

ALUMINUM ELECTROLYTIC CAPACITORS



Application Guidelines

1. Circuit Design

- (1) Please make sure the application, environmental and mounting conditions to which the capacitor will be exposed are within the conditions specified in the catalog or alternate product specifications (Referred as specification here after).
- (2) Operating temperature and applied ripple current shall be within the specifications.
 - ① The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified in the specifications.
 - ② Do not apply excessive current which exceeds the allowable ripple current.
- (3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.
- (4) Aluminum electrolytic capacitors are polarized. Make sure that no reverse voltage or AC voltage is applied to the capacitors. Please use non-polarized capacitors for a circuit that can possibly see reversed polarity.

Note: Even non-polarized capacitors cannot be used for AC voltage application.
- (5) For a circuit that repeats rapid charging/discharging of electricity, an appropriate capacitor that can endure such a condition must be used. Welding machines and photo flash are a few examples of products that contain such a circuit. In addition, rapid charging/discharging may be repeated in control circuits for servomotors, in which the circuit voltage fluctuates substantially.

For appropriate choice of capacitors for circuits that repeat rapid charging/discharging please consult us.
- (6) To restrain output ripple current, the output smoothing capacitor of the switching power supply may use low ESR capacitors. However, when the low ESR capacitors are used, the phenomenon called the abnormal oscillation of output voltage sometimes occurs. 30 degrees to 40 degrees or more of phase margin is thought as a necessity to inhibit the oscillation of output voltage with a general negative feed-back circuit. The phase margin is numerical value of how much the minimum value of the phase is from-180 degrees. The smaller the phase margin gets, the higher the chance of abnormal oscillation due to dispersion and temperature changes.

By doing phase compensation with the feed-back circuit of the error amplifier the oscillation of output voltage can be inhibited.
- (7) Make sure that no excess voltage (that is higher than the rated voltage) is applied to the capacitor.
 - ① Please pay attention to the peak voltage so that DC voltage overlapped by ripple current will not exceed the rated voltage.
 - ② In the case where more than 2 aluminum electrolytic capacitors are used in series. Please make sure that applied voltage is lower than the rated voltage and the voltage is applied to each capacitor equally using a balancing resistor in parallel with the capacitors.
- (8) The outer sleeve of the capacitor is not a guaranteed electrical insulator. Do not use a standard sleeve on a capacitor in applications that require electrical insulation. When the application requires special insulation. Please contact us for details.
- (9) Capacitors may fail if they are used under the following conditions:
 - ① Environmental (climatic) conditions
 - Being exposed to water, high temperature & high humidity, or condensation of moisture.
 - Being exposed to oil or an atmosphere that is filled with particles of oil.
 - Being exposed to salty water or an atmosphere that is filled with particles of salt.
 - In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonia, etc.).

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- Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
- Being exposed to acidic or alkaline solutions.

② Under severe conditions where vibration and /or mechanical shock exceed the applicable ranges of the specifications.

③ Vibration test condition for SMD Type

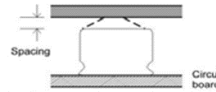
| | |
|---------------------------|--|
| Vibration frequency range | : 10~55~10Hz |
| Sweep Rate | : 10 ~ 55 ~ 10Hz/minute |
| Sweep Method | : Logarithmic |
| Amplitude or acceleration | : 1.5mm (maximum acceleration is 10G) |
| Direction of vibration | : X, Y,Z direction |
| Testing time | : 2 hours per each direction Shock is not applicable normally. |

Shock is not applicable normally. If a particular condition is required, please contact our sales office.

(10) When designing a P.C. board, please pay attention to the following:

- ① Have the hole spacing on the P.C. board match the lead spacing of the capacitor.
- ② There should not be any circuit pattern or circuit wire above the capacitor pressure relief vent.
- ③ Unless otherwise specified, following clearance should be made above the pressure relief vent.

| Case Diameter | Clearance Required |
|---------------|--------------------|
| Φ6.3~16mm | 2mm or more |
| Φ18~35mm | 3mm or more |
| Φ40mm or more | 5mm or more |



- ④ In case the vent side is placed towards P.C. board (such as end seal vented parts), make a corresponding hole on the P.C. board to release the gas when vent is operated. The hole should be made to match the capacitor vent position.
- ⑤ Screw terminal capacitors must be installed with their end seal side facing up. When you install a screw terminal capacitor in a horizontal position, the positive terminal must be in the upper position.

(11) The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible. The electrolyte is conductive. When it comes in contact with the P.C. board, there is a possibility of pattern corrosion or short circuit between the circuit pattern which could result in smoking or fire. Do not locate any circuit pattern beneath the capacitor end seal.

(12) Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).

(13) Please refer to recommended land size in this catalogue when designing in surface mount capacitors.

(14) Electrical characteristics may vary depending on changes in temperature and frequency. please consider this variation when you design circuits.

(15) When you mount capacitors on the double-sided P.C. boards do not place capacitors on circuit patterns or over on unused holes.

(16) The torque for terminal screw or brackets screws shall be within the specified value in specifications.

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(17) When you install more than 2 capacitors in parallel, consider the balance of current flowing through the capacitors. Especially, when a solid conductive polymer aluminum electrolytic capacitor and a standard aluminum electrolytic capacitor are connected in parallel, special consideration must be given.

2. Mounting

- (1) Once a capacitor has been assembled in the set and power applied. Even if a capacitor is discharged. an electric potential (recovery voltage) may exist between the terminals. Do not attempt to re-use capacitor in other circuits or application.
- (2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force. so please discharge the capacitor using a 1 k Ω resistor.
- (3) Leakage current of the parts that have been stored for more than 1 year may increase. If leakage current has increased, please perform a voltage treatment using 1 k Ω resistor.
- (4) Please confirm ratings and polarity before installing capacitors on the P.C. board.
- (5) Do not drop capacitors on the floor, nor use a capacitor that was dropped.
- (6) Be careful not to deform the capacitor during installation, do not use damaged capacitors.
- (7) Please confirm that the lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.
- (8) Snap-in type capacitor should be installed tightly to the P.C. board (allow no gap between the P.C. board and bottom of the capacitor).
- (9) Please pay attention that the clinch force is not too strong when capacitors are placed and fixed by an automatic insertion machine.
- (10) Please pay attention to that the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounted. or by product checker, or by centering mechanism.
- (11) Hand soldering
 - ① Soldering condition shall be confirmed to be within the specification.
 - ② If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.
 - ③ If you need to remove parts which were soldered. Please melt the solder enough so that stress is not applied to lead.
 - ④ Please pay attention so that solder iron does not touch any portion of capacitor body.
- (12) Flow soldering (wave solder)
 - ① Aluminum capacitor body must not be submerged into the solder bath. Aluminum capacitors must be mounted on the “top side” of the P.C. board and only allow the bottom side of the P.C. board to contact the solder.
 - ② Soldering condition must be confirmed to be within specification. Solder temperature: 260 \pm 5 $^{\circ}$ C, Immersing lead time 10 \pm 1 second. Thickness of P.C. board: 1.6mm.
 - ③ Please avoid having flux adhere to any portion except the terminal.
 - ④ Please avoid contact between other components and the aluminum capacitor.

(13) Reflow soldering (SMD only)

- ① Soldering condition must be confirmed to be within specification.
 - Pre - heating: Less than 150°C, 90 seconds max., max. temperature at capacitor top during reflow 230°C.
 - The duration for over 200°C temperatures at capacitor top 20 seconds max.
 - The duration from the pre-heat temperature to peak temperature of reflow varies due to changes of the peak temperature. Please follow “Reflow Soldering Condition” in this catalogue.
- ② When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared will vary due to difference in the color of the capacitor body, material of the sleeve and capacitor size.
- ③ The number of times for reflow of SMD aluminum electrolytic capacitors shall be one time. If this type of capacitor has to be inevitably subjected to the reflow twice, enough cooling time between the first and second reflow (at least more than 30 minutes) shall be taken to avoid consecutive reflow, please contact us if you have questions.

(14) Soldering flux

There are non-halogen types of flux that do not contain ionic halides but contain many non-ionic halides. When these non-ionic halides infiltrate the capacitor, they cause a chemical reaction that is just as harmful as the use of cleaning agents. Use soldering flux that does not contain non-ionic halides.

(15) Do not tilt, lay down or twist the capacitor body after the capacitors are soldered to the P.C. board.

(16) Do not carry the P.C. board by grasping the soldered capacitor.

(17) Please do not allow anything to touch the capacitor after soldering. If P.C. board are stored in a stack, please make sure P.C. board or the other components do not touch the capacitor. The capacitors shall not be affected by any radiated heat from the soldered P.C. board or other components after soldering.

(18) Cleaning

- ① Do not clean capacitors with halogenated cleaning agent. However, if it is necessary to clean with halogenated cleaning agent, please contact our sales office.
- ② Recommended cleaning method:
 - Applicable: Any type, any ratings
 - Cleaning agents:
 - Alcohol based solvent cleaning agent: Isopropyl Alcohol
 - Premium alcohol solvent type: Pine Alpha ST-100S, Techno Care FRW14~17, Sanelek B-12
 - Surfactant type: Clean through 750H/750L/710M Alkaline
 - Saponification agent: Aqua cleaner 210SEP
 - Cleaning conditions:
 - Total cleaning time shall be within 5 minutes by immersion, ultrasonic or other method. Temperature of the cleaning agent shall be 60°C or lower. After cleaning, capacitors should be dried using hot air for minimum of 10 minutes along with the P.C. board. Hot air temperature should be below the maximum operating temperature of the capacitor. Insufficient dry after water rinse may cause appearance problems, sleeve shrink, bottom-plate bulge and such.
- ③ Avoid using ozone destructive substances for cleaning agents to concern about global environment.

(19) Fixing Material and Coating Material

- ① Do not use any affixing or coating materials, which contain halide substance.
- ② Remove flux and any contamination, which remains in the gap between the end seal and P.C. board.
- ③ Please dry the cleaning agent on the P.C. board before using affixing or coating materials.
- ④ Please do not apply any material all around the end seal when using affixing or coating materials. There are variations of cleaning agents, fixing and coating materials, so please contact those manufactures or our sales office to make sure that the material would not cause any problems.

(20) Other

Wooden package material may be subjected to fumigation by a halogen (e.g. methyl bromide) before they are exported in order to protect them against pests. If devices with aluminum electrolytic capacitors or capacitors themselves are fumigated or packed with the pallet that is fumigated, the capacitors may internally corrode due to the halogen contents of fumigation agents.

3. In the Equipment

- (1) Do not directly touch terminal by hand.
- (2) Do not short between terminals with conductor, not spill conductible liquid such as alkaline or acidic solution on or near the capacitor.
- (3) Please make sure that the ambient conditions where the set is installed do not have any of the following conditions:
 - ① Where capacitors are exposed to water/salty water, high temperature & high humidity atmosphere, or condensation of moisture.
 - ② Where capacitors are exposed to oil or an atmosphere that is filled with particles of oil.
 - ③ Where capacitors are exposed to direct sunlight, ultraviolet rays, radiation, vibration or mechanical shock.
 - ④ The atmosphere is filled with toxic acid gasses (e.g. Hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, etc.).
 - ⑤ The atmosphere is filled with toxic alkaline gasses (e.g. ammonia).
 - ⑥ Where capacitors are exposed to acidic or alkaline solutions.
 - ⑦ Since shrinkage, bulging and/or crack could be seen on outer sleeve of capacitor when capacitors are used in atmosphere where condensation of moisture occurs, please confirm their adaptation before the use. The condensation of moisture could occur when temperature cycling test/rapid change of temperature test is performed, in this case, sleeve problem could be seen.

4. Maintenance Inspection

Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

- ① Appearance: Remarkable abnormality such as vent operation, leaking electrolyte etc.
- ② Electrical characteristic: Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

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5. In an Emergency

- (1) If you see smoke due to operation of safety vent. turn off the main switch or pull out the plug from the outlet.
- (2) Do not bring your face near the capacitor when the pressure relief vent operates. The gasses emitted from that are over 100°C.

If the gas gets into your eyes. please flush your eyes immediately in pure water.

If you breathe the gas. immediately wash out your mouth and throat with water.

Do not ingest electrolyte. if your skin is exposed to electrolyte. Please wash it away using soap and water.

6. Storage

- (1) It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
- (2) Confirm that the environment does not have any of the following conditions:
 - ① Avoid exposing capacitors to conditions where water, brine or oil are present, as well as, high temperature & high humidity conditions, or conditions where there is condensation of moisture.
 - ② Avoid exposing capacitors to toxic acidic gasses (e.g. hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, bromine, methyl bromide, etc.) and alkaline gasses (e.g. ammonia).
 - ③ Avoid exposing capacitors to acidic or alkaline solutions.
 - ④ Do not keep capacitor in conditions that expose the capacitor to ozone, ultraviolet ray or radiation
 - ⑤ Store capacitors in a packed condition as much as possible.

7. Disposal

- (1) Please dispose capacitors in either of the following ways:
 - ① Incinerate (at a temperature of 800°C or higher) capacitors after crushing parts or making a hole on the capacitor body.
 - ② If incineration is not applicable, hand them over to a waste disposal agent and have them buried in a landfill.
- (2) When removing a capacitor from the circuit board or when disposing of capacitor, please ensure that the capacitor is properly discharged.

8. Others

- (1) The products meet or exceed quality standard specified by JIS-C-5141 and with the reliability requirements refer to JIS-C-5101.
- (2) None of the ozone depleting chemicals (ODC) under the Montreal protocol is used in our manufacturing process.

NOTE: All designs and specifications are for reference only and are subject to change without prior notice. If any doubt about safety for your application, please contact us immediately for technical assistance before purchase.

ALUMINUM ELECTROLYTIC CAPACITORS



◆ MARKING AND DATE CODE

8~12.5 Φ

5~6.3 Φ

4 Φ

| Trade Mark "CS" | Chinsan mark, Show on Dimension $\geq 8 \Phi$ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|--------|-----|-----|-----|-----|-----|-----|-----|-----|------------------------|---|---|---|---|---|---|---|---|-------------------------|-----|-----|-----|-----|-----|-----|-----|---|
| Code (Date Code) | <p>$\geq 5\Phi$</p> <table style="margin-left: 20px;"> <tr> <td>(1)</td> <td>(2)</td> <td>(3)</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">1</td> <td style="border: 1px solid black; padding: 2px;">1</td> <td style="border: 1px solid black; padding: 2px;">3</td> </tr> </table> <p>$\leq 4 \Phi$</p> <table style="margin-left: 20px;"> <tr> <td>(1)</td> <td>(2)</td> <td>(3)</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"></td> <td style="border: 1px solid black; padding: 2px;">1</td> <td style="border: 1px solid black; padding: 2px;">3</td> </tr> </table> | (1) | (2) | (3) | 1 | 1 | 3 | (1) | (2) | (3) | | 1 | 3 | | | | | | | | | | | | | | | |
| (1) | (2) | (3) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | (2) | (3) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Series (Print Code) | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Series</th> <th>CTB</th> <th>CTC</th> <th>CTF</th> <th>CES</th> <th>CED</th> <th>CEE</th> <th>CHJ</th> <th>CSN</th> </tr> </thead> <tbody> <tr> <td>$\Phi 4 \sim \Phi 6.3$</td> <td>B</td> <td>C</td> <td>F</td> <td>S</td> <td>D</td> <td>E</td> <td>J</td> <td>N</td> </tr> <tr> <td>$\Phi 8 \sim \Phi 12.5$</td> <td>CTB</td> <td>CTC</td> <td>CTF</td> <td>CES</td> <td>CED</td> <td>CEE</td> <td>CHJ</td> <td>-</td> </tr> </tbody> </table> | Series | CTB | CTC | CTF | CES | CED | CEE | CHJ | CSN | $\Phi 4 \sim \Phi 6.3$ | B | C | F | S | D | E | J | N | $\Phi 8 \sim \Phi 12.5$ | CTB | CTC | CTF | CES | CED | CEE | CHJ | - |
| Series | CTB | CTC | CTF | CES | CED | CEE | CHJ | CSN | | | | | | | | | | | | | | | | | | | | |
| $\Phi 4 \sim \Phi 6.3$ | B | C | F | S | D | E | J | N | | | | | | | | | | | | | | | | | | | | |
| $\Phi 8 \sim \Phi 12.5$ | CTB | CTC | CTF | CES | CED | CEE | CHJ | - | | | | | | | | | | | | | | | | | | | | |

(1)Week

| Code | 1 | 2 | 3 | 4 | 5 |
|------|----------------|-----------------|----------------|-----------------|----------------|
| Week | The first week | The second week | The third week | The fourth week | The fifth week |

(2)Month

| Code | 1 | 2 | 3 | 4 | 5 | 6 |
|-------|------|-----|-----|-----|-----|-----|
| Month | Jan | Feb | Mar | Apr | May | Jun |
| Code | 7 | 8 | 9 | X | Y | Z |
| Month | July | Aug | Sep | Oct | Nov | Dec |

(3)Year

| Code | 9 | 0 | 1 | 2 | 3 | 4 |
|------|------|------|------|------|------|------|
| Year | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |

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PART NUMBER SYSTEM (I)

◆ Surface Mount Type

| Series | Rated Voltage | Capacitance | Tolerance | Lead Type | Lead Length | Case Dimension | Special Request |
|--|---|--|--------------------------|--------------------------|--------------------------|---|--|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

(1) Series

| Series | CTB | CTC | CTF | CES | CED | CEE | CHJ | CSN |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

(2) Rated Voltage

| Code | 0G | 0J | 1A | 1C | 1E | 1V | 1H | 1J | 1K | 2A | 2C | 2D | 2E | 2G | 2W |
|------|----|-----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| WV | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 | 200 | 250 | 400 | 450 |

(3) Capacitance

| Code | R10 | 010 | 4R7 | 100 | 150 | 220 | 151 | 561 | 102 | 332 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| μF | 0.1 | 1 | 4.7 | 10 | 15 | 22 | 150 | 560 | 1000 | 3300 |

(4) Capacitance Tolerance

| Code | J | Q | R | K | V | M | H |
|------|-----|-----------|----------|------|-----------|------|----------|
| % | ± 5 | +30 / -10 | +20 / -0 | ± 10 | +20 / -10 | ± 20 | +20 / -5 |

(5) Lead Type

| Code | C |
|-------------|---------|
| Description | Cutting |

(6) Lead Length

| Code | B | | | |
|-------------|-----|------|------|------|
| ΦD | 6.3 | 8.0* | 10.0 | 12.0 |
| Description | 2.6 | 3.0 | 3.2 | 4.6 |

*0865 Lead Length "3.3"

(7) Case Dimension

| Code | 0458 | 0558 | 6358 | 6377 | 63A5 | 0865 | 08A5 | 08C5 | 10A5 | 10C5 | 12D5 | 1216 |
|------|-------|-------|---------|---------|----------|-------|--------|--------|---------|---------|-----------|---------|
| Size | 4×5.8 | 5×5.8 | 6.3×5.8 | 6.3×7.7 | 6.3×10.5 | 8×6.5 | 8×10.5 | 8×12.5 | 10×10.5 | 10×12.5 | 12.5×13.5 | 12.5×16 |

(8) Special Request

| Code | R | F |
|-------------|---------------------------|-----------|
| Description | High Rated Ripple Current | Endurance |

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CTB Series

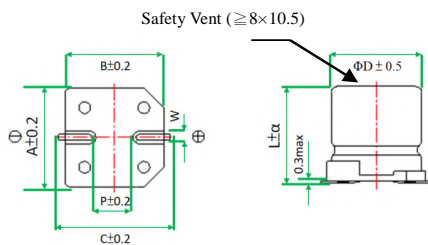
- Standard Series at 105°C
- Load life 1,000 to 2,000 hours at 105°C



◆ SPECIFICATIONS

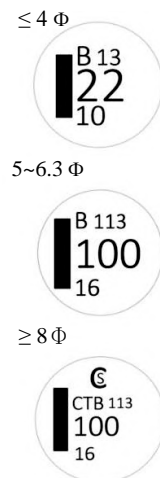
| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|---|--------------------------|-------------------------------|-----------------|-------------------------------|------|-------|-------|-----|----------|-------------------|------|------|------|------|------|------|------|------|-------------------|------|------|------|------|------|------|------|------|-------|-------------------|---|---|---|---|---|---|---|---|-------------------|----|----|----|---|---|---|---|---|
| Category Temperature Range | -55 ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 4 ~ 100Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.1 ~ 6,800 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ4 ~ Φ10</td> <td>0.35</td> <td>0.30</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>Φ12.5</td> <td>0.42</td> <td>0.38</td> <td>0.34</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.14</td> </tr> </tbody> </table> | Rated Voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Φ4 ~ Φ10 | 0.35 | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.12 | 0.12 | Φ12.5 | 0.42 | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | | | | | | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4 ~ Φ10 | 0.35 | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.12 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Φ12.5 | 0.42 | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (Φ 4~ Φ 10) I=0.01CV or 3μA whichever is greater impress the rated voltage for 2 minutes (Φ 12.5) I=0.03CV or 4μA whichever is greater impress the rated voltage for 1 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50~63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ4~Φ10</td> <td>Z(-25°C)/Z(+20°C)</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>4</td> </tr> <tr> <td rowspan="2">Φ12.5</td> <td>Z(-25°C)/Z(+20°C)</td> <td>7</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>17</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50~63 | 100 | Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 7 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | Z(-55°C)/Z(+20°C) | 15 | 8 | 6 | 4 | 4 | 3 | 3 | 4 | Φ12.5 | Z(-25°C)/Z(+20°C) | 7 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 17 | 12 | 10 | 8 | 5 | 4 | 3 | 3 |
| | Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50~63 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 7 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 15 | 8 | 6 | 4 | 4 | 3 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ12.5 | Z(-25°C)/Z(+20°C) | 7 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 17 | 12 | 10 | 8 | 5 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 2,000 hours (Φ 4~6.3×5.8,8×6.5 for 1,000 hours) at 105°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ specified value</td> </tr> </tbody> </table> | Capacitance change | ≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less) | Dissipation factor(tanδ) | ≤ 200% of the specified value | Leakage current | ≤ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ 200% of the specified value</td> </tr> </tbody> </table> | Capacitance change | ≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less) | Dissipation factor(tanδ) | ≤ 200% of the specified value | Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≤ ±20% of the initial value (≤ ±30% of the initial value of 4V or less) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 0865 | 8×6.5 | 8.0 | 6.5 | ±0.3 | 8.3 | 8.3 | 8.8 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 1216 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING



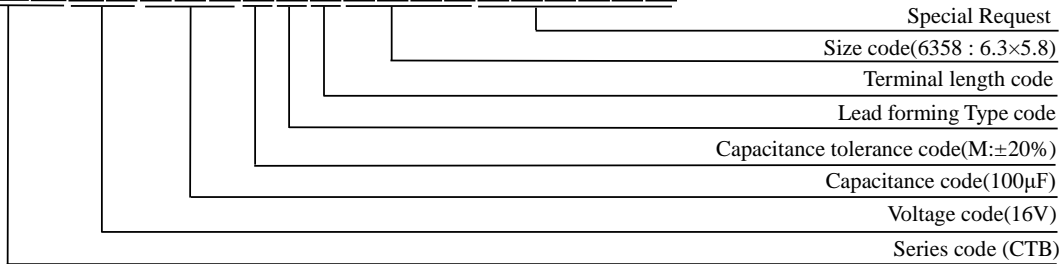
ALUMINUM ELECTROLYTIC CAPACITORS



CTB Series

◆ PART NUMBER SYSTEM (Example : 16V 100μF)

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|
| C | T | B | 1 | C | 1 | 0 | 1 | M | C | B | 6 | 3 | 5 | 8 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|



Special Request

Size code(6358 : 6.3×5.8)

Terminal length code

Lead forming Type code

Capacitance tolerance code(M:±20%)

Capacitance code(100μF)

Voltage code(16V)

Series code (CTB)

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|-----------|---------------------|--|-----------------|
| 4 (0G) | 33 | 4×5.8 | 18 | CTB0G330MCB0458 |
| | 33 | 5×5.8 | 30 | CTB0G330MCB0558 |
| | 47 | 4×5.8 | 24 | CTB0G470MCB0458 |
| | 47 | 5×5.8 | 36 | CTB0G470MCB0558 |
| | 100 | 5×5.8 | 43 | CTB0G101MCB0558 |
| | 100 | 6.3×5.8 | 60 | CTB0G101MCB6358 |
| | 150 | 6.3×5.8 | 52 | CTB0G151MCB6358 |
| | 220 | 6.3×5.8 | 57 | CTB0G221MCB6358 |
| | 330 | 6.3×7.7 | 100 | CTB0G331MCB6377 |
| | 470 | 6.3×7.7 | 105 | CTB0G471MCB6377 |
| | 680 | 8×10.5 | 210 | CTB0G681MCB08A5 |
| | 1000 | 8×10.5 | 230 | CTB0G102MCB08A5 |
| | 1500 | 10×10.5 | 315 | CTB0G152MCB10A5 |
| | 2200 | 10×10.5 | 340 | CTB0G222MCB10A5 |
| | 2200 | 10×12.5 | 440 | CTB0G222MCB10C5 |
| | 3300 | 10×12.5 | 490 | CTB0G332MCB10C5 |
| 4700 | 12.5×13.5 | 600 | CTB0G472MCB12D5 | |
| 6800 | 12.5×16 | 650 | CTB0G682MCB1216 | |
| 6.3 (0J) | 22 | 4×5.8 | 22 | CTB0J220MCB0458 |
| | 33 | 4×5.8 | 22 | CTB0J330MCB0458 |
| | 33 | 5×5.8 | 27 | CTB0J330MCB0558 |
| | 47 | 4×5.8 | 25 | CTB0J470MCB0458 |
| | 47 | 5×5.8 | 33 | CTB0J470MCB0558 |
| | 100 | 5×5.8 | 39 | CTB0J101MCB0558 |
| | 100 | 6.3×5.8 | 50 | CTB0J101MCB6358 |
| | 150 | 6.3×5.8 | 55 | CTB0J151MCB6358 |
| | 220 | 6.3×5.8 | 67 | CTB0J221MCB6358 |
| | 220 | 6.3×7.7 | 105 | CTB0J221MCB6377 |
| | 330 | 6.3×7.7 | 105 | CTB0J331MCB6377 |
| | 470 | 6.3×7.7 | 120 | CTB0J471MCB6377 |
| | 470 | 8×10.5 | 210 | CTB0J471MCB08A5 |
| | 680 | 8×10.5 | 210 | CTB0J681MCB08A5 |
| | 1000 | 8×10.5 | 230 | CTB0J102MCB08A5 |
| | 1000 | 10×10.5 | 300 | CTB0J102MCB10A5 |
| | 1500 | 10×10.5 | 315 | CTB0J152MCB10A5 |
| | 1500 | 10×12.5 | 450 | CTB0J152MCB10C5 |
| | 2200 | 10×12.5 | 500 | CTB0J222MCB10C5 |
| | 2200 | 12.5×13.5 | 620 | CTB0J222MCB12D5 |
| 3300 | 12.5×13.5 | 660 | CTB0J332MCB12D5 | |
| 3300 | 12.5×16 | 700 | CTB0J332MCB1216 | |
| 10 (1A) | 4.7 | 4×5.8 | 13 | CTB1A4R7MCB0458 |
| | 10 | 4×5.8 | 18 | CTB1A100MCB0458 |
| | 22 | 4×5.8 | 20 | CTB1A220MCB0458 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 10 (1A) | 22 | 5×5.8 | 25 | CTB1A220MCB0558 |
| | 33 | 4×5.8 | 22 | CTB1A330MCB0458 |
| | 33 | 5×5.8 | 30 | CTB1A330MCB0558 |
| | 47 | 5×5.8 | 30 | CTB1A470MCB0558 |
| | 47 | 6.3×5.8 | 41 | CTB1A470MCB6358 |
| | 100 | 5×5.8 | 39 | CTB1A101MCB0558 |
| | 100 | 6.3×5.8 | 53 | CTB1A101MCB6358 |
| | 150 | 6.3×5.8 | 62 | CTB1A151MCB6358 |
| | 220 | 6.3×5.8 | 85 | CTB1A221MCB6358 |
| | 220 | 6.3×7.7 | 105 | CTB1A221MCB6377 |
| | 220 | 8×6.5 | 105 | CTB1A221MCB0865 |
| | 330 | 6.3×7.7 | 105 | CTB1A331MCB6377 |
| | 330 | 8×10.5 | 196 | CTB1A331MCB08A5 |
| | 470 | 8×10.5 | 210 | CTB1A471MCB08A5 |
| | 470 | 10×10.5 | 260 | CTB1A471MCB10A5 |
| | 680 | 10×10.5 | 270 | CTB1A681MCB10A5 |
| | 1000 | 10×10.5 | 315 | CTB1A102MCB10A5 |
| | 1500 | 10×12.5 | 460 | CTB1A152MCB10C5 |
| | 2200 | 12.5×13.5 | 680 | CTB1A222MCB12D5 |
| | 16 (1C) | 33 | 6.3×5.8 | 40 |
| 47 | | 5×5.8 | 31 | CTB1C470MCB0558 |
| 47 | | 6.3×5.8 | 48 | CTB1C470MCB6358 |
| 100 | | 6.3×5.8 | 60 | CTB1C101MCB6358 |
| 100 | | 6.3×7.7 | 120 | CTB1C101MCB6377 |
| 100 | | 8×6.5 | 120 | CTB1C101MCB0865 |
| 150 | | 6.3×7.7 | 95 | CTB1C151MCB6377 |
| 220 | | 6.3×7.7 | 105 | CTB1C221MCB6377 |
| 220 | | 8×6.5 | 85 | CTB1C221MCB0865 |
| 220 | | 8×10.5 | 150 | CTB1C221MCB08A5 |
| 330 | | 8×10.5 | 195 | CTB1C331MCB08A5 |
| 470 | | 8×10.5 | 230 | CTB1C471MCB08A5 |
| 470 | | 10×10.5 | 295 | CTB1C471MCB10A5 |
| 680 | | 10×10.5 | 315 | CTB1C681MCB10A5 |
| 1000 | | 10×10.5 | 340 | CTB1C102MCB10A5 |
| 1000 | | 10×12.5 | 390 | CTB1C102MCB10C5 |
| 1000 | | 12.5×13.5 | 500 | CTB1C102MCB12D5 |
| 1500 | | 12.5×13.5 | 550 | CTB1C152MCB12D5 |
| 2200 | | 12.5×16 | 750 | CTB1C222MCB1216 |
| 25V (1E) | | 4.7 | 4×5.8 | 13 |
| | 10 | 4×5.8 | 14 | CTB1E100MCB0458 |
| | 10 | 5×5.8 | 20 | CTB1E100MCB0558 |
| | 22 | 5×5.8 | 25 | CTB1E220MCB0558 |
| | 22 | 6.3×5.8 | 36 | CTB1E220MCB6358 |

ALUMINUM ELECTROLYTIC CAPACITORS



CTB Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|-----------|---------------------|--|-----------------|
| 25V (1E) | 33 | 5×5.8 | 29 | CTB1E330MCB0558 |
| | 33 | 6.3×5.8 | 44 | CTB1E330MCB6358 |
| | 47 | 6.3×5.8 | 48 | CTB1E470MCB6358 |
| | 100 | 6.3×7.7 | 91 | CTB1E101MCB6377 |
| | 100 | 8×6.5 | 91 | CTB1E101MCB0865 |
| | 150 | 6.3×7.7 | 100 | CTB1E151MCB6377 |
| | 150 | 8×10.5 | 140 | CTB1E151MCB08A5 |
| | 220 | 8×10.5 | 175 | CTB1E221MCB08A5 |
| | 330 | 8×10.5 | 220 | CTB1E331MCB08A5 |
| | 330 | 10×10.5 | 240 | CTB1E331MCB10A5 |
| | 470 | 10×10.5 | 280 | CTB1E471MCB10A5 |
| | 560 | 10×10.5 | 320 | CTB1E561MCB10A5 |
| | 680 | 10×12.5 | 400 | CTB1E681MCB10C5 |
| | 1000 | 12.5×13.5 | 580 | CTB1E102MCB12D5 |
| | 1500 | 12.5×16 | 850 | CTB1E152MCB12I6 |
| 35 (1V) | 3.3 | 4×5.8 | 13 | CTB1V3R3MCB0458 |
| | 4.7 | 4×5.8 | 14 | CTB1V4R7MCB0458 |
| | 10 | 4×5.8 | 14 | CTB1V100MCB0458 |
| | 10 | 5×5.8 | 21 | CTB1V100MCB0558 |
| | 22 | 6.3×5.8 | 38 | CTB1V220MCB6358 |
| | 33 | 6.3×5.8 | 42 | CTB1V330MCB6358 |
| | 33 | 8×6.5 | 70 | CTB1V330MCB0865 |
| | 47 | 6.3×5.8 | 50 | CTB1V470MCB6358 |
| | 47 | 6.3×7.7 | 70 | CTB1V470MCB6377 |
| | 100 | 6.3×7.7 | 84 | CTB1V101MCB6377 |
| | 100 | 8×10.5 | 120 | CTB1V101MCB08A5 |
| | 150 | 8×10.5 | 155 | CTB1V151MCB08A5 |
| | 220 | 8×10.5 | 190 | CTB1V221MCB08A5 |
| | 220 | 10×10.5 | 220 | CTB1V221MCB10A5 |
| | 330 | 10×10.5 | 245 | CTB1V331MCB10A5 |
| | 470 | 10×10.5 | 280 | CTB1V471MCB10A5 |
| | 470 | 10×12.5 | 375 | CTB1V471MCB10C5 |
| | 470 | 12.5×13.5 | 520 | CTB1V471MCB12D5 |
| 680 | 10×12.5 | 395 | CTB1V681MCB10C5 | |
| 680 | 12.5×13.5 | 530 | CTB1V681MCB12D5 | |
| 1000 | 12.5×16 | 600 | CTB1V102MCB12I6 | |
| 50 (1H) | 0.1 | 4×5.8 | 0.7 | CTB1HR10MCB0458 |
| | 0.22 | 4×5.8 | 1.6 | CTB1HR22MCB0458 |
| | 0.33 | 4×5.8 | 2.5 | CTB1HR33MCB0458 |
| | 0.47 | 4×5.8 | 3.5 | CTB1HR47MCB0458 |
| | 1 | 4×5.8 | 7 | CTB1H010MCB0458 |
| | 2.2 | 4×5.8 | 11 | CTB1H2R2MCB0458 |
| | 3.3 | 4×5.8 | 13 | CTB1H3R3MCB0458 |
| | 4.7 | 4×5.8 | 13 | CTB1H4R7MCB0458 |
| | 4.7 | 5×5.8 | 16 | CTB1H4R7MCB0558 |
| | 10 | 6.3×5.8 | 24 | CTB1H100MCB6358 |
| | 22 | 6.3×5.8 | 42 | CTB1H220MCB6358 |
| | 22 | 6.3×7.7 | 51 | CTB1H220MCB6377 |
| | 22 | 8×6.5 | 70 | CTB1H220MCB0865 |
| | 33 | 6.3×7.7 | 60 | CTB1H330MCB6377 |
| | 47 | 6.3×7.7 | 63 | CTB1H470MCB6377 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|-----------|---------------------|--|-----------------|
| 50 (1H) | 47 | 8×10.5 | 120 | CTB1H470MCB08A5 |
| | 100 | 8×10.5 | 140 | CTB1H101MCB08A5 |
| | 100 | 10×10.5 | 170 | CTB1H101MCB10A5 |
| | 150 | 10×10.5 | 170 | CTB1H151MCB10A5 |
| | 220 | 10×10.5 | 220 | CTB1H221MCB10A5 |
| | 220 | 10×12.5 | 280 | CTB1H221MCB10C5 |
| | 330 | 10×12.5 | 295 | CTB1H331MCB10C5 |
| | 330 | 12.5×13.5 | 420 | CTB1H331MCB12D5 |
| | 470 | 12.5×16 | 420 | CTB1H471MCB12I6 |
| | 63 (1J) | 0.1 | 4×5.8 | 0.7 |
| 0.22 | | 4×5.8 | 1.6 | CTB1JR22MCB0458 |
| 0.33 | | 4×5.8 | 2.5 | CTB1JR33MCB0458 |
| 0.47 | | 4×5.8 | 3.5 | CTB1JR47MCB0458 |
| 1 | | 4×5.8 | 7 | CTB1J010MCB0458 |
| 2.2 | | 4×5.8 | 11 | CTB1J2R2MCB0458 |
| 3.3 | | 5×5.8 | 13 | CTB1J3R3MCB0558 |
| 4.7 | | 5×5.8 | 16 | CTB1J4R7MCB0558 |
| 10 | | 6.3×5.8 | 24 | CTB1J100MCB6358 |
| 10 | | 6.3×7.7 | 39 | CTB1J100MCB6377 |
| 10 | | 8×6.5 | 25 | CTB1J100MCB0865 |
| 22 | | 6.3×7.7 | 49 | CTB1J220MCB6377 |
| 22 | | 8×10.5 | 98 | CTB1J220MCB08A5 |
| 33 | | 8×10.5 | 112 | CTB1J330MCB08A5 |
| 47 | | 8×10.5 | 119 | CTB1J470MCB08A5 |
| 47 | | 10×10.5 | 160 | CTB1J470MCB10A5 |
| 56 | | 8×10.5 | 120 | CTB1J560MCB08A5 |
| 56 | | 10×10.5 | 165 | CTB1J560MCB10A5 |
| 100 | 10×10.5 | 196 | CTB1J101MCB10A5 | |
| 100 | 10×12.5 | 210 | CTB1J101MCB10C5 | |
| 100 | 12.5×13.5 | 270 | CTB1J101MCB12D5 | |
| 150 | 10×12.5 | 225 | CTB1J151MCB10C5 | |
| 220 | 12.5×13.5 | 470 | CTB1J221MCB12D5 | |
| 330 | 12.5×16 | 510 | CTB1J331MCB12I6 | |
| 100 (2A) | 1 | 4×5.8 | 7 | CTB2A010MCB0458 |
| | 2.2 | 6.3×5.8 | 14 | CTB2A2R2MCB6358 |
| | 3.3 | 6.3×5.8 | 20 | CTB2A3R3MCB6358 |
| | 3.3 | 6.3×7.7 | 32 | CTB2A3R3MCB6377 |
| | 3.3 | 8×6.5 | 30 | CTB2A3R3MCB0865 |
| | 4.7 | 6.3×5.8 | 21 | CTB2A4R7MCB6358 |
| | 4.7 | 6.3×7.7 | 35 | CTB2A4R7MCB6377 |
| | 10 | 6.3×7.7 | 35 | CTB2A100MCB6377 |
| | 10 | 8×10.5 | 77 | CTB2A100MCB08A5 |
| | 22 | 8×10.5 | 84 | CTB2A220MCB08A5 |
| | 22 | 10×10.5 | 126 | CTB2A220MCB10A5 |
| | 33 | 10×10.5 | 133 | CTB2A330MCB10A5 |
| | 47 | 10×10.5 | 140 | CTB2A470MCB10A5 |
| | 47 | 10×12.5 | 160 | CTB2A470MCB10C5 |
| | 47 | 12.5×13.5 | 250 | CTB2A470MCB12D5 |
| | 68 | 10×12.5 | 180 | CTB2A680MCB10C5 |
| | 68 | 12.5×13.5 | 300 | CTB2A680MCB12D5 |
| | 100 | 12.5×13.5 | 380 | CTB2A101MCB12D5 |



CTB Series

◆ **RIPPLE CURRENT MULTIPLIERS**
Frequency Multipliers

| Size | Cap(μF) | Frequency (Hz) | | | | |
|--------|-----------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| Φ4~Φ10 | 0.1~68 | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |
| | 100~3300 | 0.85 | 1.00 | 1.08 | 1.20 | 1.30 |
| Φ12.5 | ~68 | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100~680 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 1000~6800 | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |

ALUMINUM ELECTROLYTIC CAPACITORS



CTC Series

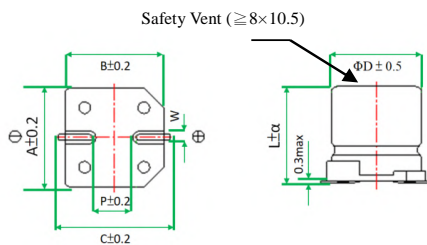
- Long life 2,000 to 5,000 hours at 105°C



SPECIFICATIONS

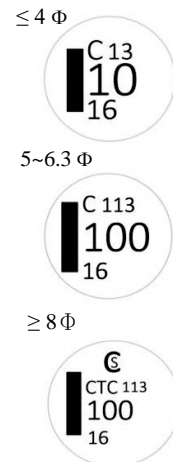
| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|--------|--------|-----------|-----------------------|------|------|------|------|------|------|-------------------|------|-------|------|------|------|------|--------|-------------------|------|---|---|---|---|---|-------------------|----|----|---|---|---|---|
| Category Temperature Range | -55 ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 100Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.1 ~ 3,300 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">tanδ(Max) Φ4 ~ Φ10</td> <td>0.28</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>Φ12.5</td> <td>0.38</td> <td>0.34</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.18</td> </tr> </tbody> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | tanδ(Max) Φ4 ~ Φ10 | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.12 | Φ12.5 | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.18 | | | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tanδ(Max) Φ4 ~ Φ10 | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Φ12.5 | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (Φ 4~ Φ 10) I=0.01CV or 3μA whichever is greater impress the rated voltage for 2 minutes (Φ 12.5) I=0.03CV or 4μA whichever is greater impress the rated voltage for 1 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50~100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ 4~ Φ 10</td> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2">Φ 12.5</td> <td>Z(-25°C)/Z(+20°C)</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50~100 | Φ 4~ Φ 10 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 | Φ 12.5 | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | 3 |
| | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50~100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ 4~ Φ 10 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ 12.5 | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ 4~6.3×5.8,8×6.5 for 2,000 hours, and 6.3×7.7 for 3,000 hours) at 105°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≤ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ specified value</td> </tr> </tbody> </table> | Capacitance change | ≤ ±30% of the initial value | Dissipation factor(tanδ) | ≤ 300% of the specified value | Leakage current | ≤ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≤ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≤ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ 200% of the specified value</td> </tr> </tbody> </table> | Capacitance change | ≤ ±30% of the initial value | Dissipation factor(tanδ) | ≤ 300% of the specified value | Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≤ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 0865 | 8×6.5 | 8.0 | 6.5 | ±0.3 | 8.3 | 8.3 | 8.8 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 1216 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

MARKING



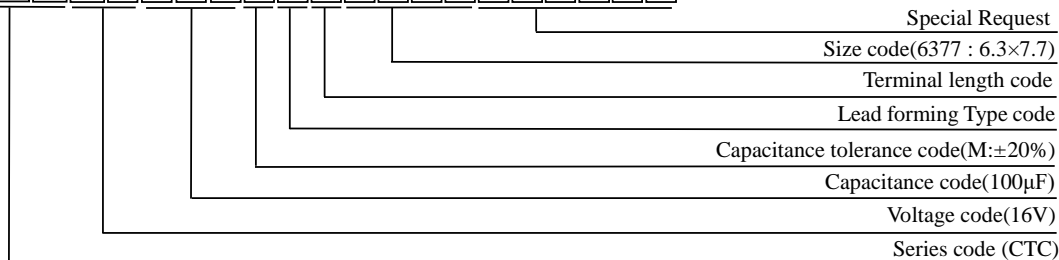
ALUMINUM ELECTROLYTIC CAPACITORS



CTC Series

◆ PART NUMBER SYSTEM (Example : 16V 100μF)

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|
| C | T | C | I | C | I | 0 | I | M | C | B | 6 | 3 | 7 | 7 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mArms/ 105°C, 120Hz) | Part Number |
|----------|-----------|---------------------|--|-----------------|
| 6.3 (0J) | 22 | 4×5.8 | 22 | CTC0J220MCB0458 |
| | 33 | 5×5.8 | 35 | CTC0J330MCB0558 |
| | 47 | 5×5.8 | 38 | CTC0J470MCB0558 |
| | 100 | 6.3×5.8 | 69 | CTC0J101MCB6358 |
| | 150 | 6.3×7.7 | 85 | CTC0J151MCB6377 |
| | 150 | 8×6.5 | 85 | CTC0J151MCB0865 |
| | 220 | 6.3×7.7 | 120 | CTC0J221MCB6377 |
| | 220 | 8×6.5 | 120 | CTC0J221MCB0865 |
| | 330 | 8×10.5 | 290 | CTC0J331MCB08A5 |
| | 470 | 10×10.5 | 320 | CTC0J471MCB10A5 |
| | 680 | 10×10.5 | 320 | CTC0J681MCB10A5 |
| | 1000 | 10×10.5 | 410 | CTC0J102MCB10A5 |
| | 1500 | 10×12.5 | 450 | CTC0J152MCB10C5 |
| | 2200 | 12.5×13.5 | 680 | CTC0J222MCB12D5 |
| 3300 | 12.5×13.5 | 800 | CTC0J332MCB12D5 | |
| 3300 | 12.5×16 | 850 | CTC0J332MCB1216 | |
| 10 (1A) | 22 | 5×5.8 | 30 | CTC1A220MCB0558 |
| | 33 | 5×5.8 | 36 | CTC1A330MCB0558 |
| | 47 | 6.3×5.8 | 50 | CTC1A470MCB6358 |
| | 100 | 6.3×7.7 | 81 | CTC1A101MCB6377 |
| | 100 | 8×6.5 | 81 | CTC1A101MCB0865 |
| | 150 | 8×10.5 | 125 | CTC1A151MCB08A5 |
| | 220 | 8×10.5 | 141 | CTC1A221MCB08A5 |
| | 330 | 10×10.5 | 290 | CTC1A331MCB10A5 |
| | 470 | 10×10.5 | 320 | CTC1A471MCB10A5 |
| | 680 | 10×10.5 | 320 | CTC1A681MCB10A5 |
| | 1000 | 10×12.5 | 390 | CTC1A102MCB10C5 |
| | 1500 | 12.5×13.5 | 480 | CTC1A152MCB12D5 |
| | 2200 | 12.5×13.5 | 510 | CTC1A222MCB12D5 |
| | 2200 | 12.5×16 | 750 | CTC1A222MCB1216 |
| 16 (1C) | 10 | 4×5.8 | 18 | CTC1C100MCB0458 |
| | 22 | 5×5.8 | 30 | CTC1C220MCB0558 |
| | 33 | 6.3×5.8 | 48 | CTC1C330MCB6358 |
| | 47 | 6.3×5.8 | 50 | CTC1C470MCB6358 |
| | 100 | 6.3×7.7 | 81 | CTC1C101MCB6377 |
| | 100 | 8×6.5 | 81 | CTC1C101MCB0865 |
| | 150 | 8×10.5 | 125 | CTC1C151MCB08A5 |
| | 220 | 10×10.5 | 216 | CTC1C221MCB10A5 |
| | 330 | 10×10.5 | 290 | CTC1C331MCB10A5 |
| | 470 | 10×10.5 | 320 | CTC1C471MCB10A5 |
| | 680 | 10×12.5 | 420 | CTC1C681MCB10C5 |
| | 1000 | 12.5×13.5 | 550 | CTC1C102MCB12D5 |
| | 1500 | 12.5×13.5 | 650 | CTC1C152MCB12D5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mArms/ 105°C, 120Hz) | Part Number |
|----------|-----------|---------------------|--|------------------|
| 25 (1E) | 10 | 5×5.8 | 27 | CTC1E100MCB0558 |
| | 22 | 6.3×5.8 | 44 | CTC1E220MCB6358 |
| | 33 | 6.3×5.8 | 50 | CTC1E330MCB6358 |
| | 47 | 6.3×7.7 | 63 | CTC1E470MCB6377 |
| | 47 | 8×6.5 | 63 | CTC1E470MCB0865 |
| | 100 | 6.3×7.7 | 100 | CTC1E101MCB6377 |
| | 100 | 8×10.5 | 116 | CTC1E101MCB08A5 |
| | 150 | 10×10.5 | 320 | CTC1E151MCB10A5 |
| | 220 | 8×10.5 | 180 | CTC1E221MCB08A5 |
| | 220 | 10×10.5 | 320 | CTC1E221MCB10A5 |
| | 330 | 10×10.5 | 320 | CTC1E331MCB10A5 |
| | 470 | 10×12.5 | 350 | CTC1E471MCB10C5 |
| | 470 | 12.5×13.5 | 400 | CTC1E471MCB12D5 |
| | 680 | 12.5×13.5 | 415 | CTC1E681MCB12D5 |
| 1000 | 12.5×13.5 | 460 | CTC1E102MCB12D5 | |
| 1500 | 12.5×16 | 700 | CTC1E152MCB1216 | |
| 35 (1V) | 4.7 | 4×5.8 | 16 | CTC1V47R7MCB0458 |
| | 10 | 5×5.8 | 27 | CTC1V100MCB0558 |
| | 22 | 6.3×5.8 | 44 | CTC1V220MCB6358 |
| | 33 | 6.3×7.7 | 57 | CTC1V330MCB6377 |
| | 33 | 8×6.5 | 57 | CTC1V330MCB0865 |
| | 47 | 8×10.5 | 92 | CTC1V470MCB08A5 |
| | 100 | 10×10.5 | 151 | CTC1V101MCB10A5 |
| | 150 | 10×10.5 | 290 | CTC1V151MCB10A5 |
| | 220 | 10×10.5 | 375 | CTC1V221MCB10A5 |
| | 330 | 10×12.5 | 375 | CTC1V331MCB10C5 |
| | 330 | 12.5×13.5 | 380 | CTC1V331MCB12D5 |
| | 470 | 12.5×13.5 | 520 | CTC1V471MCB12D5 |
| | 680 | 12.5×13.5 | 550 | CTC1V681MCB12D5 |
| | 1000 | 12.5×16 | 600 | CTC1V102MCB1216 |
| 50V (1H) | 0.1 | 4×5.8 | 1 | CTC1HR10MCB0458 |
| | 0.22 | 4×5.8 | 2.6 | CTC1HR22MCB0458 |
| | 0.33 | 4×5.8 | 3.2 | CTC1HR33MCB0458 |
| | 0.47 | 4×5.8 | 5 | CTC1HR47MCB0458 |
| | 1 | 4×5.8 | 8 | CTC1H010MCB0458 |
| | 2.2 | 4×5.8 | 12 | CTC1H2R2MCB0458 |
| | 3.3 | 4×5.8 | 17 | CTC1H3R3MCB0458 |
| | 4.7 | 5×5.8 | 22 | CTC1H4R7MCB0558 |
| | 10 | 6.3×5.8 | 32 | CTC1H100MCB6358 |
| | 22 | 6.3×7.7 | 58 | CTC1H220MCB6377 |
| | 22 | 8×6.5 | 58 | CTC1H220MCB0865 |
| | 33 | 8×10.5 | 140 | CTC1H330MCB08A5 |

ALUMINUM ELECTROLYTIC CAPACITORS



CTC Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 50 (1H) | 47 | 10×10.5 | 250 | CTC1H470MCB10A5 |
| | 100 | 10×10.5 | 310 | CTC1H101MCB10A5 |
| | 150 | 10×10.5 | 310 | CTC1H151MCB10A5 |
| | 220 | 10×12.5 | 320 | CTC1H221MCB10C5 |
| | 220 | 12.5×13.5 | 340 | CTC1H221MCB12D5 |
| | 330 | 12.5×13.5 | 500 | CTC1H331MCB12D5 |
| | 330 | 12.5×16 | 600 | CTC1H331MCB12I6 |
| 63 (1J) | 10 | 6.3×7.7 | 45 | CTC1J100MCB6377 |
| | 10 | 8×6.5 | 45 | CTC1J100MCB0865 |
| | 22 | 8×10.5 | 65 | CTC1J220MCB08A5 |
| | 33 | 10×10.5 | 80 | CTC1J330MCB10A5 |
| | 47 | 10×10.5 | 90 | CTC1J470MCB10A5 |
| | 100 | 10×12.5 | 150 | CTC1J101MCB10C5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 63 (1J) | 220 | 12.5×13.5 | 470 | CTC1J221MCB12D5 |
| | 330 | 12.5×16 | 550 | CTC1J331MCB12I6 |
| 100 (2A) | 3.3 | 6.3×7.7 | 30 | CTC2A3R3MCB6377 |
| | 3.3 | 8×6.5 | 30 | CTC2A3R3MCB0865 |
| | 4.7 | 8×10.5 | 50 | CTC2A4R7MCB08A5 |
| | 10 | 8×10.5 | 55 | CTC2A100MCB08A5 |
| | 22 | 10×10.5 | 70 | CTC2A220MCB10A5 |
| | 33 | 10×10.5 | 80 | CTC2A330MCB10A5 |
| | 47 | 10×12.5 | 150 | CTC2A470MCB10C5 |
| | 47 | 12.5×13.5 | 250 | CTC2A470MCB12D5 |
| | 100 | 12.5×13.5 | 300 | CTC2A101MCB12D5 |
| | 150 | 12.5×13.5 | 380 | CTC2A151MCB12D5 |
| | 150 | 12.5×16 | 420 | CTC2A151MCB12I6 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Size | Cap(μF) | Frequency (Hz) | | | | |
|--------|----------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| Φ4~Φ10 | ~1500 | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |
| Φ12.5 | ~68 | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100~470 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 680~3300 | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |

ALUMINUM ELECTROLYTIC CAPACITORS



CTF Series

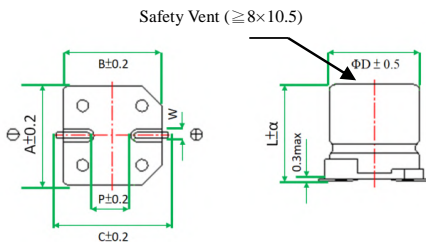
- High Voltage 160V~450V
- Long life 3,000~5,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|-------------------|------|------|------|------|------|-------------------|---|---|---|----|----|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 160 ~ 450Vdc | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 2.2 ~ 47 μF | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> </tr> </table> | Rated Voltage (V) | 160 | 200 | 250 | 400 | 450 | tanδ(Max) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | | | | | | |
| | Rated Voltage (V) | 160 | 200 | 250 | 400 | 450 | | | | | | | | | | | | | |
| tanδ(Max) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (160V~450V) I=0.04CV+100μA whichever is greater impress the rated voltage for 2 minutes I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>6</td> <td>6</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>6</td> <td>6</td> <td>6</td> <td>10</td> <td>10</td> </tr> </table> | Rated voltage (V) | 160 | 200 | 250 | 400 | 450 | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 6 | 6 | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 10 | 10 |
| | Rated voltage (V) | 160 | 200 | 250 | 400 | 450 | | | | | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 6 | 6 | | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 10 | 10 | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ 6.3 for 3,000 hours) at 105°C. | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | |

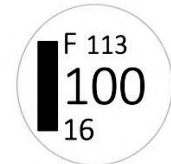
◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|------|------|------|------|---------|-----|
| 63A5 | 6.3×10.5 | 6.3 | 10.5 | ±0.3 | 6.6 | 6.6 | 7.1 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 08C5 | 8×12.5 | 8.0 | 12.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11.0 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 12I6 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING

6.3 Φ



≥ 8 Φ

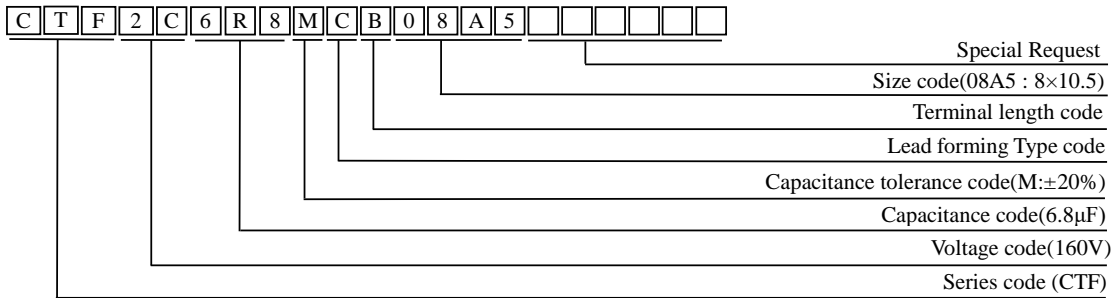


ALUMINUM ELECTROLYTIC CAPACITORS



CTF Series

◆ PART NUMBER SYSTEM (Example : 160V 6.8μF)



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 160 (2C) | 2.2 | 6.3×10.5 | 20 | CTF2C2R2MCB63A5 |
| | 3.3 | 6.3×10.5 | 23 | CTF2C3R3MCB63A5 |
| | 4.7 | 6.3×10.5 | 30 | CTF2C4R7MCB63A5 |
| | 6.8 | 8×10.5 | 35 | CTF2C6R8MCB08A5 |
| | 10 | 10×12.5 | 45 | CTF2C100MCB10C5 |
| | 22 | 12.5×13.5 | 85 | CTF2C220MCB12D5 |
| | 33 | 12.5×13.5 | 95 | CTF2C330MCB12D5 |
| 200 (2D) | 47 | 12.5×16 | 260 | CTF2C470MCB12I6 |
| | 2.2 | 6.3×10.5 | 23 | CTF2D2R2MCB63A5 |
| | 3.3 | 6.3×10.5 | 30 | CTF2D3R3MCB63A5 |
| | 4.7 | 8×10.5 | 35 | CTF2D4R7MCB08A5 |
| | 6.8 | 8×10.5 | 40 | CTF2D6R8MCB08A5 |
| | 10 | 10×12.5 | 80 | CTF2D100MCB10C5 |
| | 22 | 12.5×13.5 | 110 | CTF2D220MCB12D5 |
| 250 (2E) | 33 | 12.5×16 | 220 | CTF2D330MCB12I6 |
| | 2.2 | 6.3×10.5 | 30 | CTF2E2R2MCB63A5 |
| | 3.3 | 8×10.5 | 35 | CTF2E3R3MCB08A5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 250 (2E) | 4.7 | 8×12.5 | 40 | CTF2E4R7MCB08C5 |
| | 6.8 | 10×12.5 | 45 | CTF2E6R8MCB10C5 |
| | 10 | 10×12.5 | 105 | CTF2E100MCB10C5 |
| | 22 | 12.5×16 | 180 | CTF2E220MCB12I6 |
| | 2.2 | 6.3×10.5 | 30 | CTF2G2R2MCB63A5 |
| 400 (2G) | 3.3 | 8×12.5 | 38 | CTF2G3R3MCB08C5 |
| | 3.3 | 10×12.5 | 40 | CTF2G3R3MCB10C5 |
| | 4.7 | 8×12.5 | 40 | CTF2G4R7MCB08C5 |
| | 4.7 | 10×12.5 | 50 | CTF2G4R7MCB10C5 |
| | 6.8 | 10×12.5 | 50 | CTF2G6R8MCB10C5 |
| | 10 | 12.5×13.5 | 85 | CTF2G100MCB12D5 |
| 450 (2W) | 2.2 | 10×12.5 | 40 | CTF2W2R2MCB10C5 |
| | 3.3 | 10×12.5 | 40 | CTF2W3R3MCB10C5 |
| | 4.7 | 10×12.5 | 50 | CTF2W4R7MCB10C5 |
| | 6.8 | 12.5×13.5 | 65 | CTF2W6R8MCB12D5 |
| | 10 | 12.5×13.5 | 85 | CTF2W100MCB12D5 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|---------|----------------|------|------|------|------|
| | 50 | 120 | 300 | 1K | 10K~ |
| 160~450 | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |

ALUMINUM ELECTROLYTIC CAPACITORS



CES Series

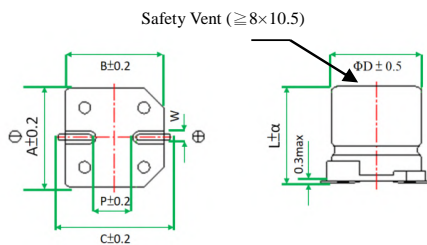
- Low Impedance
- Load life 1,000 to 2,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|----|----------|--------|-------------------|------|------|------|------|-------|------|-------------------|------|------|------|------|---|---|-------|-------------------|---|---|---|---|---|---|-------------------|----|---|---|---|---|---|
| Category Temperature Range | -55 ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 50Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 1 ~ 3,300 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ4 ~ Φ10</td> <td>0.22</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>Φ12.5</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </tbody> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Φ4 ~ Φ10 | 0.22 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | Φ12.5 | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | | | | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4 ~ Φ10 | 0.22 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Φ12.5 | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (Φ 4~ Φ 10) I=0.01CV or 3μA whichever is greater impress the rated voltage for 2 minutes (Φ 12.5) I=0.03CV or 4μA whichever is greater impress the rated voltage for 1 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ4~Φ10</td> <td>Z(-25°C)/Z(+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2">Φ12.5</td> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 5 | 4 | 4 | 3 | 3 | 3 | Φ12.5 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | 3 |
| | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 5 | 4 | 4 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ12.5 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 2,000 hours (Φ 4~6.3×5.8,8×6.5 for 1,000 hours) at 105°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 0865 | 8×6.5 | 8.0 | 6.5 | ±0.3 | 8.3 | 8.3 | 8.8 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 1216 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING

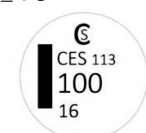
≤ 4 Φ



5~6.3 Φ



≥ 8 Φ



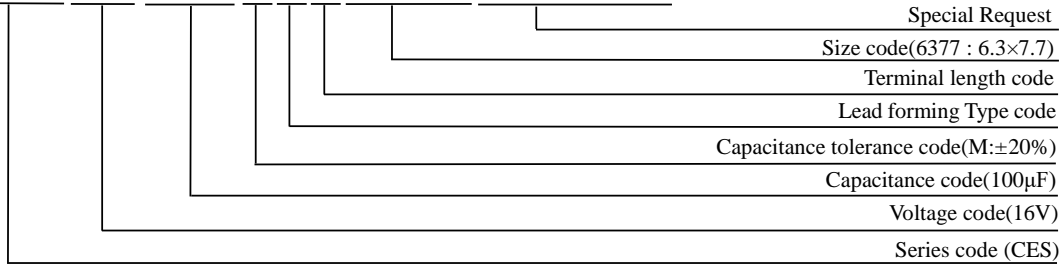
ALUMINUM ELECTROLYTIC CAPACITORS



CES Series

◆ PART NUMBER SYSTEM (Example : 16V 100μF)

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|
| C | E | S | 1 | C | 1 | 0 | 1 | M | C | B | 6 | 3 | 7 | 7 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 105°C, 100kHz) | Part Number |
|----------|-----------|---------------------|---------------------------|--|-----------------|
| 6.3 (0J) | 22 | 4×5.8 | 3 | 60 | CES0J220MCB0458 |
| | 33 | 4×5.8 | 3 | 60 | CES0J330MCB0458 |
| | 33 | 5×5.8 | 1.8 | 95 | CES0J330MCB0558 |
| | 47 | 4×5.8 | 3 | 60 | CES0J470MCB0458 |
| | 47 | 5×5.8 | 1.8 | 95 | CES0J470MCB0558 |
| | 68 | 5×5.8 | 1.8 | 95 | CES0J680MCB0558 |
| | 68 | 6.3×5.8 | 1.0 | 140 | CES0J680MCB6358 |
| | 100 | 5×5.8 | 1.8 | 95 | CES0J101MCB0558 |
| | 100 | 6.3×5.8 | 1.0 | 140 | CES0J101MCB6358 |
| | 150 | 6.3×5.8 | 1.0 | 140 | CES0J151MCB6358 |
| | 150 | 6.3×7.7 | 0.6 | 230 | CES0J151MCB6377 |
| | 220 | 6.3×5.8 | 1.0 | 140 | CES0J221MCB6358 |
| | 220 | 6.3×7.7 | 0.6 | 230 | CES0J221MCB6377 |
| | 330 | 6.3×7.7 | 0.6 | 230 | CES0J331MCB6377 |
| | 470 | 8×10.5 | 0.3 | 450 | CES0J471MCB08A5 |
| | 680 | 8×10.5 | 0.3 | 450 | CES0J681MCB08A5 |
| | 1000 | 8×10.5 | 0.3 | 450 | CES0J102MCB08A5 |
| | 1000 | 10×10.5 | 0.15 | 670 | CES0J102MCB10A5 |
| | 1500 | 10×10.5 | 0.15 | 670 | CES0J152MCB10A5 |
| | 1500 | 10×12.5 | 0.13 | 750 | CES0J152MCB10C5 |
| 2200 | 10×12.5 | 0.13 | 750 | CES0J222MCB10C5 | |
| 2200 | 12.5×13.5 | 0.11 | 820 | CES0J222MCB12D5 | |
| 3300 | 12.5×13.5 | 0.11 | 820 | CES0J332MCB12D5 | |
| 3300 | 12.5×16 | 0.09 | 950 | CES0J332MCB12I6 | |
| 10 (1A) | 22 | 4×5.8 | 3 | 60 | CES1A220MCB0458 |
| | 22 | 5×5.8 | 1.8 | 95 | CES1A220MCB0558 |
| | 33 | 4×5.8 | 3 | 60 | CES1A330MCB0458 |
| | 33 | 5×5.8 | 1.8 | 95 | CES1A330MCB0558 |
| | 47 | 5×5.8 | 1.8 | 95 | CES1A470MCB0558 |
| | 47 | 6.3×5.8 | 1.0 | 140 | CES1A470MCB6358 |
| | 68 | 6.3×5.8 | 1.0 | 140 | CES1A680MCB6358 |
| | 100 | 6.3×5.8 | 1.0 | 140 | CES1A101MCB6358 |
| | 100 | 6.3×7.7 | 0.6 | 230 | CES1A101MCB6377 |
| | 150 | 6.3×5.8 | 1.0 | 140 | CES1A151MCB6358 |
| | 150 | 6.3×7.7 | 0.6 | 230 | CES1A151MCB6377 |
| | 220 | 6.3×7.7 | 0.6 | 230 | CES1A221MCB6377 |
| | 330 | 8×10.5 | 0.3 | 450 | CES1A331MCB08A5 |
| | 470 | 8×10.5 | 0.3 | 450 | CES1A471MCB08A5 |
| | 680 | 10×10.5 | 0.15 | 670 | CES1A681MCB10A5 |
| | 1000 | 10×10.5 | 0.15 | 670 | CES1A102MCB10A5 |
| | 1500 | 10×12.5 | 0.13 | 750 | CES1A152MCB10C5 |
| | 1500 | 12.5×13.5 | 0.11 | 820 | CES1A152MCB12D5 |
| 2200 | 12.5×16 | 0.09 | 950 | CES1A222MCB12I6 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 105°C, 100kHz) | Part Number |
|----------|-----------|---------------------|---------------------------|--|-----------------|
| 16 (1C) | 10 | 4×5.8 | 3 | 60 | CES1C100MCB0458 |
| | 15 | 4×5.8 | 3 | 60 | CES1C150MCB0458 |
| | 15 | 5×5.8 | 1.8 | 95 | CES1C150MCB0558 |
| | 22 | 4×5.8 | 3 | 60 | CES1C220MCB0458 |
| | 22 | 5×5.8 | 1.8 | 95 | CES1C220MCB0558 |
| | 33 | 5×5.8 | 1.8 | 95 | CES1C330MCB0558 |
| | 33 | 6.3×5.8 | 1.0 | 140 | CES1C330MCB6358 |
| | 47 | 5×5.8 | 1.8 | 95 | CES1C470MCB0558 |
| | 47 | 6.3×5.8 | 1.0 | 140 | CES1C470MCB6358 |
| | 68 | 6.3×5.8 | 1.0 | 140 | CES1C680MCB6358 |
| | 68 | 6.3×7.7 | 0.6 | 230 | CES1C680MCB6377 |
| | 100 | 6.3×5.8 | 1.0 | 140 | CES1C101MCB6358 |
| | 100 | 6.3×7.7 | 0.6 | 230 | CES1C101MCB6377 |
| | 150 | 6.3×7.7 | 0.6 | 230 | CES1C151MCB6377 |
| | 220 | 6.3×7.7 | 0.6 | 230 | CES1C221MCB6377 |
| | 220 | 8×6.5 | 0.6 | 230 | CES1C221MCB0865 |
| | 220 | 8×10.5 | 0.3 | 450 | CES1C221MCB08A5 |
| | 330 | 8×10.5 | 0.3 | 450 | CES1C331MCB08A5 |
| | 330 | 10×10.5 | 0.15 | 670 | CES1C331MCB10A5 |
| | 470 | 8×10.5 | 0.3 | 450 | CES1C471MCB08A5 |
| 470 | 10×10.5 | 0.15 | 670 | CES1C471MCB10A5 | |
| 680 | 10×10.5 | 0.15 | 670 | CES1C681MCB10A5 | |
| 1000 | 10×10.5 | 0.15 | 670 | CES1C102MCB10A5 | |
| 1500 | 12.5×13.5 | 0.11 | 820 | CES1C152MCB12D5 | |
| 2200 | 12.5×16 | 0.09 | 950 | CES1C222MCB12I6 | |
| 25 (1E) | 4.7 | 4×5.8 | 3 | 60 | CES1E477MCB0458 |
| | 6.8 | 4×5.8 | 3 | 60 | CES1E688MCB0458 |
| | 10 | 4×5.8 | 3 | 60 | CES1E100MCB0458 |
| | 10 | 5×5.8 | 1.8 | 95 | CES1E100MCB0558 |
| | 15 | 6.3×5.8 | 1.8 | 95 | CES1E150MCB6358 |
| | 22 | 5×5.8 | 1.8 | 95 | CES1E220MCB0558 |
| | 22 | 6.3×5.8 | 1.0 | 140 | CES1E220MCB6358 |
| | 33 | 6.3×5.8 | 1.0 | 140 | CES1E330MCB6358 |
| | 47 | 6.3×5.8 | 1.0 | 140 | CES1E470MCB6358 |
| | 47 | 6.3×7.7 | 0.6 | 230 | CES1E470MCB6377 |
| | 68 | 6.3×7.7 | 0.6 | 230 | CES1E680MCB6377 |
| | 100 | 6.3×7.7 | 0.6 | 230 | CES1E101MCB6377 |
| | 150 | 6.3×7.7 | 0.6 | 230 | CES1E151MCB6377 |
| | 150 | 8×10.5 | 0.3 | 450 | CES1E151MCB08A5 |
| | 220 | 8×10.5 | 0.3 | 450 | CES1E221MCB08A5 |
| | 330 | 8×10.5 | 0.3 | 450 | CES1E331MCB08A5 |
| | 330 | 10×10.5 | 0.15 | 670 | CES1E331MCB10A5 |
| | 470 | 10×10.5 | 0.15 | 670 | CES1E471MCB10A5 |

ALUMINUM ELECTROLYTIC CAPACITORS



CES Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|-----------------|
| 25 (1E) | 680 | 10×12.5 | 0.13 | 750 | CES1E681MCB10C5 |
| | 1000 | 12.5×13.5 | 0.11 | 820 | CES1E102MCB12D5 |
| | 1500 | 12.5×16 | 0.09 | 950 | CES1E152MCB1216 |
| 35 (1V) | 1 | 4×5.8 | 3 | 60 | CES1V010MCB0458 |
| | 1.5 | 4×5.8 | 3 | 60 | CES1V1R5MCB0458 |
| | 2.2 | 4×5.8 | 3 | 60 | CES1V2R2MCB0458 |
| | 3.3 | 4×5.8 | 3 | 60 | CES1V3R3MCB0458 |
| | 4.7 | 4×5.8 | 3 | 60 | CES1V4R7MCB0458 |
| | 6.8 | 5×5.8 | 1.8 | 95 | CES1V6R8MCB0558 |
| | 10 | 4×5.8 | 3 | 60 | CES1V100MCB0458 |
| | 10 | 5×5.8 | 1.8 | 95 | CES1V100MCB0558 |
| | 15 | 5×5.8 | 1.8 | 95 | CES1V150MCB0558 |
| | 22 | 5×5.8 | 1.8 | 95 | CES1V220MCB0558 |
| | 22 | 6.3×5.8 | 1.0 | 140 | CES1V220MCB6358 |
| | 33 | 6.3×5.8 | 1.0 | 140 | CES1V330MCB6358 |
| | 47 | 6.3×5.8 | 1.0 | 140 | CES1V470MCB6358 |
| | 47 | 6.3×7.7 | 0.6 | 230 | CES1V470MCB6377 |
| | 68 | 6.3×7.7 | 0.6 | 230 | CES1V680MCB6377 |
| | 100 | 6.3×7.7 | 0.6 | 260 | CES1V101MCB6377 |
| | 100 | 8×10.5 | 0.3 | 450 | CES1V101MCB08A5 |
| | 150 | 8×10.5 | 0.3 | 450 | CES1V151MCB08A5 |
| | 220 | 8×10.5 | 0.3 | 450 | CES1V221MCB08A5 |
| | 220 | 10×10.5 | 0.15 | 670 | CES1V221MCB10A5 |
| 330 | 10×10.5 | 0.15 | 670 | CES1V331MCB10A5 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|-----------------|
| 35 (1V) | 470 | 10×10.5 | 0.15 | 670 | CES1V471MCB10A5 |
| | 680 | 10×12.5 | 0.13 | 750 | CES1V681MCB10C5 |
| | 680 | 12.5×13.5 | 0.11 | 820 | CES1V681MCB12D5 |
| | 1000 | 12.5×16 | 0.09 | 950 | CES1V102MCB1216 |
| 50 (1H) | 1 | 4×5.8 | 5 | 30 | CES1H010MCB0458 |
| | 1.5 | 4×5.8 | 5 | 30 | CES1H1R5MCB0458 |
| | 2.2 | 4×5.8 | 5 | 30 | CES1H2R2MCB0458 |
| | 3.3 | 4×5.8 | 5 | 30 | CES1H3R3MCB0458 |
| | 4.7 | 5×5.8 | 3 | 50 | CES1H4R7MCB0558 |
| | 6.8 | 6.3×5.8 | 2.0 | 70 | CES1H6R8MCB6358 |
| | 10 | 6.3×5.8 | 2.0 | 70 | CES1H100MCB6358 |
| | 15 | 6.3×5.8 | 2.0 | 70 | CES1H150MCB6358 |
| | 22 | 6.3×5.8 | 2.0 | 70 | CES1H220MCB6358 |
| | 22 | 6.3×7.7 | 1.0 | 120 | CES1H220MCB6377 |
| | 33 | 6.3×7.7 | 1.0 | 120 | CES1H330MCB6377 |
| | 47 | 6.3×7.7 | 1.0 | 120 | CES1H470MCB6377 |
| | 68 | 8×10.5 | 0.6 | 300 | CES1H680MCB08A5 |
| | 100 | 8×10.5 | 0.6 | 300 | CES1H101MCB08A5 |
| | 150 | 10×10.5 | 0.3 | 500 | CES1H151MCB10A5 |
| | 220 | 10×10.5 | 0.3 | 500 | CES1H221MCB10A5 |
| | 330 | 10×12.5 | 0.25 | 580 | CES1H331MCB10C5 |
| | 330 | 12.5×13.5 | 0.20 | 650 | CES1H331MCB12D5 |
| | 470 | 12.5×16 | 0.15 | 700 | CES1H471MCB1216 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Size | Cap(μF) | Frequency (Hz) | | | | |
|--------|-----------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| Φ4~Φ10 | 1~68 | 0.35 | 0.50 | 0.64 | 0.83 | 1.00 |
| | 100~2200 | 0.40 | 0.55 | 0.70 | 0.85 | 1.00 |
| Φ12.5 | ~680 | 0.45 | 0.65 | 0.80 | 0.90 | 1.00 |
| | 1000~3300 | 0.65 | 0.85 | 0.95 | 1.00 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



CED Series

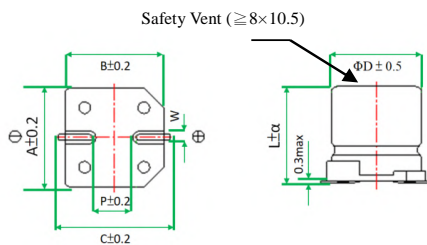
- Extra Low Impedance
- Load life 2,000 to 3,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|----|----------|--------|-------------------|------|------|------|------|-------|------|-------------------|------|------|------|------|---|---|-------|-------------------|---|---|---|---|---|---|-------------------|----|---|---|---|---|---|
| Category Temperature Range | -55 ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 50Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 4.7 ~ 3,300 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Φ4 ~ Φ10</td> <td>0.22</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>Φ12.5</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </tbody> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Φ4 ~ Φ10 | 0.22 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | Φ12.5 | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | | | | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4 ~ Φ10 | 0.22 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ12.5 | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (Φ 4~ Φ 10) I=0.01CV or 3μA whichever is greater impress the rated voltage for 2 minutes (Φ 12.5) I=0.03CV or 4μA whichever is greater impress the rated voltage for 1 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Φ4~Φ10</td> <td>Z(-25°C)/Z(+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2">Φ12.5</td> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 5 | 4 | 4 | 3 | 3 | 3 | Φ12.5 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | 3 |
| | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ4~Φ10 | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 5 | 4 | 4 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ12.5 | Z(-25°C)/Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-55°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 3,000 hours (Φ 4~6.3×5.8,8×6.5 for 2,000 hours) at 105°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 0862 | 8×6.5 | 8.0 | 6.5 | ±0.3 | 8.3 | 8.3 | 8.8 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 1216 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING

≤ 4 Φ



5~6.3 Φ



≥ 8 Φ



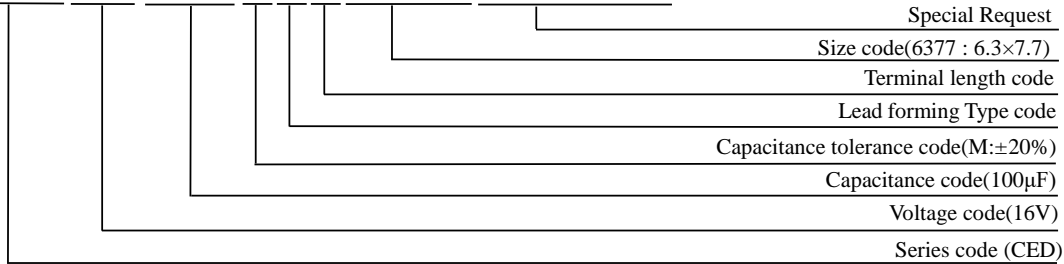
ALUMINUM ELECTROLYTIC CAPACITORS



CED Series

◆ PART NUMBER SYSTEM (Example : 16V 100μF)

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|
| C | E | D | 1 | C | 1 | 0 | 1 | M | C | B | 6 | 3 | 7 | 7 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mAmps/ 105°C, 100kHz) | Part Number |
|----------|-----------|---------------------|----------------------------|---|-----------------|
| 6.3 (0J) | 22 | 4×5.8 | 1.8 | 80 | CED0J220MCB0458 |
| | 33 | 4×5.8 | 1.8 | 80 | CED0J330MCB0458 |
| | 33 | 5×5.8 | 0.76 | 150 | CED0J330MCB0558 |
| | 47 | 4×5.8 | 1.8 | 80 | CED0J470MCB0458 |
| | 47 | 5×5.8 | 1.2 | 150 | CED0J470MCB0558 |
| | 56 | 5×5.8 | 0.76 | 150 | CED0J560MCB0558 |
| | 68 | 5×5.8 | 0.76 | 150 | CED0J680MCB0558 |
| | 68 | 6.3×5.8 | 0.44 | 230 | CED0J680MCB6358 |
| | 100 | 5×5.8 | 0.76 | 150 | CED0J101MCB0558 |
| | 100 | 6.3×5.8 | 0.44 | 230 | CED0J101MCB6358 |
| | 150 | 6.3×5.8 | 0.44 | 230 | CED0J151MCB6358 |
| | 220 | 6.3×5.8 | 0.44 | 230 | CED0J221MCB6358 |
| | 220 | 6.3×7.7 | 0.34 | 280 | CED0J221MCB6377 |
| | 220 | 8×6.5 | 0.34 | 280 | CED0J221MCB0865 |
| | 330 | 6.3×7.7 | 0.34 | 280 | CED0J331MCB6377 |
| | 330 | 8×6.5 | 0.34 | 280 | CED0J331MCB0865 |
| | 470 | 8×10.5 | 0.17 | 450 | CED0J471MCB08A5 |
| | 680 | 8×10.5 | 0.17 | 450 | CED0J681MCB08A5 |
| | 680 | 10×10.5 | 0.09 | 670 | CED0J681MCB10A5 |
| | 1000 | 8×10.5 | 0.17 | 450 | CED0J102MCB08A5 |
| 1000 | 10×10.5 | 0.09 | 670 | CED0J102MCB10A5 | |
| 1500 | 10×10.5 | 0.09 | 670 | CED0J152MCB10A5 | |
| 1500 | 10×12.5 | 0.075 | 800 | CED0J152MCB10C5 | |
| 2200 | 12.5×13.5 | 0.065 | 900 | CED0J222MCB12D5 | |
| 3300 | 12.5×16 | 0.060 | 1050 | CED0J332MCB12I6 | |
| 10 (1A) | 22 | 4×5.8 | 1.8 | 80 | CED1A220MCB0458 |
| | 33 | 4×5.8 | 1.8 | 80 | CED1A330MCB0458 |
| | 33 | 5×5.8 | 0.76 | 150 | CED1A330MCB0558 |
| | 47 | 5×5.8 | 0.76 | 150 | CED1A470MCB0558 |
| | 47 | 6.3×5.8 | 0.44 | 230 | CED1A470MCB6358 |
| | 56 | 6.3×5.8 | 0.44 | 230 | CED1A560MCB6358 |
| | 68 | 6.3×5.8 | 0.44 | 230 | CED1A680MCB6358 |
| | 100 | 6.3×5.8 | 0.44 | 230 | CED1A101MCB6358 |
| | 100 | 6.3×7.7 | 0.34 | 280 | CED1A101MCB6377 |
| | 100 | 8×6.5 | 0.34 | 280 | CED1A101MCB0865 |
| | 150 | 6.3×7.7 | 0.34 | 280 | CED1A151MCB6377 |
| | 220 | 6.3×7.7 | 0.34 | 280 | CED1A221MCB6377 |
| | 220 | 8×6.5 | 0.34 | 280 | CED1A221MCB0865 |
| | 330 | 8×10.5 | 0.17 | 450 | CED1A331MCB08A5 |
| | 470 | 8×10.5 | 0.17 | 450 | CED1A471MCB08A5 |
| | 680 | 10×10.5 | 0.09 | 670 | CED1A681MCB10A5 |
| | 1000 | 10×10.5 | 0.09 | 670 | CED1A102MCB10A5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mAmps/ 105°C, 100kHz) | Part Number |
|----------|-----------|---------------------|----------------------------|---|-----------------|
| 10 (1A) | 1500 | 12.5×13.5 | 0.065 | 900 | CED1A152MCB12D5 |
| | 2200 | 12.5×16 | 0.060 | 1050 | CED1A222MCB12I6 |
| 16 (1C) | 10 | 4×5.8 | 1.8 | 80 | CED1C100MCB0458 |
| | 15 | 4×5.8 | 1.8 | 80 | CED1C150MCB0458 |
| | 22 | 4×5.8 | 1.8 | 80 | CED1C220MCB0458 |
| | 22 | 5×5.8 | 0.76 | 150 | CED1C220MCB0558 |
| | 33 | 5×5.8 | 0.76 | 150 | CED1C330MCB0558 |
| | 33 | 6.3×5.8 | 0.44 | 230 | CED1C330MCB6358 |
| | 47 | 5×5.8 | 0.8 | 150 | CED1C470MCB0558 |
| | 47 | 6.3×5.8 | 0.44 | 230 | CED1C470MCB6358 |
| | 56 | 6.3×5.8 | 0.44 | 230 | CED1C560MCB6358 |
| | 68 | 6.3×5.8 | 0.44 | 230 | CED1C680MCB6358 |
| | 68 | 6.3×7.7 | 0.34 | 280 | CED1C680MCB6377 |
| | 68 | 8×6.5 | 0.34 | 280 | CED1C680MCB0865 |
| | 100 | 6.3×5.8 | 0.44 | 230 | CED1C101MCB6358 |
| | 100 | 6.3×7.7 | 0.34 | 280 | CED1C101MCB6377 |
| | 100 | 8×6.5 | 0.34 | 280 | CED1C101MCB0865 |
| | 150 | 6.3×7.7 | 0.34 | 280 | CED1C151MCB6377 |
| | 220 | 6.3×7.7 | 0.34 | 280 | CED1C221MCB6377 |
| | 220 | 8×10.5 | 0.17 | 450 | CED1C221MCB08A5 |
| | 330 | 8×10.5 | 0.17 | 450 | CED1C331MCB08A5 |
| | 330 | 10×10.5 | 0.09 | 670 | CED1C331MCB10A5 |
| 470 | 8×10.5 | 0.17 | 450 | CED1C471MCB08A5 | |
| 470 | 10×10.5 | 0.09 | 670 | CED1C471MCB10A5 | |
| 680 | 10×10.5 | 0.09 | 670 | CED1C681MCB10A5 | |
| 680 | 10×12.5 | 0.075 | 800 | CED1C681MCB10C5 | |
| 1000 | 12.5×13.5 | 0.065 | 900 | CED1C102MCB12D5 | |
| 1000 | 12.5×16 | 0.060 | 1050 | CED1C102MCB12I6 | |
| 25 (1E) | 10 | 4×5.8 | 1.8 | 80 | CED1E100MCB0458 |
| | 15 | 5×5.8 | 0.76 | 150 | CED1E150MCB0558 |
| | 22 | 5×5.8 | 0.76 | 150 | CED1E220MCB0558 |
| | 22 | 6.3×5.8 | 0.44 | 230 | CED1E220MCB6358 |
| | 33 | 5×5.8 | 1.2 | 150 | CED1E330MCB0558 |
| | 33 | 6.3×5.8 | 0.44 | 230 | CED1E330MCB6358 |
| | 47 | 6.3×5.8 | 0.44 | 230 | CED1E470MCB6358 |
| | 47 | 6.3×7.7 | 0.34 | 280 | CED1E470MCB6377 |
| | 47 | 8×6.5 | 0.34 | 280 | CED1E470MCB0865 |
| | 56 | 6.3×5.8 | 0.44 | 230 | CED1E560MCB6358 |
| | 56 | 6.3×7.7 | 0.34 | 280 | CED1E560MCB6377 |
| | 68 | 6.3×7.7 | 0.34 | 280 | CED1E680MCB6377 |
| | 100 | 6.3×7.7 | 0.34 | 280 | CED1E101MCB6377 |
| | 100 | 8×6.5 | 0.34 | 280 | CED1E101MCB0865 |
| | 150 | 6.3×7.7 | 0.34 | 280 | CED1E151MCB6377 |

ALUMINUM ELECTROLYTIC CAPACITORS



CED Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|------------------|
| 25 (1E) | 150 | 8×6.5 | 0.17 | 450 | CED1E151MCB0865 |
| | 220 | 8×10.5 | 0.17 | 450 | CED1E221MCB08A5 |
| | 330 | 8×10.5 | 0.17 | 450 | CED1E331MCB08A5 |
| | 330 | 10×10.5 | 0.09 | 670 | CED1E331MCB10A5 |
| | 470 | 10×10.5 | 0.09 | 670 | CED1E471MCB10A5 |
| | 470 | 10×12.5 | 0.075 | 800 | CED1E471MCB10C5 |
| | 680 | 12.5×13.5 | 0.065 | 900 | CED1E681MCB12D5 |
| | 1000 | 12.5×16 | 0.060 | 1050 | CED1E102MCB1216 |
| 35 (1V) | 4.7 | 4×5.8 | 1.8 | 80 | CED1V47R7MCB0458 |
| | 10 | 4×5.8 | 1.8 | 80 | CED1V100MCB0458 |
| | 10 | 5×5.8 | 0.8 | 150 | CED1V100MCB0558 |
| | 15 | 5×5.8 | 0.76 | 150 | CED1V150MCB0558 |
| | 22 | 5×5.8 | 0.76 | 150 | CED1V220MCB0558 |
| | 22 | 6.3×5.8 | 0.6 | 230 | CED1V220MCB6358 |
| | 33 | 6.3×5.8 | 0.44 | 230 | CED1V330MCB6358 |
| | 33 | 8×6.5 | 0.34 | 280 | CED1V330MCB0865 |
| | 47 | 6.3×5.8 | 0.44 | 230 | CED1V470MCB6358 |
| | 47 | 6.3×7.7 | 0.34 | 280 | CED1V470MCB6377 |
| | 47 | 8×6.5 | 0.34 | 280 | CED1V470MCB0865 |
| | 56 | 6.3×7.7 | 0.34 | 280 | CED1V560MCB6377 |
| | 68 | 6.3×7.7 | 0.34 | 280 | CED1V680MCB6377 |
| | 100 | 8×10.5 | 0.17 | 450 | CED1V101MCB08A5 |
| | 150 | 10×10.5 | 0.09 | 670 | CED1V151MCB10A5 |
| | 220 | 10×10.5 | 0.09 | 670 | CED1V221MCB10A5 |
| | 330 | 10×10.5 | 0.09 | 670 | CED1V331MCB10A5 |
| | 470 | 10×12.5 | 0.075 | 800 | CED1V471MCB10C5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|------------------|
| 35 (1V) | 470 | 12.5×13.5 | 0.065 | 900 | CED1V471MCB12D5 |
| | 680 | 12.5×13.5 | 0.065 | 900 | CED1V681MCB12D5 |
| | 680 | 12.5×16 | 0.060 | 1050 | CED1V681MCB1216 |
| | 4.7 | 4×5.8 | 5 | 60 | CED1H47R7MCB0458 |
| 50 (1H) | 4.7 | 5×5.8 | 1.52 | 85 | CED1H47R7MCB0558 |
| | 10 | 5×5.8 | 1.52 | 85 | CED1H100MCB0558 |
| | 10 | 6.3×5.8 | 0.88 | 165 | CED1H100MCB6358 |
| | 15 | 6.3×5.8 | 0.88 | 165 | CED1H150MCB6358 |
| | 22 | 6.3×5.8 | 0.88 | 165 | CED1H220MCB6358 |
| | 22 | 6.3×7.7 | 0.68 | 185 | CED1H220MCB6377 |
| | 22 | 8×6.5 | 0.68 | 185 | CED1H220MCB0865 |
| | 33 | 6.3×7.7 | 0.68 | 185 | CED1H330MCB6377 |
| | 33 | 8×6.5 | 0.68 | 185 | CED1H330MCB0865 |
| | 47 | 6.3×7.7 | 0.68 | 185 | CED1H470MCB6377 |
| | 47 | 8×6.5 | 0.68 | 185 | CED1H470MCB0865 |
| | 56 | 6.3×7.7 | 0.68 | 185 | CED1H560MCB6377 |
| | 56 | 8×10.5 | 0.34 | 350 | CED1H560MCB08A5 |
| | 68 | 8×10.5 | 0.34 | 350 | CED1H680MCB08A5 |
| | 100 | 8×10.5 | 0.34 | 350 | CED1H101MCB08A5 |
| | 100 | 10×10.5 | 0.18 | 670 | CED1H101MCB10A5 |
| | 150 | 10×10.5 | 0.18 | 670 | CED1H151MCB10A5 |
| | 220 | 10×10.5 | 0.18 | 670 | CED1H221MCB10A5 |
| | 220 | 10×12.5 | 0.16 | 750 | CED1H221MCB10C5 |
| | 330 | 12.5×13.5 | 0.14 | 800 | CED1H331MCB12D5 |
| | 470 | 12.5×16 | 0.12 | 900 | CED1H471MCB1216 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Size | Cap(μF) | Frequency (Hz) | | | | |
|--------|-----------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| Φ4~Φ10 | 1~68 | 0.35 | 0.50 | 0.64 | 0.83 | 1.00 |
| | 100~1500 | 0.40 | 0.55 | 0.70 | 0.85 | 1.00 |
| Φ12.5 | ~680 | 0.45 | 0.65 | 0.80 | 0.90 | 1.00 |
| | 1000~3300 | 0.65 | 0.85 | 0.95 | 1.00 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



CEE Series

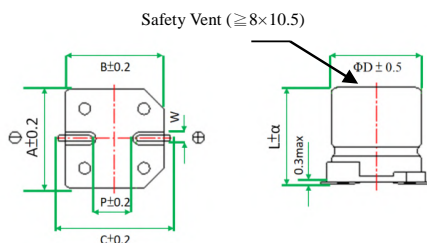
- Extra Low Impedance
- Load life 2,000 to 5,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | |
|--|---|-------------------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|------|------|------|------|-------------------|------|------|------|------|
| Category Temperature Range | -55 ~ +105°C | | | | | | | | | | | | | | | |
| Working Voltage Range | 50 ~ 100Vdc | | | | | | | | | | | | | | | |
| Capacitance Range | 3.3 ~ 470 μF | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tanδ(Max) Φ4 ~ Φ10</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.07</td> </tr> <tr> <td>Φ12.5</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.07</td> </tr> </tbody> </table> | Rated Voltage (V) | 50 | 63 | 80 | 100 | tanδ(Max) Φ4 ~ Φ10 | 0.10 | 0.08 | 0.08 | 0.07 | Φ12.5 | 0.10 | 0.08 | 0.08 | 0.07 |
| | Rated Voltage (V) | 50 | 63 | 80 | 100 | | | | | | | | | | | |
| tanδ(Max) Φ4 ~ Φ10 | 0.10 | 0.08 | 0.08 | 0.07 | | | | | | | | | | | | |
| Φ12.5 | 0.10 | 0.08 | 0.08 | 0.07 | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | |
| Leakage Current | (Φ 4~ Φ 10) I=0.01CV or 3μA whichever is greater impress the rated voltage for 2 minutes (Φ 12.5) I=0.03CV or 4μA whichever is greater impress the rated voltage for 1 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | 50 | 63 | 80 | 100 | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | Z(-55°C)/Z(+20°C) | 3 | 3 | 3 | 3 |
| | Rated voltage (V) | 50 | 63 | 80 | 100 | | | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | | | | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 3 | 3 | 3 | 3 | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ4~Φ8×6.5 for 2,000 hours) at 105°C. | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ specified value | | | | | | | | | |
| | Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </tbody> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | |
| | Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 0865 | 8×6.5 | 8.0 | 6.5 | ±0.3 | 8.3 | 8.3 | 8.8 | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 1216 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING

≤ 4 Φ



5~6.3 Φ



≥ 8 Φ



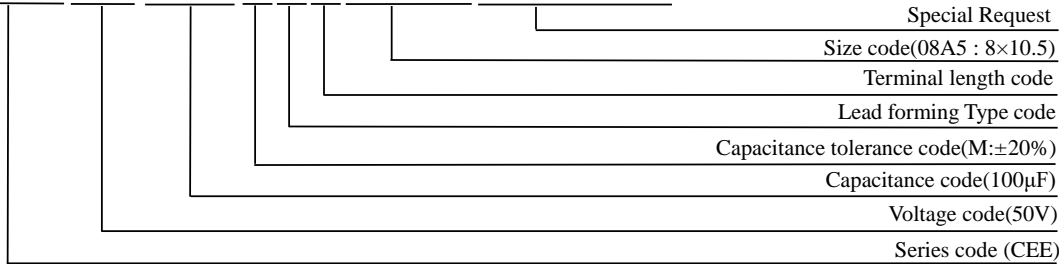
ALUMINUM ELECTROLYTIC CAPACITORS



CEE Series

◆ PART NUMBER SYSTEM (Example : 50V 100μF)

C E E 1 H 1 0 1 M C B 0 8 A 5



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mAmps/ 105°C, 100kHz) | Part Number |
|----------|-----------|---------------------|----------------------------|---|-----------------|
| 50 (1H) | 4.7 | 4×5.8 | 2.9 | 60 | CEE1H4R7MCB0458 |
| | 4.7 | 5×5.8 | 1.52 | 85 | CEE1H4R7MCB0558 |
| | 10 | 5×5.8 | 1.52 | 85 | CEE1H100MCB0558 |
| | 10 | 6.3×5.8 | 0.88 | 165 | CEE1H100MCB6358 |
| | 10 | 6.3×10.5 | 0.75 | 135 | CEE1H100MCB63A5 |
| | 10 | 8×10.5 | 0.88 | 165 | CEE1H100MCB08A5 |
| | 15 | 6.3×5.8 | 0.88 | 165 | CEE1H150MCB6358 |
| | 22 | 6.3×5.8 | 0.88 | 165 | CEE1H220MCB6358 |
| | 22 | 6.3×7.7 | 0.68 | 195 | CEE1H220MCB6377 |
| | 22 | 8×6.5 | 0.68 | 195 | CEE1H220MCB0865 |
| | 22 | 8×10.5 | 0.68 | 195 | CEE1H220MCB08A5 |
| | 33 | 6.3×7.7 | 0.68 | 195 | CEE1H330MCB6377 |
| | 33 | 8×6.5 | 0.68 | 195 | CEE1H330MCB0865 |
| | 47 | 6.3×7.7 | 0.68 | 195 | CEE1H470MCB6377 |
| | 47 | 8×6.5 | 0.68 | 195 | CEE1H470MCB0865 |
| | 56 | 8×10.5 | 0.34 | 350 | CEE1H560MCB08A5 |
| | 68 | 8×10.5 | 0.34 | 350 | CEE1H680MCB08A5 |
| | 100 | 8×10.5 | 0.34 | 350 | CEE1H101MCB08A5 |
| 100 | 10×10.5 | 0.18 | 670 | CEE1H101MCB10A5 | |
| 150 | 10×10.5 | 0.18 | 670 | CEE1H151MCB10A5 | |
| 220 | 10×10.5 | 0.18 | 670 | CEE1H221MCB10A5 | |
| 220 | 10×12.5 | 0.14 | 780 | CEE1H221MCB10C5 | |
| 330 | 12.5×13.5 | 0.12 | 900 | CEE1H331MCB12D5 | |
| 470 | 12.5×16 | 0.10 | 1050 | CEE1H471MCB1216 | |
| 63 (1J) | 4.7 | 5×5.8 | 3 | 50 | CEE1J4R7MCB0558 |
| | 10 | 6.3×5.8 | 1.5 | 80 | CEE1J100MCB6358 |
| | 10 | 6.3×7.7 | 1.2 | 120 | CEE1J100MCB6377 |
| | 22 | 6.3×7.7 | 1.2 | 120 | CEE1J220MCB6377 |
| | 22 | 8×6.5 | 1.2 | 120 | CEE1J220MCB0865 |
| | 22 | 8×10.5 | 0.65 | 250 | CEE1J220MCB08A5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mAmps/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|---|-----------------|
| 63 (1J) | 33 | 8×10.5 | 0.65 | 250 | CEE1J330MCB08A5 |
| | 47 | 8×10.5 | 0.65 | 250 | CEE1J470MCB08A5 |
| | 68 | 8×10.5 | 0.65 | 250 | CEE1J680MCB08A5 |
| | 68 | 12.5×13.5 | 0.16 | 800 | CEE1J680MCB12D5 |
| | 100 | 10×10.5 | 0.35 | 400 | CEE1J101MCB10A5 |
| | 100 | 12.5×13.5 | 0.16 | 800 | CEE1J101MCB12D5 |
| | 150 | 10×10.5 | 0.25 | 650 | CEE1J151MCB10A5 |
| | 150 | 12.5×13.5 | 0.16 | 800 | CEE1J151MCB12D5 |
| | 220 | 12.5×13.5 | 0.16 | 800 | CEE1J221MCB12D5 |
| | 80 (1K) | 3.3 | 5×5.8 | 5 | 25 |
| 4.7 | | 6.3×5.8 | 3.0 | 40 | CEE1K4R7MCB6358 |
| 10 | | 6.3×7.7 | 3.0 | 60 | CEE1K100MCB6377 |
| 10 | | 8×6.5 | 2.4 | 80 | CEE1K100MCB0865 |
| 22 | | 8×10.5 | 1.3 | 130 | CEE1K220MCB08A5 |
| 33 | | 8×10.5 | 1.3 | 130 | CEE1K330MCB08A5 |
| 47 | | 10×10.5 | 1.0 | 200 | CEE1K470MCB10A5 |
| 68 | | 12.5×13.5 | 0.32 | 500 | CEE1K680MCB12D5 |
| 100 | | 12.5×13.5 | 0.32 | 500 | CEE1K101MCB12D5 |
| 150 | | 12.5×13.5 | 0.32 | 500 | CEE1K151MCB12D5 |
| 220 | | 12.5×16 | 0.26 | 550 | CEE1K221MCB1216 |
| 100 (2A) | | 10 | 8×10.5 | 1.3 | 130 |
| | 22 | 8×10.5 | 1.3 | 130 | CEE2A220MCB08A5 |
| | 22 | 10×10.5 | 0.7 | 200 | CEE2A220MCB10A5 |
| | 33 | 10×10.5 | 0.7 | 200 | CEE2A330MCB10A5 |
| | 47 | 10×12.5 | 0.60 | 250 | CEE2A470MCB10C5 |
| | 47 | 12.5×13.5 | 0.32 | 500 | CEE2A470MCB12D5 |
| | 68 | 12.5×13.5 | 0.32 | 500 | CEE2A680MCB12D5 |
| | 100 | 12.5×13.5 | 0.32 | 500 | CEE2A101MCB12D5 |
| 100 | 12.5×16 | 0.26 | 550 | CEE2A101MCB1216 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Size | Cap(μF) | Frequency (Hz) | | | | |
|--------|---------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| Φ4~Φ10 | 4.7~68 | 0.35 | 0.50 | 0.64 | 0.83 | 1.00 |
| | 100~470 | 0.40 | 0.55 | 0.70 | 0.85 | 1.00 |
| Φ12.5 | ~68 | 0.40 | 0.55 | 0.70 | 0.85 | 1.00 |
| | 100~470 | 0.45 | 0.65 | 0.80 | 0.90 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



CHJ Series

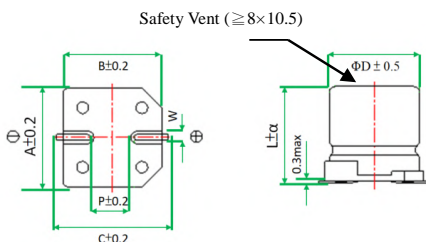
- High temperature at 125°C
- Load life 1,000 to 5,000 hours



◆ SPECIFICATIONS

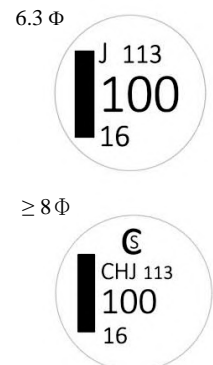
| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|---------|---------|----------|-------------------|-----------|------|------|------|------|------|-------------------|------|------|------|---|---|---|-------|-------------------|---|---|---|---|---|---|-------------------|---|---|---|---|---|----|
| Category Temperature Range | -40 ~ +125°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 10 ~ 450Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 3.3 ~ 1,000 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160~250</td><td>400~450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.14</td><td>0.18</td><td>0.18</td><td>0.20</td><td>0.20</td> </tr> </table> | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 400~450 | tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.18 | 0.18 | 0.20 | 0.20 | | | | | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 400~450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.18 | 0.18 | 0.20 | 0.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | (10V~100V) I=0.03CV or 4μA whichever is greater impress the rated voltage for 2 minutes (160V~450V) I=0.04CV+100μA whichever is greater impress the rated voltage for 2 minute I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td colspan="2">Rated voltage (V)</td> <td>10</td><td>16</td><td>25</td><td>35~100</td><td>160~250</td><td>400~450</td> </tr> <tr> <td rowspan="2">Φ6.3~Φ10</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td><td>3</td><td>2</td><td>2</td><td>-</td><td>-</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>10</td><td>8</td><td>6</td><td>4</td><td>-</td><td>-</td> </tr> <tr> <td rowspan="2">Φ12.5</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td><td>3</td><td>2</td><td>2</td><td>3</td><td>6</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td><td>6</td><td>4</td><td>3</td><td>6</td><td>10</td> </tr> </table> | Rated voltage (V) | | 10 | 16 | 25 | 35~100 | 160~250 | 400~450 | Φ6.3~Φ10 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | - | - | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | 4 | - | - | Φ12.5 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 3 | 6 | Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | 3 | 6 | 10 |
| | Rated voltage (V) | | 10 | 16 | 25 | 35~100 | 160~250 | 400~450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ6.3~Φ10 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | 4 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Φ12.5 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | 3 | 6 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ8×10.5~ Φ10 for 2,000 hours), (Φ6.3 for 1,000 hours) at 125°C. Rated voltage is applied for 2,000hours (160V~450V , Φ12.5) at 125°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±30% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 300% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±30% of the initial value | Dissipation factor(tanδ) | ≦ 300% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | ≦ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 300% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|-----------|------|------|--------------|------|------|------|---------|-----|
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 08A5 | 8×10.5 | 8.0 | 10.5 | ±0.5 | 8.3 | 8.3 | 9.1 | 0.8~1.2 | 3.1 |
| 10A5 | 10×10.5 | 10.0 | 10.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 10C5 | 10×12.5 | 10.0 | 12.5 | ±0.5 | 10.3 | 10.3 | 11 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5 | 13.5 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 12I6 | 12.5×16 | 12.5 | 16.0 | ±1.0 | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

◆ MARKING



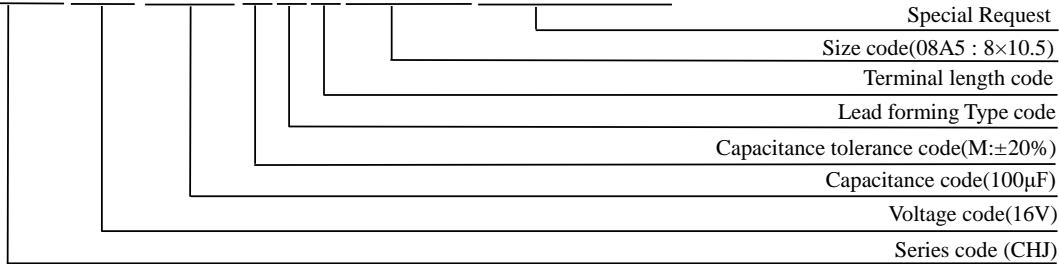
ALUMINUM ELECTROLYTIC CAPACITORS



CHJ Series

◆ PART NUMBER SYSTEM (Example : 16V 100μF)

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|
| C | H | J | I | C | I | 0 | I | M | C | B | 0 | 8 | A | 5 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | ESR (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 125°C, 100kHz) | Part Number |
|----------|----------|---------------------|--------------------------|--|-----------------|
| 10 (1A) | 100 | 6.3×7.7 | 2.3 | 72 | CHJ1A101MCB6377 |
| | 220 | 8×10.5 | 1.0 | 136 | CHJ1A221MCB08A5 |
| | 330 | 10×10.5 | 0.7 | 188 | CHJ1A331MCB10A5 |
| | 470 | 10×12.5 | 0.5 | 300 | CHJ1A471MCB10C5 |
| | 1000 | 12.5×13.5 | 0.14 | 750 | CHJ1A102MCB12D5 |
| | 1000 | 12.5×16 | 0.11 | 1000 | CHJ1A102MCB12I6 |
| 16 (1C) | 47 | 6.3×5.8 | 3.3 | 43 | CHJ1C470MCB6358 |
| | 100 | 8×10.5 | 1.0 | 115 | CHJ1C101MCB08A5 |
| | 220 | 10×10.5 | 0.7 | 175 | CHJ1C221MCB10A5 |
| | 330 | 10×12.5 | 0.5 | 280 | CHJ1C331MCB10C5 |
| | 470 | 12.5×13.5 | 0.14 | 750 | CHJ1C471MCB12D5 |
| 25 (1E) | 33 | 6.3×5.8 | 3.3 | 45 | CHJ1E330MCB6358 |
| | 47 | 6.3×7.7 | 2.3 | 68 | CHJ1E470MCB6377 |
| | 100 | 8×10.5 | 1.0 | 126 | CHJ1E101MCB08A5 |
| | 220 | 10×10.5 | 0.7 | 211 | CHJ1E221MCB10A5 |
| | 330 | 10×10.5 | 0.6 | 200 | CHJ1E331MCB10A5 |
| | 330 | 10×12.5 | 0.5 | 270 | CHJ1E331MCB10C5 |
| 35 (1V) | 330 | 12.5×13.5 | 0.14 | 750 | CHJ1E331MCB12D5 |
| | 470 | 12.5×13.5 | 0.14 | 750 | CHJ1E471MCB12D5 |
| | 10 | 6.3×5.8 | 3.3 | 38 | CHJ1V100MCB6358 |
| | 22 | 6.3×5.8 | 3.3 | 39 | CHJ1V220MCB6358 |
| | 33 | 6.3×7.7 | 2.3 | 62 | CHJ1V330MCB6377 |
| 47 | 8×10.5 | 1.0 | 92 | CHJ1V470MCB08A5 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | ESR (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA _{rms} / 125°C, 100kHz) | Part Number |
|----------|----------|---------------------|--------------------------|--|-----------------|
| 35 (1V) | 100 | 10×10.5 | 0.7 | 151 | CHJ1V101MCB10A5 |
| | 220 | 10×12.5 | 0.5 | 260 | CHJ1V221MCB10C5 |
| | 220 | 12.5×13.5 | 0.14 | 750 | CHJ1V221MCB12D5 |
| | 330 | 12.5×13.5 | 0.14 | 750 | CHJ1V331MCB12D5 |
| | 470 | 12.5×16 | 0.11 | 900 | CHJ1V471MCB12I6 |
| | 10 | 6.3×5.8 | 3.3 | 38 | CHJ1H100MCB6358 |
| 50 (1H) | 10 | 6.3×7.7 | 2.3 | 50 | CHJ1H100MCB6377 |
| | 22 | 6.3×7.7 | 2.3 | 50 | CHJ1H220MCB6377 |
| | 33 | 8×10.5 | 1.0 | 83 | CHJ1H330MCB08A5 |
| | 47 | 10×10.5 | 0.7 | 111 | CHJ1H470MCB10A5 |
| | 100 | 12.5×13.5 | 0.23 | 550 | CHJ1H101MCB12D5 |
| | 220 | 12.5×13.5 | 0.23 | 550 | CHJ1H221MCB12D5 |
| | 330 | 12.5×16 | 0.18 | 700 | CHJ1H331MCB12I6 |
| 63 (1J) | 10 | 6.3×7.7 | 2.3 | 42 | CHJ1J100MCB6377 |
| | 22 | 8×10.5 | 1.0 | 56 | CHJ1J220MCB08A5 |
| | 33 | 10×10.5 | 0.7 | 77 | CHJ1J330MCB10A5 |
| | 47 | 10×12.5 | 0.45 | 150 | CHJ1J470MCB10C5 |
| | 100 | 12.5×13.5 | 0.25 | 500 | CHJ1J101MCB12D5 |
| | 220 | 12.5×16 | 0.20 | 600 | CHJ1J221MCB12I6 |
| 100 (2A) | 10 | 8×10.5 | 1.3 | 53 | CHJ2A100MCB08A5 |
| | 22 | 10×10.5 | 0.70 | 63 | CHJ2A220MCB10A5 |
| | 33 | 10×12.5 | 0.45 | 130 | CHJ2A330MCB10C5 |
| | 47 | 12.5×13.5 | 0.33 | 450 | CHJ2A470MCB12D5 |
| | 68 | 12.5×16 | 0.26 | 550 | CHJ2A680MCB12I6 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} / 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 10 | 12.5×13.5 | 100 | CHJ2C100MCB12D5 |
| 200 (2D) | 10 | 12.5×13.5 | 100 | CHJ2D100MCB12D5 |
| 250 (2E) | 10 | 12.5×16 | 110 | CHJ2E100MCB12I6 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} / 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 400 (2G) | 4.7 | 12.5×13.5 | 65 | CHJ2G4R7MCB12D5 |
| 450 (2W) | 3.3 | 12.5×16 | 70 | CHJ2W3R3MCB12I6 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|---------|----------|----------------|------|------|------|------|
| | | 50 | 120 | 1K | 10K | 10K~ |
| 10~100 | 10~100 | 0.35 | 0.40 | 0.75 | 0.90 | 1.00 |
| | 220~470 | 0.35 | 0.50 | 0.85 | 0.94 | 1.00 |
| | 680~1000 | 0.40 | 0.60 | 0.85 | 0.95 | 1.00 |
| 160~450 | 3.3~10 | 0.75 | 1.00 | 1.50 | 1.75 | 1.80 |

ALUMINUM ELECTROLYTIC CAPACITORS



CSN Series

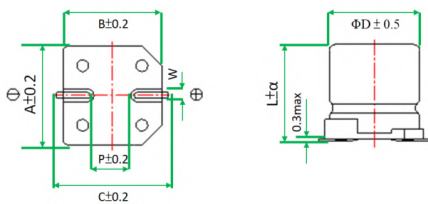
- Bi-polarized with temperature range at -40 to 105°C
- Load life 1,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|----|-------------------|------|------|------|------|------|------|-------------------|---|---|---|---|---|---|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 50Vdc | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.1 ~ 100 μF | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.24</td> <td>0.20</td> <td>0.17</td> <td>0.17</td> <td>0.15</td> <td>0.15</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | tanδ(Max) | 0.24 | 0.20 | 0.17 | 0.17 | 0.15 | 0.15 | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | |
| tanδ(Max) | 0.24 | 0.20 | 0.17 | 0.17 | 0.15 | 0.15 | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.05CV or 10μA whichever is greater impress the rated voltage for 2 minutes I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 2 | 2 | Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | 4 | 3 | 3 |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | 4 | 3 | 3 | | | | | | | | | | | | | | | | |
| | (at 120Hz) | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 1,000 hours at 105°C (The polarity needs to exchange every 250 hours.). | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-18-2 (1999) | | | | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| Code | Size | ΦD | L | α | A | B | C | W | P |
|------|---------|-----|-----|--------------|-----|-----|-----|---------|-----|
| 0458 | 4×5.8 | 4.0 | 5.8 | +0.4 -0.1 | 4.3 | 4.3 | 5.0 | 0.5~0.8 | 1.0 |
| 0558 | 5×5.8 | 5.0 | 5.8 | +0.4 -0.1 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 |
| 6358 | 6.3×5.8 | 6.3 | 5.8 | +0.4 -0.1 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |
| 6377 | 6.3×7.7 | 6.3 | 7.7 | ±0.3 | 6.6 | 6.6 | 7.3 | 0.5~0.8 | 2.1 |

◆ MARKING

≤ 4 φ



5~6.3 φ

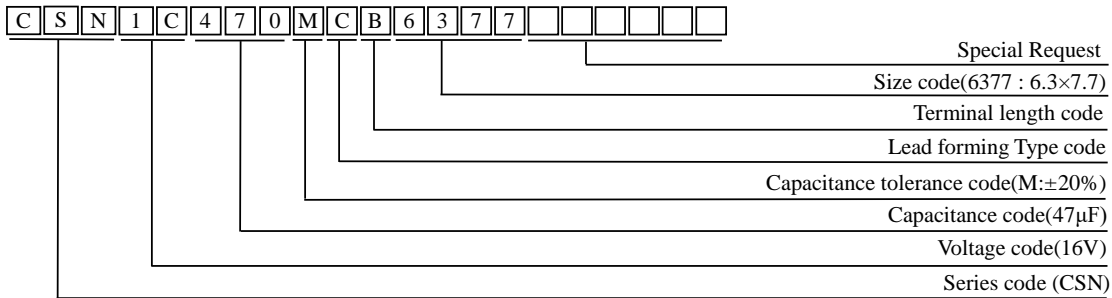


ALUMINUM ELECTROLYTIC CAPACITORS



CSN Series

◆ PART NUMBER SYSTEM (Example : 16V 47μF)



◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 6.3 (0J) | 22 | 5×5.8 | 28 | CSN0J220MCB0558 |
| | 33 | 6.3×5.8 | 37 | CSN0J330MCB6358 |
| | 47 | 6.3×5.8 | 45 | CSN0J470MCB6358 |
| | 100 | 6.3×7.7 | 82 | CSN0J101MCB6377 |
| 10 (1A) | 10 | 4×5.8 | 17 | CSN1A100MCB0458 |
| | 22 | 6.3×5.8 | 33 | CSN1A220MCB6358 |
| | 33 | 6.3×5.8 | 41 | CSN1A330MCB6358 |
| | 47 | 6.3×7.7 | 61 | CSN1A470MCB6377 |
| 16 (1C) | 100 | 6.3×7.7 | 85 | CSN1A101MCB6377 |
| | 4.7 | 4×5.8 | 12 | CSN1C4R7MCB0458 |
| | 10 | 5×5.8 | 23 | CSN1C100MCB0558 |
| | 22 | 6.3×5.8 | 37 | CSN1C220MCB6358 |
| 25 (1E) | 33 | 6.3×5.8 | 49 | CSN1C330MCB6358 |
| | 47 | 6.3×7.7 | 75 | CSN1C470MCB6377 |
| | 3.3 | 5×5.8 | 12 | CSN1E3R3MCB0558 |
| 25 (1E) | 4.7 | 5×5.8 | 16 | CSN1E4R7MCB0558 |
| | 10 | 6.3×5.8 | 27 | CSN1E100MCB6358 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mAmps/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 25 (1E) | 22 | 6.3×7.7 | 50 | CSN1E220MCB6377 |
| | 33 | 6.3×7.7 | 61 | CSN1E330MCB6377 |
| 35 (1V) | 2.2 | 4×5.8 | 8.4 | CSN1V2R2MCB0458 |
| | 3.3 | 5×5.8 | 16 | CSN1V3R3MCB0558 |
| | 4.7 | 5×5.8 | 18 | CSN1V4R7MCB0558 |
| | 10 | 6.3×5.8 | 29 | CSN1V100MCB6358 |
| | 22 | 6.3×7.7 | 54 | CSN1V220MCB6377 |
| 50 (1H) | 0.1 | 4×5.8 | 1.0 | CSN1H0R1MCB0458 |
| | 0.22 | 4×5.8 | 2.0 | CSN1HR22MCB0458 |
| | 0.33 | 4×5.8 | 2.8 | CSN1HR33MCB0458 |
| | 0.47 | 4×5.8 | 4.0 | CSN1HR47MCB0458 |
| | 1 | 4×5.8 | 8.4 | CSN1H010MCB0458 |
| | 2.2 | 5×5.8 | 13 | CSN1H2R2MCB0558 |
| | 3.3 | 5×5.8 | 17 | CSN1H3R3MCB0558 |
| | 4.7 | 6.3×5.8 | 20 | CSN1H4R7MCB6358 |
| 10 | 6.3×7.7 | 36 | CSN1H100MCB6377 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|--------|---------|----------------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K~ |
| 6.3~50 | 0.1~100 | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



PART NUMBER SYSTEM (II)

◆ RADIAL LEAD TYPE

| Series | Rated Voltage | Capacitance | Tolerance | Lead Type | Lead Length | Case Dimension | Special Request |
|---------|---------------|-------------|-----------|-----------|-------------|----------------|-----------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| □ □ (□) | □ □ | □ □ □ | □ | □ | □ | □ □ □ □ | □ □ □ □ □ □ |

(1) Series

| Series | SS | SS-H | SB | SB-H | SF | ER | EH | EC | ND | ND-H | LB | LB-H |
|--------|----|------|----|------|----|-----|----|----|----|------|----|------|
| | SM | EL | EB | EK | EG | EDJ | EY | RF | TW | TV | TD | TX |
| | PW | PV | PJ | PJL | MW | MV | MJ | MZ | MA | MQ | SW | SQ |
| | SJ | VW | VQ | VJ | | | | | | | | |

(2) Rated Voltage

| Code | 0J | 1A | 1C | 1E | 1F | 1V | 1H | 1J | 1K | 2A | 2C | 2Z | 2D | 2P | 2E | 2V | 2G | 2S | 2W | 2H |
|------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| WV | 6.3 | 10 | 16 | 25 | 30 | 35 | 50 | 63 | 80 | 100 | 160 | 180 | 200 | 220 | 250 | 350 | 400 | 420 | 450 | 500 |

(3) Capacitance

| Code | R10 | R47 | 010 | 4R7 | 100 | 470 | 101 | 471 | 102 | 472 | 473 |
|------|-----|------|-----|-----|-----|-----|-----|-----|------|------|-------|
| μF | 0.1 | 0.47 | 1.0 | 4.7 | 10 | 47 | 100 | 470 | 1000 | 4700 | 47000 |

(4) Capacitance Tolerance

| Code | J | Q | R | K | V | M | H |
|------|-----|-----------|----------|------|-----------|------|----------|
| % | ± 5 | +30 / -10 | +20 / -0 | ± 10 | +20 / -10 | ± 20 | +20 / -5 |

(5) Lead Type

| Code | N | C | B | D | F | L | T | R | S | E | P |
|-------------|-----------|---------|----------------|-------------------|-------|-------|-------|-------|-------|-------|--------|
| Description | Long Lead | Cutting | Kink & Cutting | Forming & Cutting | | | | | | | Taping |
| Drawing | --- | Fig 1 | Fig 2 | Fig 3 | Fig 4 | Fig 5 | Fig 6 | Fig 7 | Fig 8 | Fig 9 | Fig 13 |

(6) Lead Length (Cut / Formed lead)

| Code | Z | 2 | B | E | G | M | 3 | T | C | D | 4 | 5 | 6 |
|-----------|-----------|-----|-----|-----|-----|-----|------|------|------|------|-----------|-----|------------------------|
| Length | 2.0 | 2.5 | 2.8 | 3.1 | 3.3 | 3.5 | 3.5 | 3.8 | 3.8 | 4.0 | 4.5 | 5.0 | 6.3 |
| Tolerance | +0.3/-0.2 | | | | | | ±0.5 | ±0.3 | ±0.5 | | | | |
| Code | 7 | I | 8 | J | 9 | K | A | L | F | S | H | Q | N |
| Length | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10 | 10.5 | 14.8 | 1.0 | 12 | 3.6 | ⊕19mm min ⊖15mm min |
| Tolerance | ±0.5 | | | | | | | ±0.3 | | ±1.0 | +0.3/-0.2 | | |

Taping Code

| Code | Z | 2 | 3 | 5 | I |
|-----------------------|-----|-----|-----|-----|-----|
| Lead Pitch: +0.8/-0.2 | 2.0 | 2.5 | 3.5 | 5.0 | 7.5 |

(7) Case Dimension

| Code | 0407 | 0511 | 6311 | 08B5 | 10C5 | 1016 | 1225 | 16N3 | 16P1 | 18N3 | 18P1 | 1840 |
|------|-------|-------|--------|---------|---------|-------|---------|---------|---------|---------|---------|-------|
| Size | 04×07 | 05×11 | 6.3×11 | 08×11.5 | 10×12.5 | 10×16 | 12.5×25 | 16×31.5 | 16×35.5 | 18×31.5 | 18×35.5 | 18×40 |

(8) Special Request

| Code | R | F | L | D |
|-------------|---------------------------|---------------------|---------------------|------------------------|
| Description | High Rated Ripple Current | Endurance | Low Leakage Current | Low Dissipation Factor |
| Code | H | E | P | --- |
| Description | High Temperature | Low Impedance & ESR | PET Sleeve | --- |

ALUMINUM ELECTROLYTIC CAPACITORS



SS & SS-H Series

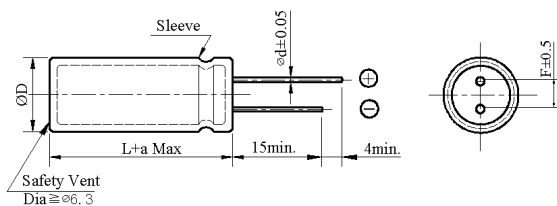
- Standard miniature series with 7mm height at 85°C & 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | |
|--|---|-------------------------------|------|------|--------------|------|------|------|
| | SS | | | | SS-H | | | |
| Series | SS | | | | SS-H | | | |
| Category Temperature Range | -40 ~ +85°C | | | | -40 ~ +105°C | | | |
| Working Voltage Range | 6.3 ~ 63 Vdc | | | | | | | |
| Capacitance Range | 0.1 ~ 330 µF | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | |
| Leakage Current | I=0.01CV or 3µA whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 4 | 3 | 3 |
| (at 120Hz) | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 1,000 hours at 85°C(SS), or 1,000 hours at 105°C(SS-H). | | | | | | | |
| | Capacitance change | ≦ ± 25% of the initial value | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 85°C(SS), or 500 hours at 105°C(SS-H) without voltage applied. | | | | | | | |
| | Capacitance change | ≦ ± 25% of the initial value | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | |
| Others | Leakage current | | | | | | | |
| | ≦ 200% of the specified value | | | | | | | |
| | Conforms to JIS-C-5101-4 (1998) | | | | | | | |

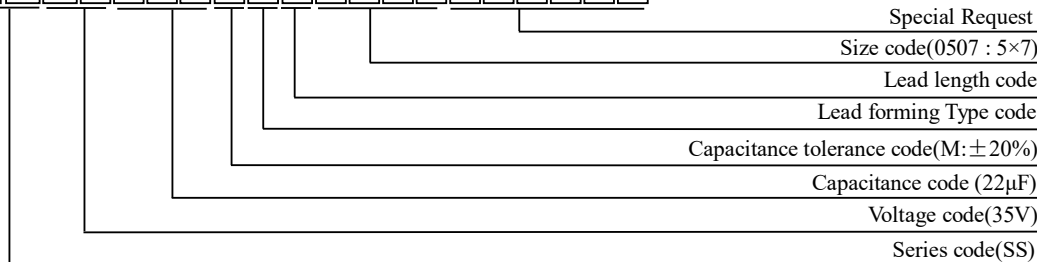
DIMENSIONS (mm)



| ΦD | 4 | 5 | 6.3 | 8×7 |
|----|--------------|------|------|------|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.45 | 0.45 | 0.45 | 0.45 |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| a | L + 1.0 Max | | | |

PART NUMBER SYSTEM(Example : 35V 22µF)

S S 1 V 2 2 0 M N N 0 5 0 7



ALUMINUM ELECTROLYTIC CAPACITORS



SS Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 6.3 (0J) | 22 | 4×7 | 34 | SS0J220MNN0407 |
| | 33 | 4×7 | 40 | SS0J330MNN0407 |
| | 47 | 4×7 | 44 | SS0J470MNN0407 |
| | 100 | 5×7 | 69 | SS0J101MNN0507 |
| | 220 | 6.3×7 | 120 | SS0J221MNN6307 |
| | 330 | 8×7 | 150 | SS0J331MNN0807 |
| 10 (1A) | 22 | 4×7 | 38 | SS1A220MNN0407 |
| | 33 | 4×7 | 41 | SS1A330MNN0407 |
| | 47 | 4×7 | 47 | SS1A470MNN0407 |
| | 100 | 5×7 | 73 | SS1A101MNN0507 |
| | 220 | 6.3×7 | 125 | SS1A221MNN6307 |
| | 330 | 8×7 | 155 | SS1A331MNN0807 |
| 16 (1C) | 10 | 4×7 | 28 | SS1C100MNN0407 |
| | 22 | 4×7 | 39 | SS1C220MNN0407 |
| | 33 | 4×7 | 45 | SS1C330MNN0407 |
| | 47 | 5×7 | 61 | SS1C470MNN0507 |
| | 100 | 6.3×7 | 92 | SS1C101MNN6307 |
| | 220 | 8×7 | 138 | SS1C221MNN0807 |
| 25 (1E) | 4.7 | 4×7 | 24 | SS1E4R7MNN0407 |
| | 10 | 4×7 | 30 | SS1E100MNN0407 |
| | 22 | 4×7 | 46 | SS1E220MNN0407 |
| | 33 | 5×7 | 57 | SS1E330MNN0507 |
| | 47 | 6.3×7 | 66 | SS1E470MNN6307 |
| | 100 | 8×7 | 95 | SS1E101MNN0807 |
| 35 (1V) | 4.7 | 4×7 | 24 | SS1V4R7MNN0407 |
| | 10 | 5×7 | 32 | SS1V100MNN0507 |
| | 22 | 5×7 | 51 | SS1V220MNN0507 |
| | 33 | 6.3×7 | 60 | SS1V330MNN6307 |
| | 47 | 6.3×7 | 72 | SS1V470MNN6307 |
| | 100 | 8×7 | 98 | SS1V101MNN0807 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|----------------|----------------|
| 50 (1H) | 0.1 | 4×7 | 2 | SS1HR10MNN0407 | |
| | 0.22 | 4×7 | 2 | SS1HR22MNN0407 | |
| | 0.33 | 4×7 | 3.5 | SS1HR33MNN0407 | |
| | 0.47 | 4×7 | 5 | SS1HR47MNN0407 | |
| | 1 | 4×7 | 10 | SS1H010MNN0407 | |
| | 2.2 | 4×7 | 19 | SS1H2R2MNN0407 | |
| | 3.3 | 4×7 | 24 | SS1H3R3MNN0407 | |
| | 4.7 | 4×7 | 26 | SS1H4R7MNN0407 | |
| | 10 | 5×7 | 40 | SS1H100MNN0507 | |
| | 22 | 6.3×7 | 60 | SS1H220MNN6307 | |
| | 33 | 8×7 | 62 | SS1H330MNN0807 | |
| | 47 | 8×7 | 75 | SS1H470MNN0807 | |
| | 63 (1J) | 0.1 | 4×7 | 4 | SS1JR10MNN0407 |
| | | 0.22 | 4×7 | 4 | SS1JR22MNN0407 |
| 0.33 | | 4×7 | 4 | SS1JR33MNN0407 | |
| 0.47 | | 4×7 | 6 | SS1JR47MNN0407 | |
| 1 | | 4×7 | 13 | SS1J010MNN0407 | |
| 2.2 | | 4×7 | 21 | SS1J2R2MNN0407 | |
| 3.3 | | 4×7 | 26 | SS1J3R3MNN0407 | |
| 4.7 | | 5×7 | 33 | SS1J4R7MNN0507 | |
| 10 | | 6.3×7 | 45 | SS1J100MNN6307 | |
| 22 | | 8×7 | 68 | SS1J220MNN0807 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|----------|----------------|------|------|------|------|
| | 60 | 120 | 1K | 10K | 100K |
| 6.3 ~ 25 | 0.75 | 1.00 | 1.10 | 1.13 | 1.20 |
| 35 ~ 63 | 0.80 | 1.00 | 1.15 | 1.20 | 1.25 |

ALUMINUM ELECTROLYTIC CAPACITORS



SS-H Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 6.3 (0J) | 22 | 4×7 | 34 | SS0J220MNN0407H |
| | 33 | 4×7 | 39 | SS0J330MNN0407H |
| | 47 | 4×7 | 40 | SS0J470MNN0407H |
| | 100 | 5×7 | 65 | SS0J101MNN0507H |
| | 220 | 6.3×7 | 100 | SS0J221MNN6307H |
| | 330 | 8×7 | 130 | SS0J331MNN0807H |
| 10 (1A) | 22 | 4×7 | 35 | SS1A220MNN0407H |
| | 33 | 4×7 | 40 | SS1A330MNN0407H |
| | 47 | 4×7 | 41 | SS1A470MNN0407H |
| | 100 | 5×7 | 70 | SS1A101MNN0507H |
| | 220 | 6.3×7 | 102 | SS1A221MNN6307H |
| | 330 | 8×7 | 135 | SS1A331MNN0807H |
| 16 (1C) | 10 | 4×7 | 28 | SS1C100MNN0407H |
| | 22 | 4×7 | 37 | SS1C220MNN0407H |
| | 33 | 4×7 | 42 | SS1C330MNN0407H |
| | 47 | 5×7 | 60 | SS1C470MNN0507H |
| | 100 | 6.3×7 | 90 | SS1C101MNN6307H |
| | 220 | 8×7 | 105 | SS1C221MNN0807H |
| 25 (1E) | 4.7 | 4×7 | 15 | SS1E4R7MNN0407H |
| | 10 | 4×7 | 29 | SS1E100MNN0407H |
| | 22 | 4×7 | 45 | SS1E220MNN0407H |
| | 33 | 5×7 | 47 | SS1E330MNN0507H |
| | 47 | 6.3×7 | 61 | SS1E470MNN6307H |
| | 100 | 8×7 | 92 | SS1E101MNN0807H |
| 35 (1V) | 4.7 | 4×7 | 20 | SS1V4R7MNN0407H |
| | 10 | 5×7 | 30 | SS1V100MNN0507H |
| | 22 | 5×7 | 47 | SS1V220MNN0507H |
| | 33 | 6.3×7 | 52 | SS1V330MNN6307H |
| | 47 | 6.3×7 | 62 | SS1V470MNN6307H |
| | 100 | 8×7 | 93 | SS1V101MNN0807H |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|-----------------|
| 50 (1H) | 0.1 | 4×7 | 1 | SS1HR10MNN0407H | |
| | 0.22 | 4×7 | 2 | SS1HR22MNN0407H | |
| | 0.33 | 4×7 | 3 | SS1HR33MNN0407H | |
| | 0.47 | 4×7 | 5 | SS1HR47MNN0407H | |
| | 1 | 4×7 | 10 | SS1H010MNN0407H | |
| | 2.2 | 4×7 | 19 | SS1H2R2MNN0407H | |
| | 3.3 | 4×7 | 24 | SS1H3R3MNN0407H | |
| | 4.7 | 4×7 | 29 | SS1H4R7MNN0407H | |
| | 10 | 5×7 | 32 | SS1H100MNN0507H | |
| | 22 | 6.3×7 | 50 | SS1H220MNN6307H | |
| | 33 | 8×7 | 62 | SS1H330MNN0807H | |
| | 47 | 8×7 | 70 | SS1H470MNN0807H | |
| | 63 (1J) | 0.1 | 4×7 | 1 | SS1JR10MNN0407H |
| | | 0.22 | 4×7 | 2 | SS1JR22MNN0407H |
| 0.33 | | 4×7 | 4 | SS1JR33MNN0407H | |
| 0.47 | | 4×7 | 6 | SS1JR47MNN0407H | |
| 1 | | 4×7 | 13 | SS1J010MNN0407H | |
| 2.2 | | 4×7 | 21 | SS1J2R2MNN0407H | |
| 3.3 | | 4×7 | 26 | SS1J3R3MNN0407H | |
| 4.7 | | 5×7 | 33 | SS1J4R7MNN0507H | |
| 10 | | 6.3×7 | 35 | SS1J100MNN6307H | |
| 22 | | 8×7 | 52 | SS1J220MNN0807H | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

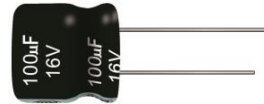
| Vdc | Frequency (Hz) | | | | |
|----------|----------------|------|------|------|------|
| | 60 | 120 | 1K | 10K | 100K |
| 6.3 ~ 25 | 0.75 | 1.00 | 1.10 | 1.13 | 1.20 |
| 35 ~ 63 | 0.80 | 1.00 | 1.15 | 1.20 | 1.25 |

ALUMINUM ELECTROLYTIC CAPACITORS



SB & SB-H Series

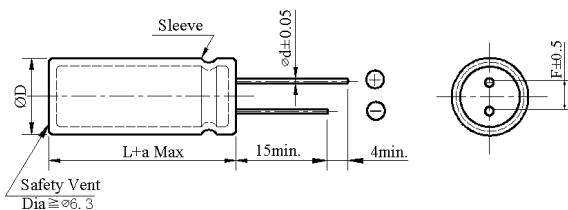
- Standard miniature series with 5mm height at 85°C & 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | |
|--|---|-------------------------------|------|------|--------------|------|------|---------------------------------|
| | SB | | | | SB-H | | | |
| Series | SB | | | | SB-H | | | |
| Category Temperature Range | -40 ~ +85°C | | | | -40 ~ +105°C | | | |
| Working Voltage Range | 4 ~ 50 Vdc | | | | | | | |
| Capacitance Range | 0.1 ~ 470 µF | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | tanδ(Max) | 0.37 | 0.28 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | |
| Leakage Current | I=0.01CV or 3µA whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Z(-40°C)/Z(+20°C) | 15 | 8 | 8 | 6 | 4 | 4 | 3 |
| (at 120Hz) | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 1,000 hours at 85°C(SB), or 1,000 hours at 105°C(SB-H). | | | | | | | |
| | Capacitance change | ≧ ± 25% of the initial value | | | | | | |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 85°C(SB), or 500 hours at 105°C(SB-H) without voltage applied. | | | | | | | |
| | Capacitance change | ≧ ± 25% of the initial value | | | | | | |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value | | | | | | |
| Leakage current | ≧ 200% of the specified value | | | | | | | |
| | Others | | | | | | | |
| | | | | | | | | Conforms to JIS-C-5101-4 (1998) |

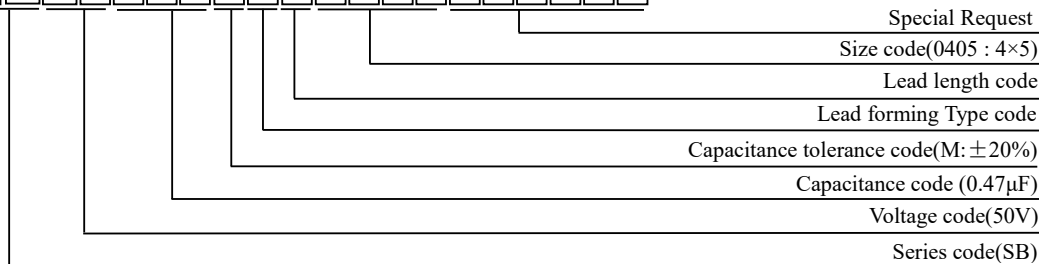
DIMENSIONS (mm)



| ΦD | 4 | 5 | 6.3 | 8×5 |
|----|--------------|------|------|------|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.45 | 0.45 | 0.45 | 0.45 |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| a | L + 1.0 Max | | | |

PART NUMBER SYSTEM(Example : 50V 0.47µF)

S B I H R 4 7 M N N 0 4 0 5



ALUMINUM ELECTROLYTIC CAPACITORS



SB Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 4 (0G) | 47 | 5×5 | 35 | SB0G470MNN0505 |
| | 100 | 6.3×5 | 63 | SB0G101MNN6305 |
| | 220 | 6.3×5 | 70 | SB0G221MNN6305 |
| | 330 | 8×5 | 80 | SB0G331MNN0805 |
| | 470 | 8×5 | 150 | SB0G471MNN0805 |
| 6.3 (0J) | 47 | 5×5 | 41 | SB0J470MNN0505 |
| | 100 | 6.3×5 | 70 | SB0J101MNN6305 |
| | 220 | 6.3×5 | 95 | SB0J221MNN6305 |
| | 330 | 8×5 | 150 | SB0J331MNN0805 |
| 10 (1A) | 33 | 5×5 | 38 | SB1A330MNN0505 |
| | 47 | 5×5 | 45 | SB1A470MNN0505 |
| | 100 | 6.3×5 | 73 | SB1A101MNN6305 |
| | 220 | 8×5 | 120 | SB1A221MNN0805 |
| | 330 | 8×5 | 150 | SB1A331MNN0805 |
| 16 (1C) | 22 | 4×5 | 32 | SB1C220MNN0405 |
| | 33 | 5×5 | 42 | SB1C330MNN0505 |
| | 47 | 6.3×5 | 58 | SB1C470MNN6305 |
| | 100 | 6.3×5 | 80 | SB1C101MNN6305 |
| | 220 | 8×5 | 125 | SB1C221MNN0805 |
| | 330 | 8×5 | 150 | SB1C331MNN0805 |
| 25 (1E) | 10 | 4×5 | 24 | SB1E100MNN0405 |
| | 22 | 5×5 | 37 | SB1E220MNN0505 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 25 (1E) | 33 | 6.3×5 | 45 | SB1E330MNN6305 |
| | 47 | 6.3×5 | 60 | SB1E470MNN6305 |
| | 100 | 8×5 | 90 | SB1E101MNN0805 |
| 35 (1V) | 4.7 | 4×5 | 18 | SB1V4R7MNN0405 |
| | 10 | 5×5 | 29 | SB1V100MNN0505 |
| | 22 | 6.3×5 | 46 | SB1V220MNN6305 |
| | 33 | 6.3×5 | 50 | SB1V330MNN6305 |
| | 47 | 8×5 | 68 | SB1V470MNN0805 |
| 50 (1H) | 0.1 | 4×5 | 1 | SB1HR10MNN0405 |
| | 0.22 | 4×5 | 2 | SB1HR22MNN0405 |
| | 0.33 | 4×5 | 2.8 | SB1HR33MNN0405 |
| | 0.47 | 4×5 | 4 | SB1HR47MNN0405 |
| | 1 | 4×5 | 8.4 | SB1H010MNN0405 |
| | 2.2 | 4×5 | 13 | SB1H2R2MNN0405 |
| | 3.3 | 4×5 | 17 | SB1H3R3MNN0405 |
| | 4.7 | 5×5 | 20 | SB1H4R7MNN0505 |
| | 10 | 6.3×5 | 33 | SB1H100MNN6305 |
| | 22 | 8×5 | 55 | SB1H220MNN0805 |
| | 33 | 8×5 | 65 | SB1H330MNN0805 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-------|----------------|------|------|------|------|
| | 60 | 120 | 1K | 10K | 100K |
| 4~25 | 0.75 | 1.00 | 1.10 | 1.13 | 1.20 |
| 35~50 | 0.80 | 1.00 | 1.15 | 1.20 | 1.25 |



SB-H Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 4 (0G) | 47 | 5×5 | 30 | SB0G470MNN0505H |
| | 100 | 6.3×5 | 60 | SB0G101MNN6305H |
| | 220 | 6.3×5 | 65 | SB0G221MNN6305H |
| | 330 | 8×5 | 70 | SB0G331MNN0805H |
| | 470 | 8×5 | 105 | SB0G471MNN0805H |
| 6.3 (0J) | 47 | 5×5 | 32 | SB0J470MNN0505H |
| | 100 | 6.3×5 | 60 | SB0J101MNN6305H |
| | 220 | 6.3×5 | 72 | SB0J221MNN6305H |
| | 330 | 8×5 | 105 | SB0J331MNN0805H |
| 10 (1A) | 33 | 5×5 | 33 | SB1A330MNN0505H |
| | 47 | 5×5 | 35 | SB1A470MNN0505H |
| | 100 | 6.3×5 | 62 | SB1A101MNN6305H |
| 16 (1C) | 220 | 8×5 | 92 | SB1A221MNN0805H |
| | 22 | 4×5 | 22 | SB1C220MNN0405H |
| | 33 | 5×5 | 37 | SB1C330MNN0505H |
| | 47 | 6.3×5 | 50 | SB1C470MNN6305H |
| | 100 | 6.3×5 | 65 | SB1C101MNN6305H |
| | 220 | 8×5 | 96 | SB1C221MNN0805H |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 25 (1E) | 10 | 4×5 | 18 | SB1E100MNN0405H |
| | 22 | 5×5 | 25 | SB1E220MNN0505H |
| | 33 | 6.3×5 | 40 | SB1E330MNN6305H |
| | 47 | 6.3×5 | 54 | SB1E470MNN6305H |
| | 100 | 8×5 | 70 | SB1E101MNN0805H |
| | 35 (1V) | 4.7 | 4×5 | 15 |
| 10 | | 5×5 | 22 | SB1V100MNN0505H |
| 22 | | 6.3×5 | 38 | SB1V220MNN6305H |
| 33 | | 6.3×5 | 45 | SB1V330MNN6305H |
| 47 | | 8×5 | 60 | SB1V470MNN0805H |
| 50 (1H) | | 0.1 | 4×5 | 0.8 |
| | 0.22 | 4×5 | 1.6 | SB1HR22MNN0405H |
| | 0.33 | 4×5 | 2.2 | SB1HR33MNN0405H |
| | 0.47 | 4×5 | 3.5 | SB1HR47MNN0405H |
| | 1 | 4×5 | 6 | SB1H010MNN0405H |
| | 2.2 | 4×5 | 11 | SB1H2R2MNN0405H |
| | 3.3 | 4×5 | 14 | SB1H3R3MNN0405H |
| | 4.7 | 5×5 | 18 | SB1H4R7MNN0505H |
| | 10 | 6.3×5 | 28 | SB1H100MNN6305H |
| | 22 | 8×5 | 42 | SB1H220MNN0805H |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-------|----------------|------|------|------|------|
| | 60 | 120 | 1K | 10K | 100K |
| 4~25 | 0.75 | 1.00 | 1.10 | 1.13 | 1.20 |
| 35~50 | 0.80 | 1.00 | 1.15 | 1.20 | 1.25 |

ALUMINUM ELECTROLYTIC CAPACITORS



SF Series

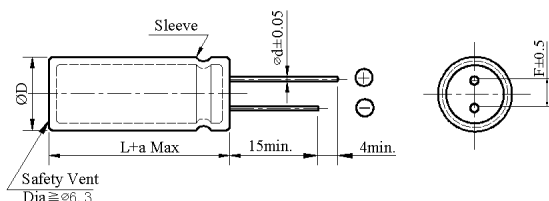
- Load life 105°C 2,000 hours, 7mm height
- Design for space saving and high density insertion
- Applications for VTR, car radio, car stereos, charger, etc



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | |
|--|---|--------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------------------------|------------|----|------------|-------------------|------|------|------|------|------|------|---|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 63Vdc | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.1 ~ 220 µF | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | | | | | | | | | |
| tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | |
| Leakage Current | $I \leq 0.01CV$ or $3 \mu A$ I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 1 minute | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td rowspan="2">(at 120Hz)</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>10</td> <td>6</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | (at 120Hz) | Z(-40°C)/Z(+20°C) | 10 | 6 | 5 | 4 | 4 | 3 | 3 |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | (at 120Hz) | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 10 | 6 | 5 | 4 | 4 | 3 | 3 | | | | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours at 105°C. | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>$\leq \pm 20\%$ of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>$\leq 200\%$ of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq specified value</td> </tr> </table> | Capacitance change | $\leq \pm 20\%$ of the initial value | Dissipation factor(tanδ) | $\leq 200\%$ of the specified value | Leakage current | \leq specified value | | | | | | | | | | | |
| | Capacitance change | $\leq \pm 20\%$ of the initial value | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | $\leq 200\%$ of the specified value | | | | | | | | | | | | | | | | |
| Leakage current | \leq specified value | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Capacitance change</td> <td>$\leq \pm 20\%$ of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>$\leq 200\%$ of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>$\leq 200\%$ of the specified value</td> </tr> </table> | Capacitance change | $\leq \pm 20\%$ of the initial value | Dissipation factor(tanδ) | $\leq 200\%$ of the specified value | Leakage current | $\leq 200\%$ of the specified value | | | | | | | | | | | | |
| Capacitance change | $\leq \pm 20\%$ of the initial value | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | $\leq 200\%$ of the specified value | | | | | | | | | | | | | | | | | |
| Leakage current | $\leq 200\%$ of the specified value | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | |

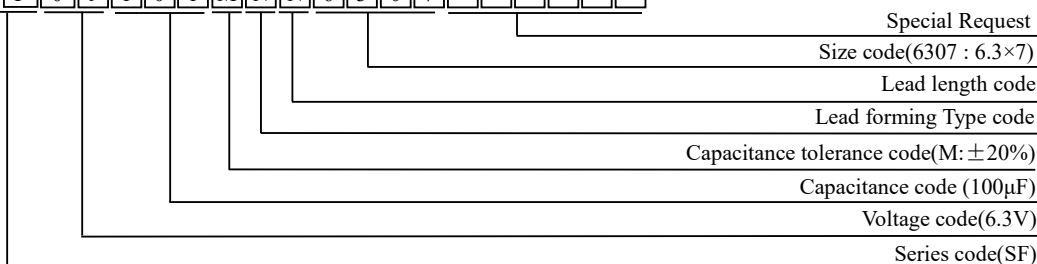
◆ DIMENSIONS (mm)



| | | | | |
|----|--------------|-----|-----|-----|
| ΦD | 4 | 5 | 6.3 | 8×7 |
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.45 | | | |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| a | L + 1.0 Max | | | |

◆ PART NUMBER SYSTEM(Example : 6.3V 100µF)

S F 0 J 1 0 1 M N N 6 3 0 7



ALUMINUM ELECTROLYTIC CAPACITORS



SF Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mArms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 6.3 (0J) | 22 | 4×7 | 28 | SF0J220MNN0407 |
| | 33 | 4×7 | 32 | SF0J330MNN0407 |
| | 33 | 5×7 | 35 | SF0J330MNN0507 |
| | 47 | 5×7 | 47 | SF0J470MNN0507 |
| | 68 | 5×7 | 50 | SF0J680MNN0507 |
| | 100 | 6.3×7 | 75 | SF0J101MNN6307 |
| | 220 | 8×7 | 92 | SF0J221MNN0807 |
| 10 (1A) | 15 | 4×7 | 26 | SF1A150MNN0407 |
| | 22 | 4×7 | 32 | SF1A220MNN0407 |
| | 33 | 5×7 | 48 | SF1A330MNN0507 |
| | 47 | 5×7 | 51 | SF1A470MNN0507 |
| | 68 | 6.3×7 | 68 | SF1A680MNN6307 |
| | 100 | 6.3×7 | 80 | SF1A101MNN6307 |
| | 100 | 8×7 | 95 | SF1A101MNN0807 |
| | 220 | 8×7 | 130 | SF1A221MNN0807 |
| 16 (1C) | 6.8 | 4×7 | 16 | SF1C6R8MNN0407 |
| | 10 | 4×7 | 28 | SF1C100MNN0407 |
| | 15 | 4×7 | 30 | SF1C150MNN0407 |
| | 22 | 4×7 | 35 | SF1C220MNN0407 |
| | 22 | 5×7 | 42 | SF1C220MNN0507 |
| | 33 | 5×7 | 50 | SF1C330MNN0507 |
| | 47 | 6.3×7 | 67 | SF1C470MNN6307 |
| | 68 | 6.3×7 | 70 | SF1C680MNN6307 |
| | 68 | 8×7 | 78 | SF1C680MNN0807 |
| | 100 | 8×7 | 110 | SF1C101MNN0807 |
| 25 (1E) | 4.7 | 4×7 | 17 | SF1E4R7MNN0407 |
| | 6.8 | 4×7 | 19 | SF1E6R8MNN0407 |
| | 10 | 4×7 | 28 | SF1E100MNN0407 |
| | 10 | 5×7 | 33 | SF1E100MNN0507 |
| | 15 | 5×7 | 35 | SF1E150MNN0507 |
| | 22 | 5×7 | 43 | SF1E220MNN0507 |
| | 22 | 6.3×7 | 45 | SF1E220MNN6307 |
| | 33 | 6.3×7 | 62 | SF1E330MNN6307 |
| | 47 | 8×7 | 75 | SF1E470MNN0807 |
| | 68 | 8×7 | 80 | SF1E680MNN0807 |
| | 100 | 8×7 | 115 | SF1E101MNN0807 |
| 35 (1V) | 4.7 | 4×7 | 22 | SF1V4R7MNN0407 |
| | 6.8 | 4×7 | 24 | SF1V6R8MNN0407 |
| | 6.8 | 5×7 | 28 | SF1V6R8MNN0507 |
| | 10 | 5×7 | 35 | SF1V100MNN0507 |
| | 15 | 5×7 | 38 | SF1V150MNN0507 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mArms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 35 (1V) | 15 | 6.3×7 | 45 | SF1V150MNN6307 |
| | 22 | 6.3×7 | 60 | SF1V220MNN6307 |
| | 33 | 6.3×7 | 50 | SF1V330MNN6307 |
| | 33 | 8×7 | 68 | SF1V330MNN0807 |
| | 47 | 8×7 | 80 | SF1V470MNN0807 |
| | 68 | 8×7 | 85 | SF1V680MNN0807 |
| | 50 (1H) | 0.1 | 4×7 | 1.5 |
| 0.15 | | 4×7 | 1.8 | SF1HR15MNN0407 |
| 0.22 | | 4×7 | 2.5 | SF1HR22MNN0407 |
| 0.33 | | 4×7 | 3.5 | SF1HR33MNN0407 |
| 0.47 | | 4×7 | 5 | SF1HR47MNN0407 |
| 0.68 | | 4×7 | 7 | SF1HR68MNN0407 |
| 1 | | 4×7 | 10 | SF1H010MNN0407 |
| 1.5 | | 4×7 | 13 | SF1H1R5MNN0407 |
| 2.2 | | 4×7 | 20 | SF1H2R2MNN0407 |
| 3.3 | | 4×7 | 26 | SF1H3R3MNN0407 |
| 4.7 | | 4×7 | 27 | SF1H4R7MNN0407 |
| 4.7 | | 5×7 | 29 | SF1H4R7MNN0507 |
| 6.8 | | 5×7 | 32 | SF1H6R8MNN0507 |
| 6.8 | | 6.3×7 | 33 | SF1H6R8MNN6307 |
| 10 | | 6.3×7 | 38 | SF1H100MNN6307 |
| 15 | | 6.3×7 | 52 | SF1H150MNN6307 |
| 22 | | 8×7 | 63 | SF1H220MNN0807 |
| 33 | | 8×7 | 78 | SF1H330MNN0807 |
| 63 (1J) | | 0.1 | 4×7 | 1.5 |
| | 0.15 | 4×7 | 1.8 | SF1JR15MNN0407 |
| | 0.22 | 4×7 | 2.5 | SF1JR22MNN0407 |
| | 0.33 | 4×7 | 3.5 | SF1JR33MNN0407 |
| | 0.47 | 4×7 | 6 | SF1JR47MNN0407 |
| | 0.68 | 4×7 | 7 | SF1JR68MNN0407 |
| | 1 | 4×7 | 12 | SF1J010MNN0407 |
| | 1.5 | 4×7 | 14 | SF1J1R5MNN0407 |
| | 2.2 | 4×7 | 20 | SF1J2R2MNN0407 |
| | 3.3 | 5×7 | 28 | SF1J3R3MNN0507 |
| | 4.7 | 5×7 | 29 | SF1J4R7MNN0507 |
| | 4.7 | 6.3×7 | 33 | SF1J4R7MNN6307 |
| | 6.8 | 6.3×7 | 35 | SF1J6R8MNN6307 |
| | 10 | 6.3×7 | 40 | SF1J100MNN6307 |
| | 15 | 8×7 | 55 | SF1J150MNN0807 |
| 22 | 8×7 | 65 | SF1J220MNN0807 | |

RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | | |
|----------|-----------------|----------------|------|------|------|------|----------|
| | | 50/60 | 120 | 400 | 1K | 10K | 50K-100K |
| 6.3 ~ 63 | CAP ≦ 10 | 0.80 | 1.00 | 1.30 | 1.45 | 1.65 | 1.70 |
| | 100 < CAP ≦ 220 | 0.80 | 1.00 | 1.23 | 1.36 | 1.36 | 1.53 |

ALUMINUM ELECTROLYTIC CAPACITORS



ER Series

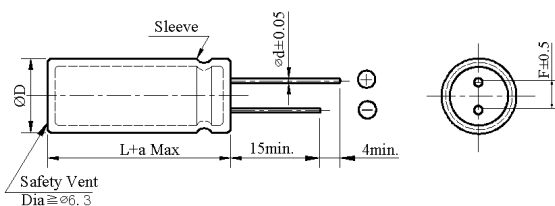
- Low impedance, high ripple current and miniature size with 7 to 9 mm height



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | |
|--|--|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------|-------------------|------|------|------|------|------|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 35Vdc | | | | | | | | | | | | |
| Capacitance Range | 33 ~ 470 µF | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | | | | | | | |
| tanδ(Max) | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | |
| Leakage Current | $I = 0.01CV$ or $3 \mu A$, whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes Impress the rated voltage for 2 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>5</td> <td>4</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 3,000 hours at 105°C. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≧ ±25% of the initial value(6.3V、10V: ≧ ±30%)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≧ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≧ specified value</td> </tr> </table> | Capacitance change | ≧ ±25% of the initial value(6.3V、10V: ≧ ±30%) | Dissipation factor(tanδ) | ≧ 200% of the specified value | Leakage current | ≧ specified value | | | | | | |
| | Capacitance change | ≧ ±25% of the initial value(6.3V、10V: ≧ ±30%) | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value | | | | | | | | | | | |
| Leakage current | ≧ specified value | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Capacitance change</td> <td>≧ ±25% of the initial value(6.3V、10V: ≧ ±30%)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≧ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≧ 200% of the specified value</td> </tr> </table> | Capacitance change | ≧ ±25% of the initial value(6.3V、10V: ≧ ±30%) | Dissipation factor(tanδ) | ≧ 200% of the specified value | Leakage current | ≧ 200% of the specified value | | | | | | | |
| Capacitance change | ≧ ±25% of the initial value(6.3V、10V: ≧ ±30%) | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≧ 200% of the specified value | | | | | | | | | | | | |
| Leakage current | ≧ 200% of the specified value | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

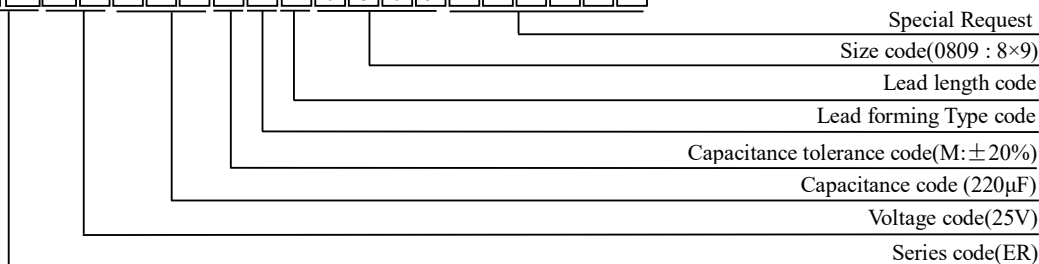
DIMENSIONS (mm)



| | | |
|----|--------------|------|
| ΦD | 8×7 | 8×9 |
| ΦD | ΦD + 0.5 Max | |
| dΦ | 0.45 | 0.50 |
| F | 3.5 | |
| a | L+ 1.0 Max | |

PART NUMBER SYSTEM(Example : 25V 220µF)

E R 1 E 2 2 1 M N N 0 8 0 9



ALUMINUM ELECTROLYTIC CAPACITORS



ER Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μ F) | Case Size (mm) Φ D×L | Impedance (Ω max/20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------------|---------------------------------|---|---|----------------|
| 6.3 (0J) | 150 | 8×7 | 0.23 | 305 | ER0J151MNN0807 |
| | 220 | 8×7 | 0.15 | 380 | ER0J221MNN0807 |
| | 330 | 8×7 | 0.14 | 405 | ER0J331MNN0807 |
| | 470 | 8×9 | 0.13 | 465 | ER0J471MNN0809 |
| 10 (1A) | 150 | 8×7 | 0.21 | 315 | ER1A151MNN0807 |
| | 220 | 8×7 | 0.14 | 390 | ER1A221MNN0807 |
| | 330 | 8×9 | 0.13 | 465 | ER1A331MNN0809 |
| | 470 | 8×9 | 0.12 | 480 | ER1A471MNN0809 |
| 16 (1C) | 100 | 8×7 | 0.24 | 330 | ER1C101MNN0807 |
| | 150 | 8×7 | 0.15 | 385 | ER1C151MNN0807 |
| | 220 | 8×7 | 0.13 | 405 | ER1C221MNN0807 |
| | 330 | 8×9 | 0.12 | 505 | ER1C331MNN0809 |
| | 470 | 8×9 | 0.11 | 535 | ER1C471MNN0809 |
| 25 (1E) | 33 | 8×7 | 0.36 | 215 | ER1E330MNN0807 |
| | 47 | 8×7 | 0.28 | 250 | ER1E470MNN0807 |
| | 56 | 8×7 | 0.23 | 310 | ER1E560MNN0807 |
| | 68 | 8×7 | 0.19 | 330 | ER1E680MNN0807 |
| | 100 | 8×7 | 0.15 | 380 | ER1E101MNN0807 |
| | 150 | 8×7 | 0.14 | 465 | ER1E151MNN0807 |
| | 180 | 8×9 | 0.12 | 760 | ER1E181MNN0809 |
| 30 (1F) | 220 | 8×9 | 0.1 | 800 | ER1E221MNN0809 |
| | 150 | 8×7 | 0.13 | 680 | ER1F151MNN0807 |
| 35 (1V) | 180 | 8×9 | 0.11 | 765 | ER1F181MNN0809 |
| | 33 | 8×7 | 0.3 | 250 | ER1V330MNN0807 |
| | 47 | 8×7 | 0.23 | 310 | ER1V470MNN0807 |
| | 56 | 8×7 | 0.16 | 380 | ER1V560MNN0807 |
| | 68 | 8×7 | 0.15 | 400 | ER1V680MNN0807 |
| | 100 | 8×7 | 0.14 | 420 | ER1V101MNN0807 |
| | 150 | 8×9 | 0.12 | 700 | ER1V151MNN0809 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μ F) | Frequency (Hz) | | | |
|----------|---------------|----------------|------|------|-------------|
| | | 120 | 1K | 10K | 100K ≤ 200K |
| 6.3 ~ 35 | 33 ~ 82 | 0.50 | 0.80 | 0.98 | 1.00 |
| | 100 ~ 470 | 0.55 | 0.85 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EH Series

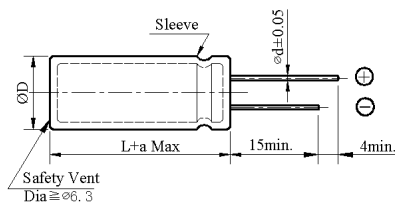
- Low impedance and high ripple current
- Load life 3,000~4,000 hours at 105°C



◆ SPECIFICATIONS

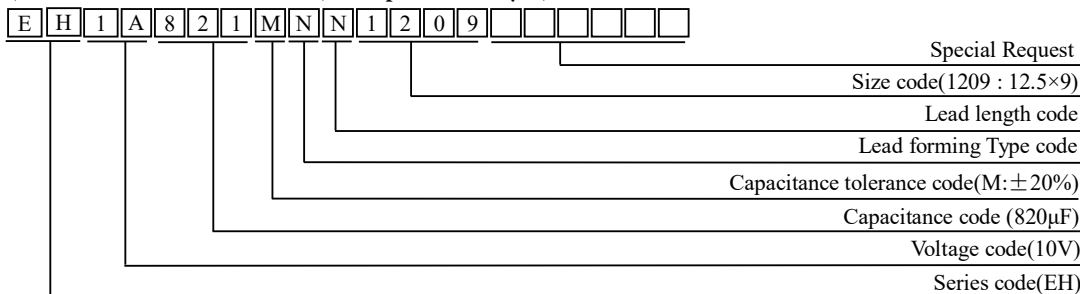
| Item | Performance Characteristics | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|------|-------|-----------------|-------------------|-------|-------|
| Category Temperature Range | -55~ +105°C | | | | | | | | | | | | |
| Working Voltage Range | 10 ~ 35Vdc | | | | | | | | | | | | |
| Capacitance Range | 150 ~820 µF | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </table> | Rated Voltage (V) | 10 | 16 | 25 | 35 | tanδ(Max) | 0.19 | 0.16 | 0.14 | 0.12 | | |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | | | | | | | | |
| tanδ(Max) | 0.19 | 0.16 | 0.14 | 0.12 | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | |
| Leakage Current | $I=0.01CV$ or $3\mu A$, whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 10 | 16 | 25 | 35 | Z(-40°C)/Z(+20°C) | 3 | 3 | 3 | 3 | | |
| Rated voltage (V) | 10 | 16 | 25 | 35 | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 3 | 3 | 3 | 3 | | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 3,000 to 4,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> <td>Φ10</td> <td>3,000</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> <td>Φ12.5</td> <td>4,000</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≦ 200% of the specified value | Φ10 | 3,000 | Leakage current | ≦ specified value | Φ12.5 | 4,000 |
| Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | Φ10 | 3,000 | | | | | | | | | | |
| Leakage current | ≦ specified value | Φ12.5 | 4,000 | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | |
| Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| | | |
|----|--------------|--------|
| ΦD | 10×9 | 12.5×9 |
| ΦD | ΦD + 0.5 Max | |
| Φd | 0.6 | 0.6 |
| F | 5.0 | 5.0 |
| a | L + 1.0 Max | |

◆ PART NUMBER SYSTEM(Example : 10V 820µF)



ALUMINUM ELECTROLYTIC CAPACITORS



EH Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 10 (1A) | 560 | 10×9 | 600 | EH1A561MNN1009 |
| | 820 | 12.5×9 | 750 | EH1A821MNN1209 |
| 16 (1C) | 390 | 10×9 | 640 | EH1C391MNN1009 |
| | 560 | 12.5×9 | 720 | EH1C561MNN1209 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 25 (1E) | 270 | 10×9 | 630 | EH1E271MNN1009 |
| | 390 | 12.5×9 | 700 | EH1E391MNN1209 |
| 35 (1V) | 150 | 10×9 | 630 | EH1V151MNN1009 |
| | 220 | 12.5×9 | 750 | EH1V221MNN1209 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|---------|-----------|----------------|------|------|------|------|
| | | 50/60 | 120 | 1K | 10K | 100K |
| 10 ~ 35 | 150 ~ 270 | 0.30 | 0.50 | 0.80 | 0.95 | 1.00 |
| | 390 ~ 820 | 0.57 | 0.71 | 0.90 | 0.98 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EC Series

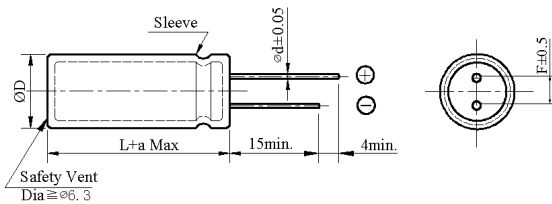
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability
- Load life 5,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | |
|--|---|---------------------------------------|---------------------------------------|-----------------------------------|------------------------------------|-----------------|------------------------------------|--------------------|------|------|------|------|------|
| Category Temperature Range | -40~ +105°C | | | | | | | | | | | | |
| Working Voltage Range | 10~100Vdc | | | | | | | | | | | | |
| Capacitance Range | 68~1800 μ F | | | | | | | | | | | | |
| Capacitance Tolerance | \pm 20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>100</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.08</td> </tr> </table> | Rated Voltage (V) | 10 | 16 | 25 | 35 | 100 | tan δ (Max) | 0.19 | 0.16 | 0.14 | 0.12 | 0.08 |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | 100 | | | | | | | |
| tan δ (Max) | 0.19 | 0.16 | 0.14 | 0.12 | 0.08 | | | | | | | | |
| When nominal capacitance exceeds 1,000 μ F, add 0.02 to the value above for each 1,000 μ F increase. | | | | | | | | | | | | | |
| Leakage Current | $I=0.01CV$ or $3\mu A$ whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>100</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>6</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 10 | 16 | 25 | 35 | 100 | Z(-40°C)/Z(+20°C) | 6 | 6 | 5 | 4 | 3 |
| Rated voltage (V) | 10 | 16 | 25 | 35 | 100 | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 6 | 6 | 5 | 4 | 3 | | | | | | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 5,000 hours at 105°C. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq specified value</td> </tr> </table> | Capacitance change | \leq \pm 25% of the initial value | Dissipation factor(tan δ) | \leq 200% of the specified value | Leakage current | \leq specified value | | | | | | |
| | Capacitance change | \leq \pm 25% of the initial value | | | | | | | | | | | |
| | Dissipation factor(tan δ) | \leq 200% of the specified value | | | | | | | | | | | |
| Leakage current | \leq specified value | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq 200% of the specified value</td> </tr> </table> | Capacitance change | \leq \pm 25% of the initial value | Dissipation factor(tan δ) | \leq 200% of the specified value | Leakage current | \leq 200% of the specified value | | | | | | |
| | Capacitance change | \leq \pm 25% of the initial value | | | | | | | | | | | |
| | Dissipation factor(tan δ) | \leq 200% of the specified value | | | | | | | | | | | |
| Leakage current | \leq 200% of the specified value | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

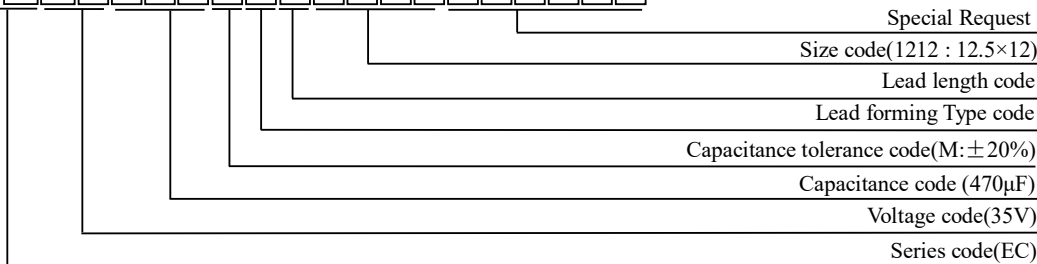
◆ DIMENSIONS (mm)



| | |
|----|--------------|
| ΦD | 12.5×12 |
| ΦD | ΦD + 0.5 Max |
| Φd | 0.6 |
| F | 5.0 |
| a | L + 1.0 Max |

◆ PART NUMBER SYSTEM(Example : 35V 470 μ F)

EC1V471MNN1212



ALUMINUM ELECTROLYTIC CAPACITORS



EC Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 10 (1A) | 1500 | 12.5×12 | 1260 | EC1A152MNN1212 |
| | 1800 | 12.5×12 | 1300 | EC1A182MNN1212 |
| 16 (1C) | 1000 | 12.5×12 | 1300 | EC1C102MNN1212 |
| | 1200 | 12.5×12 | 1400 | EC1C122MNN1212 |
| 25 (1E) | 560 | 12.5×12 | 1150 | EC1E561MNN1212 |
| | 680 | 12.5×12 | 1200 | EC1E681MNN1212 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 35 (1V) | 390 | 12.5×12 | 1050 | EC1V391MNN1212 |
| | 470 | 12.5×12 | 1100 | EC1V471MNN1212 |
| 100 (2A) | 68 | 12.5×12 | 350 | EC2A680MNN1212 |
| | 82 | 12.5×12 | 420 | EC2A820MNN1212 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|---------|-------------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 10 ~100 | ≥68 | 0.30 | 0.65 | 0.85 | 1.00 |
| | 82 ~ 220 | 0.50 | 0.70 | 0.90 | 1.00 |
| | 330 ~ 820 | 0.60 | 0.75 | 0.95 | 1.00 |
| | 1000 ~ 1800 | 0.70 | 0.80 | 0.98 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



ND&ND-H Series

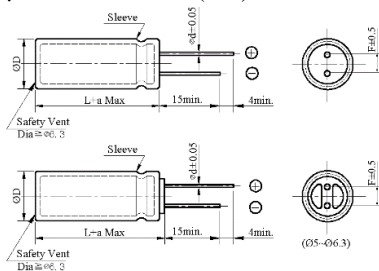


- Standard non-polarized type
- Suitable for conditions where polarity reverses or where polarity is not constant
- ND series 85°C 2,000hrs, ND-H series 105°C 1,000hrs

◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | |
|---|--|-------------------------------|-----------------|---------------|------|--------|---------|------------|------|---------|
| | ND | | ND-H | | | | | | | |
| Series | ND | | ND-H | | | | | | | |
| Category Temperature Range | -40 ~ +85°C | -25 ~ +85°C | -40 ~ +105°C | -25 ~ +105°C | | | | | | |
| Working Voltage Range | 6.3 ~ 100 Vdc | 160 ~ 250 Vdc | 6.3 ~ 100 Vdc | 160 ~ 250 Vdc | | | | | | |
| Capacitance Range | 0.47 ~ 2,200 μF | 0.47 ~ 100 μF | 0.47 ~ 2,200 μF | 0.47 ~ 100 μF | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 |
| | tanδ(Max) | 0.26 | 0.24 | 0.22 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.20 |
| | When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | |
| Leakage Current | I=0.03CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35~100 | 160~250 | | | |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | — | | | |
| | Z(-25°C)/Z(+20°C) | — | — | — | — | — | 3 | (at 120Hz) | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours at 85°C(ND), or 1,000 hours at 105°C(ND-H). During this test rated DC voltage shall be reversed on the capacitor for every 250 hours. | | | | | | | | | |
| | Capacitance change | ≦ ± 20% of the initial value | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | |
| | Leakage current | ≦ specified value | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C(ND), or 500 hours at 105°C(ND-H) without voltage applied. | | | | | | | | | |
| | Capacitance change | ≦ ± 25% of the initial value | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | |
| | Leakage current | ≦ 200% of the specified value | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | |

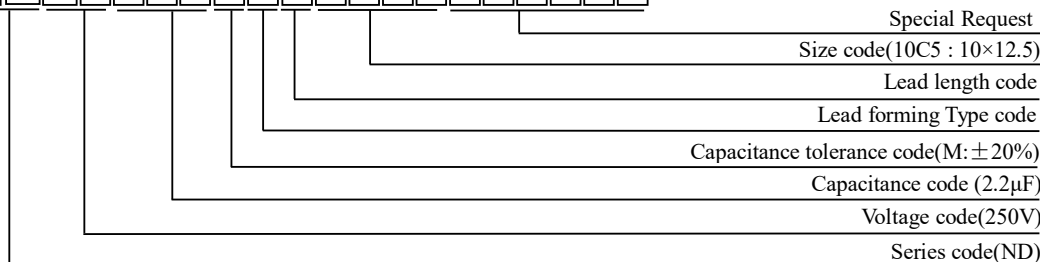
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|---------------------------------|-------------|--------|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8Max |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 250V 2.2μF)

N D 2 E 2 R 2 M N N 1 0 C 5



ALUMINUM ELECTROLYTIC CAPACITORS



ND Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 6.3 (0J) | 33 | 5×11 | 64 | ND0J330MNN0511 |
| | 47 | 5×11 | 76 | ND0J470MNN0511 |
| | 100 | 6.3×11 | 125 | ND0J101MNN6311 |
| | 220 | 6.3×11 | 160 | ND0J221MNN6311 |
| | 330 | 8×11.5 | 240 | ND0J331MNN08B5 |
| | 470 | 8×11.5 | 250 | ND0J471MNN08B5 |
| | 1000 | 10×16 | 425 | ND0J102MNN1016 |
| | 2200 | 12.5×20 | 580 | ND0J222MNN1220 |
| 10 (1A) | 22 | 5×11 | 46 | ND1A220MNN0511 |
| | 33 | 5×11 | 64 | ND1A330MNN0511 |
| | 47 | 5×11 | 76 | ND1A470MNN0511 |
| | 100 | 6.3×11 | 125 | ND1A101MNN6311 |
| | 220 | 8×11.5 | 215 | ND1A221MNN08B5 |
| | 330 | 8×11.5 | 240 | ND1A331MNN08B5 |
| | 470 | 10×12.5 | 345 | ND1A471MNN10C5 |
| | 1000 | 10×20 | 550 | ND1A102MNN1020 |
| 2200 | 12.5×20 | 645 | ND1A222MNN1220 | |
| 16 (1C) | 10 | 5×11 | 40 | ND1C100MNN0511 |
| | 22 | 5×11 | 46 | ND1C220MNN0511 |
| | 33 | 5×11 | 70 | ND1C330MNN0511 |
| | 47 | 5×11 | 80 | ND1C470MNN0511 |
| | 100 | 6.3×11 | 130 | ND1C101MNN6311 |
| | 220 | 8×11.5 | 220 | ND1C221MNN08B5 |
| | 330 | 10×12.5 | 325 | ND1C331MNN10C5 |
| | 470 | 10×16 | 415 | ND1C471MNN1016 |
| | 1000 | 12.5×20 | 695 | ND1C102MNN1220 |
| | 2200 | 16×25 | 730 | ND1C222MNN1625 |
| 25 (1E) | 10 | 5×11 | 40 | ND1E100MNN0511 |
| | 22 | 5×11 | 50 | ND1E220MNN0511 |
| | 33 | 5×11 | 77 | ND1E330MNN0511 |
| | 47 | 6.3×11 | 95 | ND1E470MNN6311 |
| | 100 | 8×11.5 | 160 | ND1E101MNN08B5 |
| | 220 | 10×12.5 | 295 | ND1E221MNN10C5 |
| | 330 | 10×16 | 380 | ND1E331MNN1016 |
| | 470 | 10×20 | 510 | ND1E471MNN1020 |
| | 1000 | 12.5×25 | 710 | ND1E102MNN1225 |
| | 2200 | 16×31.5 | 845 | ND1E222MNN16N3 |
| 35 (1V) | 4.7 | 5×11 | 34 | ND1V470MNN0511 |
| | 10 | 5×11 | 40 | ND1V100MNN0511 |
| | 22 | 6.3×11 | 65 | ND1V220MNN6311 |
| | 33 | 6.3×11 | 90 | ND1V330MNN6311 |
| | 47 | 8×11.5 | 120 | ND1V470MNN08B5 |
| | 100 | 10×12.5 | 220 | ND1V101MNN10C5 |
| | 220 | 10×20 | 390 | ND1V221MNN1020 |
| | 330 | 12.5×20 | 505 | ND1V331MNN1220 |
| | 470 | 12.5×25 | 655 | ND1V471MNN1225 |
| | 1000 | 16×25 | 880 | ND1V102MNN1625 |
| 50 (1H) | 0.47 | 5×11 | 7 | ND1HR47MNN0511 |
| | 1 | 5×11 | 17 | ND1H010MNN0511 |
| | 2.2 | 5×11 | 25 | ND1H2R2MNN0511 |
| | 3.3 | 5×11 | 27 | ND1H3R3MNN0511 |
| | 4.7 | 5×11 | 34 | ND1H4R7MNN0511 |
| | 10 | 5×11 | 40 | ND1H100MNN0511 |
| | 22 | 6.3×11 | 72 | ND1H220MNN6311 |
| | 47 | 8×11.5 | 130 | ND1H470MNN08B5 |
| | 100 | 10×16 | 235 | ND1H101MNN1016 |
| | 220 | 12.5×20 | 460 | ND1H221MNN1220 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 50 (1H) | 330 | 12.5×25 | 590 | ND1H331MNN1225 |
| | 470 | 16×25 | 668 | ND1H471MNN1625 |
| | 1000 | 16×35.5 | 975 | ND1H102MNN16P1 |
| 63 (1J) | 3.3 | 5×11 | 28 | ND1J3R3MNN0511 |
| | 4.7 | 6.3×11 | 34 | ND1J4R7MNN6311 |
| | 10 | 6.3×11 | 57 | ND1J100MNN6311 |
| | 22 | 8×11.5 | 82 | ND1J220MNN08B5 |
| | 33 | 8×11.5 | 100 | ND1J330MNN08B5 |
| | 47 | 10×16 | 180 | ND1J470MNN1016 |
| | 100 | 10×20 | 250 | ND1J101MNN1020 |
| | 220 | 12.5×25 | 490 | ND1J221MNN1225 |
| | 330 | 16×25 | 600 | ND1J331MNN1625 |
| | 470 | 16×35.5 | 720 | ND1J471MNN16P1 |
| 100 (2A) | 0.47 | 5×11 | 14 | ND2AR47MNN0511 |
| | 1 | 5×11 | 21 | ND2A010MNN0511 |
| | 2.2 | 6.3×11 | 34 | ND2A2R2MNN6311 |
| | 3.3 | 6.3×11 | 39 | ND2A3R3MNN6311 |
| | 4.7 | 6.3×11 | 47 | ND2A4R7MNN6311 |
| | 10 | 8×11.5 | 71 | ND2A100MNN08B5 |
| | 22 | 10×12.5 | 96 | ND2A220MNN10C5 |
| | 33 | 10×16 | 125 | ND2A330MNN1016 |
| | 47 | 12.5×20 | 240 | ND2A470MNN1220 |
| | 100 | 12.5×25 | 285 | ND2A101MNN1225 |
| | 220 | 16×31.5 | 505 | ND2A221MNN16N3 |
| | 0.47 | 5×11 | 7 | ND2CR47MNN0511 |
| | 1 | 5×11 | 10 | ND2C010MNN0511 |
| 2.2 | 6.3×11 | 16 | ND2C2R2MNN6311 | |
| 3.3 | 8×11.5 | 23 | ND2C3R3MNN08B5 | |
| 4.7 | 10×12.5 | 35 | ND2C4R7MNN10C5 | |
| 10 | 10×16 | 55 | ND2C100MNN1016 | |
| 22 | 12.5×20 | 105 | ND2C220MNN1220 | |
| 33 | 12.5×25 | 110 | ND2C330MNN1225 | |
| 47 | 16×25 | 200 | ND2C470MNN1625 | |
| 100 | 18×31.5 | 275 | ND2C101MNN18N3 | |
| 160 (2C) | 0.47 | 6.3×11 | 8 | ND2DR47MNN6311 |
| | 1 | 6.3×11 | 11 | ND2D010MNN6311 |
| | 2.2 | 8×11.5 | 20 | ND2D2R2MNN08B5 |
| | 3.3 | 10×12.5 | 29 | ND2D3R3MNN10C5 |
| | 4.7 | 10×16 | 38 | ND2D4R7MNN1016 |
| | 10 | 12.5×20 | 70 | ND2D100MNN1220 |
| | 22 | 12.5×25 | 120 | ND2D220MNN1225 |
| | 33 | 16×25 | 165 | ND2D330MNN1625 |
| | 47 | 16×31.5 | 220 | ND2D470MNN16N3 |
| | 0.47 | 6.3×11 | 9 | ND2ER47MNN6311 |
| 1 | 6.3×11 | 13 | ND2E010MNN6311 | |
| 2.2 | 10×12.5 | 23 | ND2E2R2MNN10C5 | |
| 3.3 | 10×12.5 | 29 | ND2E3R3MNN10C5 | |
| 4.7 | 10×16 | 40 | ND2E4R7MNN1016 | |
| 10 | 12.5×20 | 70 | ND2E100MNN1220 | |
| 22 | 16×25 | 135 | ND2E220MNN1625 | |
| 33 | 16×31.5 | 180 | ND2E330MNN16N3 | |



ND Series

◆ **RIPPLE CURRENT MULTIPLIERS**
Frequency Multipliers

| Cap(uF) | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 0.47~47 | 0.75 | 1.00 | 1.57 | 1.75 | 2.00 |
| 100~470 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| 1000~2200 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



ND-H Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 6.3 (0J) | 33 | 5×11 | 46 | ND0J330MNN0511H |
| | 47 | 5×11 | 50 | ND0J470MNN0511H |
| | 100 | 6.3×11 | 65 | ND0J101MNN6311H |
| | 220 | 6.3×11 | 70 | ND0J221MNN6311H |
| | 330 | 8×11.5 | 135 | ND0J331MNN08B5H |
| | 470 | 8×11.5 | 161 | ND0J471MNN08B5H |
| | 1000 | 10×16 | 360 | ND0J102MNN1016H |
| | 2200 | 12.5×20 | 480 | ND0J222MNN1220H |
| 10 (1A) | 22 | 5×11 | 35 | ND1A220MNN0511H |
| | 33 | 5×11 | 46 | ND1A330MNN0511H |
| | 47 | 5×11 | 50 | ND1A470MNN0511H |
| | 100 | 6.3×11 | 68 | ND1A101MNN6311H |
| | 220 | 8×11.5 | 135 | ND1A221MNN08B5H |
| | 330 | 8×11.5 | 150 | ND1A331MNN08B5H |
| | 470 | 10×12.5 | 215 | ND1A471MNN10C5H |
| | 1000 | 10×20 | 380 | ND1A102MNN1020H |
| 2200 | 12.5×25 | 500 | ND1A222MNN1225H | |
| 16 (1C) | 10 | 5×11 | 30 | ND1C100MNN0511H |
| | 22 | 5×11 | 35 | ND1C220MNN0511H |
| | 33 | 5×11 | 50 | ND1C330MNN0511H |
| | 47 | 5×11 | 54 | ND1C470MNN0511H |
| | 100 | 6.3×11 | 84 | ND1C101MNN6311H |
| | 220 | 8×11.5 | 140 | ND1C221MNN08B5H |
| | 330 | 10×12.5 | 202 | ND1C331MNN10C5H |
| | 470 | 10×16 | 265 | ND1C471MNN1016H |
| | 1000 | 12.5×20 | 475 | ND1C102MNN1220H |
| | 2200 | 16×25 | 625 | ND1C222MNN1625H |
| 25 (1E) | 10 | 5×11 | 30 | ND1E100MNN0511H |
| | 22 | 5×11 | 38 | ND1E220MNN0511H |
| | 33 | 5×11 | 50 | ND1E330MNN0511H |
| | 47 | 6.3×11 | 68 | ND1E470MNN6311H |
| | 100 | 8×11.5 | 115 | ND1E101MNN08B5H |
| | 220 | 10×12.5 | 182 | ND1E221MNN10C5H |
| | 330 | 10×16 | 247 | ND1E331MNN1016H |
| | 470 | 10×20 | 333 | ND1E471MNN1020H |
| | 1000 | 12.5×25 | 510 | ND1E102MNN1225H |
| | 2200 | 16×31.5 | 660 | ND1E222MNN16N3H |
| 35 (1V) | 4.7 | 5×11 | 24 | ND1V47R7MNN0511H |
| | 10 | 5×11 | 30 | ND1V100MNN0511H |
| | 22 | 6.3×11 | 44 | ND1V220MNN6311H |
| | 33 | 6.3×11 | 56 | ND1V330MNN6311H |
| | 47 | 8×11.5 | 86 | ND1V470MNN08B5H |
| | 100 | 10×12.5 | 142 | ND1V101MNN10C5H |
| | 220 | 10×20 | 256 | ND1V221MNN1020H |
| | 330 | 12.5×20 | 364 | ND1V331MNN1220H |
| | 470 | 12.5×25 | 472 | ND1V471MNN1225H |
| | 1000 | 16×25 | 560 | ND1V102MNN1625H |
| 50 (1H) | 0.47 | 5×11 | 5 | ND1HR47MNN0511H |
| | 1 | 5×11 | 12 | ND1H010MNN0511H |
| | 2.2 | 5×11 | 18 | ND1H2R2MNN0511H |
| | 3.3 | 5×11 | 19 | ND1H3R3MNN0511H |
| | 4.7 | 5×11 | 24 | ND1H4R7MNN0511H |
| | 10 | 5×11 | 30 | ND1H100MNN0511H |
| | 22 | 6.3×11 | 45 | ND1H220MNN6311H |
| | 33 | 8×11.5 | 65 | ND1H330MNN08B5H |
| | 47 | 8×11.5 | 80 | ND1H470MNN08B5H |
| | 100 | 10×16 | 150 | ND1H101MNN1016H |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 50 (1H) | 220 | 12.5×20 | 280 | ND1H221MNN1220H |
| | 330 | 12.5×25 | 365 | ND1H331MNN1225H |
| | 470 | 16×25 | 450 | ND1H471MNN1625H |
| | 1000 | 16×35.5 | 615 | ND1H102MNN16P1H |
| | 1000 | 16×35.5 | 615 | ND1H102MNN16P1H |
| 63 (1J) | 3.3 | 5×11 | 20 | ND1J3R3MNN0511H |
| | 4.7 | 6.3×11 | 24 | ND1J4R7MNN6311H |
| | 10 | 6.3×11 | 41 | ND1J100MNN6311H |
| | 22 | 8×11.5 | 68 | ND1J220MNN08B5H |
| | 33 | 10×12.5 | 69 | ND1J330MNN10C5H |
| | 47 | 10×16 | 130 | ND1J470MNN1016H |
| | 100 | 10×20 | 165 | ND1J101MNN1020H |
| | 220 | 12.5×25 | 310 | ND1J221MNN1225H |
| | 330 | 16×25 | 410 | ND1J331MNN1625H |
| | 470 | 16×35.5 | 455 | ND1J471MNN16P1H |
| 100 (2A) | 0.47 | 5×11 | 10 | ND2A4R7MNN0511H |
| | 1 | 5×11 | 15 | ND2A010MNN0511H |
| | 2.2 | 6.3×11 | 24 | ND2A2R2MNN6311H |
| | 3.3 | 6.3×11 | 28 | ND2A3R3MNN6311H |
| | 4.7 | 6.3×11 | 34 | ND2A4R7MNN6311H |
| | 10 | 8×11.5 | 51 | ND2A100MNN08B5H |
| | 22 | 10×12.5 | 70 | ND2A220MNN10C5H |
| | 33 | 10×16 | 95 | ND2A330MNN1016H |
| | 47 | 12.5×20 | 173 | ND2A470MNN1220H |
| | 100 | 12.5×25 | 205 | ND2A101MNN1225H |
| 220 | 16×31.5 | 365 | ND2A221MNN16N3H | |
| 160 (2C) | 0.47 | 5×11 | 6 | ND2CR47MNN0511H |
| | 1 | 5×11 | 8 | ND2C010MNN0511H |
| | 2.2 | 6.3×11 | 12 | ND2C2R2MNN6311H |
| | 3.3 | 8×11.5 | 17 | ND2C3R3MNN08B5H |
| | 4.7 | 10×12.5 | 25 | ND2C4R7MNN10C5H |
| | 10 | 10×16 | 40 | ND2C100MNN1016H |
| | 22 | 12.5×20 | 76 | ND2C220MNN1220H |
| | 33 | 12.5×25 | 95 | ND2C330MNN1225H |
| | 47 | 16×25 | 144 | ND2C470MNN1625H |
| | 100 | 18×31.5 | 210 | ND2C101MNN18N3H |
| 200 (2D) | 0.47 | 6.3×11 | 6 | ND2DR47MNN6311H |
| | 1 | 6.3×11 | 8 | ND2D010MNN6311H |
| | 2.2 | 8×11.5 | 14 | ND2D2R2MNN08B5H |
| | 3.3 | 10×12.5 | 21 | ND2D3R3MNN10C5H |
| | 4.7 | 10×16 | 27 | ND2D4R7MNN1016H |
| | 10 | 12.5×20 | 50 | ND2D100MNN1220H |
| | 22 | 12.5×25 | 86 | ND2D220MNN1225H |
| | 33 | 16×25 | 119 | ND2D330MNN1625H |
| | 47 | 16×31.5 | 158 | ND2D470MNN16N3H |
| | 100 | 18×31.5 | 210 | ND2D101MNN18N3H |
| 250 (2E) | 0.47 | 6.3×11 | 6 | ND2ER47MNN6311H |
| | 1 | 6.3×11 | 9 | ND2E010MNN6311H |
| | 2.2 | 10×12.5 | 17 | ND2E2R2MNN10C5H |
| | 3.3 | 10×12.5 | 21 | ND2E3R3MNN10C5H |
| | 4.7 | 10×16 | 29 | ND2E4R7MNN1016H |
| | 10 | 12.5×20 | 50 | ND2E100MNN1220H |
| | 22 | 16×25 | 97 | ND2E220MNN1625H |
| | 33 | 16×16 | 130 | ND2E330MNN1616H |
| | 47 | 16×35.5 | 166 | ND2E470MNN16P1H |



ND-H Series

◆ **RIPPLE CURRENT MULTIPLIERS**
Frequency Multipliers

| Cap(uF) | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 0.47~47 | 0.75 | 1.00 | 1.57 | 1.75 | 2.00 |
| 100~470 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| 1000~2200 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



LB & LB-H Series

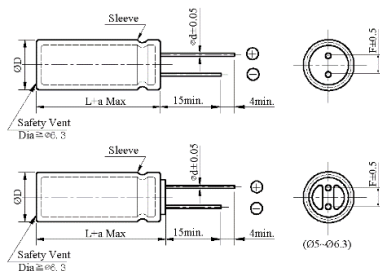
- Low leakage current at 85°C & 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | |
|--|--|-------------------------------|------|------|------|--------------|--------------|------|------|------|
| | LB | | | | | LB-H | | | | |
| Series | LB | | | | | LB-H | | | | |
| Category Temperature Range | -40 ~ +85°C | | | | | -40 ~ +105°C | | | | |
| Working Voltage Range | 6.3 ~ 100 Vdc | | | | | | | | | |
| Capacitance Range | 0.47 ~ 4,700 μF | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| | tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.10 | 0.10 |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | |
| Leakage Current | I=0.002CV or 0.4μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50~100 | | | |
| | Z(-40°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | 3 (at 120Hz) | | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours at 85°C(LB) or 1,000 hours at 105°C(LB-H). | | | | | | | | | |
| | Capacitance change | ≤ ± 20% of the initial value | | | | | | | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | |
| | Leakage current | ≤ specified value | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C(LB) or 500 hours at 105°C(LB-H) without voltage applied. | | | | | | | | | |
| | Capacitance change | ≤ ± 20% of the initial value | | | | | | | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | |
| | Leakage current | ≤ 200% of the specified value | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | |

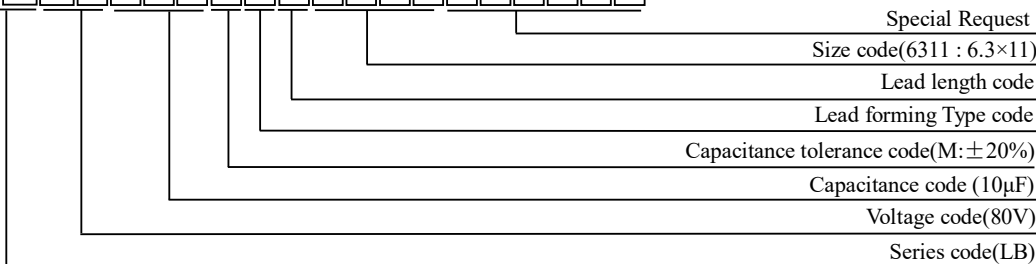
DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|---------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L + 1.5 Max | |

PART NUMBER SYSTEM(Example : 80V 10μF)

L B 1 K 1 0 0 M N N 6 3 1 1



ALUMINUM ELECTROLYTIC CAPACITORS



LB Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 6.3 (0J) | 68 | 5×11 | 86 | LB0J680MNN0511 |
| | 100 | 5×11 | 114 | LB0J101MNN0511 |
| | 150 | 6.3×11 | 146 | LB0J151MNN6311 |
| | 220 | 6.3×11 | 180 | LB0J221MNN6311 |
| | 330 | 8×11.5 | 270 | LB0J331MNN08B5 |
| | 470 | 10×12.5 | 318 | LB0J471MNN10C5 |
| | 680 | 10×16 | 384 | LB0J681MNN1016 |
| | 1000 | 10×20 | 554 | LB0J102MNN1020 |
| | 1500 | 12.5×20 | 720 | LB0J152MNN1220 |
| | 2200 | 12.5×20 | 948 | LB0J222MNN1220 |
| | 3300 | 16×25 | 1240 | LB0J332MNN1625 |
| | 4700 | 16×31.5 | 1530 | LB0J472MNN16N3 |
| 10 (1A) | 47 | 5×11 | 72 | LB1A470MNN0511 |
| | 68 | 6.3×11 | 104 | LB1A680MNN6311 |
| | 100 | 6.3×11 | 120 | LB1A101MNN6311 |
| | 150 | 8×11.5 | 160 | LB1A151MNN08B5 |
| | 220 | 8×11.5 | 204 | LB1A221MNN08B5 |
| | 330 | 10×12.5 | 294 | LB1A331MNN10C5 |
| | 470 | 10×16 | 396 | LB1A471MNN1016 |
| | 680 | 10×20 | 504 | LB1A681MNN1020 |
| | 1000 | 10×20 | 684 | LB1A102MNN1020 |
| | 1500 | 12.5×20 | 904 | LB1A152MNN1220 |
| | 2200 | 12.5×25 | 1152 | LB1A222MNN1225 |
| | 3300 | 16×25 | 1434 | LB1A332MNN1625 |
| 4700 | 16×31.5 | 1700 | LB1A472MNN16N3 | |
| 16 (1C) | 33 | 5×11 | 66 | LB1C330MNN0511 |
| | 47 | 6.3×11 | 90 | LB1C470MNN6311 |
| | 68 | 6.3×11 | 122 | LB1C680MNN6311 |
| | 100 | 8×11.5 | 156 | LB1C101MNN08B5 |
| | 150 | 8×11.5 | 210 | LB1C151MNN08B5 |
| | 220 | 10×12.5 | 270 | LB1C221MNN10C5 |
| | 330 | 10×16 | 360 | LB1C331MNN1016 |
| | 470 | 10×16 | 468 | LB1C471MNN1016 |
| | 680 | 12.5×20 | 636 | LB1C681MNN1220 |
| | 1000 | 12.5×20 | 810 | LB1C102MNN1220 |
| | 1500 | 12.5×25 | 1032 | LB1C152MNN1225 |
| | 2200 | 16×25 | 1260 | LB1C222MNN1625 |
| 3300 | 16×31.5 | 1902 | LB1C332MNN16N3 | |
| 4700 | 18×35.5 | 2268 | LB1C472MNN18P1 | |
| 25 (1E) | 22 | 5×11 | 60 | LB1E220MNN0511 |
| | 33 | 6.3×11 | 82 | LB1E330MNN6311 |
| | 47 | 6.3×11 | 96 | LB1E470MNN6311 |
| | 68 | 8×11.5 | 132 | LB1E680MNN08B5 |
| | 100 | 8×11.5 | 162 | LB1E101MNN08B5 |
| | 150 | 10×12.5 | 238 | LB1E151MNN10C5 |
| | 220 | 10×16 | 312 | LB1E221MNN1016 |
| | 330 | 10×20 | 414 | LB1E331MNN1020 |
| | 470 | 12.5×20 | 552 | LB1E471MNN1220 |
| | 680 | 12.5×20 | 780 | LB1E681MNN1220 |
| | 1000 | 12.5×25 | 900 | LB1E102MNN1225 |
| | 1500 | 16×31.5 | 1218 | LB1E152MNN16N3 |
| 2200 | 16×31.5 | 1482 | LB1E222MNN16N3 | |
| 3300 | 18×40 | 1956 | LB1E332MNN1840 | |
| 4700 | 18×40 | 2568 | LB1E472MNN1840 | |
| 35 (1V) | 15 | 5×11 | 48 | LB1V150MNN0511 |
| | 22 | 6.3×11 | 72 | LB1V220MNN6311 |
| | 33 | 6.3×11 | 88 | LB1V330MNN6311 |
| | 47 | 8×11.5 | 120 | LB1V470MNN08B5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 35 (1V) | 68 | 8×11.5 | 162 | LB1V680MNN08B5 |
| | 100 | 10×12.5 | 204 | LB1V101MNN10C5 |
| | 150 | 10×16 | 285 | LB1V151MNN1016 |
| | 220 | 10×20 | 366 | LB1V221MNN1020 |
| | 330 | 12.5×20 | 498 | LB1V331MNN1220 |
| | 470 | 12.5×25 | 642 | LB1V471MNN1225 |
| | 680 | 12.5×25 | 864 | LB1V681MNN1225 |
| | 1000 | 16×25 | 1044 | LB1V102MNN1625 |
| | 1500 | 16×35.5 | 1338 | LB1V152MNN16P1 |
| | 2200 | 18×35.5 | 1632 | LB1V222MNN18P1 |
| | 3300 | 18×40 | 2160 | LB1V332MNN1840 |
| | 50 (1H) | 2.2 | 5×11 | 15 |
| 3.3 | | 5×11 | 22 | LB1H3R3MNN0511 |
| 4.7 | | 5×11 | 26 | LB1H4R7MNN0511 |
| 6.8 | | 5×11 | 32 | LB1H6R8MNN0511 |
| 10 | | 5×11 | 36 | LB1H100MNN0511 |
| 15 | | 5×11 | 48 | LB1H150MNN0511 |
| 22 | | 5×11 | 60 | LB1H220MNN0511 |
| 33 | | 6.3×11 | 78 | LB1H330MNN6311 |
| 47 | | 6.3×11 | 112 | LB1H470MNN6311 |
| 68 | | 8×11.5 | 134 | LB1H680MNN08B5 |
| 100 | | 8×11.5 | 192 | LB1H101MNN08B5 |
| 150 | | 10×12.5 | 248 | LB1H151MNN10C5 |
| 220 | 10×16 | 348 | LB1H221MNN1016 | |
| 330 | 10×20 | 444 | LB1H331MNN1020 | |
| 470 | 12.5×20 | 546 | LB1H471MNN1220 | |
| 680 | 16×25 | 782 | LB1H681MNN1625 | |
| 1000 | 16×25 | 1032 | LB1H102MNN1625 | |
| 1500 | 16×31.5 | 1224 | LB1H152MNN16N3 | |
| 2200 | 18×40 | 1584 | LB1H222MNN1840 | |
| 3300 | 18×40 | 1896 | LB1H332MNN1840 | |
| 63 (1J) | 2.2 | 5×11 | 15 | LB1J2R2MNN0511 |
| | 3.3 | 5×11 | 24 | LB1J3R3MNN0511 |
| | 4.7 | 5×11 | 29 | LB1J4R7MNN0511 |
| | 6.8 | 5×11 | 36 | LB1J6R8MNN0511 |
| | 10 | 5×11 | 44 | LB1J100MNN0511 |
| | 15 | 6.3×11 | 60 | LB1J150MNN6311 |
| | 22 | 8×11.5 | 78 | LB1J220MNN08B5 |
| | 33 | 8×11.5 | 102 | LB1J330MNN08B5 |
| | 47 | 8×11.5 | 126 | LB1J470MNN08B5 |
| | 68 | 10×12.5 | 174 | LB1J680MNN10C5 |
| | 100 | 10×16 | 240 | LB1J101MNN1016 |
| | 150 | 10×20 | 302 | LB1J151MNN1020 |
| 220 | 12.5×20 | 396 | LB1J221MNN1220 | |
| 330 | 12.5×20 | 497 | LB1J331MNN1220 | |
| 470 | 12.5×25 | 660 | LB1J471MNN1225 | |
| 680 | 16×25 | 870 | LB1J681MNN1625 | |
| 1000 | 16×31.5 | 1200 | LB1J102MNN16N3 | |
| 1500 | 18×35.5 | 1464 | LB1J152MNN18P1 | |
| 80 (1K) | 2.2 | 5×11 | 15 | LB1K2R2MNN0511 |
| | 3.3 | 5×11 | 25 | LB1K3R3MNN0511 |
| | 4.7 | 5×11 | 30 | LB1K4R7MNN0511 |
| | 6.8 | 5×11 | 38 | LB1K6R8MNN0511 |
| | 10 | 6.3×11 | 50 | LB1K100MNN6311 |
| | 15 | 8×11.5 | 66 | LB1K150MNN08B5 |
| | 22 | 8×11.5 | 90 | LB1K220MNN08B5 |
| | 33 | 10×12.5 | 114 | LB1K330MNN10C5 |
| | 47 | 10×12.5 | 160 | LB1K470MNN10C5 |



LB Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 80 (1K) | 68 | 10×16 | 186 | LB1K680MNN1016 |
| | 100 | 10×20 | 264 | LB1K101MNN1020 |
| | 150 | 12.5×20 | 336 | LB1K151MNN1220 |
| | 220 | 12.5×20 | 437 | LB1K221MNN1220 |
| | 330 | 12.5×25 | 540 | LB1K331MNN1225 |
| | 470 | 16×31.5 | 780 | LB1K471MNN16N3 |
| | 680 | 16×35.5 | 966 | LB1K681MNN16P1 |
| | 1000 | 18×35.5 | 1296 | LB1K102MNN18P1 |
| 100 (2A) | 0.47 | 5×11 | 12 | LB2AR47MNN0511 |
| | 1 | 5×11 | 18 | LB2A010MNN0511 |
| | 2.2 | 5×11 | 26 | LB2A2R2MNN0511 |
| | 3.3 | 5×11 | 32 | LB2A3R3MNN0511 |
| | 4.7 | 6.3×11 | 43 | LB2A4R7MNN6311 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 100 (2A) | 6.8 | 6.3×11 | 54 | LB2A6R8MNN6311 |
| | 10 | 8×11.5 | 73 | LB2A100MNN08B5 |
| | 15 | 10×12.5 | 98 | LB2A150MNN10C5 |
| | 22 | 10×12.5 | 127 | LB2A220MNN10C5 |
| | 33 | 10×16 | 170 | LB2A330MNN1016 |
| | 47 | 10×20 | 220 | LB2A470MNN1020 |
| | 68 | 12.5×20 | 288 | LB2A680MNN1220 |
| | 100 | 12.5×20 | 360 | LB2A101MNN1220 |
| | 150 | 12.5×25 | 497 | LB2A151MNN1225 |
| | 220 | 16×25 | 640 | LB2A221MNN1625 |
| | 330 | 16×31.5 | 842 | LB2A331MNN16N3 |
| | 470 | 18×35.5 | 1068 | LB2A471MNN18P1 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Cap(μF) | Frequency (Hz) | | | | |
|-------------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 0.47 ~ 68 | 0.75 | 1.00 | 1.57 | 1.75 | 2.00 |
| 100 ~ 680 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| 1000 ~ 4700 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



LB-H Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 6.3 (0J) | 68 | 5×11 | 72 | LB0J680MNN0511H |
| | 100 | 5×11 | 95 | LB0J101MNN0511H |
| | 150 | 6.3×11 | 122 | LB0J151MNN6311H |
| | 220 | 6.3×11 | 150 | LB0J221MNN6311H |
| | 330 | 8×11.5 | 225 | LB0J331MNN08B5H |
| | 470 | 10×12.5 | 265 | LB0J471MNN10C5H |
| | 680 | 10×16 | 320 | LB0J681MNN1016H |
| | 1000 | 10×20 | 462 | LB0J102MNN1020H |
| | 1500 | 12.5×20 | 600 | LB0J152MNN1220H |
| | 2200 | 12.5×20 | 790 | LB0J222MNN1220H |
| | 3300 | 16×25 | 1033 | LB0J332MNN1625H |
| | 4700 | 16×31.5 | 1275 | LB0J472MNN16N3H |
| 10 (1A) | 47 | 5×11 | 60 | LB1A470MNN0511H |
| | 68 | 6.3×11 | 87 | LB1A680MNN6311H |
| | 100 | 6.3×11 | 100 | LB1A101MNN6311H |
| | 150 | 8×11 | 134 | LB1A151MNN0811H |
| | 220 | 8×11 | 170 | LB1A221MNN0811H |
| | 330 | 10×12.5 | 245 | LB1A331MNN10C5H |
| | 470 | 10×16 | 325 | LB1A471MNN1016H |
| | 680 | 10×20 | 420 | LB1A681MNN1020H |
| | 1000 | 10×20 | 570 | LB1A102MNN1020H |
| | 1500 | 12.5×20 | 753 | LB1A152MNN1220H |
| | 2200 | 12.5×25 | 960 | LB1A222MNN1225H |
| | 3300 | 16×25 | 1195 | LB1A332MNN1625H |
| 4700 | 16×31.5 | 1420 | LB1A472MNN16N3H | |
| 16 (1C) | 33 | 5×11 | 55 | LB1C330MNN0511H |
| | 47 | 6.3×11 | 75 | LB1C470MNN6311H |
| | 68 | 6.3×11 | 102 | LB1C680MNN6311H |
| | 100 | 8×11 | 130 | LB1C101MNN0811H |
| | 150 | 8×11 | 175 | LB1C151MNN0811H |
| | 220 | 10×12.5 | 225 | LB1C221MNN10C5H |
| | 330 | 10×16 | 300 | LB1C331MNN1016H |
| | 470 | 10×16 | 390 | LB1C471MNN1016H |
| | 680 | 12.5×20 | 530 | LB1C681MNN1220H |
| | 1000 | 12.5×20 | 675 | LB1C102MNN1220H |
| | 1500 | 12.5×25 | 860 | LB1C152MNN1225H |
| | 2200 | 16×25 | 1050 | LB1C222MNN1625H |
| 3300 | 16×31.5 | 1585 | LB1C332MNN16N3H | |
| 4700 | 18×35.5 | 1890 | LB1C472MNN18P1H | |
| 25 (1E) | 22 | 5×11 | 50 | LB1E220MNN0511H |
| | 33 | 6.3×11 | 68 | LB1E330MNN6311H |
| | 47 | 6.3×11 | 80 | LB1E470MNN6311H |
| | 68 | 8×11 | 110 | LB1E680MNN0811H |
| | 100 | 8×11 | 135 | LB1E101MNN0811H |
| | 150 | 10×12.5 | 198 | LB1E151MNN10C5H |
| | 220 | 10×16 | 260 | LB1E221MNN1016H |
| | 330 | 10×20 | 345 | LB1E331MNN1020H |
| | 470 | 12.5×20 | 460 | LB1E471MNN1220H |
| | 680 | 12.5×20 | 650 | LB1E681MNN1220H |
| | 1000 | 12.5×25 | 725 | LB1E102MNN1225H |
| | 1500 | 16×31.5 | 1015 | LB1E152MNN16N3H |
| 2200 | 16×31.5 | 1235 | LB1E222MNN16N3H | |
| 3300 | 18×40 | 1630 | LB1E332MNN1840H | |
| 4700 | 18×40 | 2140 | LB1E472MNN1840H | |
| 35 (1V) | 15 | 5×11 | 40 | LB1V150MNN0511H |
| | 22 | 6.3×11 | 60 | LB1V220MNN6311H |
| | 33 | 6.3×11 | 73 | LB1V330MNN6311H |
| | 47 | 8×11 | 100 | LB1V470MNN0811H |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 35 (1V) | 68 | 8×11 | 135 | LB1V680MNN0811H |
| | 100 | 10×12.5 | 170 | LB1V101MNN10C5H |
| | 150 | 10×16 | 238 | LB1V151MNN1016H |
| | 220 | 10×20 | 305 | LB1V221MNN1020H |
| | 330 | 12.5×20 | 415 | LB1V331MNN1220H |
| | 470 | 12.5×25 | 535 | LB1V471MNN1225H |
| | 680 | 12.5×25 | 720 | LB1V681MNN1225H |
| | 1000 | 16×25 | 870 | LB1V102MNN1625H |
| | 1500 | 16×35.5 | 1115 | LB1V152MNN16P1H |
| | 2200 | 18×35.5 | 1360 | LB1V222MNN18P1H |
| | 3300 | 18×40 | 1800 | LB1V332MNN1840H |
| | 50 (1H) | 1 | 5×11 | 12 |
| 2.2 | | 5×11 | 18 | LB1H2R2MNN0511H |
| 3.3 | | 5×11 | 22 | LB1H3R3MNN0511H |
| 4.7 | | 5×11 | 27 | LB1H4R7MNN0511H |
| 6.8 | | 5×11 | 30 | LB1H6R8MNN0511H |
| 10 | | 5×11 | 40 | LB1H100MNN0511H |
| 15 | | 5×11 | 50 | LB1H150MNN0511H |
| 22 | | 6.3×11 | 65 | LB1H220MNN6311H |
| 33 | | 6.3×11 | 93 | LB1H330MNN6311H |
| 47 | | 8×11 | 112 | LB1H470MNN0811H |
| 68 | | 8×11 | 160 | LB1H680MNN0811H |
| 100 | | 10×12.5 | 207 | LB1H101MNN10C5H |
| 150 | 10×16 | 290 | LB1H151MNN1016H | |
| 220 | 10×20 | 370 | LB1H221MNN1020H | |
| 330 | 12.5×20 | 455 | LB1H331MNN1220H | |
| 470 | 16×25 | 652 | LB1H471MNN1625H | |
| 680 | 16×25 | 860 | LB1H681MNN1625H | |
| 1000 | 16×31.5 | 1020 | LB1H102MNN16N3H | |
| 1500 | 18×40 | 1320 | LB1H152MNN1840H | |
| 2200 | 18×40 | 1580 | LB1H222MNN1840H | |
| 63 (1J) | 1 | 5×11 | 12 | LB1J010MNN0511H |
| | 2.2 | 5×11 | 20 | LB1J2R2MNN0511H |
| | 3.3 | 5×11 | 24 | LB1J3R3MNN0511H |
| | 4.7 | 5×11 | 30 | LB1J4R7MNN0511H |
| | 6.8 | 5×11 | 37 | LB1J6R8MNN0511H |
| | 10 | 6.3×11 | 50 | LB1J100MNN6311H |
| | 15 | 8×11 | 65 | LB1J150MNN0811H |
| | 22 | 8×11 | 85 | LB1J220MNN0811H |
| | 33 | 8×11 | 105 | LB1J330MNN0811H |
| | 47 | 10×12.5 | 145 | LB1J470MNN10C5H |
| | 68 | 10×16 | 200 | LB1J680MNN1016H |
| | 100 | 10×20 | 252 | LB1J101MNN1020H |
| 150 | 12.5×20 | 330 | LB1J151MNN1220H | |
| 220 | 12.5×20 | 414 | LB1J221MNN1220H | |
| 330 | 12.5×25 | 550 | LB1J331MNN1225H | |
| 470 | 16×25 | 725 | LB1J471MNN1625H | |
| 680 | 16×31.5 | 1000 | LB1J681MNN16N3H | |
| 1000 | 18×35.5 | 1220 | LB1J102MNN18P1H | |
| 80 (1K) | 1 | 5×11 | 12 | LB1K010MNN0511H |
| | 2.2 | 5×11 | 21 | LB1K2R2MNN0511H |
| | 3.3 | 5×11 | 25 | LB1K3R3MNN0511H |
| | 4.7 | 5×11 | 32 | LB1K4R7MNN0511H |
| | 6.8 | 6.3×11 | 42 | LB1K6R8MNN6311H |
| | 10 | 8×11 | 55 | LB1K100MNN0811H |
| | 15 | 8×11 | 75 | LB1K150MNN0811H |
| | 22 | 10×12.5 | 95 | LB1K220MNN10C5H |
| | 33 | 10×12.5 | 133 | LB1K330MNN10C5H |

ALUMINUM ELECTROLYTIC CAPACITORS



LB-H Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 80 (1K) | 47 | 10×16 | 155 | LB1K470MNN1016H |
| | 68 | 10×20 | 220 | LB1K680MNN1020H |
| | 100 | 12.5×20 | 280 | LB1K101MNN1220H |
| | 150 | 12.5×20 | 364 | LB1K151MNN1220H |
| | 220 | 12.5×25 | 450 | LB1K221MNN1225H |
| | 330 | 16×31.5 | 650 | LB1K331MNN16N3H |
| | 470 | 16×35.5 | 805 | LB1K471MNN16P1H |
| | 680 | 18×35.5 | 1080 | LB1K681MNN18P1H |
| 100 (2A) | 0.47 | 5×11 | 10 | LB2AR47MNN0511H |
| | 1 | 5×11 | 15 | LB2A010MNN0511H |
| | 2.2 | 5×11 | 22 | LB2A2R2MNN0511H |
| | 3.3 | 5×11 | 27 | LB2A3R3MNN0511H |
| | 4.7 | 6.3×11 | 36 | LB2A4R7MNN6311H |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 100 (2A) | 6.8 | 6.3×11 | 45 | LB2A6R8MNN6311H |
| | 10 | 8×11 | 61 | LB2A100MNN0811H |
| | 15 | 10×12.5 | 82 | LB2A150MNN10C5H |
| | 22 | 10×12.5 | 106 | LB2A220MNN10C5H |
| | 33 | 10×16 | 142 | LB2A330MNN1016H |
| | 47 | 10×20 | 184 | LB2A470MNN1020H |
| | 68 | 12.5×20 | 240 | LB2A680MNN1220H |
| | 100 | 12.5×20 | 300 | LB2A101MNN1220H |
| | 150 | 12.5×25 | 414 | LB2A151MNN1225H |
| | 220 | 16×25 | 533 | LB2A221MNN1625H |
| | 330 | 16×31.5 | 702 | LB2A331MNN16N3H |
| | 470 | 18×35.5 | 890 | LB2A471MNN18P1H |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Cap(μF) | Frequency (Hz) | | | | |
|-------------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 0.47 ~ 68 | 0.75 | 1.00 | 1.57 | 1.75 | 2.00 |
| 100 ~ 680 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| 1000 ~ 4700 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



SM Series

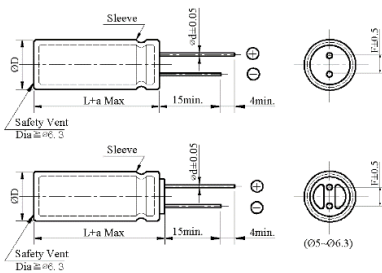


- Standard size downsized
- 2,000 hours assured at 85°C

◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|--|---|--|
| Category Temperature Range | -40 ~ +85°C | -25 ~ +85°C |
| Working Voltage Range | 6.3 ~ 100Vdc | 160 ~ 450Vdc |
| Capacitance Range | 0.1 ~ 22,000μF | 0.47 ~ 470 μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 6.3 10 16 25 35 50 63 100 160 ~ 250 350 ~ 500 550 |
| | tanδ(Max) | 0.26 0.22 0.16 0.14 0.12 0.10 0.09 0.08 0.15 0.20 0.25 |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | |
| Leakage Current | I=0.01CV or 3μA whichever is greater (6.3 ~ 100V) I=0.03CV + 10μA (160 ~ 550V) I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 6.3 10 16 25 35 50~100 160~250 350~500 550 |
| | Z(-40°C)/Z(+20°C) | 12 10 8 5 4 3 --- --- --- |
| Z(-25°C)/Z(+20°C) --- --- --- --- --- 3 6 8 (at 120Hz) | | |
| Endurance | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 2,000 hours at 85°C. | |
| | Capacitance change | ≦ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied. | |
| | Capacitance change | ≦ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| Leakage current | ≦ 200% of the specified value | |
| | Others | |
| Conforms to JIS-C-5101-4 (1998) | | |

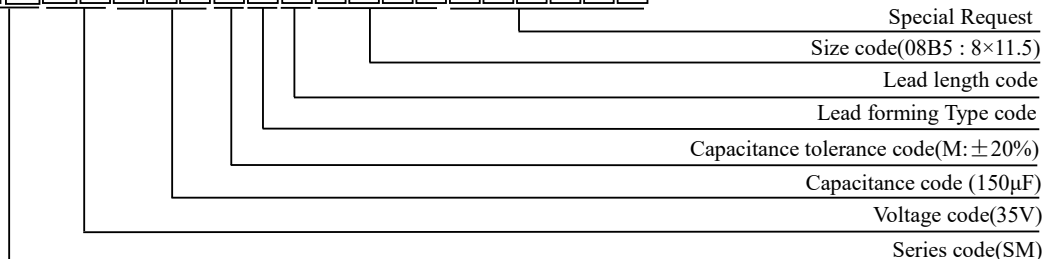
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 |
|----|-------------|-----|-----|-----|---------------------------------|-----------|-----|-----------|-------------|
| ΦD | ΦD +0.5 Max | | | | | | | | ΦD +1.0 Max |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.0 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 | 10 |
| a | L+1.5 Max | | | | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | | L+2.0 Max | |

◆ PART NUMBER SYSTEM(Example : 35V 150μF)

S M I V 1 5 1 M N N 0 8 B 5



ALUMINUM ELECTROLYTIC CAPACITORS



SM Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|-----------------|----------|----------|---------------------|--|-----------------|-----------------|
| 6.3 (0J) | 22 | 5×11 | 65 | SM0J220MNN0511 | 25 (1E) | 68 | 6.3×11 | 145 | SM1E680MNN6311 | |
| | 33 | 5×11 | 80 | SM0J330MNN0511 | | 100 | 6.3×11 | 190 | SM1E101MNN6311 | |
| | 47 | 5×11 | 95 | SM0J470MNN0511 | | 150 | 6.3×11 | 210 | SM1E151MNN6311 | |
| | 68 | 5×11 | 100 | SM0J680MNN0511 | | 220 | 8×11.5 | 370 | SM1E221MNN08B5 | |
| | 100 | 5×11 | 134 | SM0J101MNN0511 | | 330 | 8×11.5 | 440 | SM1E331MNN08B5 | |
| | 150 | 5×11 | 150 | SM0J151MNN0511 | | 470 | 10×12.5 | 550 | SM1E471MNN10C5 | |
| | 220 | 5×11 | 220 | SM0J221MNN0511 | | 680 | 10×16 | 605 | SM1E681MNN1016 | |
| | 330 | 6.3×11 | 280 | SM0J331MNN6311 | | 1000 | 10×20 | 930 | SM1E102MNN1020 | |
| | 470 | 6.3×11 | 360 | SM0J471MNN6311 | | 2200 | 12.5×25 | 1550 | SM1E222MNN1225 | |
| | 680 | 8×11.5 | 503 | SM0J681MNN08B5 | | 3300 | 16×25 | 1980 | SM1E332MNN1625 | |
| | 1000 | 8×11.5 | 590 | SM0J102MNN08B5 | | 4700 | 16×31.5 | 2140 | SM1E472MNN16N3 | |
| | 2200 | 10×16 | 930 | SM0J222MNN1016 | | 6800 | 16×35.5 | 2600 | SM1E682MNN16P1 | |
| | 3300 | 10×20 | 1230 | SM0J332MNN1020 | | 35 (1V) | 4.7 | 5×11 | 35 | SM1V47R7MNN0511 |
| | 4700 | 12.5×20 | 1520 | SM0J472MNN1220 | | | 10 | 5×11 | 60 | SM1V100MNN0511 |
| | 6800 | 12.5×25 | 1920 | SM0J682MNN1225 | | | 22 | 5×11 | 90 | SM1V220MNN0511 |
| | 10000 | 16×25 | 2370 | SM0J103MNN1625 | | | 33 | 5×11 | 110 | SM1V330MNN0511 |
| 15000 | 16×35.5 | 2590 | SM0J153MNN16P1 | 47 | 5×11 | | 135 | SM1V470MNN0511 | | |
| 22000 | 18×35.5 | 3220 | SM0J223MNN18P1 | 68 | 6.3×11 | | 160 | SM1V680MNN6311 | | |
| 10 (1A) | 22 | 5×11 | 65 | SM1A220MNN0511 | 100 | | 6.3×11 | 215 | SM1V101MNN6311 | |
| | 33 | 5×11 | 85 | SM1A330MNN0511 | 150 | | 8×11.5 | 290 | SM1V151MNN08B5 | |
| | 47 | 5×11 | 100 | SM1A470MNN0511 | 220 | | 8×11.5 | 385 | SM1V221MNN08B5 | |
| | 68 | 5×11 | 110 | SM1A680MNN0511 | 330 | | 10×12.5 | 490 | SM1V331MNN10C5 | |
| | 100 | 5×11 | 150 | SM1A101MNN0511 | 470 | | 10×16 | 650 | SM1V471MNN1016 | |
| | 150 | 5×11 | 160 | SM1A151MNN0511 | 680 | | 10×20 | 820 | SM1V681MNN1020 | |
| | 220 | 5×11 | 220 | SM1A221MNN0511 | 1000 | | 12.5×20 | 1200 | SM1V102MNN1220 | |
| | 330 | 6.3×11 | 300 | SM1A331MNN6311 | 2200 | | 16×25 | 1880 | SM1V222MNN1625 | |
| | 470 | 6.3×11 | 360 | SM1A471MNN6311 | 3300 | | 16×31.5 | 2100 | SM1V332MNN16N3 | |
| | 680 | 8×11.5 | 580 | SM1A681MNN08B5 | 4700 | | 16×35.5 | 2500 | SM1V472MNN16P1 | |
| | 1000 | 10×12.5 | 650 | SM1A102MNN10C5 | 50 (1H) | 0.1 | 5×11 | 2 | SM1HR10MNN0511 | |
| | 2200 | 10×16 | 1090 | SM1A222MNN1016 | | 0.22 | 5×11 | 3 | SM1HR22MNN0511 | |
| | 3300 | 12.5×20 | 1450 | SM1A332MNN1220 | | 0.33 | 5×11 | 5 | SM1HR33MNN0511 | |
| | 4700 | 12.5×25 | 1790 | SM1A472MNN1225 | | 0.47 | 5×11 | 14 | SM1HR47MNN0511 | |
| | 6800 | 16×25 | 2250 | SM1A682MNN1625 | | 1 | 5×11 | 20 | SM1H010MNN0511 | |
| | 10000 | 16×31.5 | 2550 | SM1A103MNN16N3 | | 2.2 | 5×11 | 30 | SM1H2R2MNN0511 | |
| 15000 | 18×35.5 | 2880 | SM1A153MNN18P1 | 3.3 | | 5×11 | 37 | SM1H3R3MNN0511 | | |
| 22000 | 18×40 | 3400 | SM1A223MNN1840 | 4.7 | | 5×11 | 41 | SM1H4R7MNN0511 | | |
| 16 (1C) | 10 | 5×11 | 40 | SM1C100MNN0511 | | 10 | 5×11 | 65 | SM1H100MNN0511 | |
| | 22 | 5×11 | 75 | SM1C220MNN0511 | | 22 | 5×11 | 95 | SM1H220MNN0511 | |
| | 33 | 5×11 | 90 | SM1C330MNN0511 | | 33 | 5×11 | 125 | SM1H330MNN0511 | |
| | 47 | 5×11 | 115 | SM1C470MNN0511 | | 47 | 6.3×11 | 160 | SM1H470MNN6311 | |
| | 68 | 5×11 | 120 | SM1C680MNN0511 | | 68 | 6.3×11 | 210 | SM1H680MNN6311 | |
| | 100 | 5×11 | 175 | SM1C101MNN0511 | | 100 | 8×11.5 | 270 | SM1H101MNN08B5 | |
| | 150 | 6.3×11 | 210 | SM1C151MNN6311 | | 150 | 10×12.5 | 345 | SM1H151MNN10C5 | |
| | 220 | 6.3×11 | 280 | SM1C221MNN6311 | | 220 | 10×12.5 | 430 | SM1H221MNN10C5 | |
| | 330 | 8×11.5 | 370 | SM1C331MNN08B5 | 330 | 10×16 | 590 | SM1H331MNN1016 | | |
| | 470 | 8×11.5 | 460 | SM1C471MNN08B5 | 470 | 10×20 | 760 | SM1H471MNN1020 | | |
| | 680 | 10×12.5 | 690 | SM1C681MNN10C5 | 680 | 12.5×20 | 875 | SM1H681MNN1220 | | |
| | 1000 | 10×12.5 | 720 | SM1C102MNN10C5 | 1000 | 12.5×25 | 1360 | SM1H102MNN1225 | | |
| | 2200 | 12.5×20 | 1555 | SM1C222MNN1220 | 2200 | 16×35.5 | 2060 | SM1H222MNN16P1 | | |
| | 3300 | 12.5×25 | 1990 | SM1C332MNN1225 | 3300 | 18×35.5 | 2500 | SM1H332MNN18P1 | | |
| | 4700 | 16×25 | 2100 | SM1C472MNN1625 | 63 (1J) | 4.7 | 5×11 | 45 | SM1J47R7MNN0511 | |
| | 6800 | 16×31.5 | 2280 | SM1C682MNN16N3 | | 10 | 5×11 | 70 | SM1J100MNN0511 | |
| 10000 | 18×35.5 | 2750 | SM1C103MNN18P1 | 22 | | 5×11 | 100 | SM1J220MNN0511 | | |
| 25 (1E) | 4.7 | 5×11 | 30 | SM1E47R7MNN0511 | | 33 | 6.3×11 | 140 | SM1J330MNN6311 | |
| | 10 | 5×11 | 55 | SM1E100MNN0511 | | 47 | 6.3×11 | 170 | SM1J470MNN6311 | |
| | 22 | 5×11 | 80 | SM1E220MNN0511 | | 68 | 8×11.5 | 220 | SM1J680MNN08B5 | |
| | 33 | 5×11 | 95 | SM1E330MNN0511 | | 100 | 8×11.5 | 280 | SM1J101MNN08B5 | |
| | 47 | 5×11 | 120 | SM1E470MNN0511 | | 150 | 10×12.5 | 345 | SM1J151MNN10C5 | |

ALUMINUM ELECTROLYTIC CAPACITORS



SM Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|----------------|----------------|
| 63 (1J) | 220 | 10×16 | 490 | SM1J221MNN1016 | |
| | 330 | 10×20 | 710 | SM1J331MNN1020 | |
| | 470 | 12.5×20 | 900 | SM1J471MNN1220 | |
| | 680 | 12.5×25 | 1000 | SM1J681MNN1225 | |
| | 1000 | 16×25 | 1310 | SM1J102MNN1625 | |
| | 2200 | 18×35.5 | 2300 | SM1J222MNN18P1 | |
| 100 (2A) | 0.1 | 5×11 | 3 | SM2AR10MNN0511 | |
| | 0.22 | 5×11 | 5 | SM2AR22MNN0511 | |
| | 0.33 | 5×11 | 7 | SM2AR33MNN0511 | |
| | 0.47 | 5×11 | 16 | SM2AR47MNN0511 | |
| | 1 | 5×11 | 23 | SM2A010MNN0511 | |
| | 2.2 | 5×11 | 34 | SM2A2R2MNN0511 | |
| | 3.3 | 5×11 | 42 | SM2A3R3MNN0511 | |
| | 4.7 | 5×11 | 50 | SM2A4R7MNN0511 | |
| | 10 | 6.3×11 | 80 | SM2A100MNN6311 | |
| | 22 | 6.3×11 | 130 | SM2A220MNN6311 | |
| | 33 | 8×11.5 | 180 | SM2A330MNN08B5 | |
| | 47 | 10×12.5 | 220 | SM2A470MNN10C5 | |
| | 68 | 10×12.5 | 270 | SM2A680MNN10C5 | |
| | 100 | 10×16 | 340 | SM2A101MNN1016 | |
| | 150 | 12.5×20 | 490 | SM2A151MNN1220 | |
| | 220 | 12.5×20 | 550 | SM2A221MNN1220 | |
| | 330 | 12.5×25 | 760 | SM2A331MNN1225 | |
| | 470 | 16×25 | 1000 | SM2A471MNN1625 | |
| | 680 | 16×35.5 | 1100 | SM2A681MNN16P1 | |
| | 1000 | 18×35.5 | 1350 | SM2A102MNN18P1 | |
| 160 (2C) | 0.47 | 5×11 | 12 | SM2CR47MNN0511 | |
| | 1 | 5×11 | 17 | SM2C010MNN0511 | |
| | 2.2 | 6.3×11 | 26 | SM2C2R2MNN6311 | |
| | 3.3 | 6.3×11 | 35 | SM2C3R3MNN6311 | |
| | 4.7 | 6.3×11 | 40 | SM2C4R7MNN6311 | |
| | 10 | 8×11.5 | 65 | SM2C100MNN08B5 | |
| | 22 | 10×16 | 110 | SM2C220MNN1016 | |
| | 33 | 10×20 | 150 | SM2C330MNN1020 | |
| | 47 | 12.5×20 | 180 | SM2C470MNN1220 | |
| | 68 | 12.5×25 | 230 | SM2C680MNN1225 | |
| | 82 | 12.5×25 | 250 | SM2C820MNN1225 | |
| | 100 | 12.5×25 | 300 | SM2C101MNN1225 | |
| | 120 | 12.5×25 | 325 | SM2C121MNN1225 | |
| | 150 | 16×25 | 360 | SM2C151MNN1625 | |
| | 180 | 16×31.5 | 415 | SM2C181MNN16N3 | |
| | 220 | 16×31.5 | 510 | SM2C221MNN16N3 | |
| | 330 | 18×35.5 | 600 | SM2C331MNN18P1 | |
| | 470 | 18×40 | 700 | SM2C471MNN1840 | |
| | 200 (2D) | 0.47 | 5×11 | 12 | SM2DR47MNN0511 |
| | | 1 | 5×11 | 17 | SM2D010MNN0511 |
| 2.2 | | 6.3×11 | 26 | SM2D2R2MNN6311 | |
| 3.3 | | 6.3×11 | 35 | SM2D3R3MNN6311 | |
| 4.7 | | 8×11.5 | 45 | SM2D4R7MNN08B5 | |
| 10 | | 8×11.5 | 70 | SM2D100MNN08B5 | |
| 22 | | 10×20 | 110 | SM2D220MNN1020 | |
| 33 | | 10×20 | 160 | SM2D330MNN1020 | |
| 47 | | 12.5×20 | 180 | SM2D470MNN1220 | |
| 68 | | 12.5×25 | 230 | SM2D680MNN1225 | |
| 82 | | 12.5×25 | 260 | SM2D820MNN1225 | |
| 100 | | 16×25 | 330 | SM2D101MNN1625 | |
| 120 | | 16×25 | 350 | SM2D121MNN1625 | |
| 150 | | 16×31.5 | 400 | SM2D151MNN16N3 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|----------------|----------------|
| 200 (2D) | 180 | 16×35.5 | 430 | SM2D181MNN16P1 | |
| | 220 | 16×35.5 | 520 | SM2D221MNN16P1 | |
| | 330 | 18×35.5 | 635 | SM2D331MNN18P1 | |
| | 470 | 18×40 | 705 | SM2D471MNN1840 | |
| | 0.47 | 5×11 | 12 | SM2ER47MNN0511 | |
| | 1 | 6.3×11 | 17 | SM2E010MNN6311 | |
| 250 (2E) | 2.2 | 6.3×11 | 30 | SM2E2R2MNN6311 | |
| | 3.3 | 8×11.5 | 35 | SM2E3R3MNN08B5 | |
| | 4.7 | 8×11.5 | 45 | SM2E4R7MNN08B5 | |
| | 10 | 10×12.5 | 70 | SM2E100MNN10C5 | |
| | 22 | 10×20 | 130 | SM2E220MNN1020 | |
| | 33 | 12.5×20 | 160 | SM2E330MNN1220 | |
| | 47 | 12.5×20 | 210 | SM2E470MNN1220 | |
| | 68 | 16×25 | 250 | SM2E680MNN1625 | |
| | 82 | 16×25 | 265 | SM2E820MNN1625 | |
| | 100 | 16×31.5 | 310 | SM2E101MNN16N3 | |
| | 120 | 16×31.5 | 345 | SM2E121MNN16N3 | |
| | 150 | 16×35.5 | 530 | SM2E151MNN16P1 | |
| | 180 | 18×35.5 | 540 | SM2E181MNN18P1 | |
| | 220 | 18×35.5 | 600 | SM2E221MNN18P1 | |
| | 330 | 18×40 | 650 | SM2E331MNN1840 | |
| | 0.47 | 5×11 | 14 | SM2VR47MNN0511 | |
| | 1 | 6.3×11 | 18 | SM2V010MNN6311 | |
| | 350 (2V) | 2.2 | 8×11.5 | 28 | SM2V2R2MNN08B5 |
| | | 3.3 | 8×11.5 | 35 | SM2V3R3MNN08B5 |
| | | 4.7 | 10×12.5 | 41 | SM2V4R7MNN10C5 |
| 10 | | 10×16 | 70 | SM2V100MNN1016 | |
| 22 | | 12.5×20 | 110 | SM2V220MNN1220 | |
| 33 | | 12.5×25 | 140 | SM2V330MNN1225 | |
| 47 | | 16×25 | 220 | SM2V470MNN1625 | |
| 68 | | 16×31.5 | 260 | SM2V680MNN16N3 | |
| 82 | | 18×31.5 | 270 | SM2V820MNN18N3 | |
| 100 | | 18×31.5 | 305 | SM2V101MNN18N3 | |
| 120 | | 18×31.5 | 340 | SM2V121MNN18N3 | |
| 150 | | 18×35.5 | 380 | SM2V151MNN18P1 | |
| 180 | | 18×40 | 410 | SM2V181MNN1840 | |
| 0.47 | | 6.3×11 | 14 | SM2GR47MNN6311 | |
| 1 | | 6.3×11 | 18 | SM2G010MNN6311 | |
| 400 (2G) | | 2.2 | 8×11.5 | 28 | SM2G2R2MNN08B5 |
| | | 3.3 | 8×11.5 | 32 | SM2G3R3MNN08B5 |
| | | 4.7 | 10×16 | 41 | SM2G4R7MNN1016 |
| | | 10 | 10×20 | 70 | SM2G100MNN1020 |
| | | 22 | 12.5×25 | 110 | SM2G220MNN1225 |
| | 33 | 16×25 | 140 | SM2G330MNN1625 | |
| | 47 | 16×25 | 160 | SM2G470MNN1625 | |
| | 68 | 16×35.5 | 280 | SM2G680MNN16P1 | |
| | 82 | 18×31.5 | 290 | SM2G820MNN18N3 | |
| | 100 | 18×31.5 | 300 | SM2G101MNN18N3 | |
| | 120 | 18×35.5 | 330 | SM2G121MNN18P1 | |
| | 150 | 18×40 | 360 | SM2G151MNN1840 | |
| | 180 | 18×45 | 400 | SM2G181MNN1845 | |
| | 0.47 | 6.3×11 | 14 | SM2WR47MNN6311 | |
| | 450 (2W) | 1 | 8×11.5 | 19 | SM2W010MNN08B5 |
| | | 2.2 | 8×11.5 | 25 | SM2W2R2MNN08B5 |
| | | 3.3 | 10×12.5 | 32 | SM2W3R3MNN10C5 |
| | | 4.7 | 10×16 | 50 | SM2W4R7MNN1016 |
| | | 10 | 12.5×16 | 75 | SM2W100MNN1216 |
| | | 22 | 12.5×25 | 110 | SM2W220MNN1225 |

ALUMINUM ELECTROLYTIC CAPACITORS



SM Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 450 (2W) | 33 | 16×25 | 150 | SM2W330MNN1625 |
| | 47 | 16×31.5 | 220 | SM2W470MNN16N3 |
| | 68 | 18×31.5 | 310 | SM2W680MNN18N3 |
| | 82 | 18×35.5 | 330 | SM2W820MNN18P1 |
| | 100 | 18×40 | 360 | SM2W101MNN1840 |
| | 120 | 18×45 | 400 | SM2W121MNN1845 |
| 500 (2H) | 0.47 | 6.3×11 | 14 | SM2HR47MNN6311 |
| | 1 | 6.3×11 | 19 | SM2H010MNN6311 |
| | 2.2 | 8×11.5 | 28 | SM2H2R2MNN08B5 |
| | 3.3 | 10×12.5 | 35 | SM2H3R3MNN10C5 |
| | 4.7 | 10×16 | 55 | SM2H4R7MNN1016 |
| | 10 | 12.5×20 | 78 | SM2H100MNN1220 |
| | 22 | 12.5×30 | 135 | SM2H220MNN1230 |
| | 33 | 16×25 | 160 | SM2H330MNN1625 |
| | 47 | 16×31.5 | 240 | SM2H470MNN16N3 |
| | 68 | 18×31.5 | 350 | SM2H680MNN18N3 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|----------------|
| 500 (2H) | 82 | 18×35.5 | 380 | SM2H820MNN18P1 |
| | 100 | 18×40 | 430 | SM2H101MNN1840 |
| | 120 | 18×45 | 480 | SM2H121MNN1845 |
| 550 (2L) | 0.47 | 6.3×11 | 15 | SM2LR47MNN6311 |
| | 1 | 6.3×11 | 20 | SM2L010MNN6311 |
| | 2.2 | 8×15 | 30 | SM2L2R2MNN0815 |
| | 3.3 | 10×16 | 40 | SM2L3R3MNN1016 |
| | 4.7 | 10×20 | 60 | SM2L4R7MNN1020 |
| | 10 | 12.5×25 | 85 | SM2L100MNN1225 |
| | 22 | 12.5×35 | 150 | SM2L220MNN1235 |
| | 33 | 16×31.5 | 180 | SM2L330MNN16N3 |
| | 47 | 16×35.5 | 280 | SM2L470MNN16P1 |
| | 68 | 18×35.5 | 400 | SM2L680MNN18P1 |
| | 82 | 18×40 | 430 | SM2L820MNN1840 |
| | 100 | 18×45 | 480 | SM2L101MNN1845 |

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|---------|--------------|----------------|------|------|------|------|
| | | 50/60 | 120 | 1K | 10K | 100K |
| 6.3~100 | 0.1 ~ 68 | 0.75 | 1.00 | 1.57 | 2.00 | 2.00 |
| | 100 ~ 680 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| | 1000 ~ 22000 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |
| 160~550 | 0.47 ~ 220 | 0.80 | 1.00 | 1.40 | 1.40 | 1.40 |
| | 330 ~ 470 | 0.90 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



EL Series

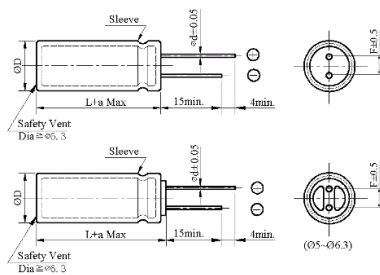
- Suitable for main board
- Extremely low impedance, downsize and high ripple current



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | |
|--|---|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|----|-------------------|------|------|------|------|------|------|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 50Vdc | | | | | | | | | | | | | | |
| Capacitance Range | 56 ~ 6,800 µF | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | |
| tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | |
| Leakage Current | $I = 0.01CV$ or $3 \mu A$, whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 | 3 |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 | 3 | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C <table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≒ specified value</td> </tr> </table> | Capacitance change | ≒ ±25% of the initial value | Dissipation factor(tanδ) | ≒ 200% of the specified value | Leakage current | ≒ specified value | | | | | | | | |
| Capacitance change | ≒ ±25% of the initial value | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≒ 200% of the specified value | | | | | | | | | | | | | | |
| Leakage current | ≒ specified value | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≒ 200% of the specified value</td> </tr> </table> | Capacitance change | ≒ ±25% of the initial value | Dissipation factor(tanδ) | ≒ 200% of the specified value | Leakage current | ≒ 200% of the specified value | | | | | | | | |
| Capacitance change | ≒ ±25% of the initial value | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≒ 200% of the specified value | | | | | | | | | | | | | | |
| Leakage current | ≒ 200% of the specified value | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | |

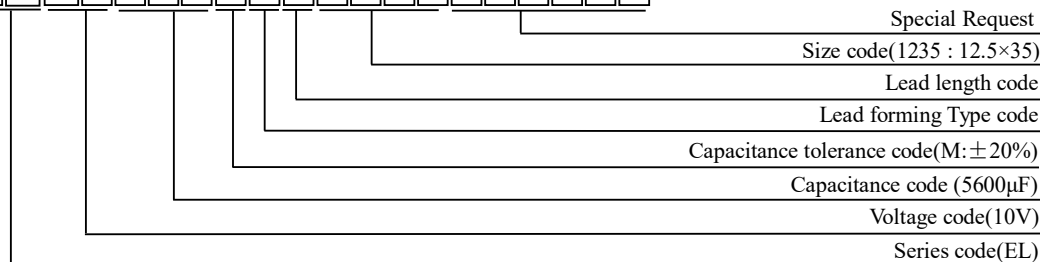
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|--|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | $\leq 35 L + 1.5 \text{Max}$ $\geq 40 L + 2.0 \text{Max}$ | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 10V 5600µF)

E L I A 5 6 2 M N N 1 2 3 5



ALUMINUM ELECTROLYTIC CAPACITORS



EL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------|---------------------------|----------------------------|-------|---|----------------|
| | | | 20°C | -10°C | | |
| 6.3 (0J) | 100 | 5×11 | 1.78 | 2.69 | 175 | EL0J101MNN0511 |
| | 220 | 6.3×11 | 0.88 | 1.76 | 280 | EL0J221MNN6311 |
| | 330 | 6.3×11 | 0.45 | 1.32 | 405 | EL0J331MNN6311 |
| | 470 | 8×11.5 | 0.11 | 0.38 | 560 | EL0J471MNN08B5 |
| | 560 | 8×11.5 | 0.072 | 0.22 | 760 | EL0J561MNN08B5 |
| | 680 | 8×11.5 | 0.068 | 0.21 | 800 | EL0J681MNN08B5 |
| | 820 | 8×15 | 0.056 | 0.17 | 995 | EL0J821MNN0815 |
| | 1000 | 8×15 | 0.053 | 0.16 | 1030 | EL0J102MNN0815 |
| | 1200 | 8×20 | 0.041 | 0.13 | 1250 | EL0J122MNN0820 |
| | 1500 | 10×20 | 0.023 | 0.069 | 1820 | EL0J152MNN1020 |
| | 2200 | 10×25 | 0.022 | 0.066 | 2150 | EL0J222MNN1025 |
| | 2700 | 10×30 | 0.022 | 0.066 | 2200 | EL0J272MNN1030 |
| | 3300 | 12.5×20 | 0.021 | 0.053 | 2360 | EL0J332MNN1220 |
| | 3900 | 12.5×25 | 0.018 | 0.045 | 2770 | EL0J392MNN1225 |
| | 4700 | 12.5×30 | 0.016 | 0.041 | 3290 | EL0J472MNN1230 |
| | 5600 | 12.5×35 | 0.015 | 0.039 | 3400 | EL0J562MNN1235 |
| 6800 | 12.5×40 | 0.016 | 0.043 | 3460 | EL0J682MNN1240 | |
| 10 (1A) | 100 | 5×11 | 1.48 | 2.48 | 250 | EL1A101MNN0511 |
| | 220 | 6.3×11 | 0.58 | 1.66 | 405 | EL1A221MNN6311 |
| | 330 | 8×11.5 | 0.38 | 1.28 | 500 | EL1A331MNN08B5 |
| | 470 | 8×11.5 | 0.072 | 0.22 | 760 | EL1A471MNN08B5 |
| | 560 | 8×15 | 0.069 | 0.2 | 805 | EL1A561MNN0815 |
| | 680 | 8×15 | 0.056 | 0.17 | 995 | EL1A681MNN0815 |
| | 820 | 8×20 | 0.052 | 0.16 | 1050 | EL1A821MNN0820 |
| | 1000 | 8×20 | 0.041 | 0.13 | 1250 | EL1A102MNN0820 |
| | 1200 | 10×20 | 0.023 | 0.069 | 1820 | EL1A122MNN1020 |
| | 1500 | 10×25 | 0.022 | 0.066 | 2150 | EL1A152MNN1025 |
| | 2200 | 12.5×20 | 0.021 | 0.053 | 2360 | EL1A222MNN1220 |
| | 2700 | 12.5×20 | 0.021 | 0.053 | 2395 | EL1A272MNN1220 |
| | 3300 | 12.5×25 | 0.018 | 0.045 | 2770 | EL1A332MNN1225 |
| | 3900 | 12.5×30 | 0.016 | 0.041 | 3290 | EL1A392MNN1230 |
| | 4700 | 12.5×35 | 0.015 | 0.039 | 3400 | EL1A472MNN1235 |
| | 5600 | 12.5×40 | 0.016 | 0.043 | 3460 | EL1A562MNN1240 |
| 6800 | 16×31.5 | 0.017 | 0.04 | 3500 | EL1A682MNN16N3 | |
| 16 (1C) | 100 | 6.3×11 | 1.28 | 2.16 | 290 | EL1C101MNN6311 |
| | 220 | 8×11.5 | 0.46 | 1.56 | 410 | EL1C221MNN08B5 |
| | 330 | 8×11.5 | 0.28 | 1.08 | 760 | EL1C331MNN08B5 |
| | 470 | 8×15 | 0.056 | 0.17 | 995 | EL1C471MNN0815 |
| | 560 | 8×20 | 0.052 | 0.16 | 1050 | EL1C561MNN0820 |
| | 680 | 10×16 | 0.038 | 0.12 | 1430 | EL1C681MNN1016 |
| | 820 | 10×20 | 0.035 | 0.11 | 1520 | EL1C821MNN1020 |
| | 1000 | 10×20 | 0.023 | 0.069 | 1820 | EL1C102MNN1020 |
| | 1200 | 10×25 | 0.022 | 0.066 | 2150 | EL1C122MNN1025 |
| | 1500 | 12.5×20 | 0.021 | 0.053 | 2360 | EL1C152MNN1220 |
| | 2200 | 12.5×25 | 0.018 | 0.045 | 2770 | EL1C222MNN1225 |
| | 2700 | 12.5×30 | 0.016 | 0.041 | 3290 | EL1C272MNN1230 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number | |
|-------------|-------------|---------------------------|----------------------------|-------|---|----------------|----------------|
| | | | 20°C | -10°C | | | |
| 16 (1C) | 3300 | 12.5×35 | 0.015 | 0.039 | 3400 | EL1C332MNN1235 | |
| | 3900 | 16×25 | 0.016 | 0.043 | 3460 | EL1C392MNN1625 | |
| | 4700 | 16×31.5 | 0.016 | 0.043 | 3500 | EL1C472MNN16N3 | |
| | 5600 | 16×35.5 | 0.015 | 0.042 | 3540 | EL1C562MNN16P1 | |
| | 6800 | 16×40 | 0.015 | 0.04 | 3585 | EL1C682MNN1640 | |
| | 25 (1E) | 56 | 6.3×11 | 0.88 | 0.9 | 270 | EL1E560MNN6311 |
| 68 | | 6.3×11 | 0.66 | 0.85 | 290 | EL1E680MNN6311 | |
| 100 | | 6.3×11 | 0.43 | 0.5 | 405 | EL1E101MNN6311 | |
| 150 | | 8×11.5 | 0.12 | 0.4 | 415 | EL1E151MNN08B5 | |
| 220 | | 8×11.5 | 0.072 | 0.22 | 760 | EL1E221MNN08B5 | |
| 330 | | 8×15 | 0.056 | 0.17 | 995 | EL1E331MNN0815 | |
| 470 | | 10×16 | 0.038 | 0.12 | 1430 | EL1E471MNN1016 | |
| 560 | | 10×20 | 0.035 | 0.11 | 1505 | EL1E561MNN1020 | |
| 680 | | 10×20 | 0.023 | 0.069 | 1820 | EL1E681MNN1020 | |
| 820 | | 10×25 | 0.022 | 0.066 | 2150 | EL1E821MNN1025 | |
| 1000 | | 12.5×20 | 0.021 | 0.053 | 2360 | EL1E102MNN1220 | |
| 1200 | | 12.5×25 | 0.021 | 0.053 | 2400 | EL1E122MNN1225 | |
| 1500 | 12.5×25 | 0.018 | 0.045 | 2770 | EL1E152MNN1225 | | |
| 2200 | 12.5×35 | 0.015 | 0.039 | 3400 | EL1E222MNN1235 | | |
| 2700 | 16×25 | 0.016 | 0.043 | 3460 | EL1E272MNN1625 | | |
| 35 (1V) | 56 | 6.3×11 | 0.76 | 1.24 | 405 | EL1V560MNN6311 | |
| | 68 | 8×11.5 | 0.56 | 0.76 | 430 | EL1V680MNN08B5 | |
| | 100 | 8×11.5 | 0.38 | 0.56 | 450 | EL1V101MNN08B5 | |
| | 150 | 8×11.5 | 0.072 | 0.22 | 760 | EL1V151MNN08B5 | |
| | 220 | 8×15 | 0.056 | 0.17 | 995 | EL1V221MNN0815 | |
| | 330 | 10×16 | 0.038 | 0.12 | 1430 | EL1V331MNN1016 | |
| | 470 | 10×20 | 0.023 | 0.069 | 1820 | EL1V471MNN1020 | |
| | 560 | 10×25 | 0.022 | 0.066 | 2150 | EL1V561MNN1025 | |
| | 680 | 12.5×20 | 0.021 | 0.053 | 2360 | EL1V681MNN1220 | |
| | 820 | 12.5×20 | 0.02 | 0.052 | 2410 | EL1V821MNN1220 | |
| | 1000 | 12.5×25 | 0.018 | 0.045 | 2770 | EL1V102MNN1225 | |
| | 1200 | 12.5×30 | 0.016 | 0.041 | 3290 | EL1V122MNN1230 | |
| | 1500 | 12.5×35 | 0.015 | 0.039 | 3400 | EL1V152MNN1235 | |
| | 2200 | 16×31.5 | 0.015 | 0.039 | 3500 | EL1V222MNN16N3 | |
| | 50 (1H) | 56 | 8×11.5 | 0.64 | 1.4 | 385 | EL1H560MNN08B5 |
| | | 68 | 8×11.5 | 0.48 | 0.9 | 405 | EL1H680MNN08B5 |
| 100 | | 8×11.5 | 0.22 | 0.63 | 724 | EL1H101MNN08B5 | |
| 150 | | 8×15 | 0.061 | 0.18 | 979 | EL1H151MNN0815 | |
| 220 | | 10×16 | 0.042 | 0.12 | 1370 | EL1H221MNN1016 | |
| 330 | | 10×25 | 0.028 | 0.085 | 1870 | EL1H331MNN1025 | |
| 470 | | 12.5×20 | 0.027 | 0.068 | 2050 | EL1H471MNN1220 | |
| 560 | | 12.5×25 | 0.023 | 0.059 | 2410 | EL1H561MNN1225 | |
| 680 | | 12.5×30 | 0.021 | 0.052 | 2860 | EL1H681MNN1230 | |
| 820 | | 12.5×35 | 0.019 | 0.051 | 2960 | EL1H821MNN1235 | |
| 1000 | | 16×25 | 0.021 | 0.056 | 3010 | EL1H102MNN1625 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 6.3 ~ 16 | 0.60 | 0.75 | 0.90 | 0.98 | 1.00 |
| 25 ~ 50 | 0.50 | 0.62 | 0.85 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EB Series

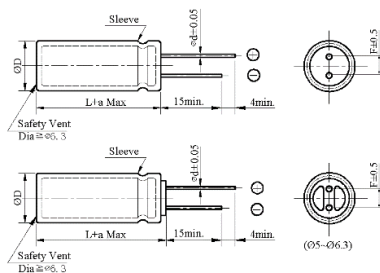
- Extremely low impedance, downsize and high ripple current
- Suitable for main board



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | |
|--|---|-----------------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|--------|-------|-----------------|-------------------|------|-------|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 16Vdc | | | | | | | | | | | | |
| Capacitance Range | 82 ~ 3,300 µF | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.14</td> <td>0.12</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | tanδ(Max) | 0.15 | 0.14 | 0.12 | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | | | | | | | | | |
| tanδ(Max) | 0.15 | 0.14 | 0.12 | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | |
| Leakage Current | $I=0.03CV$ or $3\mu A$ whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | | | | |
| | Rated voltage (V) | 6.3 | 10 | 16 | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 1,000~2,000 hours at 105°C. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> <td>≦ Φ6.3</td> <td>1,000</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> <td>≧ Φ8</td> <td>2,000</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 1,000 | Leakage current | ≦ specified value | ≧ Φ8 | 2,000 |
| | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 1,000 | | | | | | | | | | |
| Leakage current | ≦ specified value | ≧ Φ8 | 2,000 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | |
| | Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

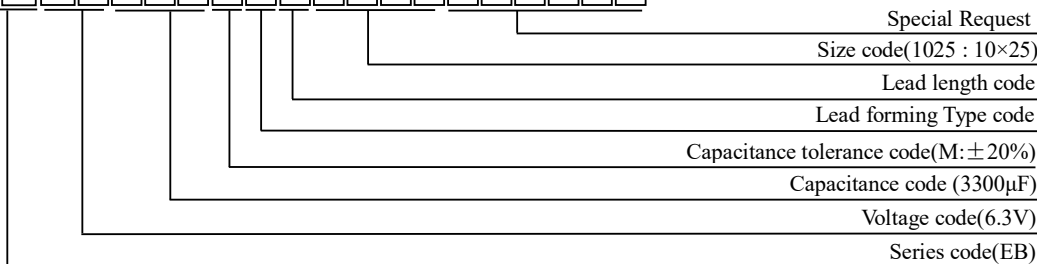
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 |
|----|--------------|-----|-----|-----|------|
| ΦD | ΦD + 0.5 Max | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 |
| a | L + 1.5 Max | | | | |

◆ PART NUMBER SYSTEM(Example : 6.3V 3300µF)

E B 0 J 3 3 2 M N N 1 0 2 5



ALUMINUM ELECTROLYTIC CAPACITORS



EB Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Impedance (Ω max/20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|--------------------------------|--|----------------|
| 6.3 (0J) | 82 | 5×11 | 1.85 | 165 | EB0J820MNN0511 |
| | 100 | 5×11 | 1.65 | 180 | EB0J101MNN0511 |
| | 150 | 6.3×11 | 1.32 | 215 | EB0J151MNN6311 |
| | 220 | 6.3×11 | 0.68 | 295 | EB0J221MNN6311 |
| | 330 | 6.3×11 | 0.32 | 425 | EB0J331MNN6311 |
| | 470 | 8×11.5 | 0.078 | 605 | EB0J471MNN08B5 |
| | 680 | 8×11.5 | 0.052 | 805 | EB0J681MNN08B5 |
| | 820 | 8×15 | 0.036 | 1140 | EB0J821MNN0815 |
| | 1000 | 8×15 | 0.032 | 1210 | EB0J102MNN0815 |
| | 1200 | 8×15 | 0.028 | 1490 | EB0J122MNN0815 |
| | 1500 | 8×20 | 0.016 | 1870 | EB0J152MNN0820 |
| | 1500 | 10×12.5 | 0.026 | 1540 | EB0J152MNN10C5 |
| | 1800 | 8×20 | 0.021 | 1870 | EB0J182MNN0820 |
| | 1800 | 10×16 | 0.019 | 2000 | EB0J182MNN1016 |
| | 2200 | 10×20 | 0.013 | 2550 | EB0J222MNN1020 |
| 3300 | 10×25 | 0.012 | 2800 | EB0J332MNN1025 | |
| 10 (1A) | 82 | 5×11 | 1.35 | 200 | EB1A820MNN0511 |
| | 100 | 5×11 | 1.18 | 260 | EB1A101MNN0511 |
| | 150 | 6.3×11 | 0.96 | 340 | EB1A151MNN6311 |
| | 220 | 6.3×11 | 0.48 | 425 | EB1A221MNN6311 |
| | 330 | 8×11.5 | 0.25 | 525 | EB1A331MNN08B5 |
| | 470 | 8×11.5 | 0.052 | 805 | EB1A471MNN08B5 |
| | 680 | 8×11.5 | 0.036 | 1140 | EB1A681MNN08B5 |
| | 820 | 8×15 | 0.033 | 1200 | EB1A821MNN0815 |
| | 1000 | 8×15 | 0.028 | 1490 | EB1A102MNN0815 |
| | 1000 | 10×12.5 | 0.026 | 1540 | EB1A102MNN10C5 |
| | 1200 | 10×16 | 0.024 | 1605 | EB1A122MNN1016 |
| | 1500 | 8×20 | 0.019 | 1870 | EB1A152MNN0820 |
| | 1500 | 10×16 | 0.019 | 2000 | EB1A152MNN1016 |
| | 1800 | 10×20 | 0.013 | 2550 | EB1A182MNN1020 |
| | 2200 | 10×25 | 0.012 | 2800 | EB1A222MNN1025 |
| 3300 | 10×25 | 0.012 | 2950 | EB1A332MNN1025 | |
| 16 (1C) | 82 | 6.3×11 | 1.2 | 250 | EB1C820MNN6311 |
| | 100 | 6.3×11 | 0.98 | 300 | EB1C101MNN6311 |
| | 150 | 6.3×11 | 0.88 | 350 | EB1C151MNN6311 |
| | 220 | 8×11.5 | 0.42 | 430 | EB1C221MNN08B5 |
| | 330 | 8×11.5 | 0.18 | 795 | EB1C331MNN08B5 |
| | 470 | 8×11.5 | 0.036 | 1140 | EB1C471MNN08B5 |
| | 680 | 8×15 | 0.028 | 1490 | EB1C681MNN0815 |
| | 680 | 10×12.5 | 0.026 | 1540 | EB1C681MNN10C5 |
| | 820 | 10×16 | 0.024 | 1605 | EB1C821MNN1016 |
| | 1000 | 8×20 | 0.019 | 1870 | EB1C102MNN0820 |
| | 1000 | 10×16 | 0.019 | 2000 | EB1C102MNN1016 |
| | 1200 | 10×20 | 0.017 | 2110 | EB1C122MNN1020 |
| | 1500 | 10×20 | 0.013 | 2550 | EB1C152MNN1020 |
| | 1800 | 10×25 | 0.012 | 2800 | EB1C182MNN1025 |
| | 2200 | 10×25 | 0.012 | 2950 | EB1C222MNN1025 |
| 3300 | 12.5×25 | 0.012 | 3050 | EB1C332MNN1225 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|---------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 6.3 ~16 | 0.60 | 0.75 | 0.90 | 0.98 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EK Series

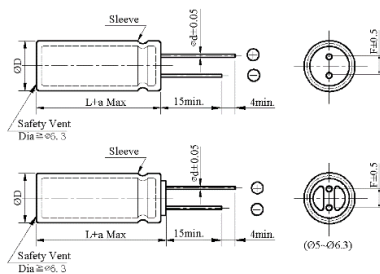
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|---------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|------------------------------------|-------------------|--------------------|-----------------|------------------------|----------|-------|------|------|-----------|-------|--|--|--------------------|-------|
| Category Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 50Vdc | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.10 ~ 6,800 μ F | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | \pm 20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | tan δ (Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | |
| tan δ (Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000 μ F, add 0.02 to the value above for each 1,000 μ F increase. | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.03CV or 3 μ A whichever is greater I : Leakage current (μ A) C : Rated capacitance (μ F) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 | 3 | | | | | | |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 5 | 4 | 3 | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000~5,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> <td>\leq Φ6.3</td> <td>2,000</td> </tr> <tr> <td>Leakage current</td> <td>\leq specified value</td> <td>Φ8</td> <td>3,000</td> </tr> <tr> <td></td> <td></td> <td>Φ10</td> <td>4,000</td> </tr> <tr> <td></td> <td></td> <td>\geq Φ12.5</td> <td>5,000</td> </tr> </table> | Capacitance change | \leq \pm 25% of the initial value | Size | Life time (hours) | Dissipation factor(tan δ) | \leq 200% of the specified value | \leq Φ 6.3 | 2,000 | Leakage current | \leq specified value | Φ 8 | 3,000 | | | Φ 10 | 4,000 | | | \geq Φ 12.5 | 5,000 |
| Capacitance change | \leq \pm 25% of the initial value | Size | Life time (hours) | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tan δ) | \leq 200% of the specified value | \leq Φ 6.3 | 2,000 | | | | | | | | | | | | | | | | | | |
| Leakage current | \leq specified value | Φ 8 | 3,000 | | | | | | | | | | | | | | | | | | |
| | | Φ 10 | 4,000 | | | | | | | | | | | | | | | | | | |
| | | \geq Φ 12.5 | 5,000 | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq 200% of the specified value</td> </tr> </table> | Capacitance change | \leq \pm 25% of the initial value | Dissipation factor(tan δ) | \leq 200% of the specified value | Leakage current | \leq 200% of the specified value | | | | | | | | | | | | | | |
| Capacitance change | \leq \pm 25% of the initial value | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tan δ) | \leq 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| Leakage current | \leq 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | | | |

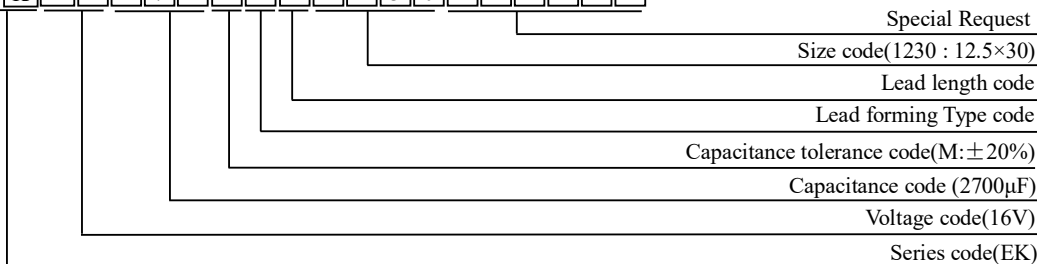
◆ DIMENSIONS (mm)



| Φ D | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
|----------|--------------------|-----|-----|-----|---|-------------|
| Φ D | Φ D + 0.5 Max | | | | | |
| Φ d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |
| a | L + 1.5 Max | | | | \leq 35 L+1.5Max \geq 40 L+2.0 Max | L + 1.5 Max |

◆ PART NUMBER SYSTEM(Example : 16V 2700 μ F)

E K I C 2 7 2 M N N 1 2 3 0



ALUMINUM ELECTROLYTIC CAPACITORS



EK Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP.D. (Ω max/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|------------------------------|--|----------------|
| 6.3 (0J) | 22 | 6.3×11 | 0.15 | 150 | EK0J220MNN6311 |
| | 150 | 5×11 | 0.3 | 250 | EK0J151MNN0511 |
| | 220 | 5×11 | 0.3 | 350 | EK0J221MNN0511 |
| | 330 | 6.3×11 | 0.13 | 405 | EK0J331MNN6311 |
| | 560 | 8×11.5 | 0.072 | 760 | EK0J561MNN08B5 |
| | 820 | 8×15 | 0.056 | 995 | EK0J821MNN0815 |
| | 1000 | 10×12.5 | 0.053 | 1030 | EK0J102MNN10C5 |
| | 1200 | 8×20 | 0.041 | 1250 | EK0J122MNN0820 |
| | 1200 | 10×16 | 0.038 | 1430 | EK0J122MNN1016 |
| | 1500 | 10×20 | 0.023 | 1820 | EK0J152MNN1020 |
| | 2200 | 10×25 | 0.022 | 2150 | EK0J222MNN1025 |
| | 2700 | 12.5×20 | 0.022 | 2200 | EK0J272MNN1220 |
| | 3300 | 12.5×20 | 0.021 | 2360 | EK0J332MNN1220 |
| | 3900 | 12.5×25 | 0.018 | 2770 | EK0J392MNN1225 |
| | 4700 | 12.5×30 | 0.016 | 3290 | EK0J472MNN1230 |
| | 5600 | 12.5×35 | 0.015 | 3400 | EK0J562MNN1235 |
| 5600 | 16×20 | 0.018 | 3140 | EK0J562MNN1620 | |
| 6800 | 16×25 | 0.016 | 3460 | EK0J682MNN1625 | |
| 10 (1A) | 22 | 5×11 | 0.5 | 80 | EK1A220MNN0511 |
| | 100 | 5×11 | 0.3 | 250 | EK1A101MNN0511 |
| | 150 | 5×11 | 0.38 | 300 | EK1A151MNN0511 |
| | 220 | 6.3×11 | 0.13 | 405 | EK1A221MNN6311 |
| | 220 | 8×11.5 | 0.072 | 520 | EK1A221MNN08B5 |
| | 470 | 8×11.5 | 0.072 | 760 | EK1A471MNN08B5 |
| | 470 | 10×12.5 | 0.053 | 1030 | EK1A471MNN10C5 |
| | 680 | 8×15 | 0.056 | 995 | EK1A681MNN0815 |
| | 680 | 10×12.5 | 0.053 | 1030 | EK1A681MNN10C5 |
| | 1000 | 8×20 | 0.041 | 1250 | EK1A102MNN0820 |
| | 1000 | 10×12.5 | 0.038 | 1410 | EK1A102MNN10C5 |
| | 1000 | 10×16 | 0.038 | 1430 | EK1A102MNN1016 |
| | 1200 | 10×20 | 0.023 | 1820 | EK1A122MNN1020 |
| | 1500 | 10×25 | 0.022 | 2150 | EK1A152MNN1025 |
| | 1500 | 12.5×20 | 0.021 | 2150 | EK1A152MNN1220 |
| | 2200 | 10×30 | 0.021 | 2500 | EK1A222MNN1030 |
| 3300 | 12.5×25 | 0.018 | 2770 | EK1A332MNN1225 | |
| 3900 | 12.5×30 | 0.016 | 3290 | EK1A392MNN1230 | |
| 3900 | 16×20 | 0.018 | 3140 | EK1A392MNN1620 | |
| 4700 | 12.5×35 | 0.015 | 3400 | EK1A472MNN1235 | |
| 5600 | 16×25 | 0.016 | 3460 | EK1A562MNN1625 | |
| 16 (1C) | 2.2 | 5×11 | 4.5 | 40 | EK1C2R2MNN0511 |
| | 4.7 | 5×11 | 4 | 80 | EK1C4R7MNN0511 |
| | 10 | 5×11 | 1.3 | 90 | EK1C100MNN0511 |
| | 22 | 5×11 | 0.8 | 150 | EK1C220MNN0511 |
| | 47 | 5×11 | 0.35 | 100 | EK1C470MNN0511 |
| | 56 | 5×11 | 0.3 | 250 | EK1C560MNN0511 |
| | 100 | 5×11 | 0.24 | 320 | EK1C101MNN0511 |
| | 100 | 6.3×11 | 0.15 | 350 | EK1C101MNN6311 |
| | 120 | 6.3×11 | 0.13 | 405 | EK1C121MNN6311 |
| | 220 | 6.3×11 | 0.11 | 680 | EK1C221MNN6311 |
| | 220 | 8×11.5 | 0.09 | 720 | EK1C221MNN08B5 |
| | 330 | 8×11.5 | 0.072 | 760 | EK1C331MNN08B5 |
| | 470 | 8×11.5 | 0.056 | 995 | EK1C471MNN08B5 |
| | 470 | 8×15 | 0.056 | 995 | EK1C471MNN0815 |
| | 470 | 10×12.5 | 0.053 | 1030 | EK1C471MNN10C5 |
| | 470 | 10×16 | 0.05 | 1080 | EK1C471MNN1016 |
| 680 | 8×15 | 0.045 | 1200 | EK1C681MNN0815 | |
| 680 | 8×20 | 0.041 | 1250 | EK1C681MNN0820 | |
| 680 | 10×16 | 0.038 | 1430 | EK1C681MNN1016 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP.D. (Ω max/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number | |
|----------|----------|---------------------|------------------------------|--|----------------|----------------|
| 16 (1C) | 1000 | 10×20 | 0.023 | 1820 | EK1C102MNN1020 | |
| | 1200 | 10×25 | 0.022 | 2150 | EK1C122MNN1025 | |
| | 1500 | 12.5×20 | 0.021 | 2360 | EK1C152MNN1220 | |
| | 2200 | 12.5×25 | 0.018 | 2770 | EK1C222MNN1225 | |
| | 2700 | 12.5×30 | 0.016 | 3290 | EK1C272MNN1230 | |
| | 2700 | 16×20 | 0.018 | 3140 | EK1C272MNN1620 | |
| | 3300 | 12.5×35 | 0.015 | 3400 | EK1C332MNN1235 | |
| | 3900 | 16×25 | 0.016 | 3460 | EK1C392MNN1625 | |
| | 25 (1E) | 4.7 | 5×11 | 1.2 | 100 | EK1E4R7MNN0511 |
| | | 10 | 5×11 | 1.2 | 100 | EK1E100MNN0511 |
| 22 | | 5×11 | 1 | 120 | EK1E220MNN0511 | |
| 47 | | 5×11 | 0.3 | 250 | EK1E470MNN0511 | |
| 100 | | 6.3×11 | 0.13 | 405 | EK1E101MNN6311 | |
| 220 | | 8×11.5 | 0.072 | 840 | EK1E221MNN08B5 | |
| 330 | | 8×15 | 0.056 | 995 | EK1E331MNN0815 | |
| 330 | | 10×12.5 | 0.053 | 1030 | EK1E331MNN10C5 | |
| 470 | | 8×20 | 0.041 | 1250 | EK1E471MNN0820 | |
| 470 | | 10×12.5 | 0.038 | 1300 | EK1E471MNN10C5 | |
| 470 | | 10×16 | 0.038 | 1430 | EK1E471MNN1016 | |
| 470 | | 12.5×16 | 0.035 | 1480 | EK1E471MNN1216 | |
| 680 | | 10×16 | 0.028 | 1750 | EK1E681MNN1016 | |
| 680 | | 10×20 | 0.023 | 1820 | EK1E681MNN1020 | |
| 820 | | 10×25 | 0.022 | 2150 | EK1E821MNN1025 | |
| 1000 | | 12.5×16 | 0.028 | 2250 | EK1E102MNN1216 | |
| 1000 | 12.5×20 | 0.021 | 2360 | EK1E102MNN1220 | | |
| 1500 | 12.5×25 | 0.018 | 2770 | EK1E152MNN1225 | | |
| 1800 | 12.5×30 | 0.016 | 3290 | EK1E182MNN1230 | | |
| 1800 | 16×20 | 0.018 | 3140 | EK1E182MNN1620 | | |
| 2200 | 12.5×35 | 0.015 | 3400 | EK1E222MNN1235 | | |
| 2700 | 16×25 | 0.016 | 3460 | EK1E272MNN1625 | | |
| 35 (1V) | 10 | 5×11 | 0.8 | 170 | EK1V100MNN0511 | |
| | 33 | 5×11 | 0.3 | 250 | EK1V330MNN0511 | |
| | 56 | 6.3×11 | 0.13 | 405 | EK1V560MNN6311 | |
| | 150 | 8×11.5 | 0.072 | 760 | EK1V151MNN08B5 | |
| | 220 | 8×15 | 0.056 | 995 | EK1V221MNN0815 | |
| | 220 | 10×12.5 | 0.053 | 1030 | EK1V221MNN10C5 | |
| | 270 | 8×20 | 0.041 | 1250 | EK1V271MNN0820 | |
| | 330 | 10×16 | 0.038 | 1430 | EK1V331MNN1016 | |
| | 470 | 10×16 | 0.03 | 1620 | EK1V471MNN1016 | |
| | 470 | 10×20 | 0.023 | 1820 | EK1V471MNN1020 | |
| | 470 | 12.5×16 | 0.033 | 1750 | EK1V471MNN1216 | |
| | 560 | 10×25 | 0.022 | 2150 | EK1V561MNN1025 | |
| | 680 | 12.5×20 | 0.021 | 2360 | EK1V681MNN1220 | |
| | 1000 | 12.5×20 | 0.05 | 2610 | EK1V102MNN1220 | |
| | 1000 | 12.5×25 | 0.018 | 2770 | EK1V102MNN1225 | |
| | 1200 | 12.5×30 | 0.016 | 3290 | EK1V122MNN1230 | |
| 1200 | 16×20 | 0.018 | 3140 | EK1V122MNN1620 | | |
| 1500 | 12.5×35 | 0.015 | 3400 | EK1V152MNN1235 | | |
| 1800 | 16×25 | 0.016 | 3460 | EK1V182MNN1625 | | |
| 50 (1H) | 0.1 | 5×11 | 20 | 38 | EK1HR10MNN0511 | |
| | 0.22 | 5×11 | 15 | 40 | EK1HR22MNN0511 | |
| | 0.33 | 5×11 | 12 | 45 | EK1HR33MNN0511 | |
| | 0.47 | 5×11 | 4 | 50 | EK1HR47MNN0511 | |
| | 1 | 5×11 | 3.6 | 100 | EK1H010MNN0511 | |
| | 2.2 | 5×11 | 3.6 | 140 | EK1H2R2MNN0511 | |
| | 4.7 | 5×11 | 3.6 | 140 | EK1H4R7MNN0511 | |
| | 10 | 5×11 | 0.9 | 180 | EK1H100MNN0511 | |
| | 22 | 5×11 | 0.75 | 238 | EK1H220MNN0511 | |

ALUMINUM ELECTROLYTIC CAPACITORS



EK Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|----------------|
| 50 (1H) | 47 | 6.3×11 | 0.34 | 285 | EK1H470MNN6311 |
| | 56 | 6.3×11 | 0.14 | 385 | EK1H560MNN6311 |
| | 100 | 8×11.5 | 0.074 | 724 | EK1H101MNN08B5 |
| | 120 | 8×15 | 0.061 | 950 | EK1H121MNN0815 |
| | 150 | 10×12.5 | 0.061 | 979 | EK1H151MNN10C5 |
| | 180 | 8×20 | 0.046 | 1190 | EK1H181MNN0820 |
| | 220 | 10×16 | 0.042 | 1370 | EK1H221MNN1016 |
| 270 | 10×20 | 0.03 | 1580 | EK1H271MNN1020 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/ 20°C, 100kHz) | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|----------|----------|---------------------|----------------------------|--|----------------|
| 50 (1H) | 330 | 10×25 | 0.028 | 1870 | EK1H331MNN1025 |
| | 470 | 12.5×20 | 0.027 | 2050 | EK1H471MNN1220 |
| | 560 | 12.5×25 | 0.023 | 2410 | EK1H561MNN1225 |
| | 680 | 12.5×20 | 0.028 | 2700 | EK1H681MNN1220 |
| | 680 | 12.5×30 | 0.021 | 2860 | EK1H681MNN1230 |
| | 820 | 12.5×35 | 0.019 | 2960 | EK1H821MNN1235 |
| | 820 | 16×20 | 0.023 | 2730 | EK1H821MNN1620 |
| | 1000 | 16×25 | 0.021 | 3010 | EK1H102MNN1625 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

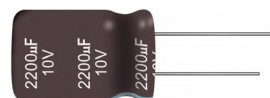
| Vdc | Cap(μF) | Frequency (Hz) | | | |
|---------|-------------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 6.3 ~50 | 0.10 ~ 68 | 0.30 | 0.55 | 0.80 | 1.00 |
| | 82 ~ 220 | 0.40 | 0.60 | 0.85 | 1.00 |
| | 330 ~ 820 | 0.50 | 0.65 | 0.90 | 1.00 |
| | 1000 ~ 6800 | 0.60 | 0.70 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EG Series

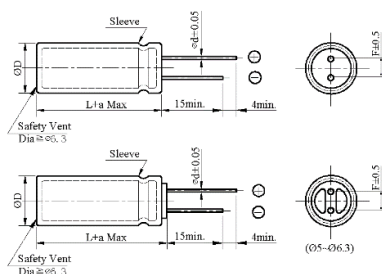
- Low impedance and high ripple current
- Load life 3,000 to 7,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | |
|--|---|-----------------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|--------|-------|-------------------|-------------------|------|-------|------|------|------|-------|--|--|---------|-------|
| Category Temperature Range | -55~ +105°C | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 63Vdc | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 10 ~ 10,000µF | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | | | | | | | | | | | | |
| tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | $I = 0.01CV$ or $3\mu A$ whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | | | |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | | | | | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000~7,000 hours at 105°C. | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> <td>≦ Φ6.3</td> <td>3,000</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> <td>Φ8</td> <td>4,000</td> </tr> <tr> <td></td> <td></td> <td>Φ10</td> <td>5,000</td> </tr> <tr> <td></td> <td></td> <td>≧ Φ12.5</td> <td>7,000</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 3,000 | Leakage current | ≦ specified value | Φ8 | 4,000 | | | Φ10 | 5,000 | | | ≧ Φ12.5 | 7,000 |
| | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 3,000 | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | Φ8 | 4,000 | | | | | | | | | | | | | | | | | | |
| | | Φ10 | 5,000 | | | | | | | | | | | | | | | | | | |
| | | ≧ Φ12.5 | 7,000 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | |
| | Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | | | |

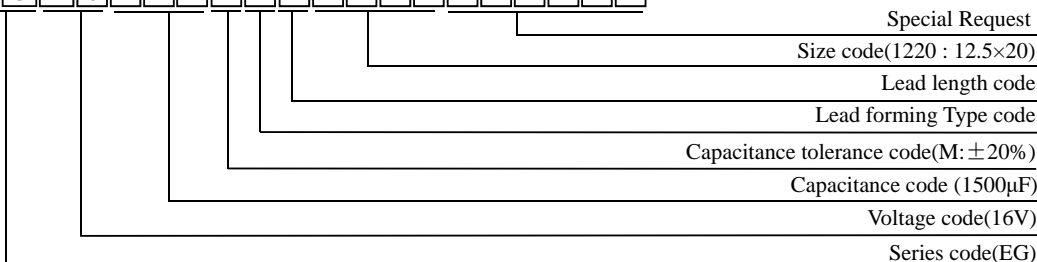
DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|--|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | $\leq 35 L + 1.5 \text{ Max}$ $\geq 40 L + 2.0 \text{ Max}$ | L + 1.5 Max | |

PART NUMBER SYSTEM(Example : 16V 1500µF)

EGIC152MNN1220



ALUMINUM ELECTROLYTIC CAPACITORS



EG Series

STANDARD RATINGS

| WV (V _{dc}) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|--------------------------|-------------------|---------------------------------|-------------------------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 6.3 (0J) | 100 | 5×11 | 0.65 | 3.6 | 155 | EG0J101MNN0511 |
| | 220 | 6.3×11 | 0.4 | 1.6 | 255 | EG0J221MNN6311 |
| | 330 | 6.3×11 | 0.22 | 0.87 | 340 | EG0J331MNN6311 |
| | 470 | 8×11.5 | 0.18 | 0.8 | 400 | EG0J471MNN08B5 |
| | 560 | 8×11.5 | 0.17 | 0.75 | 460 | EG0J561MNN08B5 |
| | 680 | 8×11.5 | 0.13 | 0.52 | 640 | EG0J681MNN08B5 |
| | 820 | 8×15 | 0.095 | 0.48 | 730 | EG0J821MNN0815 |
| | 1000 | 8×15 | 0.087 | 0.35 | 840 | EG0J102MNN0815 |
| | 1200 | 8×20 | 0.069 | 0.27 | 1050 | EG0J122MNN0820 |
| | 1500 | 10×20 | 0.046 | 0.18 | 1400 | EG0J152MNN1020 |
| | 2200 | 10×20 | 0.045 | 0.18 | 1440 | EG0J222MNN1020 |
| | 2700 | 10×30 | 0.035 | 0.12 | 1910 | EG0J272MNN1030 |
| | 3300 | 12.5×20 | 0.03 | 0.12 | 1950 | EG0J332MNN1220 |
| | 3900 | 12.5×25 | 0.027 | 0.089 | 2230 | EG0J392MNN1225 |
| | 4700 | 12.5×30 | 0.024 | 0.078 | 2650 | EG0J472MNN1230 |
| | 5600 | 12.5×35 | 0.02 | 0.065 | 2880 | EG0J562MNN1235W |
| | 6800 | 12.5×40 | 0.017 | 0.056 | 3350 | EG0J682MNN1240W |
| | 8200 | 16×31.5 | 0.017 | 0.05 | 3450 | EG0J822MNN16N3 |
| | 10000 | 16×35.5 | 0.015 | 0.044 | 3610 | EG0J103MNN16P1 |
| | 10 (1A) | 100 | 5×11 | 0.58 | 2.3 | 210 |
| 220 | | 6.3×11 | 0.22 | 0.87 | 340 | EG1A221MNN6311 |
| 330 | | 8×11.5 | 0.21 | 0.85 | 410 | EG1A331MNN08B5 |
| 470 | | 8×11.5 | 0.13 | 0.52 | 640 | EG1A471MNN08B5 |
| 560 | | 8×15 | 0.12 | 0.48 | 675 | EG1A561MNN0815 |
| 680 | | 8×15 | 0.087 | 0.35 | 840 | EG1A681MNN0815 |
| 820 | | 8×20 | 0.085 | 0.33 | 875 | EG1A821MNN0820 |
| 1000 | | 10×16 | 0.06 | 0.24 | 1210 | EG1A102MNN1016 |
| 1200 | | 10×20 | 0.046 | 0.18 | 1400 | EG1A122MNN1020 |
| 1500 | | 10×20 | 0.045 | 0.18 | 1440 | EG1A152MNN1020 |
| 2200 | | 12.5×20 | 0.035 | 0.12 | 1900 | EG1A222MNN1220 |
| 2700 | | 12.5×25 | 0.034 | 0.11 | 1945 | EG1A272MNN1225 |
| 3300 | | 12.5×25 | 0.027 | 0.089 | 2230 | EG1A332MNN1225 |
| 3900 | | 12.5×30 | 0.024 | 0.078 | 2650 | EG1A392MNN1230 |
| 4700 | | 12.5×35 | 0.02 | 0.065 | 2880 | EG1A472MNN1235W |
| 5600 | | 12.5×40 | 0.017 | 0.056 | 3350 | EG1A562MNN1240W |
| 6800 | | 16×31.5 | 0.017 | 0.05 | 3450 | EG1A682MNN16N3 |
| 8200 | | 16×35.5 | 0.015 | 0.044 | 3610 | EG1A822MNN16P1 |
| 10000 | | 16×40 | 0.013 | 0.038 | 4080 | EG1A103MNN1640 |
| 16 (1C) | | 47 | 5×11 | 0.8 | 2.8 | 120 |
| | 68 | 6.3×11 | 0.56 | 2.2 | 220 | EG1C680MNN6311 |
| | 100 | 6.3×11 | 0.52 | 1.5 | 255 | EG1C101MNN6311 |
| | 150 | 8×11.5 | 0.21 | 0.86 | 350 | EG1C151MNN08B5 |
| | 220 | 8×11.5 | 0.2 | 0.79 | 405 | EG1C221MNN08B5 |
| | 330 | 8×11.5 | 0.13 | 0.52 | 640 | EG1C331MNN08B5 |
| | 470 | 8×15 | 0.087 | 0.35 | 840 | EG1C471MNN0815 |
| | 560 | 8×20 | 0.085 | 0.34 | 865 | EG1C561MNN0820 |
| | 680 | 8×20 | 0.069 | 0.27 | 1050 | EG1C681MNN0820 |
| | 820 | 10×20 | 0.058 | 0.23 | 1220 | EG1C821MNN1020 |
| | 1000 | 10×20 | 0.046 | 0.18 | 1400 | EG1C102MNN1020 |
| | 1200 | 10×25 | 0.042 | 0.17 | 1650 | EG1C122MNN1025 |
| | 1500 | 12.5×20 | 0.035 | 0.12 | 1900 | EG1C152MNN1220 |
| | 2200 | 12.5×25 | 0.027 | 0.089 | 2230 | EG1C222MNN1225 |
| | 2700 | 12.5×30 | 0.024 | 0.078 | 2650 | EG1C272MNN1230 |
| | 3300 | 12.5×35 | 0.02 | 0.065 | 2880 | EG1C332MNN1235W |
| | 3900 | 12.5×40 | 0.017 | 0.056 | 3350 | EG1C392MNN1240W |
| | 4700 | 16×31.5 | 0.017 | 0.05 | 3450 | EG1C472MNN16N3 |
| | 5600 | 16×35.5 | 0.015 | 0.044 | 3610 | EG1C562MNN16P1 |
| | 6800 | 16×40 | 0.013 | 0.038 | 4080 | EG1C682MNN1640 |

| WV (V _{dc}) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number | |
|--------------------------|-------------------|---------------------------------|-------------------------------------|-------|---|-----------------|----------------|
| | | | 20°C | -10°C | | | |
| 25 (1E) | 47 | 5×11 | 0.58 | 2.3 | 210 | EG1E470MNN0511 | |
| | 68 | 6.3×11 | 0.36 | 1.8 | 230 | EG1E680MNN6311 | |
| | 100 | 6.3×11 | 0.22 | 0.87 | 340 | EG1E101MNN6311 | |
| | 150 | 8×11.5 | 0.2 | 0.69 | 405 | EG1E151MNN08B5 | |
| | 220 | 8×11.5 | 0.13 | 0.52 | 640 | EG1E221MNN08B5 | |
| | 330 | 8×15 | 0.087 | 0.35 | 840 | EG1E331MNN0815 | |
| | 470 | 10×16 | 0.06 | 0.24 | 1210 | EG1E471MNN1016 | |
| | 560 | 10×20 | 0.058 | 0.23 | 1220 | EG1E561MNN1020 | |
| | 680 | 10×20 | 0.046 | 0.18 | 1400 | EG1E681MNN1020 | |
| | 820 | 10×25 | 0.042 | 0.17 | 1650 | EG1E821MNN1025 | |
| | 1000 | 12.5×20 | 0.035 | 0.12 | 1900 | EG1E102MNN1220 | |
| | 1200 | 12.5×25 | 0.034 | 0.11 | 1936 | EG1E122MNN1225 | |
| | 1500 | 12.5×25 | 0.027 | 0.089 | 2230 | EG1E152MNN1225 | |
| | 2200 | 12.5×35 | 0.02 | 0.065 | 2880 | EG1E222MNN1235W | |
| | 2700 | 12.5×40 | 0.017 | 0.056 | 3350 | EG1E272MNN1240W | |
| | 3300 | 16×31.5 | 0.017 | 0.05 | 3450 | EG1E332MNN16N3 | |
| | 3900 | 16×35.5 | 0.015 | 0.044 | 3610 | EG1E392MNN16P1 | |
| | 4700 | 16×40 | 0.013 | 0.038 | 4080 | EG1E472MNN1640 | |
| | 35 (1V) | 10 | 5×11 | 1.5 | 3.8 | 100 | EG1V100MNN0511 |
| | | 22 | 5×11 | 0.75 | 3.2 | 160 | EG1V220MNN0511 |
| 33 | | 5×11 | 0.58 | 2.3 | 210 | EG1V330MNN0511 | |
| 47 | | 6.3×11 | 0.49 | 1.8 | 215 | EG1V470MNN6311 | |
| 68 | | 8×11.5 | 0.21 | 0.87 | 350 | EG1V680MNN08B5 | |
| 100 | | 8×11.5 | 0.2 | 0.85 | 405 | EG1V101MNN08B5 | |
| 150 | | 8×11.5 | 0.13 | 0.52 | 640 | EG1V151MNN08B5 | |
| 220 | | 8×15 | 0.087 | 0.35 | 840 | EG1V221MNN0815 | |
| 330 | | 10×16 | 0.06 | 0.24 | 1210 | EG1V331MNN1016 | |
| 470 | | 10×20 | 0.046 | 0.18 | 1400 | EG1V471MNN1020 | |
| 560 | | 10×25 | 0.042 | 0.17 | 1650 | EG1V561MNN1025 | |
| 680 | | 10×30 | 0.031 | 0.12 | 1910 | EG1V681MNN1030 | |
| 820 | | 12.5×25 | 0.03 | 0.11 | 1938 | EG1V821MNN1225 | |
| 1000 | | 12.5×25 | 0.027 | 0.089 | 2230 | EG1V102MNN1225 | |
| 1200 | | 12.5×30 | 0.024 | 0.078 | 2650 | EG1V122MNN1230 | |
| 1500 | | 12.5×35 | 0.02 | 0.065 | 2880 | EG1V152MNN1235W | |
| 2200 | | 16×31.5 | 0.017 | 0.05 | 3450 | EG1V222MNN16N3 | |
| 2700 | | 16×35.5 | 0.015 | 0.044 | 3610 | EG1V272MNN16P1 | |
| 3300 | | 16×40 | 0.013 | 0.038 | 4080 | EG1V332MNN1640 | |
| 3900 | | 18×40 | 0.012 | 0.032 | 4280 | EG1V392MNN1840 | |
| 50 (1H) | 10 | 5×11 | 1.45 | 3.5 | 105 | EG1H100MNN0511 | |
| | 22 | 5×11 | 0.7 | 2.8 | 180 | EG1H220MNN0511 | |
| | 33 | 6.3×11 | 0.48 | 1.7 | 215 | EG1H330MNN6311 | |
| | 47 | 6.3×11 | 0.4 | 1.6 | 220 | EG1H470MNN6311 | |
| | 68 | 8×11.5 | 0.28 | 1.1 | 355 | EG1H680MNN08B5 | |
| | 100 | 8×11.5 | 0.17 | 0.68 | 555 | EG1H101MNN08B5 | |
| | 150 | 8×15 | 0.12 | 0.48 | 730 | EG1H151MNN0815 | |
| | 220 | 10×16 | 0.084 | 0.34 | 1050 | EG1H221MNN1016 | |
| | 330 | 10×25 | 0.055 | 0.22 | 1440 | EG1H331MNN1025 | |
| | 470 | 12.5×20 | 0.045 | 0.15 | 1660 | EG1H471MNN1220 | |
| | 560 | 12.5×25 | 0.034 | 0.11 | 1950 | EG1H561MNN1225 | |
| | 680 | 12.5×30 | 0.03 | 0.1 | 2310 | EG1H681MNN1230 | |
| | 820 | 12.5×35 | 0.025 | 0.083 | 2510 | EG1H821MNN1235W | |
| | 1000 | 16×25 | 0.025 | 0.075 | 2555 | EG1H102MNN1625 | |
| | 1200 | 16×31.5 | 0.022 | 0.066 | 3010 | EG1H122MNN16N3 | |
| | 1500 | 16×35.5 | 0.019 | 0.057 | 3150 | EG1H152MNN16P1 | |
| | 2200 | 18×35.5 | 0.017 | 0.046 | 3680 | EG1H222MNN18P1 | |
| | 2700 | 18×40 | 0.014 | 0.038 | 3800 | EG1H272MNN1840 | |
| | 63 (1J) | 10 | 5×11 | 2.85 | 9.3 | 30 | EG1J100MNN0511 |
| | | 22 | 6.3×11 | 1.85 | 7.2 | 60 | EG1J220MNN6311 |

ALUMINUM ELECTROLYTIC CAPACITORS



EG Series

◆ STANDARD RATINGS

| WV (V _{dc}) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|--------------------------|-------------------|---------------------------------|-------------------------------------|-------|---|----------------|
| | | | 20°C | -10°C | | |
| 63 (1J) | 33 | 6.3×11 | 1.2 | 5 | 115 | EG1J330MNN6311 |
| | 47 | 8×11.5 | 1 | 4.5 | 170 | EG1J470MNN08B5 |
| | 68 | 8×11.5 | 0.61 | 2.5 | 245 | EG1J680MNN08B5 |
| | 100 | 8×15 | 0.43 | 1.9 | 305 | EG1J101MNN0815 |
| | 100 | 10×12.5 | 0.43 | 1.9 | 305 | EG1J101MNN10C5 |
| | 220 | 10×20 | 0.21 | 0.92 | 470 | EG1J221MNN1020 |
| | 220 | 10×25 | 0.2 | 0.84 | 531 | EG1J221MNN1025 |
| | 330 | 12.5×25 | 0.12 | 0.45 | 784 | EG1J331MNN1225 |

| WV (V _{dc}) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|--------------------------|-------------------|---------------------------------|-------------------------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 63 (1J) | 470 | 12.5×30 | 0.1 | 0.42 | 905 | EG1J471MNN1230 |
| | 560 | 12.5×35 | 0.083 | 0.35 | 1050 | EG1J561MNN1235W |
| | 680 | 12.5×40 | 0.071 | 0.3 | 1180 | EG1J681MNN1240W |
| | 820 | 16×31.5 | 0.054 | 0.2 | 1570 | EG1J821MNN16N3 |
| | 1000 | 16×35.5 | 0.045 | 0.17 | 1790 | EG1J102MNN16P1 |
| | 1200 | 16×40 | 0.04 | 0.15 | 2020 | EG1J122MNN1640 |
| | 1500 | 18×40 | 0.036 | 0.13 | 2330 | EG1J152MNN1840 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| V _{dc} | Cap(μ F) | Frequency (Hz) | | | | |
|-----------------|---------------|----------------|------|------|------|------|
| | | 60 | 120 | 1K | 10K | 100K |
| 6.3 ~63 | 10 ~33 | 0.45 | 0.55 | 0.75 | 0.90 | 1.00 |
| | 47 ~ 330 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| | 470 ~ 1000 | 0.65 | 0.75 | 0.90 | 0.98 | 1.00 |
| | 1200~ 10000 | 0.75 | 0.80 | 0.95 | 1.00 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EDJ Series NEW

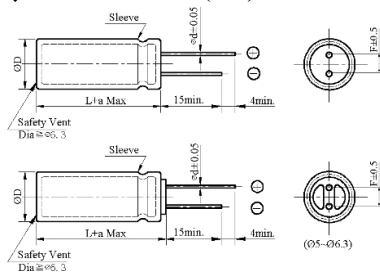
- Suitable for use in high ripple current capability
- Miniaturized, low ESR and low impedance
- Load life 6,000 to 10,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|--|--------------------------|-------------------------------|-------------------|-------------------------------|------|---------|------|-------|--------|-------------------|--------------------------|-------------------------------|--------|-------|-------|-------|------|---------|-------|-------|-------|-----|-----------------|-------------------|---------|-------|--------|-------|-------|----------|-------|--|-----|--|--|--|----------|--------|--|--|
| Category Temperature Range | -40~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3~120Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 8.2 ~ 8200 μF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td><td>120</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.08</td><td>0.08</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | tanδ(Max) | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.08 | | | | | | | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tanδ(Max) | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.01CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td><td>120</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>4</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | Z(-40°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | | | | | | | | | | | | | | | | | | | | |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 6,000~10,000 hours at 105°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td rowspan="2">Capacitance change</td> <td rowspan="2">≤ ±25% of the initial value (6.3V、10Vdc:±30%)</td> <td rowspan="2">Size</td> <td colspan="4">Life time (hours)</td> </tr> <tr> <td>WV(Vdc)</td> <td>6.3</td><td>10~50</td><td>63~100</td><td>120</td> </tr> <tr> <td rowspan="2">Dissipation factor(tanδ)</td> <td rowspan="2">≤ 200% of the specified value</td> <td>≤ Φ6.3</td> <td>6,000</td><td>7,000</td><td>6,000</td><td>---</td> </tr> <tr> <td>Φ8×11.5</td> <td>8,000</td><td>9,000</td><td>8,000</td><td>---</td> </tr> <tr> <td rowspan="2">Leakage current</td> <td rowspan="2">≤ specified value</td> <td>≥ Φ8×16</td> <td>9,000</td><td>10,000</td><td>9,000</td><td>9,000</td> </tr> <tr> <td>Φ10×12.5</td> <td colspan="2">9,000</td><td colspan="2">---</td> </tr> <tr> <td></td> <td></td> <td>≥ Φ10×16</td> <td colspan="4">10,000</td> </tr> </table> | Capacitance change | ≤ ±25% of the initial value (6.3V、10Vdc:±30%) | Size | Life time (hours) | | | | WV(Vdc) | 6.3 | 10~50 | 63~100 | 120 | Dissipation factor(tanδ) | ≤ 200% of the specified value | ≤ Φ6.3 | 6,000 | 7,000 | 6,000 | --- | Φ8×11.5 | 8,000 | 9,000 | 8,000 | --- | Leakage current | ≤ specified value | ≥ Φ8×16 | 9,000 | 10,000 | 9,000 | 9,000 | Φ10×12.5 | 9,000 | | --- | | | | ≥ Φ10×16 | 10,000 | | |
| Capacitance change | ≤ ±25% of the initial value (6.3V、10Vdc:±30%) | | | | Size | Life time (hours) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | WV(Vdc) | 6.3 | 10~50 | | 63~100 | 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | ≤ Φ6.3 | 6,000 | 7,000 | 6,000 | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Φ8×11.5 | 8,000 | 9,000 | 8,000 | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ specified value | ≥ Φ8×16 | 9,000 | 10,000 | 9,000 | 9,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Φ10×12.5 | 9,000 | | --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | ≥ Φ10×16 | 10,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≤ ±25% of the initial value(6.3V、10Vdc:±30%)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ 200% of the specified value</td> </tr> </table> | Capacitance change | ≤ ±25% of the initial value(6.3V、10Vdc:±30%) | Dissipation factor(tanδ) | ≤ 200% of the specified value | Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±25% of the initial value(6.3V、10Vdc:±30%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

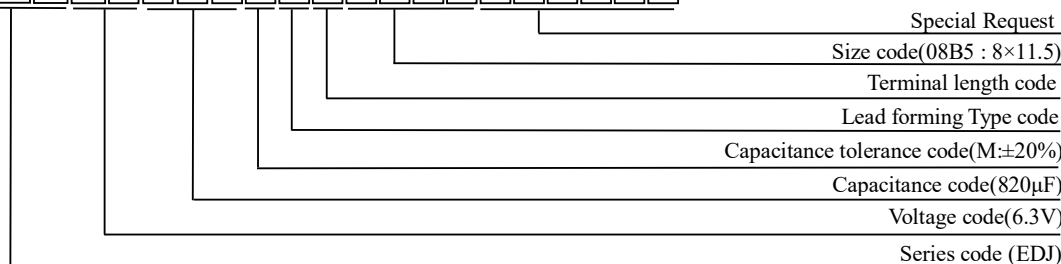
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|--------------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | ≤ 35 L + 1.5 Max ≥ 40 L + 2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 6.3V 820μF)

EDJ0J821MNN08B5



ALUMINUM ELECTROLYTIC CAPACITORS



EDJ Series

STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω _{max} / 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|--------------------------|-------------|---------------------------|---|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 6.3 (0J) | 220 | 5×11 | 0.4 | 1.2 | 345 | EDJ0J221MNN0511 |
| | 470 | 6.3×11 | 0.17 | 0.51 | 540 | EDJ0J471MNN6311 |
| | 820 | 8×11.5 | 0.075 | 0.23 | 945 | EDJ0J821MNN08B5 |
| | 1000 | 8×16 | 0.059 | 0.18 | 1250 | EDJ0J102MNN0816 |
| | 1200 | 10×12.5 | 0.053 | 0.16 | 1330 | EDJ0J122MNN10C5 |
| | 1500 | 8×20 | 0.041 | 0.13 | 1500 | EDJ0J152MNN0820 |
| | 1800 | 10×16 | 0.038 | 0.12 | 1760 | EDJ0J182MNN1016 |
| | 2700 | 10×20 | 0.028 | 0.084 | 1960 | EDJ0J272MNN1020 |
| | 3300 | 10×25 | 0.024 | 0.072 | 2250 | EDJ0J332MNN1025 |
| | 3900 | 12.5×20 | 0.025 | 0.075 | 2480 | EDJ0J392MNN1220 |
| | 4700 | 12.5×25 | 0.019 | 0.057 | 2900 | EDJ0J472MNN1225 |
| | 5600 | 12.5×30 | 0.018 | 0.054 | 3450 | EDJ0J562MNN1230 |
| | 6800 | 12.5×35 | 0.016 | 0.048 | 3570 | EDJ0J682MNN1235W |
| | 6800 | 16×20 | 0.021 | 0.063 | 3250 | EDJ0J682MNN1620 |
| 8200 | 16×25 | 0.017 | 0.051 | 3630 | EDJ0J822MNN1625 | |
| 10 (1A) | 150 | 5×11 | 0.4 | 1.2 | 450 | EDJ1A151MNN0511 |
| | 330 | 6.3×11 | 0.17 | 0.51 | 700 | EDJ1A331MNN6311 |
| | 560 | 8×11.5 | 0.075 | 0.23 | 1200 | EDJ1A561MNN08B5 |
| | 680 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1A681MNN0816 |
| | 820 | 10×12.5 | 0.053 | 0.16 | 1700 | EDJ1A821MNN10C5 |
| | 1000 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1A102MNN0820 |
| | 1200 | 10×16 | 0.038 | 0.12 | 2000 | EDJ1A122MNN1016 |
| | 1800 | 10×20 | 0.028 | 0.084 | 2500 | EDJ1A182MNN1020 |
| | 2200 | 10×25 | 0.024 | 0.072 | 2900 | EDJ1A222MNN1025 |
| | 2700 | 12.5×20 | 0.025 | 0.075 | 2600 | EDJ1A272MNN1220 |
| | 3300 | 12.5×25 | 0.019 | 0.057 | 3200 | EDJ1A332MNN1225 |
| | 4700 | 12.5×30 | 0.018 | 0.054 | 3660 | EDJ1A472MNN1230 |
| | 4700 | 16×20 | 0.021 | 0.063 | 3330 | EDJ1A472MNN1620 |
| | 5600 | 12.5×35 | 0.016 | 0.048 | 4120 | EDJ1A562MNN1235W |
| 5600 | 16×25 | 0.017 | 0.051 | 3810 | EDJ1A562MNN1625 | |
| 16 (1C) | 120 | 5×11 | 0.4 | 1.2 | 450 | EDJ1C121MNN0511 |
| | 270 | 6.3×11 | 0.17 | 0.51 | 700 | EDJ1C271MNN6311 |
| | 470 | 8×11.5 | 0.075 | 0.23 | 1200 | EDJ1C471MNN08B5 |
| | 560 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1C561MNN0816 |
| | 680 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1C681MNN0816 |
| | 680 | 10×12.5 | 0.053 | 0.16 | 1700 | EDJ1C681MNN10C5 |
| | 820 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1C821MNN0820 |
| | 1000 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1C102MNN0820 |
| | 1000 | 10×16 | 0.038 | 0.12 | 2000 | EDJ1C102MNN1016 |
| | 1500 | 10×20 | 0.028 | 0.084 | 2500 | EDJ1C152MNN1020 |
| | 1800 | 10×25 | 0.024 | 0.072 | 2900 | EDJ1C182MNN1025 |
| | 2200 | 12.5×20 | 0.025 | 0.075 | 2600 | EDJ1C222MNN1220 |
| | 2700 | 12.5×25 | 0.019 | 0.057 | 3200 | EDJ1C272MNN1225 |
| | 3300 | 12.5×30 | 0.018 | 0.054 | 3660 | EDJ1C332MNN1230 |
| 3300 | 16×20 | 0.021 | 0.063 | 3330 | EDJ1C332MNN1620 | |
| 3900 | 12.5×35 | 0.016 | 0.048 | 4120 | EDJ1C392MNN1235W | |
| 4700 | 16×25 | 0.017 | 0.051 | 3810 | EDJ1C472MNN1625 | |
| 25 (1E) | 68 | 5×11 | 0.4 | 1.2 | 450 | EDJ1E680MNN0511 |
| | 150 | 6.3×11 | 0.17 | 0.51 | 700 | EDJ1E151MNN6311 |
| | 330 | 8×11.5 | 0.075 | 0.23 | 1200 | EDJ1E331MNN08B5 |
| | 390 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1E391MNN0816 |
| | 470 | 10×12.5 | 0.053 | 0.16 | 1700 | EDJ1E471MNN10C5 |
| | 560 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1E561MNN0820 |
| | 680 | 10×16 | 0.038 | 0.12 | 2000 | EDJ1E681MNN1016 |
| | 1000 | 10×20 | 0.028 | 0.084 | 2500 | EDJ1E102MNN1020 |
| | 1200 | 10×25 | 0.024 | 0.072 | 2900 | EDJ1E122MNN1025 |
| | 1500 | 12.5×20 | 0.025 | 0.075 | 2600 | EDJ1E152MNN1220 |
| | 1800 | 12.5×25 | 0.019 | 0.057 | 3200 | EDJ1E182MNN1225 |
| | 2200 | 12.5×30 | 0.018 | 0.054 | 3660 | EDJ1E222MNN1230 |

| WV (V _{dc}) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω _{max} / 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|--------------------------|-------------|---------------------------|---|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 25 (1E) | 2200 | 16×20 | 0.021 | 0.063 | 3330 | EDJ1E222MNN1620 |
| | 2700 | 12.5×35 | 0.016 | 0.048 | 4120 | EDJ1E272MNN1235W |
| | 3300 | 16×25 | 0.017 | 0.051 | 3810 | EDJ1E332MNN1625 |
| | 47 | 5×11 | 0.4 | 1.2 | 450 | EDJ1V470MNN0511 |
| 35 (1V) | 100 | 6.3×11 | 0.17 | 0.51 | 700 | EDJ1V101MNN6311 |
| | 180 | 8×11.5 | 0.075 | 0.23 | 1200 | EDJ1V181MNN08B5 |
| | 220 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1V221MNN0816 |
| | 270 | 8×16 | 0.059 | 0.18 | 1600 | EDJ1V271MNN0816 |
| | 270 | 10×12.5 | 0.053 | 0.16 | 1700 | EDJ1V271MNN10C5 |
| | 330 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1V331MNN0820 |
| | 330 | 10×12.5 | 0.053 | 0.16 | 1700 | EDJ1V331MNN10C5 |
| | 390 | 8×20 | 0.041 | 0.13 | 1960 | EDJ1V391MNN0820 |
| | 390 | 10×16 | 0.038 | 0.12 | 2000 | EDJ1V391MNN1016 |
| | 470 | 10×16 | 0.038 | 0.12 | 2000 | EDJ1V471MNN1016 |
| | 560 | 10×20 | 0.028 | 0.084 | 2500 | EDJ1V561MNN1020 |
| | 680 | 10×25 | 0.024 | 0.072 | 2900 | EDJ1V681MNN1025 |
| | 820 | 12.5×20 | 0.025 | 0.075 | 2600 | EDJ1V821MNN1220 |
| | 1000 | 12.5×20 | 0.025 | 0.075 | 2600 | EDJ1V102MNN1220 |
| | 1200 | 12.5×25 | 0.019 | 0.057 | 3200 | EDJ1V122MNN1225 |
| | 1500 | 12.5×30 | 0.018 | 0.054 | 3660 | EDJ1V152MNN1230 |
| | 1500 | 16×20 | 0.021 | 0.063 | 3330 | EDJ1V152MNN1620 |
| | 1800 | 12.5×35 | 0.016 | 0.048 | 4120 | EDJ1V182MNN1235W |
| 1800 | 16×25 | 0.017 | 0.051 | 3810 | EDJ1V182MNN1625 | |
| 50 (1H) | 27 | 5×11 | 0.48 | 1.5 | 310 | EDJ1H270MNN0511 |
| | 56 | 6.3×11 | 0.22 | 0.66 | 500 | EDJ1H560MNN6311 |
| | 100 | 8×11.5 | 0.12 | 0.36 | 950 | EDJ1H101MNN08B5 |
| | 120 | 8×11.5 | 0.11 | 0.33 | 1300 | EDJ1H121MNN08B5 |
| | 120 | 8×16 | 0.082 | 0.25 | 1230 | EDJ1H121MNN0816 |
| | 150 | 10×12.5 | 0.073 | 0.22 | 1280 | EDJ1H151MNN10C5 |
| | 180 | 8×16 | 0.081 | 0.24 | 1700 | EDJ1H181MNN0816 |
| | 180 | 8×20 | 0.058 | 0.18 | 1580 | EDJ1H181MNN0820 |
| | 220 | 10×12.5 | 0.071 | 0.21 | 1700 | EDJ1H221MNN10C5 |
| | 220 | 10×16 | 0.053 | 0.16 | 1650 | EDJ1H221MNN1016 |
| | 270 | 8×20 | 0.058 | 0.17 | 2100 | EDJ1H271MNN0820 |
| | 330 | 10×16 | 0.052 | 0.16 | 2100 | EDJ1H331MNN1016 |
| | 330 | 10×20 | 0.038 | 0.12 | 2060 | EDJ1H331MNN1020 |
| | 390 | 10×25 | 0.032 | 0.1 | 2420 | EDJ1H391MNN1025 |
| | 470 | 10×20 | 0.037 | 0.11 | 2500 | EDJ1H471MNN1020 |
| | 470 | 12.5×16 | 0.04 | 0.12 | 2200 | EDJ1H471MNN1216 |
| | 470 | 12.5×20 | 0.032 | 0.1 | 2300 | EDJ1H471MNN1220 |
| | 560 | 10×25 | 0.031 | 0.093 | 2900 | EDJ1H561MNN1025 |
| | 680 | 12.5×20 | 0.029 | 0.087 | 2700 | EDJ1H681MNN1220 |
| | 680 | 12.5×25 | 0.025 | 0.08 | 2800 | EDJ1H681MNN1225 |
| | 820 | 12.5×30 | 0.023 | 0.074 | 3370 | EDJ1H821MNN1230 |
| | 820 | 16×20 | 0.026 | 0.084 | 3070 | EDJ1H821MNN1620 |
| | 1000 | 12.5×25 | 0.022 | 0.066 | 3000 | EDJ1H102MNN1225 |
| | 1000 | 12.5×30 | 0.02 | 0.06 | 3500 | EDJ1H102MNN1230 |
| 1000 | 12.5×35 | 0.021 | 0.067 | 3810 | EDJ1H102MNN1235W | |
| 1000 | 16×25 | 0.022 | 0.07 | 3510 | EDJ1H102MNN1625 | |
| 1200 | 12.5×35 | 0.017 | 0.051 | 4000 | EDJ1H122MNN1235W | |
| 1200 | 16×20 | 0.023 | 0.069 | 3100 | EDJ1H122MNN1620 | |
| 1500 | 12.5×40 | 0.019 | 0.057 | 4500 | EDJ1H152MNN1240W | |
| 1500 | 16×25 | 0.018 | 0.054 | 3600 | EDJ1H152MNN1625 | |
| 1500 | 18×20 | 0.029 | 0.087 | 3200 | EDJ1H152MNN1820 | |
| 2200 | 16×31.5 | 0.018 | 0.054 | 4100 | EDJ1H222MNN16N3 | |
| 2200 | 18×25 | 0.022 | 0.066 | 3700 | EDJ1H222MNN1825 | |
| 2700 | 16×35.5 | 0.016 | 0.048 | 4400 | EDJ1H272MNN16P1 | |
| 2700 | 16×40 | 0.014 | 0.042 | 4800 | EDJ1H272MNN1640 | |
| 2700 | 18×31.5 | 0.019 | 0.057 | 4200 | EDJ1H272MNN18N3 | |

ALUMINUM ELECTROLYTIC CAPACITORS



EDJ Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---------------------|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 50 (1H) | 3300 | 18×35.5 | 0.016 | 0.048 | 4600 | EDJ1H332MNN18P1 |
| | 3900 | 18×40 | 0.014 | 0.042 | 5000 | EDJ1H392MNN1840 |
| 63 (1J) | 18 | 5×11 | 0.71 | 3.2 | 240 | EDJ1J180MNN0511 |
| | 47 | 6.3×11 | 0.28 | 1.3 | 420 | EDJ1J470MNN6311 |
| | 82 | 8×11.5 | 0.18 | 0.79 | 720 | EDJ1J820MNN08B5 |
| | 100 | 8×11.5 | 0.13 | 0.39 | 1000 | EDJ1J101MNN08B5 |
| | 100 | 8×16 | 0.13 | 0.58 | 990 | EDJ1J101MNN0816 |
| | 120 | 8×16 | 0.095 | 0.29 | 1300 | EDJ1J121MNN0816 |
| | 120 | 10×12.5 | 0.11 | 0.44 | 990 | EDJ1J121MNN10C5 |
| | 150 | 8×20 | 0.096 | 0.43 | 1200 | EDJ1J151MNN0820 |
| | 150 | 10×12.5 | 0.08 | 0.24 | 1300 | EDJ1J151MNN10C5 |
| | 180 | 8×20 | 0.069 | 0.21 | 1600 | EDJ1J181MNN0820 |
| | 180 | 10×16 | 0.076 | 0.31 | 1200 | EDJ1J181MNN1016 |
| | 220 | 10×16 | 0.058 | 0.17 | 1700 | EDJ1J221MNN1016 |
| | 270 | 10×20 | 0.056 | 0.23 | 1570 | EDJ1J271MNN1020 |
| | 270 | 12.5×16 | 0.072 | 0.27 | 1570 | EDJ1J271MNN1216 |
| | 330 | 10×20 | 0.042 | 0.13 | 2000 | EDJ1J331MNN1020 |
| | 330 | 10×25 | 0.046 | 0.19 | 1990 | EDJ1J331MNN1025 |
| | 330 | 12.5×16 | 0.045 | 0.14 | 1900 | EDJ1J331MNN1216 |
| | 390 | 10×25 | 0.035 | 0.11 | 2400 | EDJ1J391MNN1025 |
| | 390 | 12.5×20 | 0.041 | 0.13 | 1990 | EDJ1J391MNN1220 |
| | 470 | 12.5×20 | 0.033 | 0.099 | 2400 | EDJ1J471MNN1220 |
| | 470 | 12.5×25 | 0.031 | 0.093 | 2460 | EDJ1J471MNN1225 |
| | 560 | 12.5×30 | 0.028 | 0.084 | 2760 | EDJ1J561MNN1230 |
| | 560 | 16×20 | 0.032 | 0.096 | 2380 | EDJ1J561MNN1620 |
| | 680 | 12.5×25 | 0.025 | 0.075 | 2800 | EDJ1J681MNN1225 |
| | 680 | 12.5×35 | 0.024 | 0.072 | 3040 | EDJ1J681MNN1235W |
| | 820 | 12.5×30 | 0.022 | 0.066 | 3200 | EDJ1J821MNN1230 |
| | 820 | 16×20 | 0.025 | 0.075 | 2900 | EDJ1J821MNN1620 |
| | 820 | 16×25 | 0.025 | 0.075 | 2890 | EDJ1J821MNN1625 |
| | 1000 | 12.5×35 | 0.018 | 0.054 | 3500 | EDJ1J102MNN1235W |
| | 1000 | 16×25 | 0.02 | 0.06 | 3200 | EDJ1J102MNN1625 |
| | 1200 | 12.5×40 | 0.021 | 0.063 | 3800 | EDJ1J122MNN1240W |
| | 1200 | 18×20 | 0.032 | 0.096 | 3000 | EDJ1J122MNN1820 |
| 1500 | 16×31.5 | 0.02 | 0.06 | 3500 | EDJ1J152MNN16N3 | |
| 1500 | 18×25 | 0.024 | 0.072 | 3200 | EDJ1J152MNN1825 | |
| 1800 | 16×35.5 | 0.017 | 0.051 | 3800 | EDJ1J182MNN16P1 | |
| 1800 | 18×31.5 | 0.02 | 0.06 | 3700 | EDJ1J182MNN18N3 | |
| 2200 | 16×40 | 0.015 | 0.045 | 4100 | EDJ1J222MNN1640 | |
| 2200 | 18×35.5 | 0.017 | 0.051 | 3900 | EDJ1J222MNN18P1 | |
| 2700 | 18×40 | 0.015 | 0.045 | 4300 | EDJ1J272MNN1840 | |
| 80 (1K) | 12 | 5×11 | 0.72 | 3.2 | 235 | EDJ1K120MNN0511 |
| | 12 | 5×11 | 1.2 | 5.4 | 220 | EDJ1K120MNN0511 |
| | 27 | 6.3×11 | 0.34 | 1.5 | 390 | EDJ1K270MNN6311 |
| | 27 | 6.3×11 | 0.46 | 2.1 | 370 | EDJ1K270MNN6311 |
| | 47 | 8×11.5 | 0.2 | 0.9 | 650 | EDJ1K470MNN08B5 |
| | 47 | 8×11.5 | 0.29 | 1.3 | 620 | EDJ1K470MNN08B5 |
| | 56 | 8×16 | 0.2 | 0.9 | 780 | EDJ1K560MNN0816 |
| | 68 | 10×12.5 | 0.17 | 0.66 | 780 | EDJ1K680MNN10C5 |
| | 82 | 8×16 | 0.14 | 0.63 | 820 | EDJ1K820MNN0816 |
| | 82 | 8×20 | 0.16 | 0.66 | 1040 | EDJ1K820MNN0820 |
| | 100 | 10×12.5 | 0.14 | 0.56 | 860 | EDJ1K101MNN10C5 |
| | 100 | 10×16 | 0.11 | 0.47 | 1040 | EDJ1K101MNN1016 |
| | 120 | 8×20 | 0.12 | 0.54 | 1090 | EDJ1K121MNN0820 |
| | 150 | 10×16 | 0.09 | 0.36 | 1150 | EDJ1K151MNN1016 |
| | 150 | 10×20 | 0.084 | 0.34 | 1430 | EDJ1K151MNN1020 |
| | 150 | 12.5×16 | 0.11 | 0.34 | 1430 | EDJ1K151MNN1216 |
| | 180 | 10×25 | 0.069 | 0.28 | 1620 | EDJ1K181MNN1025 |
| | 220 | 10×20 | 0.068 | 0.28 | 1570 | EDJ1K221MNN1020 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---------------------|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 80 (1K) | 220 | 12.5×16 | 0.09 | 0.27 | 1430 | EDJ1K221MNN1216 |
| | 220 | 12.5×20 | 0.062 | 0.18 | 1750 | EDJ1K221MNN1220 |
| | 270 | 10×25 | 0.055 | 0.22 | 1780 | EDJ1K271MNN1025 |
| | 270 | 12.5×25 | 0.047 | 0.14 | 2210 | EDJ1K271MNN1225 |
| | 330 | 12.5×20 | 0.048 | 0.15 | 1800 | EDJ1K331MNN1220 |
| | 330 | 12.5×30 | 0.042 | 0.13 | 2400 | EDJ1K331MNN1230 |
| | 330 | 16×20 | 0.048 | 0.15 | 1950 | EDJ1K331MNN1620 |
| | 390 | 12.5×25 | 0.038 | 0.12 | 2210 | EDJ1K391MNN1225 |
| | 390 | 12.5×35 | 0.036 | 0.11 | 2600 | EDJ1K391MNN1235W |
| | 470 | 12.5×30 | 0.033 | 0.11 | 2520 | EDJ1K471MNN1230 |
| | 470 | 12.5×40 | 0.032 | 0.095 | 2860 | EDJ1K471MNN1240W |
| | 470 | 16×20 | 0.036 | 0.12 | 2150 | EDJ1K471MNN1620 |
| | 470 | 16×25 | 0.038 | 0.12 | 2430 | EDJ1K471MNN1625 |
| | 470 | 18×20 | 0.045 | 0.14 | 2270 | EDJ1K471MNN1820 |
| | 560 | 12.5×35 | 0.026 | 0.078 | 2860 | EDJ1K561MNN1235W |
| | 560 | 16×31.5 | 0.032 | 0.095 | 2640 | EDJ1K561MNN16N3 |
| | 680 | 16×25 | 0.028 | 0.084 | 2620 | EDJ1K681MNN1625 |
| | 680 | 18×20 | 0.032 | 0.096 | 2280 | EDJ1K681MNN1820 |
| | 680 | 16×35.5 | 0.029 | 0.086 | 2860 | EDJ1K681MNN16P1 |
| | 680 | 18×25 | 0.036 | 0.11 | 2500 | EDJ1K681MNN1825 |
| | 820 | 16×31.5 | 0.022 | 0.066 | 2900 | EDJ1K821MNN16N3 |
| | 820 | 16×40 | 0.027 | 0.081 | 3510 | EDJ1K821MNN1640 |
| | 820 | 18×31.5 | 0.03 | 0.09 | 2860 | EDJ1K821MNN18N3 |
| | 1000 | 16×35.5 | 0.02 | 0.06 | 3150 | EDJ1K102MNN16P1 |
| | 1000 | 18×25 | 0.027 | 0.081 | 2750 | EDJ1K102MNN1825 |
| | 1000 | 18×35.5 | 0.027 | 0.081 | 3510 | EDJ1K102MNN18P1 |
| | 1200 | 16×40 | 0.018 | 0.054 | 3710 | EDJ1K122MNN1640 |
| | 1200 | 18×31.5 | 0.02 | 0.06 | 3150 | EDJ1K122MNN18N3 |
| | 1200 | 18×40 | 0.026 | 0.076 | 3860 | EDJ1K122MNN1840 |
| | 1500 | 18×35.5 | 0.018 | 0.054 | 3710 | EDJ1K152MNN18P1 |
| | 1800 | 18×40 | 0.017 | 0.051 | 4060 | EDJ1K182MNN1840 |
| | 100 (2A) | 8.2 | 5×11 | 0.72 | 3.2 | 235 |
| 8.2 | | 5×11 | 1.2 | 5.4 | 220 | EDJ2A8R2MNN0511 |
| 18 | | 6.3×11 | 0.34 | 1.5 | 390 | EDJ2A180MNN6311 |
| 18 | | 6.3×11 | 0.46 | 2.1 | 370 | EDJ2A180MNN6311 |
| 33 | | 8×11.5 | 0.2 | 0.9 | 650 | EDJ2A330MNN08B5 |
| 33 | | 8×11.5 | 0.29 | 1.3 | 620 | EDJ2A330MNN08B5 |
| 47 | | 8×16 | 0.14 | 0.63 | 820 | EDJ2A470MNN0816 |
| 47 | | 8×16 | 0.2 | 0.9 | 780 | EDJ2A470MNN0816 |
| 56 | | 10×12.5 | 0.14 | 0.56 | 860 | EDJ2A560MNN10C5 |
| 56 | | 10×12.5 | 0.17 | 0.66 | 780 | EDJ2A560MNN10C5 |
| 68 | | 8×20 | 0.12 | 0.54 | 1090 | EDJ2A680MNN0820 |
| 68 | | 8×20 | 0.16 | 0.66 | 1040 | EDJ2A680MNN0820 |
| 82 | | 10×16 | 0.09 | 0.36 | 1150 | EDJ2A820MNN1016 |
| 82 | | 10×16 | 0.11 | 0.47 | 1040 | EDJ2A820MNN1016 |
| 100 | | 10×20 | 0.084 | 0.34 | 1430 | EDJ2A101MNN1020 |
| 100 | | 12.5×16 | 0.11 | 0.34 | 1430 | EDJ2A101MNN1216 |
| 120 | | 10×20 | 0.068 | 0.28 | 1570 | EDJ2A121MNN1020 |
| 120 | | 10×25 | 0.069 | 0.28 | 1620 | EDJ2A121MNN1025 |
| 120 | | 12.5×16 | 0.09 | 0.27 | 1430 | EDJ2A121MNN1216 |
| 150 | | 10×25 | 0.055 | 0.22 | 1780 | EDJ2A151MNN1025 |
| 150 | 12.5×20 | 0.062 | 0.18 | 1750 | EDJ2A151MNN1220 | |
| 180 | 12.5×20 | 0.048 | 0.15 | 1800 | EDJ2A181MNN1220 | |
| 220 | 12.5×25 | 0.038 | 0.12 | 2210 | EDJ2A221MNN1225 | |
| 220 | 12.5×25 | 0.047 | 0.14 | 2210 | EDJ2A221MNN1225 | |
| 270 | 12.5×30 | 0.033 | 0.11 | 2520 | EDJ2A271MNN1230 | |
| 270 | 12.5×30 | 0.042 | 0.13 | 2400 | EDJ2A271MNN1230 | |
| 270 | 16×20 | 0.048 | 0.15 | 1950 | EDJ2A271MNN1620 | |
| 330 | 12.5×35 | 0.036 | 0.11 | 2600 | EDJ2A331MNN1235W | |

ALUMINUM ELECTROLYTIC CAPACITORS



EDJ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------------|---------------------------------|-------------------------------------|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 100 (2A) | 330 | 16×20 | 0.036 | 0.12 | 2150 | EDJ2A331MNN1620 |
| | 390 | 12.5×35 | 0.026 | 0.078 | 2860 | EDJ2A391MNN1235W |
| | 390 | 12.5×40 | 0.032 | 0.095 | 2860 | EDJ2A391MNN1240W |
| | 390 | 16×25 | 0.028 | 0.084 | 2620 | EDJ2A391MNN1625 |
| | 390 | 16×25 | 0.038 | 0.12 | 2430 | EDJ2A391MNN1625 |
| | 390 | 18×20 | 0.032 | 0.096 | 2280 | EDJ2A391MNN1820 |
| | 390 | 18×20 | 0.045 | 0.14 | 2270 | EDJ2A391MNN1820 |
| | 470 | 16×31.5 | 0.032 | 0.095 | 2640 | EDJ2A471MNN16N3 |
| | 470 | 18×25 | 0.036 | 0.11 | 2500 | EDJ2A471MNN1825 |
| | 560 | 16×31.5 | 0.022 | 0.066 | 2900 | EDJ2A561MNN16N3 |
| | 560 | 16×35.5 | 0.029 | 0.086 | 2860 | EDJ2A561MNN16P1 |
| | 560 | 18×25 | 0.027 | 0.081 | 2750 | EDJ2A561MNN1825 |
| | 560 | 18×31.5 | 0.03 | 0.09 | 2860 | EDJ2A561MNN18N3 |
| | 680 | 16×35.5 | 0.02 | 0.06 | 3150 | EDJ2A681MNN16P1 |
| | 680 | 16×40 | 0.027 | 0.081 | 3510 | EDJ2A681MNN1640 |
| | 680 | 18×31.5 | 0.02 | 0.06 | 3150 | EDJ2A681MNN18N3 |
| | 680 | 18×35.5 | 0.027 | 0.081 | 3510 | EDJ2A681MNN18P1 |
| | 820 | 16×40 | 0.018 | 0.054 | 3710 | EDJ2A821MNN1640 |
| | 820 | 18×35.5 | 0.018 | 0.054 | 3710 | EDJ2A821MNN18P1 |
| | 820 | 18×40 | 0.026 | 0.076 | 3860 | EDJ2A821MNN1840 |
| 1000 | 18×40 | 0.017 | 0.051 | 4060 | EDJ2A102MNN1840 | |

| WV (Vdc) | Cap (μ F) | Case Size (mm) Φ D×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------------|---------------------------------|-------------------------------------|-------|---|------------------|
| | | | 20°C | -10°C | | |
| 120 (3A) | 33 | 8×16 | 0.25 | 1 | 585 | EDJ3A330MNN0816 |
| | 47 | 8×20 | 0.19 | 0.76 | 735 | EDJ3A470MNN0820 |
| | 56 | 10×16 | 0.17 | 0.72 | 780 | EDJ3A560MNN1016 |
| | 82 | 10×20 | 0.12 | 0.52 | 1040 | EDJ3A820MNN1020 |
| | 100 | 10×25 | 0.1 | 0.43 | 1250 | EDJ3A101MNN1025 |
| | 120 | 10×28 | 0.09 | 0.38 | 1400 | EDJ3A121MNN1028 |
| | 120 | 12.5×20 | 0.085 | 0.31 | 1430 | EDJ3A121MNN1220 |
| | 150 | 12.5×25 | 0.21 | 0.84 | 1620 | EDJ3A151MNN1225 |
| | 180 | 12.5×30 | 0.18 | 0.72 | 1880 | EDJ3A181MNN1230 |
| | 180 | 16×20 | 0.17 | 0.65 | 1700 | EDJ3A181MNN1620 |
| | 220 | 12.5×35 | 0.15 | 0.6 | 2140 | EDJ3A221MNN1235W |
| | 270 | 12.5×40 | 0.12 | 0.48 | 2340 | EDJ3A271MNN1240W |
| | 270 | 16×25 | 0.13 | 0.49 | 2100 | EDJ3A271MNN1625 |
| | 270 | 18×20 | 0.14 | 0.52 | 1850 | EDJ3A271MNN1820 |
| | 330 | 16×31.5 | 0.1 | 0.38 | 2400 | EDJ3A331MNN16N3 |
| | 390 | 16×35.5 | 0.085 | 0.32 | 2600 | EDJ3A391MNN16P1 |
| | 390 | 18×25 | 0.1 | 0.37 | 2270 | EDJ3A391MNN1825 |
| | 470 | 16×40 | 0.075 | 0.29 | 2860 | EDJ3A471MNN1640 |
| | 470 | 18×31.5 | 0.08 | 0.3 | 2470 | EDJ3A471MNN18N3 |
| | 560 | 18×35.5 | 0.07 | 0.26 | 2860 | EDJ3A561MNN18P1 |
| 680 | 18×40 | 0.06 | 0.22 | 3510 | EDJ3A681MNN1840 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Cap(μ F) | Frequency (Hz) | | | |
|---------------|----------------|------|------|------|
| | 120 | 1K | 10K | 100K |
| 8.2~33 | 0.42 | 0.70 | 0.90 | 1.00 |
| 47~270 | 0.50 | 0.73 | 0.92 | 1.00 |
| 330~680 | 0.55 | 0.77 | 0.94 | 1.00 |
| 820~1800 | 0.60 | 0.80 | 0.96 | 1.00 |
| 2200~8200 | 0.70 | 0.85 | 0.98 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



EY Series

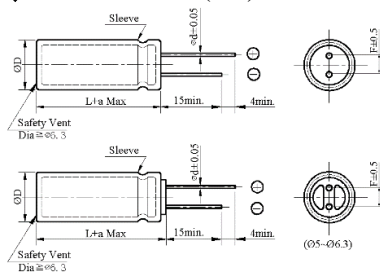
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability
- Load life 4,000~10,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | |
|--|---|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|--------|-------|-------|-------------------|--------|-------|-------|------|---------|-------|--------|------|
| Category Temperature Range | -55~+105°C | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 100Vdc | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 6.8 ~ 18,000µF | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | |
| tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | | |
| Leakage Current | $I=0.01CV$ or $3\mu A$ whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 4,000~10,000 hours at 105°C. <table border="1"> <tr> <td rowspan="2">Capacitance change</td> <td rowspan="2">≦ ±25% of the initial value</td> <td colspan="2">Life time (hours)</td> </tr> <tr> <td>6.3~10WV</td> <td>16~100WV</td> </tr> <tr> <td>≦ Φ6.3</td> <td>4,000</td> <td colspan="2">5,000</td> </tr> <tr> <td>Φ8 ~10</td> <td>6,000</td> <td colspan="2">7,000</td> </tr> <tr> <td>≧ Φ12.5</td> <td>8,000</td> <td colspan="2">10,000</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Life time (hours) | | 6.3~10WV | 16~100WV | ≦ Φ6.3 | 4,000 | 5,000 | | Φ8 ~10 | 6,000 | 7,000 | | ≧ Φ12.5 | 8,000 | 10,000 | |
| Capacitance change | ≦ ±25% of the initial value | | | Life time (hours) | | | | | | | | | | | | | | | |
| | | 6.3~10WV | 16~100WV | | | | | | | | | | | | | | | | |
| ≦ Φ6.3 | 4,000 | 5,000 | | | | | | | | | | | | | | | | | |
| Φ8 ~10 | 6,000 | 7,000 | | | | | | | | | | | | | | | | | |
| ≧ Φ12.5 | 8,000 | 10,000 | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | |

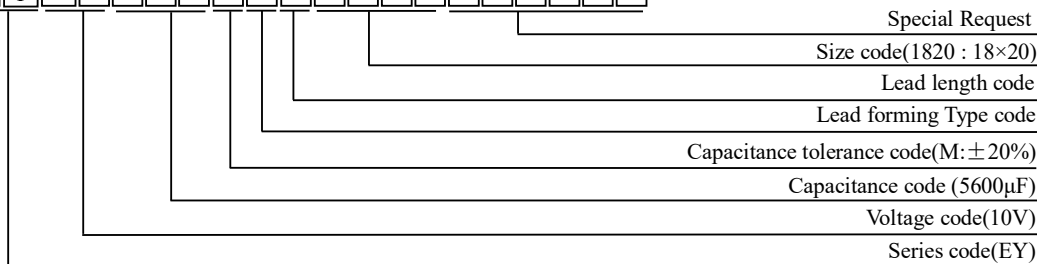
DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|---------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L + 1.5 Max | |

PART NUMBER SYSTEM(Example : 10V 5600µF)

E Y 1 A 5 6 2 M N N 1 8 2 0



ALUMINUM ELECTROLYTIC CAPACITORS



EY Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP.D. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number | |
|----------|----------|---------------------|----------------------|-------|---|-----------------|----------------|
| | | | 20°C | -10°C | | | |
| 6.3 (0J) | 150 | 5×11 | 0.57 | 2.3 | 210 | EY0J151MNN0511 | |
| | 220 | 6.3×11 | 0.25 | 0.9 | 320 | EY0J221MNN6311 | |
| | 330 | 6.3×11 | 0.21 | 0.87 | 350 | EY0J331MNN6311 | |
| | 470 | 8×11.5 | 0.15 | 0.58 | 410 | EY0J471MNN08B5 | |
| | 680 | 8×11.5 | 0.13 | 0.52 | 645 | EY0J681MNN08B5 | |
| | 820 | 10×12.5 | 0.08 | 0.32 | 865 | EY0J821MNN10C5 | |
| | 1000 | 8×15 | 0.085 | 0.35 | 870 | EY0J102MNN0815 | |
| | 1200 | 8×20 | 0.069 | 0.26 | 1050 | EY0J122MNN0820 | |
| | 1200 | 10×16 | 0.062 | 0.24 | 1215 | EY0J122MNN1016 | |
| | 1500 | 10×20 | 0.045 | 0.18 | 1410 | EY0J152MNN1020 | |
| | 1800 | 12.5×16 | 0.048 | 0.16 | 1460 | EY0J182MNN1216 | |
| | 2200 | 10×20 | 0.042 | 0.17 | 1650 | EY0J222MNN1020 | |
| | 2700 | 10×30 | 0.03 | 0.12 | 1910 | EY0J272MNN1030 | |
| | 2700 | 16×15 | 0.041 | 0.12 | 1945 | EY0J272MNN1615 | |
| | 3300 | 12.5×20 | 0.034 | 0.12 | 1950 | EY0J332MNN1220 | |
| | 3900 | 12.5×25 | 0.026 | 0.088 | 2240 | EY0J392MNN1225 | |
| | 3900 | 18×15 | 0.042 | 0.11 | 2210 | EY0J392MNN1815 | |
| | 4700 | 12.5×30 | 0.023 | 0.078 | 2670 | EY0J472MNN1230 | |
| | 5600 | 12.5×35 | 0.02 | 0.065 | 2890 | EY0J562MNN1235W | |
| | 5600 | 16×20 | 0.026 | 0.077 | 2540 | EY0J562MNN1620 | |
| | 6800 | 12.5×40 | 0.016 | 0.055 | 3350 | EY0J682MNN1240W | |
| | 6800 | 16×25 | 0.02 | 0.06 | 2940 | EY0J682MNN1625 | |
| | 6800 | 18×20 | 0.025 | 0.066 | 2870 | EY0J682MNN1820 | |
| | 8200 | 16×31.5 | 0.016 | 0.05 | 3460 | EY0J822MNN16N3 | |
| | 10000 | 16×35.5 | 0.014 | 0.044 | 3620 | EY0J103MNN16P1 | |
| | 10000 | 18×25 | 0.018 | 0.049 | 3150 | EY0J103MNN1825 | |
| | 12000 | 16×40 | 0.012 | 0.038 | 4090 | EY0J123MNN1640 | |
| | 12000 | 18×31.5 | 0.014 | 0.04 | 4180 | EY0J123MNN18N3 | |
| | 15000 | 18×35.5 | 0.013 | 0.038 | 4230 | EY0J153MNN18P1 | |
| | 18000 | 18×40 | 0.012 | 0.032 | 4290 | EY0J183MNN1840 | |
| | 10 (1A) | 100 | 5×11 | 0.58 | 2.3 | 215 | EY1A101MNN0511 |
| | | 150 | 5×11 | 0.58 | 2.3 | 230 | EY1A151MNN0511 |
| | | 220 | 6.3×11 | 0.22 | 0.87 | 340 | EY1A221MNN6311 |
| 330 | | 6.3×11 | 0.22 | 0.87 | 380 | EY1A331MNN6311 | |
| 470 | | 8×11.5 | 0.13 | 0.52 | 640 | EY1A471MNN08B5 | |
| 680 | | 8×15 | 0.086 | 0.35 | 845 | EY1A681MNN0815 | |
| 680 | | 10×12.5 | 0.08 | 0.31 | 865 | EY1A681MNN10C5 | |
| 820 | | 10×16 | 0.07 | 0.28 | 1015 | EY1A821MNN1016 | |
| 1000 | | 8×20 | 0.068 | 0.27 | 1050 | EY1A102MNN0820 | |
| 1000 | | 10×16 | 0.06 | 0.24 | 1215 | EY1A102MNN1016 | |
| 1200 | | 10×20 | 0.045 | 0.18 | 1410 | EY1A122MNN1020 | |
| 1500 | | 10×25 | 0.041 | 0.17 | 1610 | EY1A152MNN1025 | |
| 1500 | | 12.5×16 | 0.049 | 0.16 | 1450 | EY1A152MNN1216 | |
| 1800 | | 12.5×20 | 0.039 | 0.15 | 1710 | EY1A182MNN1220 | |
| 2200 | | 10×30 | 0.03 | 0.12 | 1920 | EY1A222MNN1030 | |
| 2200 | | 12.5×20 | 0.035 | 0.12 | 1910 | EY1A222MNN1220 | |
| 2200 | | 16×16 | 0.042 | 0.12 | 1900 | EY1A222MNN1616 | |
| 2700 | | 18×15 | 0.042 | 0.11 | 2220 | EY1A272MNN1815 | |
| 3300 | | 12.5×25 | 0.026 | 0.089 | 2250 | EY1A332MNN1225 | |
| 3900 | | 12.5×30 | 0.023 | 0.078 | 2660 | EY1A392MNN1230 | |
| 3900 | | 16×20 | 0.026 | 0.078 | 2540 | EY1A392MNN1620 | |
| 4700 | | 12.5×35 | 0.02 | 0.065 | 2890 | EY1A472MNN1235W | |
| 5600 | | 12.5×40 | 0.016 | 0.055 | 3360 | EY1A562MNN1240W | |
| 5600 | | 16×25 | 0.02 | 0.06 | 2940 | EY1A562MNN1625 | |
| 5600 | | 18×20 | 0.025 | 0.066 | 2870 | EY1A562MNN1820 | |
| 6800 | | 16×31.5 | 0.016 | 0.05 | 3460 | EY1A682MNN16N3 | |
| 6800 | | 18×25 | 0.018 | 0.049 | 3150 | EY1A682MNN1825 | |
| 8200 | | 16×35.5 | 0.015 | 0.044 | 3610 | EY1A822MNN16P1 | |
| 8200 | | 18×31.5 | 0.015 | 0.04 | 4180 | EY1A822MNN18N3 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMP.D. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number | |
|----------|----------|---------------------|----------------------|-------|---|-----------------|----------------|
| | | | 20°C | -10°C | | | |
| 10 (1A) | 10000 | 16×40 | 0.013 | 0.038 | 4090 | EY1A103MNN1640 | |
| | 10000 | 18×35.5 | 0.012 | 0.038 | 4150 | EY1A103MNN18P1 | |
| | 12000 | 18×40 | 0.011 | 0.032 | 4290 | EY1A123MNN1840 | |
| | 10 | 5×11 | 1.1 | 3.02 | 96 | EY1C100MNN0511 | |
| | 22 | 5×11 | 0.75 | 2.8 | 120 | EY1C220MNN0511 | |
| | 47 | 5×11 | 0.6 | 2.6 | 180 | EY1C470MNN0511 | |
| | 56 | 5×11 | 0.57 | 2.3 | 220 | EY1C560MNN0511 | |
| | 100 | 5×11 | 0.35 | 0.76 | 260 | EY1C101MNN0511 | |
| | 100 | 6.3×11 | 0.21 | 0.82 | 310 | EY1C101MNN6311 | |
| | 120 | 6.3×11 | 0.21 | 0.87 | 340 | EY1C121MNN6311 | |
| 16 (1C) | 220 | 6.3×11 | 0.15 | 0.65 | 450 | EY1C221MNN6311 | |
| | 220 | 8×11.5 | 0.19 | 0.85 | 650 | EY1C221MNN08B5 | |
| | 330 | 8×11.5 | 0.12 | 0.52 | 760 | EY1C331MNN08B5 | |
| | 470 | 8×15 | 0.086 | 0.35 | 850 | EY1C471MNN0815 | |
| | 470 | 10×12.5 | 0.08 | 0.32 | 865 | EY1C471MNN10C5 | |
| | 680 | 8×20 | 0.069 | 0.27 | 1060 | EY1C681MNN0820 | |
| | 680 | 10×16 | 0.06 | 0.24 | 1210 | EY1C681MNN1016 | |
| | 820 | 10×20 | 0.052 | 0.22 | 1310 | EY1C821MNN1020 | |
| | 1000 | 10×20 | 0.045 | 0.18 | 1410 | EY1C102MNN1020 | |
| | 1000 | 12.5×16 | 0.05 | 0.16 | 1450 | EY1C102MNN1216 | |
| | 1200 | 10×25 | 0.043 | 0.17 | 1650 | EY1C122MNN1025 | |
| | 1500 | 10×30 | 0.03 | 0.12 | 1920 | EY1C152MNN1030 | |
| | 1500 | 12.5×20 | 0.035 | 0.12 | 1910 | EY1C152MNN1220 | |
| | 1500 | 16×16 | 0.042 | 0.12 | 1940 | EY1C152MNN1616 | |
| | 1800 | 12.5×25 | 0.028 | 0.095 | 2140 | EY1C182MNN1225 | |
| | 2200 | 12.5×25 | 0.026 | 0.089 | 2240 | EY1C222MNN1225 | |
| | 2200 | 18×15 | 0.042 | 0.11 | 2220 | EY1C222MNN1815 | |
| | 2700 | 12.5×30 | 0.023 | 0.077 | 2650 | EY1C272MNN1230 | |
| | 2700 | 16×20 | 0.026 | 0.078 | 2540 | EY1C272MNN1620 | |
| | 3300 | 12.5×35 | 0.02 | 0.066 | 2890 | EY1C332MNN1235W | |
| | 3900 | 12.5×40 | 0.016 | 0.056 | 3350 | EY1C392MNN1240W | |
| | 3900 | 16×25 | 0.021 | 0.06 | 2930 | EY1C392MNN1625 | |
| | 3900 | 16×20 | 0.025 | 0.067 | 2860 | EY1C392MNN1620 | |
| | 4700 | 16×31.5 | 0.016 | 0.05 | 3450 | EY1C472MNN16N3 | |
| | 4700 | 18×25 | 0.018 | 0.049 | 3150 | EY1C472MNN1825 | |
| | 5600 | 16×35.5 | 0.015 | 0.044 | 3620 | EY1C562MNN16P1 | |
| | 5600 | 18×31.5 | 0.015 | 0.04 | 4180 | EY1C562MNN18N3 | |
| | 6800 | 16×40 | 0.012 | 0.038 | 4080 | EY1C682MNN1640 | |
| | 8200 | 18×35.5 | 0.014 | 0.038 | 4230 | EY1C822MNN18P1 | |
| | 18000 | 18×40 | 0.011 | 0.032 | 4290 | EY1C183MNN1840 | |
| | 25 (1E) | 10 | 5×11 | 1.1 | 3.02 | 100 | EY1E100MNN0511 |
| | | 22 | 5×11 | 0.7 | 2.8 | 140 | EY1E220MNN0511 |
| | | 47 | 5×11 | 0.57 | 2.3 | 205 | EY1E470MNN0511 |
| 56 | | 5×11 | 0.57 | 2.3 | 240 | EY1E560MNN0511 | |
| 100 | | 6.3×11 | 0.21 | 0.87 | 360 | EY1E101MNN6311 | |
| 220 | | 8×11.5 | 0.12 | 0.52 | 650 | EY1E221MNN08B5 | |
| 330 | | 8×15 | 0.087 | 0.35 | 850 | EY1E331MNN0815 | |
| 330 | | 10×12.5 | 0.081 | 0.32 | 870 | EY1E331MNN10C5 | |
| 470 | | 8×20 | 0.07 | 0.27 | 1050 | EY1E471MNN0820 | |
| 470 | | 10×16 | 0.06 | 0.24 | 1210 | EY1E471MNN1016 | |
| 680 | | 10×20 | 0.045 | 0.18 | 1410 | EY1E681MNN1020 | |
| 680 | | 12.5×16 | 0.049 | 0.16 | 1460 | EY1E681MNN1216 | |
| 820 | | 10×25 | 0.041 | 0.17 | 1660 | EY1E821MNN1025 | |
| 1000 | | 10×30 | 0.03 | 0.12 | 1920 | EY1E102MNN1030 | |
| 1000 | | 12.5×20 | 0.034 | 0.12 | 1910 | EY1E102MNN1220 | |
| 1000 | | 16×16 | 0.042 | 0.12 | 1940 | EY1E102MNN1616 | |
| 1200 | | 18×15 | 0.043 | 0.11 | 2220 | EY1E122MNN1815 | |
| 1500 | | 12.5×25 | 0.026 | 0.089 | 2240 | EY1E152MNN1225 | |
| 1800 | | 12.5×30 | 0.024 | 0.078 | 2660 | EY1E182MNN1230 | |

ALUMINUM ELECTROLYTIC CAPACITORS



EY Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number |
|----------|----------|---------------------|---------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 25 (1E) | 1800 | 16×20 | 0.026 | 0.078 | 2540 | EY1E182MNN1620 |
| | 2200 | 12.5×35 | 0.02 | 0.065 | 2890 | EY1E222MNN1235W |
| | 2200 | 18×20 | 0.025 | 0.066 | 2870 | EY1E222MNN1820 |
| | 2700 | 12.5×40 | 0.016 | 0.056 | 3360 | EY1E272MNN1240W |
| | 2700 | 16×25 | 0.021 | 0.06 | 2940 | EY1E272MNN1625 |
| | 3300 | 16×30 | 0.016 | 0.05 | 3460 | EY1E332MNN1630 |
| | 3300 | 18×25 | 0.018 | 0.048 | 3150 | EY1E332MNN1825 |
| | 3900 | 16×35.5 | 0.014 | 0.043 | 3620 | EY1E392MNN16P1 |
| | 3900 | 18×31.5 | 0.015 | 0.04 | 4180 | EY1E392MNN18N3 |
| | 4700 | 16×40 | 0.012 | 0.038 | 4090 | EY1E472MNN1640 |
| | 4700 | 18×35.5 | 0.013 | 0.038 | 4230 | EY1E472MNN18P1 |
| | 5600 | 18×40 | 0.011 | 0.032 | 4290 | EY1E562MNN1840 |
| 35 (1V) | 33 | 5×11 | 0.56 | 2.3 | 220 | EY1V330MNN0511 |
| | 47 | 6.3×11 | 0.35 | 1.4 | 280 | EY1V470MNN6311 |
| | 56 | 6.3×11 | 0.21 | 0.86 | 340 | EY1V560MNN6311 |
| | 100 | 8×11.5 | 0.15 | 0.56 | 510 | EY1V101MNN08B5 |
| | 150 | 8×11.5 | 0.13 | 0.52 | 650 | EY1V151MNN08B5 |
| | 220 | 8×15 | 0.086 | 0.35 | 850 | EY1V221MNN0815 |
| | 330 | 10×16 | 0.06 | 0.24 | 1210 | EY1V331MNN1016 |
| | 470 | 10×20 | 0.045 | 0.18 | 1410 | EY1V471MNN1020 |
| | 560 | 10×25 | 0.041 | 0.16 | 1670 | EY1V561MNN1025 |
| | 680 | 10×30 | 0.03 | 0.12 | 1920 | EY1V681MNN1030 |
| | 820 | 12.5×25 | 0.029 | 0.095 | 2050 | EY1V821MNN1225 |
| | 1000 | 12.5×25 | 0.028 | 0.088 | 2250 | EY1V102MNN1225 |
| | 1200 | 12.5×30 | 0.023 | 0.078 | 2660 | EY1V122MNN1230 |
| | 1500 | 12.5×35 | 0.02 | 0.065 | 2890 | EY1V152MNN1235W |
| | 2200 | 16×31.5 | 0.016 | 0.056 | 3470 | EY1V222MNN16N3 |
| | 2700 | 18×35.5 | 0.015 | 0.044 | 3620 | EY1V272MNN18P1 |
| 3300 | 16×40 | 0.013 | 0.038 | 4090 | EY1V332MNN1640 | |
| 3900 | 18×40 | 0.012 | 0.033 | 4290 | EY1V392MNN1840 | |
| 50 (1H) | 10 | 5×11 | 1.3 | 2.8 | 135 | EY1H100MNN0511 |
| | 22 | 5×11 | 0.7 | 2.5 | 190 | EY1H220MNN0511 |
| | 33 | 6.3×11 | 0.6 | 1.9 | 225 | EY1H330MNN6311 |
| | 47 | 6.3×11 | 0.38 | 1.5 | 230 | EY1H470MNN6311 |
| | 56 | 8×11.5 | 0.3 | 1.2 | 300 | EY1H560MNN08B5 |
| | 100 | 8×11.5 | 0.16 | 0.67 | 560 | EY1H101MNN08B5 |
| | 150 | 8×15 | 0.12 | 0.48 | 740 | EY1H151MNN0815 |
| | 220 | 10×16 | 0.083 | 0.34 | 1060 | EY1H221MNN1016 |
| | 330 | 10×25 | 0.053 | 0.22 | 1460 | EY1H331MNN1025 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ωmax/100kHz) | | Rated Ripple current (mA rms/105°C, 100kHz) | Part Number | |
|----------|----------|---------------------|---------------------|-------|---|-----------------|----------------|
| | | | 20°C | -10°C | | | |
| 50 (1H) | 470 | 12.5×20 | 0.044 | 0.15 | 1670 | EY1H471MNN1220 | |
| | 560 | 12.5×25 | 0.033 | 0.11 | 1960 | EY1H561MNN1225 | |
| | 680 | 12.5×30 | 0.03 | 0.1 | 2320 | EY1H681MNN1230 | |
| | 820 | 12.5×35 | 0.023 | 0.081 | 2530 | EY1H821MNN1235W | |
| | 1000 | 16×25 | 0.025 | 0.075 | 2565 | EY1H102MNN1625 | |
| | 1200 | 16×31.5 | 0.021 | 0.066 | 3020 | EY1H122MNN16N3 | |
| | 1500 | 16×35.5 | 0.018 | 0.056 | 3160 | EY1H152MNN16P1 | |
| | 2200 | 18×35.5 | 0.017 | 0.046 | 3690 | EY1H222MNN18P1 | |
| | 2700 | 18×40 | 0.014 | 0.038 | 3810 | EY1H272MNN1840 | |
| | 63 (1J) | 15 | 5×11 | 2.2 | 9.2 | 56 | EY1J150MNN0511 |
| | | 33 | 6.3×11 | 1.2 | 5 | 120 | EY1J330MNN6311 |
| | | 47 | 8×11.5 | 0.68 | 3.1 | 190 | EY1J470MNN08B5 |
| 68 | | 8×11.5 | 0.6 | 2.9 | 255 | EY1J680MNN08B5 | |
| 100 | | 10×16 | 0.35 | 1.8 | 320 | EY1J101MNN1016 | |
| 120 | | 10×16 | 0.3 | 1.5 | 355 | EY1J121MNN1016 | |
| 180 | | 10×20 | 0.2 | 0.94 | 470 | EY1J181MNN1020 | |
| 220 | | 10×25 | 0.2 | 0.84 | 535 | EY1J221MNN1025 | |
| 330 | | 12.5×25 | 0.12 | 0.45 | 790 | EY1J331MNN1225 | |
| 470 | | 12.5×30 | 0.1 | 0.42 | 910 | EY1J471MNN1230 | |
| 560 | | 12.5×35 | 0.082 | 0.35 | 1050 | EY1J561MNN1235W | |
| 680 | | 12.5×40 | 0.07 | 0.3 | 1190 | EY1J681MNN1240W | |
| 820 | | 16×31.5 | 0.053 | 0.2 | 1580 | EY1J821MNN16N3 | |
| 1000 | | 18×35.5 | 0.045 | 0.17 | 1790 | EY1J102MNN18P1 | |
| 1200 | | 16×40 | 0.04 | 0.15 | 2020 | EY1J122MNN1640 | |
| 1500 | | 18×40 | 0.035 | 0.13 | 2340 | EY1J152MNN1840 | |
| 100 (2A) | 6.8 | 5×11 | 2.2 | 9.2 | 56 | EY2A688MNN0511 | |
| | 15 | 6.3×11 | 1.2 | 5 | 120 | EY2A150MNN6311 | |
| | 33 | 8×15 | 0.58 | 3.2 | 160 | EY2A330MNN0815 | |
| | 47 | 10×12.5 | 0.43 | 1.8 | 290 | EY2A470MNN10C5 | |
| | 68 | 10×16 | 0.3 | 1.5 | 350 | EY2A680MNN1016 | |
| | 100 | 10×25 | 0.2 | 0.84 | 535 | EY2A101MNN1025 | |
| | 120 | 10×30 | 0.15 | 0.71 | 665 | EY2A121MNN1030 | |
| | 180 | 12.5×25 | 0.12 | 0.45 | 790 | EY2A181MNN1225 | |
| | 220 | 12.5×30 | 0.1 | 0.42 | 905 | EY2A221MNN1230 | |
| | 330 | 12.5×40 | 0.07 | 0.3 | 1190 | EY2A331MNN1240W | |
| | 470 | 16×35.5 | 0.045 | 0.17 | 1790 | EY2A471MNN16P1 | |
| | 560 | 16×40 | 0.04 | 0.15 | 2030 | EY2A561MNN1640 | |
| | 680 | 18×35.5 | 0.04 | 0.15 | 2100 | EY2A681MNN18P1 | |
| | 820 | 18×40 | 0.036 | 0.13 | 2340 | EY2A821MNN1840 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|-----------|--------------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 6.3 ~ 100 | 6.8 ~ 68 | 0.30 | 0.55 | 0.80 | 1.00 |
| | 82 ~ 220 | 0.40 | 0.60 | 0.85 | 1.00 |
| | 330 ~ 820 | 0.50 | 0.65 | 0.90 | 1.00 |
| | 1000 ~ 18000 | 0.60 | 0.70 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



RF Series

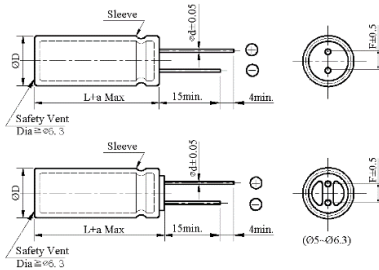
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability
- Load life 6,000~12,000 hours at 105°C
- Applied to lighting products



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | |
|--|---|-------------------------------|---|---|-------------------------------|-------------------|-------------------------------|-------|-------|-------|-------------------|---------|---------|--------|--------------------------|-------------------------------|-----------------|-------------------|------|
| Category Temperature Range | -55~+105°C | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 6.3 ~ 100Vdc | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 6.8 ~ 22,000µF | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> </tr> </table> | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | |
| tanδ(Max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.01CV or 3µA whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 6,000~12,000 hours at 105°C. | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> <td> <table border="1"> <tr> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>≦ Φ6.3</td> <td>6,000</td> </tr> <tr> <td>Φ8</td> <td>8,000</td> </tr> <tr> <td>Φ10</td> <td>10,000</td> </tr> <tr> <td>≧ Φ12.5</td> <td>12,000</td> </tr> </table> </td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | <table border="1"> <tr> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>≦ Φ6.3</td> <td>6,000</td> </tr> <tr> <td>Φ8</td> <td>8,000</td> </tr> <tr> <td>Φ10</td> <td>10,000</td> </tr> <tr> <td>≧ Φ12.5</td> <td>12,000</td> </tr> </table> | Size | Life time (hours) | ≦ Φ6.3 | 6,000 | Φ8 | 8,000 | Φ10 | 10,000 | ≧ Φ12.5 | 12,000 | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | |
| | Capacitance change | ≦ ±25% of the initial value | <table border="1"> <tr> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>≦ Φ6.3</td> <td>6,000</td> </tr> <tr> <td>Φ8</td> <td>8,000</td> </tr> <tr> <td>Φ10</td> <td>10,000</td> </tr> <tr> <td>≧ Φ12.5</td> <td>12,000</td> </tr> </table> | Size | Life time (hours) | ≦ Φ6.3 | 6,000 | Φ8 | 8,000 | Φ10 | 10,000 | ≧ Φ12.5 | 12,000 | | | | | | |
| | Size | Life time (hours) | | | | | | | | | | | | | | | | | |
| ≦ Φ6.3 | 6,000 | | | | | | | | | | | | | | | | | | |
| Φ8 | 8,000 | | | | | | | | | | | | | | | | | | |
| Φ10 | 10,000 | | | | | | | | | | | | | | | | | | |
| ≧ Φ12.5 | 12,000 | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| | Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Others | | | | | | | | | | | | | | | | | | | |
| Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | | |

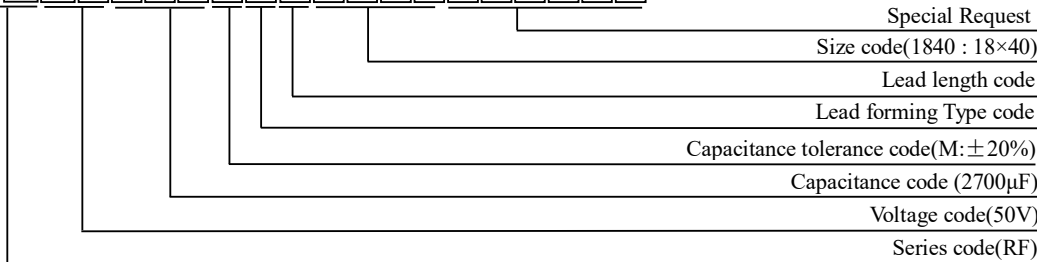
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-----|--------------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | | ≦ 35 L + 1.5 Max ≧ 40 L + 2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 50V 2700µF)

R F I H 2 7 2 M N N 1 8 4 0



ALUMINUM ELECTROLYTIC CAPACITORS



RF Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------|---------------------------|-----------------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 6.3 (0J) | 150 | 5×11 | 0.57 | 2.3 | 210 | RF0J151MNN0511 |
| | 220 | 5×11 | 0.38 | 0.9 | 345 | RF0J221MNN0511 |
| | 330 | 6.3×11 | 0.21 | 0.87 | 380 | RF0J331MNN6311 |
| | 470 | 6.3×11 | 0.17 | 0.58 | 540 | RF0J471MNN6311 |
| | 680 | 8×11.5 | 0.13 | 0.52 | 645 | RF0J681MNN08B5 |
| | 820 | 8×11.5 | 0.08 | 0.32 | 865 | RF0J821MNN08B5 |
| | 1000 | 8×15 | 0.085 | 0.35 | 870 | RF0J102MNN0815 |
| | 1200 | 8×15 | 0.059 | 0.26 | 1250 | RF0J122MNN0815 |
| | 1200 | 10×12.5 | 0.053 | 0.24 | 1330 | RF0J122MNN10C5 |
| | 1500 | 8×20 | 0.041 | 0.18 | 1500 | RF0J152MNN0820 |
| | 1800 | 10×16 | 0.038 | 0.16 | 1760 | RF0J182MNN1016 |
| | 2200 | 10×20 | 0.042 | 0.17 | 1650 | RF0J222MNN1020 |
| | 2700 | 10×20 | 0.028 | 0.12 | 1960 | RF0J272MNN1020 |
| | 2700 | 12.5×15 | 0.035 | 0.12 | 1900 | RF0J272MNN1215 |
| | 3300 | 10×25 | 0.026 | 0.12 | 2250 | RF0J332MNN1025 |
| | 3900 | 12.5×20 | 0.025 | 0.088 | 2480 | RF0J392MNN1220 |
| | 3900 | 18×15 | 0.042 | 0.11 | 2210 | RF0J392MNN1815 |
| | 4700 | 12.5×30 | 0.023 | 0.078 | 2670 | RF0J472MNN1230 |
| | 5600 | 12.5×35 | 0.02 | 0.065 | 2890 | RF0J562MNN1235W |
| | 5600 | 16×20 | 0.026 | 0.077 | 2540 | RF0J562MNN1620 |
| | 6800 | 12.5×30 | 0.018 | 0.055 | 3450 | RF0J682MNN1230 |
| | 6800 | 16×20 | 0.021 | 0.06 | 3250 | RF0J682MNN1620 |
| | 6800 | 18×20 | 0.025 | 0.066 | 2870 | RF0J682MNN1820 |
| | 8200 | 12.5×35 | 0.016 | 0.05 | 3570 | RF0J822MNN1235W |
| | 10000 | 16×25 | 0.017 | 0.044 | 3630 | RF0J103MNN1625 |
| | 10000 | 18×25 | 0.018 | 0.049 | 3150 | RF0J103MNN1825 |
| | 12000 | 16×40 | 0.012 | 0.048 | 4090 | RF0J123MNN1640 |
| 12000 | 18×31.5 | 0.014 | 0.04 | 4180 | RF0J123MNN18N3 | |
| 15000 | 18×31.5 | 0.014 | 0.042 | 4190 | RF0J153MNN18N3 | |
| 18000 | 16×40 | 0.013 | 0.039 | 4580 | RF0J183MNN1640 | |
| 10 (1A) | 100 | 5×11 | 0.58 | 2.3 | 215 | RF1A101MNN0511 |
| | 150 | 5×11 | 0.58 | 2.3 | 230 | RF1A151MNN0511 |
| | 220 | 6.3×11 | 0.22 | 0.87 | 340 | RF1A221MNN6311 |
| | 330 | 6.3×11 | 0.22 | 0.87 | 380 | RF1A331MNN6311 |
| | 470 | 8×11.5 | 0.13 | 0.52 | 640 | RF1A471MNN08B5 |
| | 680 | 8×15 | 0.086 | 0.35 | 845 | RF1A681MNN0815 |
| | 680 | 10×12.5 | 0.08 | 0.31 | 865 | RF1A681MNN10C5 |
| | 820 | 8×15 | 0.059 | 0.28 | 1600 | RF1A821MNN0815 |
| | 1000 | 8×20 | 0.041 | 0.27 | 1960 | RF1A102MNN0820 |
| | 1000 | 10×12.5 | 0.053 | 0.24 | 1700 | RF1A102MNN10C5 |
| | 1200 | 10×16 | 0.038 | 0.18 | 2000 | RF1A122MNN1016 |
| | 1500 | 10×20 | 0.041 | 0.17 | 1610 | RF1A152MNN1020 |
| | 1500 | 12.5×16 | 0.049 | 0.16 | 1450 | RF1A152MNN1216 |
| | 1800 | 12.5×16 | 0.035 | 0.15 | 2400 | RF1A182MNN1216 |
| | 2200 | 10×25 | 0.026 | 0.12 | 2900 | RF1A222MNN1025 |
| | 2200 | 12.5×20 | 0.035 | 0.12 | 1910 | RF1A222MNN1220 |
| | 2200 | 16×16 | 0.042 | 0.12 | 1900 | RF1A222MNN1616 |
| | 2700 | 12.5×20 | 0.025 | 0.11 | 2600 | RF1A272MNN1220 |
| | 3300 | 12.5×25 | 0.026 | 0.089 | 2250 | RF1A332MNN1225 |
| | 3900 | 12.5×25 | 0.019 | 0.078 | 3200 | RF1A392MNN1225 |
| | 3900 | 16×20 | 0.026 | 0.078 | 2540 | RF1A392MNN1620 |
| | 4700 | 12.5×30 | 0.018 | 0.065 | 3660 | RF1A472MNN1230 |
| | 5600 | 12.5×40 | 0.016 | 0.055 | 3360 | RF1A562MNN1240W |
| | 5600 | 12.5×35 | 0.016 | 0.06 | 4120 | RF1A562MNN1235W |
| | 5600 | 18×20 | 0.025 | 0.066 | 3450 | RF1A562MNN1820 |
| | 6800 | 16×25 | 0.017 | 0.05 | 3810 | RF1A682MNN1625 |
| | 6800 | 18×25 | 0.018 | 0.049 | 3150 | RF1A682MNN1825 |
| 8200 | 16×35.5 | 0.015 | 0.044 | 3610 | RF1A822MNN16P1 | |
| 8200 | 18×31.5 | 0.015 | 0.04 | 4180 | RF1A822MNN18N3 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------|---------------------------|-----------------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 10 (1A) | 10000 | 16×35.5 | 0.014 | 0.042 | 4280 | RF1A103MNN16P1 |
| | 10000 | 18×31.5 | 0.014 | 0.042 | 4190 | RF1A103MNN18N3 |
| | 12000 | 18×40 | 0.011 | 0.032 | 4290 | RF1A123MNN1840 |
| | 10 | 5×11 | 1.1 | 3.02 | 96 | RF1C100MNN0511 |
| | 22 | 5×11 | 0.75 | 2.8 | 120 | RF1C220MNN0511 |
| | 47 | 5×11 | 0.6 | 2.6 | 100 | RF1C470MNN0511 |
| | 56 | 5×11 | 0.57 | 2.3 | 220 | RF1C560MNN0511 |
| | 100 | 5×11 | 0.35 | 0.76 | 260 | RF1C101MNN0511 |
| | 100 | 6.3×11 | 0.21 | 0.82 | 310 | RF1C101MNN6311 |
| | 120 | 5×11 | 0.38 | 0.87 | 450 | RF1C121MNN0511 |
| 16 (1C) | 220 | 6.3×11 | 0.15 | 0.65 | 450 | RF1C221MNN6311 |
| | 220 | 8×11.5 | 0.19 | 0.85 | 650 | RF1C221MNN08B5 |
| | 330 | 8×11.5 | 0.12 | 0.52 | 760 | RF1C331MNN08B5 |
| | 470 | 8×11.5 | 0.075 | 0.35 | 1200 | RF1C471MNN08B5 |
| | 470 | 10×12.5 | 0.08 | 0.32 | 865 | RF1C471MNN10C5 |
| | 680 | 8×15 | 0.059 | 0.27 | 1600 | RF1C681MNN0815 |
| | 680 | 10×12.5 | 0.053 | 0.24 | 1700 | RF1C681MNN10C5 |
| | 820 | 8×20 | 0.041 | 0.22 | 1960 | RF1C821MNN0820 |
| | 1000 | 10×16 | 0.038 | 0.18 | 2000 | RF1C102MNN1016 |
| | 1000 | 12.5×16 | 0.05 | 0.16 | 1450 | RF1C102MNN1216 |
| | 1200 | 10×25 | 0.043 | 0.17 | 1650 | RF1C122MNN1025 |
| | 1500 | 10×20 | 0.028 | 0.12 | 2500 | RF1C152MNN1020 |
| | 1500 | 12.5×20 | 0.035 | 0.12 | 1910 | RF1C152MNN1220 |
| | 1500 | 16×16 | 0.042 | 0.12 | 1940 | RF1C152MNN1616 |
| | 1800 | 10×25 | 0.026 | 0.095 | 2900 | RF1C182MNN1025 |
| | 2200 | 12.5×20 | 0.025 | 0.089 | 2600 | RF1C222MNN1220 |
| | 2200 | 18×15 | 0.042 | 0.11 | 2220 | RF1C222MNN1815 |
| | 2700 | 12.5×25 | 0.019 | 0.077 | 3200 | RF1C272MNN1225 |
| | 2700 | 16×20 | 0.026 | 0.078 | 2540 | RF1C272MNN1620 |
| | 3300 | 12.5×30 | 0.018 | 0.066 | 3660 | RF1C332MNN1230 |
| | 3900 | 12.5×35 | 0.016 | 0.056 | 4120 | RF1C392MNN1235W |
| | 3900 | 16×20 | 0.021 | 0.063 | 3330 | RF1C392MNN1620 |
| | 3900 | 16×25 | 0.021 | 0.06 | 2930 | RF1C392MNN1625 |
| | 4700 | 16×31.5 | 0.016 | 0.05 | 3450 | RF1C472MNN16N3 |
| | 4700 | 18×20 | 0.02 | 0.06 | 3450 | RF1C472MNN1820 |
| | 5600 | 16×25 | 0.017 | 0.051 | 3810 | RF1C562MNN1625 |
| | 5600 | 18×31.5 | 0.015 | 0.04 | 4180 | RF1C562MNN18N3 |
| 6800 | 16×31.5 | 0.016 | 0.048 | 4100 | RF1C682MNN16N3 | |
| 8200 | 18×31.5 | 0.014 | 0.042 | 4190 | RF1C822MNN18N3 | |
| 18000 | 18×40 | 0.011 | 0.032 | 4290 | RF1C183MNN1840 | |
| 25 (1E) | 10 | 5×11 | 1.1 | 3.02 | 100 | RF1E100MNN0511 |
| | 22 | 5×11 | 0.7 | 2.8 | 140 | RF1E220MNN0511 |
| | 47 | 5×11 | 0.57 | 2.3 | 205 | RF1E470MNN0511 |
| | 56 | 5×11 | 0.57 | 2.3 | 240 | RF1E560MNN0511 |
| | 100 | 6.3×11 | 0.21 | 0.87 | 360 | RF1E101MNN6311 |
| | 120 | 6.3×11 | 0.21 | 0.87 | 370 | RF1E121MNN6311 |
| | 220 | 8×11.5 | 0.12 | 0.52 | 650 | RF1E221MNN08B5 |
| | 330 | 8×15 | 0.087 | 0.35 | 850 | RF1E331MNN0815 |
| | 330 | 10×12.5 | 0.081 | 0.32 | 870 | RF1E331MNN10C5 |
| | 470 | 8×15 | 0.059 | 0.27 | 1600 | RF1E471MNN0815 |
| | 470 | 10×12.5 | 0.053 | 0.24 | 1700 | RF1E471MNN10C5 |
| | 680 | 10×16 | 0.038 | 0.18 | 2000 | RF1E681MNN1016 |
| | 680 | 12.5×16 | 0.049 | 0.16 | 1460 | RF1E681MNN1216 |
| | 820 | 10×20 | 0.028 | 0.17 | 2500 | RF1E821MNN1020 |
| | 1000 | 10×30 | 0.03 | 0.12 | 1920 | RF1E102MNN1030 |
| | 1000 | 12.5×16 | 0.035 | 0.12 | 2400 | RF1E102MNN1216 |
| | 1000 | 16×16 | 0.042 | 0.12 | 1940 | RF1E102MNN1616 |
| 1200 | 10×25 | 0.026 | 0.11 | 2900 | RF1E122MNN1025 | |
| 1500 | 12.5×20 | 0.025 | 0.089 | 2600 | RF1E152MNN1220 | |

ALUMINUM ELECTROLYTIC CAPACITORS



RF Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number |
|-------------|-------------|---------------------------|-----------------------------|-------|---|-----------------|
| | | | 20°C | -10°C | | |
| 25 (1E) | 1800 | 12.5×25 | 0.019 | 0.078 | 3200 | RF1E182MNN1225 |
| | 1800 | 16×20 | 0.026 | 0.078 | 2540 | RF1E182MNN1620 |
| | 2200 | 12.5×30 | 0.018 | 0.065 | 3660 | RF1E222MNN1230 |
| | 2200 | 16×20 | 0.021 | 0.066 | 3330 | RF1E222MNN1620 |
| | 2700 | 12.5×35 | 0.016 | 0.056 | 4120 | RF1E272MNN1235W |
| | 2700 | 16×25 | 0.021 | 0.06 | 2940 | RF1E272MNN1625 |
| | 3300 | 16×25 | 0.017 | 0.051 | 3810 | RF1E332MNN1625 |
| | 3300 | 18×20 | 0.02 | 0.06 | 3450 | RF1E332MNN1820 |
| | 3900 | 16×35.5 | 0.014 | 0.043 | 3620 | RF1E392MNN16P1 |
| | 3900 | 18×31.5 | 0.015 | 0.04 | 4180 | RF1E392MNN18N3 |
| | 4700 | 16×31.5 | 0.016 | 0.048 | 4100 | RF1E472MNN16N3 |
| | 4700 | 18×25 | 0.016 | 0.048 | 3880 | RF1E472MNN1825 |
| | 5600 | 18×31.5 | 0.014 | 0.042 | 4190 | RF1E562MNN18N3 |
| 35 (1V) | 10 | 5×11 | 0.7 | 2.5 | 120 | RF1V100MNN0511 |
| | 22 | 5×11 | 0.6 | 1.9 | 165 | RF1V220MNN0511 |
| | 33 | 5×11 | 0.56 | 2.3 | 220 | RF1V330MNN0511 |
| | 47 | 5×11 | 0.38 | 1.4 | 450 | RF1V470MNN0511 |
| | 56 | 6.3×11 | 0.21 | 0.86 | 340 | RF1V560MNN6311 |
| | 100 | 6.3×11 | 0.17 | 0.56 | 700 | RF1V101MNN6311 |
| | 150 | 8×11.5 | 0.13 | 0.52 | 650 | RF1V151MNN08B5 |
| | 220 | 8×15 | 0.059 | 0.35 | 1600 | RF1V221MNN0815 |
| | 330 | 8×20 | 0.041 | 0.24 | 1960 | RF1V331MNN0820 |
| | 470 | 10×20 | 0.028 | 0.18 | 2500 | RF1V471MNN1020 |
| | 560 | 12.5×16 | 0.035 | 0.16 | 2400 | RF1V561MNN1216 |
| | 680 | 10×25 | 0.026 | 0.12 | 2900 | RF1V681MNN1025 |
| | 820 | 12.5×20 | 0.025 | 0.095 | 2600 | RF1V821MNN1220 |
| | 1000 | 12.5×25 | 0.028 | 0.088 | 2250 | RF1V102MNN1225 |
| | 1200 | 12.5×25 | 0.019 | 0.078 | 3200 | RF1V122MNN1225 |
| | 1500 | 12.5×30 | 0.018 | 0.065 | 3660 | RF1V152MNN1230 |
| | 2200 | 16×31.5 | 0.016 | 0.056 | 3370 | RF1V222MNN16N3 |
| 2700 | 16×31.5 | 0.016 | 0.048 | 4100 | RF1V272MNN16N3 | |
| 3300 | 16×35.5 | 0.014 | 0.042 | 4280 | RF1V332MNN16P1 | |
| 3900 | 18×35.5 | 0.012 | 0.036 | 4380 | RF1V392MNN18P1 | |
| 50 (1H) | 10 | 5×11 | 1.3 | 2.8 | 135 | RF1H100MNN0511 |
| | 22 | 5×11 | 0.7 | 2.5 | 190 | RF1H220MNN0511 |
| | 33 | 6.3×11 | 0.6 | 1.9 | 225 | RF1H330MNN6311 |
| | 47 | 6.3×11 | 0.38 | 1.5 | 230 | RF1H470MNN6311 |
| | 56 | 6.3×11 | 0.18 | 1.2 | 700 | RF1H560MNN6311 |
| | 100 | 8×11.5 | 0.085 | 0.67 | 1200 | RF1H101MNN08B5 |
| | 150 | 10×12.5 | 0.073 | 0.48 | 1280 | RF1H151MNN10C5 |
| | 220 | 10×16 | 0.053 | 0.34 | 1650 | RF1H221MNN1016 |
| | 330 | 10×20 | 0.038 | 0.22 | 2060 | RF1H331MNN1020 |
| | 470 | 12.5×20 | 0.032 | 0.15 | 2300 | RF1H471MNN1220 |
| | 560 | 12.5×25 | 0.033 | 0.11 | 1960 | RF1H561MNN1225 |
| | 680 | 12.5×25 | 0.025 | 0.1 | 2800 | RF1H681MNN1225 |
| | 820 | 12.5×30 | 0.023 | 0.081 | 3370 | RF1H821MNN1230 |
| | 1000 | 16×25 | 0.025 | 0.075 | 2565 | RF1H102MNN1625 |
| | 1200 | 16×25 | 0.022 | 0.07 | 3510 | RF1H122MNN1625 |
| | 1500 | 16×31.5 | 0.019 | 0.057 | 4030 | RF1H152MNN16N3 |
| | 2200 | 18×31.5 | 0.016 | 0.048 | 4080 | RF1H222MNN18N3 |
| 2700 | 18×35.5 | 0.013 | 0.039 | 4270 | RF1H272MNN18P1 | |
| 63 (1J) | 15 | 5×11 | 2.2 | 9.2 | 56 | RF1J150MNN0511 |
| | 33 | 6.3×11 | 1.2 | 5 | 120 | RF1J330MNN6311 |
| | 47 | 8×11.5 | 0.68 | 3.1 | 190 | RF1J470MNN08B5 |
| | 68 | 8×11.5 | 0.15 | 2.9 | 720 | RF1J680MNN08B5 |
| | 100 | 8×15 | 0.1 | 1.8 | 990 | RF1J101MNN0815 |
| | 120 | 10×12.5 | 0.09 | 1.5 | 990 | RF1J121MNN10C5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | IMPD. (Ω max/ 100kHz) | | Rated Ripple current (mA rms/ 105°C, 100kHz) | Part Number | |
|-------------|-------------|---------------------------|-----------------------------|-------|---|-----------------|----------------|
| | | | 20°C | -10°C | | | |
| 63 (1J) | 180 | 10×16 | 0.061 | 0.94 | 1200 | RF1J181MNN1016 | |
| | 220 | 10×25 | 0.2 | 0.84 | 535 | RF1J221MNN1025 | |
| | 330 | 10×25 | 0.037 | 0.45 | 1990 | RF1J331MNN1025 | |
| | 470 | 12.5×30 | 0.1 | 0.42 | 910 | RF1J471MNN1230 | |
| | 560 | 12.5×25 | 0.026 | 0.35 | 2460 | RF1J561MNN1225 | |
| | 680 | 12.5×30 | 0.024 | 0.3 | 2760 | RF1J681MNN1230 | |
| | 820 | 12.5×35 | 0.022 | 0.2 | 3040 | RF1J821MNN1235W | |
| | 1000 | 16×25 | 0.024 | 0.17 | 2890 | RF1J102MNN1625 | |
| | 1200 | 16×31.5 | 0.02 | 0.15 | 3280 | RF1J122MNN16N3 | |
| | 1500 | 18×31.5 | 0.018 | 0.13 | 3380 | RF1J152MNN18N3 | |
| | 80 (1K) | 12 | 5×11 | 0.72 | 3.2 | 235 | RF1K120MNN0511 |
| | | 27 | 6.3×11 | 0.34 | 1.5 | 390 | RF1K270MNN6311 |
| | | 47 | 8×11.5 | 0.2 | 0.9 | 650 | RF1K470MNN08B5 |
| 68 | | 8×15 | 0.14 | 0.63 | 820 | RF1K680MNN0815 | |
| 82 | | 8×20 | 0.12 | 0.54 | 1090 | RF1K820MNN0820 | |
| 82 | | 10×12.5 | 0.14 | 0.56 | 860 | RF1K820MNN10C5 | |
| 100 | | 10×12.5 | 0.14 | 0.56 | 860 | RF1K101MNN10C5 | |
| 120 | | 10×16 | 0.09 | 0.36 | 1150 | RF1K121MNN1016 | |
| 150 | | 10×16 | 0.09 | 0.36 | 1150 | RF1K151MNN1016 | |
| 180 | | 10×20 | 0.068 | 0.28 | 1570 | RF1K181MNN1020 | |
| 180 | | 12.5×16 | 0.09 | 0.27 | 1430 | RF1K181MNN1216 | |
| 220 | | 10×20 | 0.068 | 0.28 | 1570 | RF1K221MNN1020 | |
| 220 | | 10×25 | 0.055 | 0.22 | 1780 | RF1K221MNN1025 | |
| 220 | | 12.5×16 | 0.09 | 0.27 | 1430 | RF1K221MNN1216 | |
| 270 | | 10×25 | 0.055 | 0.22 | 1780 | RF1K271MNN1025 | |
| 270 | | 12.5×20 | 0.048 | 0.15 | 1800 | RF1K271MNN1220 | |
| 330 | | 12.5×20 | 0.048 | 0.15 | 1800 | RF1K331MNN1220 | |
| 390 | 12.5×25 | 0.038 | 0.12 | 2210 | RF1K391MNN1225 | | |
| 470 | 12.5×30 | 0.033 | 0.11 | 2520 | RF1K471MNN1230 | | |
| 470 | 16×20 | 0.036 | 0.12 | 2150 | RF1K471MNN1620 | | |
| 560 | 12.5×35 | 0.026 | 0.078 | 2860 | RF1K561MNN1235W | | |
| 680 | 12.5×40 | 0.026 | 0.078 | 3150 | RF1K681MNN1240W | | |
| 680 | 16×25 | 0.028 | 0.084 | 2620 | RF1K681MNN1625 | | |
| 680 | 18×20 | 0.032 | 0.096 | 2280 | RF1K681MNN1820 | | |
| 820 | 16×31.5 | 0.022 | 0.066 | 2900 | RF1K821MNN16N3 | | |
| 820 | 18×25 | 0.027 | 0.081 | 2750 | RF1K821MNN1825 | | |
| 1000 | 16×35.5 | 0.02 | 0.06 | 3150 | RF1K102MNN16P1 | | |
| 1000 | 18×25 | 0.027 | 0.081 | 2750 | RF1K102MNN1825 | | |
| 1200 | 16×40 | 0.018 | 0.054 | 3710 | RF1K122MNN1640 | | |
| 1200 | 18×31.5 | 0.02 | 0.06 | 3150 | RF1K122MNN18N3 | | |
| 1500 | 18×35.5 | 0.018 | 0.054 | 3710 | RF1K152MNN18P1 | | |
| 1800 | 18×40 | 0.017 | 0.051 | 4060 | RF1K182MNN1840 | | |
| 100 (2A) | 6.8 | 5×11 | 2.2 | 9.2 | 56 | RF2A68MNN0511 | |
| | 15 | 6.3×11 | 1.2 | 5 | 120 | RF2A150MNN6311 | |
| | 33 | 8×11.5 | 0.2 | 3.2 | 650 | RF2A330MNN08B5 | |
| | 47 | 8×15 | 0.14 | 1.8 | 820 | RF2A470MNN0815 | |
| | 68 | 10×16 | 0.3 | 1.5 | 350 | RF2A680MNN1016 | |
| | 100 | 10×20 | 0.065 | 0.84 | 1570 | RF2A101MNN1020 | |
| | 120 | 10×20 | 0.068 | 0.71 | 1570 | RF2A121MNN1020 | |
| | 180 | 12.5×20 | 0.048 | 0.45 | 1800 | RF2A181MNN1220 | |
| | 220 | 12.5×25 | 0.038 | 0.42 | 2210 | RF2A221MNN1225 | |
| | 330 | 16×20 | 0.036 | 0.3 | 2150 | RF2A331MNN1620 | |
| | 470 | 16×31.5 | 0.022 | 0.17 | 2900 | RF2A471MNN16N3 | |
| | 560 | 16×31.5 | 0.022 | 0.15 | 2900 | RF2A561MNN16N3 | |
| | 680 | 18×31.5 | 0.02 | 0.15 | 3150 | RF2A681MNN18N3 | |
| 820 | 18×35.5 | 0.018 | 0.13 | 3710 | RF2A821MNN18P1 | | |



RF Series

◆ RIPPLE CURRENT MULTIPLIERS
Frequency Multipliers

| Vdc | Cap(uF) | Frequency (Hz) | | | |
|-----------|--------------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 6.3 ~ 100 | 6.8 ~ 68 | 0.30 | 0.55 | 0.80 | 1.00 |
| | 82 ~ 220 | 0.40 | 0.60 | 0.85 | 1.00 |
| | 330 ~ 820 | 0.50 | 0.65 | 0.90 | 1.00 |
| | 1000 ~ 22000 | 0.60 | 0.70 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



TW Series

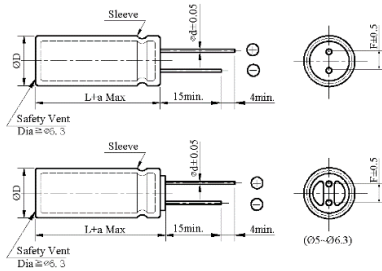
- High temperature 125°C, high reliability
- Load life 2,000 hours at 125°C



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------|------|------|------|------|------|------|---------|---------|-------------------|----|----|----|----|----|----|-----|---------|---------|-----------|-------------------|------|------|------|------|------|------|------|------|---|---|-------------------|---|---|---|---|---|---|---|---|---|---|
| Category Temperature Range | -40 ~ +125°C | -25 ~ +125°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 10 ~ 100Vdc | 160 ~ 450Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 4.7 ~ 1000 µF | 4.7~ 150 µF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <th>Rated Voltage (V)</th> <td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160~250</td><td>350~450</td> </tr> <tr> <th>tanδ(Max)</th> <td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.10</td><td>0.09</td><td>0.20</td><td>0.24</td> </tr> </table> | | | | | | | | | | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~450 | tanδ(Max) | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.09 | 0.20 | 0.24 | | | | | | | | | | | | | |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tanδ(Max) | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.09 | 0.20 | 0.24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.01CV or 3µA whichever is greater (10~100V) I=0.03CV + 10µA (160~450V) I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <th>Rated voltage (V)</th> <td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160~250</td><td>350</td><td>400~450</td> </tr> <tr> <th>Z(-40°C)/Z(+20°C)</th> <td>6</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>—</td><td>—</td><td>—</td> </tr> <tr> <th>Z(-25°C)/Z(+20°C)</th> <td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>3</td><td>6</td><td>6</td> </tr> </table> | | | | | | | | | | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350 | 400~450 | Z(-40°C)/Z(+20°C) | 6 | 4 | 4 | 4 | 4 | 4 | 4 | — | — | — | Z(-25°C)/Z(+20°C) | — | — | — | — | — | — | — | 3 | 6 | 6 |
| | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350 | 400~450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 6 | 4 | 4 | 4 | 4 | 4 | 4 | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | — | — | — | — | — | — | — | 3 | 6 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 125°C. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±25% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 125°C without voltage applied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±25% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Others | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

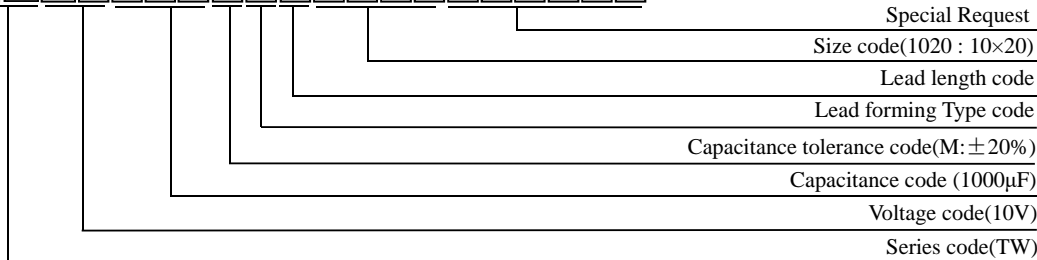
DIMENSIONS (mm)



| ΦD | 6.3 | 8 | 10 | 12.5 | 16 |
|----|--------------|-----|-----|---------------------------------|-------------|
| ΦD | ΦD + 0.5 Max | | | | |
| Φd | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |
| a | L + 1.5 Max | | | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L + 1.5 Max |

PART NUMBER SYSTEM(Example : 10V 1000µF)

T W I A 1 0 2 M N N 1 0 2 0



ALUMINUM ELECTROLYTIC CAPACITORS



TW Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 10 (1A) | 47 | 6.3×11 | 80 | TW1A470MNN6311 |
| | 100 | 6.3×11 | 105 | TW1A101MNN6311 |
| | 220 | 8×11.5 | 230 | TW1A221MNN08B5 |
| | 330 | 10×12.5 | 310 | TW1A331MNN10C5 |
| | 470 | 10×12.5 | 420 | TW1A471MNN10C5 |
| | 1000 | 10×20 | 760 | TW1A102MNN1020 |
| 16 (1C) | 33 | 6.3×11 | 70 | TW1C330MNN6311 |
| | 47 | 6.3×11 | 82 | TW1C470MNN6311 |
| | 100 | 8×11.5 | 146 | TW1C101MNN08B5 |
| | 220 | 10×12.5 | 300 | TW1C221MNN10C5 |
| | 330 | 10×12.5 | 385 | TW1C331MNN10C5 |
| | 470 | 10×16 | 520 | TW1C471MNN1016 |
| | 1000 | 12.5×20 | 800 | TW1C102MNN1220 |
| 25 (1E) | 22 | 6.3×11 | 70 | TW1E220MNN6311 |
| | 33 | 8×11.5 | 90 | TW1E330MNN08B5 |
| | 47 | 8×11.5 | 110 | TW1E470MNN08B5 |
| | 100 | 8×11.5 | 220 | TW1E101MNN08B5 |
| | 220 | 10×12.5 | 450 | TW1E221MNN10C5 |
| | 330 | 10×16 | 620 | TW1E331MNN1016 |
| | 470 | 10×20 | 800 | TW1E471MNN1020 |
| | 1000 | 12.5×25 | 900 | TW1E102MNN1225 |
| 35 (1V) | 22 | 8×11.5 | 78 | TW1V220MNN08B5 |
| | 33 | 8×11.5 | 105 | TW1V330MNN08B5 |
| | 47 | 8×11.5 | 148 | TW1V470MNN08B5 |
| | 100 | 10×12.5 | 252 | TW1V101MNN10C5 |
| | 220 | 10×16 | 530 | TW1V221MNN1016 |
| | 330 | 10×20 | 710 | TW1V331MNN1020 |
| | 470 | 12.5×20 | 890 | TW1V471MNN1220 |
| | 1000 | 16×25 | 1100 | TW1V102MNN1625 |
| 50 (1H) | 22 | 8×11.5 | 150 | TW1H220MNN08B5 |
| | 33 | 8×11.5 | 182 | TW1H330MNN08B5 |
| | 47 | 8×15 | 205 | TW1H470MNN0815 |
| | 100 | 10×16 | 442 | TW1H101MNN1016 |
| | 220 | 10×20 | 690 | TW1H221MNN1020 |
| | 330 | 10×25 | 885 | TW1H331MNN1025 |
| | 470 | 12.5×25 | 1120 | TW1H471MNN1225 |
| | 1000 | 16×30 | 1405 | TW1H102MNN1630 |
| 100 (2A) | 4.7 | 8×11.5 | 72 | TW2A4R7MNN08B5 |
| | 10 | 8×11.5 | 120 | TW2A100MNN08B5 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 100 (2A) | 22 | 10×12.5 | 200 | TW2A220MNN10C5 |
| | 33 | 10×12.5 | 225 | TW2A330MNN10C5 |
| | 47 | 10×16 | 330 | TW2A470MNN1016 |
| | 100 | 12.5×20 | 550 | TW2A101MNN1220 |
| | 220 | 16×25 | 763 | TW2A221MNN1625 |
| | 330 | 16×30 | 950 | TW2A331MNN1630 |
| 160 (2C) | 22 | 10×20 | 120 | TW2C220MNN1020 |
| | 33 | 10×25 | 160 | TW2C330MNN1025 |
| | 47 | 12.5×20 | 195 | TW2C470MNN1220 |
| | 68 | 12.5×25 | 255 | TW2C680MNN1225 |
| | 100 | 16×25 | 345 | TW2C101MNN1625 |
| | 150 | 16×30 | 450 | TW2C151MNN1630 |
| | 1000 | 12.5×20 | 86 | TW2D100MNN1020 |
| 200 (2D) | 22 | 10×25 | 138 | TW2D220MNN1025 |
| | 33 | 12.5×20 | 172 | TW2D330MNN1220 |
| | 47 | 12.5×25 | 224 | TW2D470MNN1225 |
| | 68 | 16×20 | 275 | TW2D680MNN1620 |
| | 100 | 16×25 | 360 | TW2D101MNN1625 |
| | 1000 | 10×20 | 90 | TW2E100MNN1020 |
| 250 (2E) | 22 | 12.5×20 | 140 | TW2E220MNN1220 |
| | 33 | 12.5×25 | 188 | TW2E330MNN1225 |
| | 47 | 16×25 | 250 | TW2E470MNN1625 |
| | 68 | 16×30 | 320 | TW2E680MNN1630 |
| 350 (2V) | 4.7 | 10×20 | 58 | TW2V4R7MNN1020 |
| | 10 | 10×25 | 94 | TW2V100MNN1025 |
| | 22 | 12.5×25 | 152 | TW2V220MNN1225 |
| | 33 | 16×25 | 208 | TW2V330MNN1625 |
| | 47 | 16×30 | 265 | TW2V470MNN1630 |
| | 1000 | 10×20 | 60 | TW2G4R7MNN1020 |
| 400 (2G) | 10 | 10×25 | 100 | TW2G100MNN1025 |
| | 22 | 12.5×30 | 163 | TW2G220MNN1230 |
| | 33 | 16×25 | 217 | TW2G330MNN1625 |
| | 47 | 16×30 | 280 | TW2G470MNN1630 |
| | 1000 | 10×25 | 70 | TW2W4R7MNN1025 |
| 450 (2W) | 10 | 12.5×20 | 103 | TW2W100MNN1220 |
| | 22 | 16×25 | 185 | TW2W220MNN1625 |
| | 33 | 16×30 | 245 | TW2W330MNN1630 |

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|--------|---------|----------------|------|------|-----------|------|
| | | 50/60 | 120 | 1K | ≥10K | ≥50K |
| 10~35 | <100 | 0.75 | 1.00 | 1.57 | 2.00 | --- |
| | 100~470 | 0.80 | 1.00 | 1.34 | 1.50 | --- |
| | >470 | 0.85 | 1.00 | 1.10 | 1.15 | --- |
| 50~100 | --- | 0.95 | 1.00 | 1.00 | 1.08(10K) | 1.08 |

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|---------|---------|----------------|------|------|------|------|
| | | 50/60 | 120 | 1K | 10K | 100K |
| 160~450 | 4.7~33 | 0.75 | 1.00 | 1.50 | 1.75 | 1.80 |
| | 47~150 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



TV Series

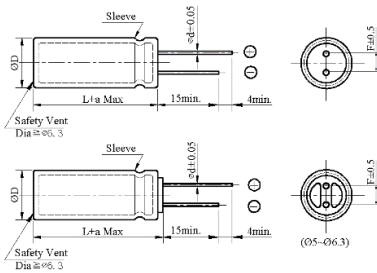
- High temperature 125°C, high reliability
- Load life 3,000~5,000 hours at 125°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | |
|--|--|-------------------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|-------------------|-------|-----------------|-------------------|------|-------|--|--|-----|-------|
| Category Temperature Range | -55~ +125°C | | | | | | | | | | | | | | | | |
| Working Voltage Range | 10 ~ 50Vdc | | | | | | | | | | | | | | | | |
| Capacitance Range | 22~1000µF | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | tanδ(Max) | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | | | | |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | |
| tanδ(Max) | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | |
| Leakage Current | I=0.01CV or 2µA whichever is greater I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table> | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | Z(-55°C)/Z(+20°C) | 6 | 4 | 4 | 4 | 4 | | | | |
| | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 6 | 4 | 4 | 4 | 4 | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000~5,000 hours at 125°C. | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> <td>≦ Φ6.3</td> <td>3,000</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> <td>Φ8</td> <td>4,000</td> </tr> <tr> <td></td> <td></td> <td>Φ10</td> <td>5,000</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 3,000 | Leakage current | ≦ specified value | Φ8 | 4,000 | | | Φ10 | 5,000 |
| | Capacitance change | ≦ ±25% of the initial value | Size | Life time (hours) | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | ≦ Φ6.3 | 3,000 | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | Φ8 | 4,000 | | | | | | | | | | | | | | |
| | | Φ10 | 5,000 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 125°C without voltage applied. | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±25% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | |
| | Capacitance change | ≦ ±25% of the initial value | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | |

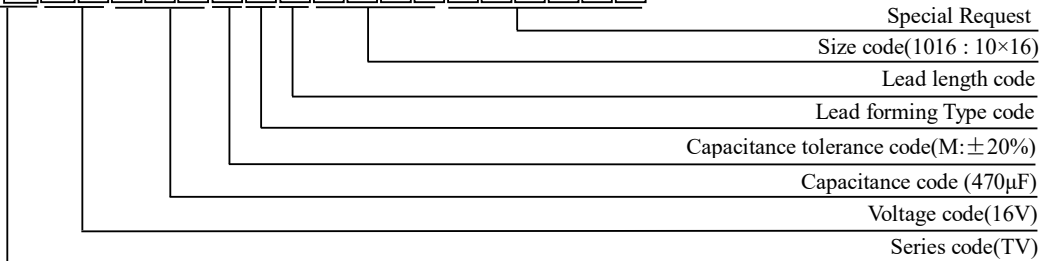
◆ DIMENSIONS (mm)



| ΦD | 6.3 | 8 | 10 | 12.5 | 16 |
|----|--------------|-----|-------------------------------------|------|-------------|
| ΦD | ΦD + 0.5 Max | | | | |
| Φd | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |
| a | L + 1.5 Max | | ≦ 35 L + 1.5Max ≧ 40 L + 2.0 Max | | L + 1.5 Max |

◆ PART NUMBER SYSTEM(Example : 16V 470µF)

T V 1 C 4 7 1 M N N 1 0 1 6



ALUMINUM ELECTROLYTIC CAPACITORS



TV Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 10 (1A) | 47 | 6.3×11 | 90 | TV1A470MNN6311 |
| | 100 | 6.3×11 | 130 | TV1A101MNN6311 |
| | 220 | 8×11.5 | 242 | TV1A221MNN08B5 |
| | 330 | 10×12.5 | 335 | TV1A331MNN10C5 |
| | 470 | 10×16 | 440 | TV1A471MNN1016 |
| 16 (1C) | 1000 | 10×20 | 800 | TV1A102MNN1020 |
| | 33 | 6.3×11 | 90 | TV1C330MNN6311 |
| | 47 | 6.3×11 | 100 | TV1C470MNN6311 |
| | 100 | 8×11.5 | 155 | TV1C101MNN08B5 |
| | 220 | 10×12.5 | 348 | TV1C221MNN10C5 |
| | 330 | 10×16 | 405 | TV1C331MNN1016 |
| 25 (1E) | 470 | 10×20 | 550 | TV1C471MNN1020 |
| | 1000 | 12.5×20 | 900 | TV1C102MNN1220 |
| | 22 | 6.3×11 | 100 | TV1E220MNN6311 |
| | 33 | 8×11.5 | 115 | TV1E330MNN08B5 |
| | 47 | 8×11.5 | 130 | TV1E470MNN08B5 |
| | 100 | 8×11.5 | 250 | TV1E101MNN08B5 |
| 25 (1E) | 220 | 10×12.5 | 472 | TV1E221MNN10C5 |
| | 330 | 10×16 | 690 | TV1E331MNN1016 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 25 (1E) | 470 | 10×20 | 875 | TV1E471MNN1020 |
| | 1000 | 12.5×25 | 1050 | TV1E102MNN1225 |
| 35 (1V) | 22 | 8×11.5 | 130 | TV1V220MNN08B5 |
| | 33 | 8×11.5 | 155 | TV1V330MNN08B5 |
| | 47 | 8×11.5 | 170 | TV1V470MNN08B5 |
| | 100 | 10×12.5 | 272 | TV1V101MNN10C5 |
| | 220 | 10×16 | 565 | TV1V221MNN1016 |
| | 330 | 10×20 | 733 | TV1V331MNN1020 |
| 50 (1H) | 470 | 12.5×20 | 895 | TV1V471MNN1220 |
| | 1000 | 16×25 | 1137 | TV1V102MNN1625 |
| | 22 | 8×11.5 | 185 | TV1H220MNN08B5 |
| | 33 | 8×11.5 | 210 | TV1H330MNN08B5 |
| | 47 | 8×15 | 245 | TV1H470MNN0815 |
| | 100 | 10×16 | 480 | TV1H101MNN1016 |
| 50 (1H) | 220 | 10×20 | 810 | TV1H221MNN1020 |
| | 330 | 10×25 | 1085 | TV1H331MNN1025 |
| | 470 | 12.5×25 | 1210 | TV1H471MNN1225 |
| | 1000 | 16×30 | 1470 | TV1H102MNN1630 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|---------|-----------|----------------|------|------|------|
| | | 50/60 | 120 | 1K | ≥10K |
| 10 ~ 50 | <100 | 0.75 | 1.00 | 1.57 | 2.00 |
| | 100 ~ 470 | 0.80 | 1.00 | 1.34 | 1.50 |
| | >470 | 0.85 | 1.00 | 1.10 | 1.15 |

ALUMINUM ELECTROLYTIC CAPACITORS



TD Series

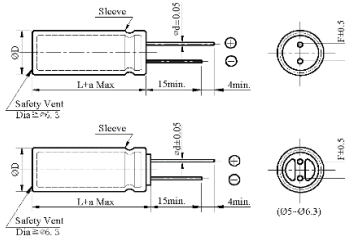
- High temperature 130°C, high reliability
- Load life 1,000~ 4,000 hours at 130°C
- For automotive electronics and lighting equipment and other high temperature applications



◆ SPECIFICATIONS

| Item | Performance Characteristics | | |
|---|--|--|--------------------------------|
| Category Temperature Range | -40 ~ +130°C | -25 ~ +130°C | |
| Working Voltage Range | 10 ~ 100Vdc | 200 ~ 450Vdc | |
| Capacitance Range | 4.7 ~ 4,700 µF | 3.3~ 100 µF | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 10 16 25 35 50 63 100 200~250 400~450 | |
| | tanδ(Max) | 0.20 0.16 0.14 0.12 0.10 0.10 0.09 0.20 0.24 | |
| Leakage Current | I=0.01CV or 3µA whichever is greater (10~100V), I=0.03CV + 10µA (160~450V) I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 10 16 25 35 50 63 100 200~250 350 400~450 | |
| | Z(-40°C)/Z(+20°C) | 6 4 4 4 4 4 4 — — — | |
| | Z(-25°C)/Z(+20°C) | — — — — — — — 3 6 6 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 1,000~4,000 hours at 130°C. | | |
| | | 10~100 Vdc | 200~450Vdc |
| | Capacitance change | ≤ ±30% of the initial value | ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≤ ±300% of the specified value | ≤ ±200% of the specified value |
| Leakage current | ≤ Specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 130°C without voltage applied. | | |
| | | 10~100 Vdc | 200~450Vdc |
| | Capacitance change | ≤ ±30% of the initial value | ≤ ±20% of the initial value |
| | Dissipation | ≤ ±300% of the specified value | ≤ ±200% of the specified value |
| Leakage current | ≤ Specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | |

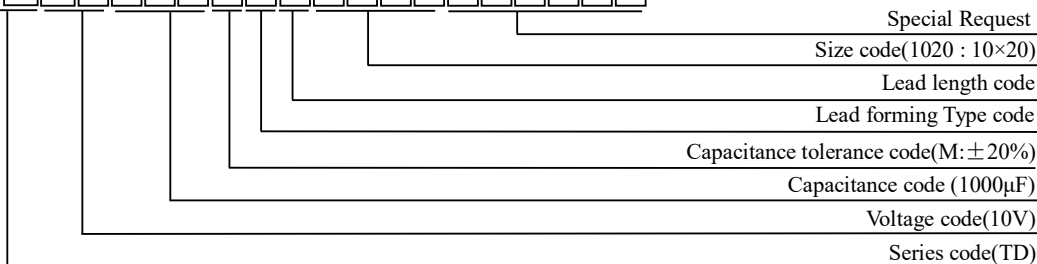
◆ DIMENSIONS (mm)



| ΦD | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|--------------|-----|-----|-------------------------------------|------------|-----|
| ΦD | ΦD + 0.5 Max | | | | | |
| Φd | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | | | ≤ 35 L + 1.5Max ≥ 40 L + 2.0 Max | L + 1.5Max | |

◆ PART NUMBER SYSTEM(Example : 10V 1000µF)

T D 1 A 1 1 0 2 M N N 1 0 2 0



ALUMINUM ELECTROLYTIC CAPACITORS



TD Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 130°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 10 (1A) | 330 | 8×11.5 | 360 | TD1A331MNN08B5 |
| | 470 | 10×12.5 | 620 | TD1A471MNN10C5 |
| | 1000 | 10×20 | 960 | TD1A102MNN1020 |
| | 2200 | 12.5×25 | 1430 | TD1A222MNN1225 |
| | 3300 | 16×25 | 1900 | TD1A332MNN1625 |
| | 4700 | 16×31.5 | 2300 | TD1A472MNN16N3 |
| 16 (1C) | 330 | 8×11.5 | 360 | TD1C331MNN08B5 |
| | 470 | 10×12.5 | 620 | TD1C471MNN10C5 |
| | 1000 | 10×20 | 960 | TD1C102MNN1020 |
| | 2200 | 12.5×25 | 1430 | TD1C222MNN1225 |
| | 3300 | 16×31.5 | 2300 | TD1C332MNN16N3 |
| | 4700 | 16×35.5 | 2550 | TD1C472MNN16P1 |
| 25 (1E) | 220 | 8×11.5 | 360 | TD1E221MNN08B5 |
| | 330 | 10×12.5 | 620 | TD1E331MNN10C5 |
| | 470 | 10×16 | 800 | TD1E471MNN1016 |
| | 1000 | 12.5×20 | 1100 | TD1E102MNN1220 |
| | 2200 | 16×31.5 | 2300 | TD1E222MNN16N3 |
| | 3300 | 16×35.5 | 2550 | TD1E332MNN16P1 |
| 35 (1V) | 100 | 8×11.5 | 360 | TD1V101MNN08B5 |
| | 220 | 10×12.5 | 620 | TD1V221MNN10C5 |
| | 330 | 10×16 | 800 | TD1V331MNN1016 |
| | 470 | 10×25 | 960 | TD1V471MNN1025 |
| | 1000 | 12.5×30 | 1430 | TD1V102MNN1230 |
| | 1500 | 16×31.5 | 1800 | TD1V152MNN16N3 |
| | 2200 | 16×35.5 | 2550 | TD1V222MNN16P1 |
| | 3300 | 18×35.5 | 2800 | TD1V332MNN18P1 |
| 50 (1H) | 4.7 | 8×11.5 | 100 | TD1H47R7MNN08B5 |
| | 10 | 8×11.5 | 200 | TD1H100MNN08B5 |
| | 22 | 8×11.5 | 260 | TD1H220MNN08B5 |
| | 33 | 8×11.5 | 300 | TD1H330MNN08B5 |
| | 47 | 8×11.5 | 300 | TD1H470MNN08B5 |
| | 100 | 10×12.5 | 520 | TD1H101MNN10C5 |
| | 220 | 10×20 | 890 | TD1H221MNN1020 |
| | 330 | 12.5×20 | 1000 | TD1H331MNN1220 |
| | 470 | 12.5×25 | 1200 | TD1H471MNN1225 |
| | 1000 | 16×31.5 | 2180 | TD1H102MNN16N3 |
| | 1500 | 18×35.5 | 2450 | TD1H152MNN18P1 |
| | 2200 | 18×40 | 2800 | TD1H222MNN1840 |
| 63 (1J) | 33 | 8×11.5 | 250 | TD1J330MNN08B5 |
| | 47 | 10×12.5 | 400 | TD1J470MNN10C5 |
| | 100 | 10×16 | 450 | TD1J101MNN1016 |
| | 220 | 12.5×25 | 820 | TD1J221MNN1225 |
| | 330 | 12.5×30 | 1000 | TD1J331MNN1230 |
| | 470 | 16×25 | 1500 | TD1J471MNN1625 |
| | 1000 | 18×35.5 | 1850 | TD1J102MNN18P1 |
| | 1500 | 18×45 | 2350 | TD1J152MNN1845 |
| 100 (2A) | 10 | 8×16 | 200 | TD2A100MNN0816 |
| | 15 | 8×16 | 210 | TD2A150MNN0816 |
| | 22 | 8×16 | 220 | TD2A220MNN0816 |
| | 33 | 10×12.5 | 260 | TD2A330MNN10C5 |
| | 47 | 10×16 | 330 | TD2A470MNN1016 |
| | 56 | 10×20 | 350 | TD2A560MNN1020 |
| | 68 | 10×25 | 400 | TD2A680MNN1025 |
| | 82 | 10×30 | 435 | TD2A820MNN1030 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 130°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|-----------------|
| 100 (2A) | 100 | 12.5×25 | 670 | TD2A101MNN1225 | |
| | 220 | 16×25 | 1100 | TD2A221MNN1625 | |
| | 330 | 16×31.5 | 1300 | TD2A331MNN16N3 | |
| | 470 | 16×40 | 1650 | TD2A471MNN1640 | |
| | 4.7 | 6.3×11 | 100 | TD2D47R7MNN6311 | |
| | 5.6 | 8×11.5 | 130 | TD2D56R6MNN08B5 | |
| 200 (2D) | 6.8 | 8×11.5 | 130 | TD2D68R8MNN08B5 | |
| | 10 | 8×16 | 200 | TD2D100MNN0816 | |
| | 15 | 8×16 | 220 | TD2D150MNN0816 | |
| | 22 | 8×20 | 300 | TD2D220MNN0820 | |
| | 33 | 10×20 | 320 | TD2D330MNN1020 | |
| | 47 | 10×25 | 345 | TD2D470MNN1025 | |
| | 56 | 10×30 | 370 | TD2D560MNN1030 | |
| | 68 | 12.5×25 | 450 | TD2D680MNN1225 | |
| | 82 | 12.5×30 | 485 | TD2D820MNN1230 | |
| | 100 | 16×25 | 600 | TD2D101MNN1625 | |
| | 4.7 | 8×11.5 | 115 | TD2E47R7MNN08B5 | |
| | 5.6 | 8×11.5 | 140 | TD2E56R6MNN08B5 | |
| | 6.8 | 8×11.5 | 140 | TD2E68R8MNN08B5 | |
| | 10 | 8×16 | 220 | TD2E100MNN0816 | |
| 250 (2E) | 15 | 8×20 | 245 | TD2E150MNN0820 | |
| | 22 | 10×16 | 320 | TD2E220MNN1016 | |
| | 33 | 10×25 | 350 | TD2E330MNN1025 | |
| | 47 | 12.5×20 | 375 | TD2E470MNN1220 | |
| | 56 | 12.5×25 | 400 | TD2E560MNN1225 | |
| | 68 | 16×20 | 480 | TD2E680MNN1620 | |
| | 82 | 16×25 | 505 | TD2E820MNN1625 | |
| | 3.3 | 8×16 | 110 | TD2G3R3MNN0816 | |
| | 4.7 | 8×20 | 120 | TD2G47R7MNN0820 | |
| | 5.6 | 10×16 | 130 | TD2G56R6MNN1016 | |
| | 6.8 | 10×20 | 150 | TD2G68R8MNN1020 | |
| | 10 | 10×25 | 220 | TD2G100MNN1025 | |
| | 15 | 10×30 | 240 | TD2G150MNN1030 | |
| | 22 | 12.5×20 | 270 | TD2G220MNN1220 | |
| 33 | 12.5×25 | 305 | TD2G330MNN1225 | | |
| 47 | 16×25 | 400 | TD2G470MNN1625 | | |
| 56 | 16×31.5 | 435 | TD2G560MNN16N3 | | |
| 68 | 16×35.5 | 480 | TD2G680MNN16P1 | | |
| 400 (2G) | 3.3 | 8×16 | 120 | TD2S3R3MNN0816 | |
| | 4.7 | 8×20 | 130 | TD2S47R7MNN0820 | |
| | 5.6 | 10×16 | 140 | TD2S56R6MNN1016 | |
| | 6.8 | 10×20 | 155 | TD2S68R8MNN1020 | |
| | 10 | 10×25 | 240 | TD2S100MNN1025 | |
| | 15 | 10×30 | 255 | TD2S150MNN1030 | |
| | 22 | 12.5×25 | 300 | TD2S220MNN1225 | |
| | 33 | 12.5×30 | 340 | TD2S330MNN1230 | |
| | 47 | 16×31.5 | 445 | TD2S470MNN16N3 | |
| | 3.3 | 8×20 | 135 | TD2W3R3MNN0820 | |
| 420 (2S) | 4.7 | 10×12.5 | 150 | TD2W47R7MNN10C5 | |
| | 5.6 | 10×16 | 160 | TD2W56R6MNN1016 | |
| | 6.8 | 10×20 | 170 | TD2W68R8MNN1020 | |
| | 10 | 12.5×20 | 260 | TD2W100MNN1220 | |
| | 15 | 12.5×25 | 300 | TD2W150MNN1225 | |
| | 22 | 16×20 | 345 | TD2W220MNN1620 | |
| | 450 (2W) | 3.3 | 8×20 | 135 | TD2W3R3MNN0820 |
| | | 4.7 | 10×12.5 | 150 | TD2W47R7MNN10C5 |
| 5.6 | | 10×16 | 160 | TD2W56R6MNN1016 | |
| 6.8 | | 10×20 | 170 | TD2W68R8MNN1020 | |
| 10 | | 12.5×20 | 260 | TD2W100MNN1220 | |
| 15 | | 12.5×25 | 300 | TD2W150MNN1225 | |
| 22 | | 16×20 | 345 | TD2W220MNN1620 | |



TD Series

◆ **RIPPLE CURRENT MULTIPLIERS**
Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|----------|-----------|----------------|------|------|-------|
| | | 120 | 1K | 10K | ≥100K |
| 10 ~ 100 | <100 | 0.40 | 0.75 | 0.90 | 1.00 |
| | 100 ~ 470 | 0.50 | 0.85 | 0.94 | 1.00 |
| | >470 | 0.60 | 0.87 | 0.95 | 1.00 |

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|-----------|---------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 200 ~ 450 | 3.3~15 | 0.30 | 0.60 | 0.90 | 1.00 |
| | 22~100 | 0.50 | 0.80 | 0.90 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



TX Series

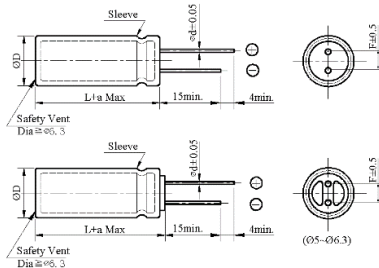
- High temperature 135°C, high reliability
- Load life 1,000~ 2,000 hours at 135°C
- For automotive electronics and lighting equipment and other high temperature applications



◆ SPECIFICATIONS

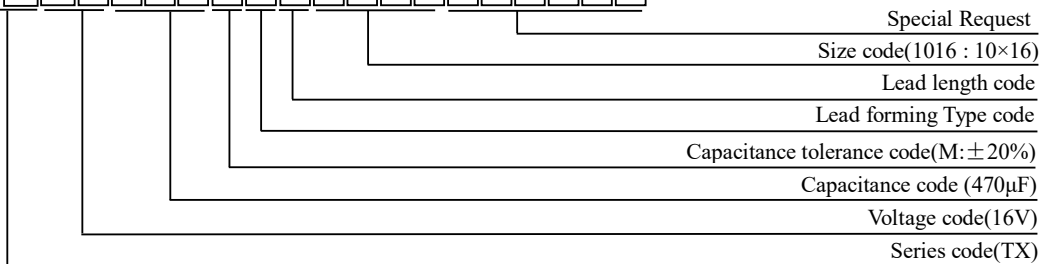
| Item | Performance Characteristics | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|-------------------|-------|-----------------|-------------------|---------|-------|
| Category Temperature Range | -55 ~ +135°C | | | | | | | | | | | | |
| Working Voltage Range | 10 ~ 50Vdc | | | | | | | | | | | | |
| Capacitance Range | 22 ~ 1000 µF | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> <p>When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase.</p> | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | tanδ(Max) | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 |
| Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | | | | | | | | |
| tanδ(Max) | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | | | | | | | | |
| Leakage Current | $I=0.03CV$ I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> <p>(at 120Hz)</p> | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | Z(-55°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 |
| Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | | | | | | | | |
| Z(-55°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 | | | | | | | | |
| Endurance | <p>The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 1,000~2,000 hours at 135°C.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>≤ ±25% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 200% of the specified value</td> <td>≅ Φ10</td> <td>1,000</td> </tr> <tr> <td>Leakage current</td> <td>≤ specified value</td> <td>≅ Φ12.5</td> <td>2,000</td> </tr> </table> | Capacitance change | ≤ ±25% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≤ 200% of the specified value | ≅ Φ10 | 1,000 | Leakage current | ≤ specified value | ≅ Φ12.5 | 2,000 |
| Capacitance change | ≤ ±25% of the initial value | Size | Life time (hours) | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | ≅ Φ10 | 1,000 | | | | | | | | | | |
| Leakage current | ≤ specified value | ≅ Φ12.5 | 2,000 | | | | | | | | | | |
| Shelf Life | <p>The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 135°C without voltage applied.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>≤ ±25% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≤ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤ 200% of the specified value</td> </tr> </table> | Capacitance change | ≤ ±25% of the initial value | Dissipation factor(tanδ) | ≤ 200% of the specified value | Leakage current | ≤ 200% of the specified value | | | | | | |
| Capacitance change | ≤ ±25% of the initial value | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≤ 200% of the specified value | | | | | | | | | | | | |
| Leakage current | ≤ 200% of the specified value | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



| ΦD | 6.3 | 8 | 10 | 12.5 | 16 |
|----|--------------|-----|--------------------------------------|------|-------------|
| ΦD | ΦD + 0.5 Max | | | | |
| Φd | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |
| a | L + 1.5 Max | | ≤ 35 L + 1.5 Max ≥ 40 L + 2.0 Max | | L + 1.5 Max |

◆ PART NUMBER SYSTEM(Example : 16V 470µF)



ALUMINUM ELECTROLYTIC CAPACITORS



TX Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 135°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 10 (1A) | 47 | 6.3×11 | 180 | TX1A470MNN6311 |
| | 100 | 6.3×11 | 420 | TX1A101MNN6311 |
| | 220 | 8×11.5 | 500 | TX1A221MNN08B5 |
| | 330 | 10×12.5 | 580 | TX1A331MNN10C5 |
| | 470 | 10×12.5 | 620 | TX1A471MNN10C5 |
| | 1000 | 10×20 | 900 | TX1A102MNN1020 |
| 16 (1C) | 33 | 6.3×11 | 155 | TX1C330MNN6311 |
| | 47 | 6.3×11 | 190 | TX1C470MNN6311 |
| | 100 | 8×11.5 | 455 | TX1C101MNN08B5 |
| | 220 | 10×12.5 | 590 | TX1C221MNN10C5 |
| | 330 | 10×12.5 | 600 | TX1C331MNN10C5 |
| | 470 | 10×16 | 755 | TX1C471MNN1016 |
| 25 (1E) | 1000 | 12.5×20 | 1010 | TX1C102MNN1220 |
| | 22 | 6.3×20 | 135 | TX1E220MNN6320 |
| | 33 | 8×11 | 175 | TX1E330MNN0811 |
| | 47 | 8×11.5 | 225 | TX1E470MNN08B5 |
| | 100 | 8×11.5 | 480 | TX1E101MNN08B5 |
| | 220 | 10×12.5 | 600 | TX1E221MNN10C5 |
| 330 | 10×16 | 745 | TX1E331MNN1016 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 135°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 25 (1E) | 470 | 10×20 | 900 | TX1E471MNN1020 |
| | 1000 | 12.5×25 | 1290 | TX1E102MNN1225 |
| 35 (1V) | 22 | 8×11.5 | 170 | TX1V220MNN08B5 |
| | 33 | 8×11.5 | 185 | TX1V330MNN08B5 |
| | 47 | 8×11.5 | 240 | TX1V470MNN08B5 |
| | 100 | 10×12.5 | 490 | TX1V101MNN10C5 |
| | 220 | 10×16 | 770 | TX1V221MNN1016 |
| | 330 | 10×20 | 880 | TX1V331MNN1020 |
| | 470 | 12.5×20 | 1020 | TX1V471MNN1220 |
| 50 (1H) | 1000 | 16×25 | 1450 | TX1V102MNN1625 |
| | 22 | 8×11.5 | 185 | TX1H220MNN08B5 |
| | 33 | 8×11.5 | 210 | TX1H330MNN08B5 |
| | 47 | 8×15 | 280 | TX1H470MNN0815 |
| | 100 | 10×12.5 | 490 | TX1H101MNN10C5 |
| | 220 | 10×20 | 820 | TX1H221MNN1020 |
| | 330 | 12.5×20 | 900 | TX1H331MNN1220 |
| | 470 | 12.5×25 | 1095 | TX1H471MNN1225 |
| | 1000 | 16×31.5 | 1510 | TX1H102MNN16N3 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|---------|-----------|----------------|------|------|------|
| | | 120K | 1K | 10K | 100K |
| 10 ~ 50 | <100 | 0.40 | 0.75 | 0.90 | 1.00 |
| | 100 ~ 470 | 0.50 | 0.85 | 0.94 | 1.00 |
| | >470 | 0.60 | 0.87 | 0.95 | 1.00 |

ALUMINUM ELECTROLYTIC CAPACITORS



PW Series

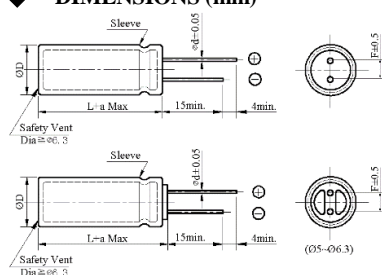
- Downsize and high ripple version
- Load life 2,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|--|---|---|
| Category Temperature Range | -40~ +105°C | -25~ +105°C |
| Working Voltage Range | 6.3 ~ 450dc | 500 ~ 600Vdc |
| Capacitance Range | 0.47 ~2200 µF | 10~150 µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 6.3 10 16 25 35 50 63 100 160 ~ 250 400 ~ 600 |
| | tanδ(Max) | 0.26 0.22 0.18 0.16 0.14 0.12 0.10 0.10 0.15 0.20 |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | |
| Leakage Current | I=0.01CV or 3µA whichever is greater(6.3 ~ 100V) I=0.03CV + 10µA(160 ~ 600V) I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 6.3 100 16 25 35 50~100 160~250 400 420 ~ 450 500~600 |
| | Z(-40°C)/Z(+20°C) | 12 10 8 5 4 3 10 8 8 --- |
| | Z(-25°C)/Z(+20°C) | --- --- --- --- --- --- --- --- --- 6 |
| (at 120Hz) | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value |
| | Leakage current | ≤ specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value |
| | Leakage current | ≤ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

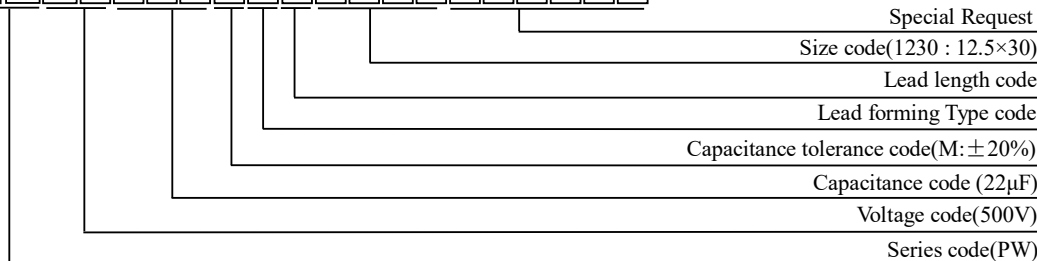
◆ DIMENSIONS (mm)



| ΦD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|----|-------------|-----|-----|-----|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | | | | |
| Φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | | | | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 500V 22µF)

P W 2 H 2 2 0 M N N 1 2 3 0



ALUMINUM ELECTROLYTIC CAPACITORS



PW Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 6.3 (0J) | 22 | 5×11 | 45 | PW0J220MNN0511 |
| | 33 | 5×11 | 55 | PW0J330MNN0511 |
| | 47 | 5×11 | 65 | PW0J470MNN0511 |
| | 68 | 5×11 | 70 | PW0J680MNN0511 |
| | 100 | 5×11 | 100 | PW0J101MNN0511 |
| | 150 | 6.3×11 | 120 | PW0J151MNN6311 |
| | 220 | 6.3×11 | 180 | PW0J221MNN6311 |
| | 330 | 6.3×11 | 195 | PW0J331MNN6311 |
| | 470 | 8×11.5 | 300 | PW0J471MNN08B5 |
| | 680 | 10×12.5 | 320 | PW0J681MNN10C5 |
| | 1000 | 10×12.5 | 480 | PW0J102MNN10C5 |
| | 1500 | 10×16 | 600 | PW0J152MNN1016 |
| | 2200 | 10×20 | 830 | PW0J222MNN1020 |
| | 3300 | 10×20 | 840 | PW0J332MNN1020 |
| | 4700 | 12.5×20 | 1090 | PW0J472MNN1220 |
| | 6800 | 12.5×25 | 1350 | PW0J682MNN1225 |
| | 10000 | 16×25 | 1650 | PW0J103MNN1625 |
| | 15000 | 16×31.5 | 1820 | PW0J153MNN16N3 |
| 22000 | 18×35.5 | 2280 | PW0J223MNN18P1 | |
| 10 (1A) | 22 | 5×11 | 51 | PW1A220MNN0511 |
| | 33 | 5×11 | 60 | PW1A330MNN0511 |
| | 47 | 5×11 | 75 | PW1A470MNN0511 |
| | 68 | 5×11 | 80 | PW1A680MNN0511 |
| | 100 | 5×11 | 110 | PW1A101MNN0511 |
| | 150 | 6.3×11 | 130 | PW1A151MNN6311 |
| | 220 | 6.3×11 | 190 | PW1A221MNN6311 |
| | 330 | 6.3×11 | 210 | PW1A331MNN6311 |
| | 470 | 8×11.5 | 330 | PW1A471MNN08B5 |
| | 680 | 10×12.5 | 420 | PW1A681MNN10C5 |
| | 1000 | 10×12.5 | 460 | PW1A102MNN10C5 |
| | 1500 | 10×20 | 750 | PW1A152MNN1020 |
| | 2200 | 12.5×20 | 980 | PW1A222MNN1220 |
| | 3300 | 12.5×25 | 1250 | PW1A332MNN1225 |
| | 4700 | 16×25 | 1350 | PW1A472MNN1625 |
| | 6800 | 16×31.5 | 1670 | PW1A682MNN16N3 |
| | 10000 | 18×35.5 | 2010 | PW1A103MNN18P1 |
| | 15000 | 18×40 | 2360 | PW1A153MNN1840 |
| 16 (1C) | 10 | 5×11 | 40 | PW1C100MNN0511 |
| | 15 | 5×11 | 45 | PW1C150MNN0511 |
| | 22 | 5×11 | 55 | PW1C220MNN0511 |
| | 33 | 5×11 | 70 | PW1C330MNN0511 |
| | 47 | 5×11 | 85 | PW1C470MNN0511 |
| | 68 | 5×11 | 100 | PW1C680MNN0511 |
| | 100 | 5×11 | 115 | PW1C101MNN0511 |
| | 150 | 8×11.5 | 180 | PW1C151MNN08B5 |
| | 220 | 8×11.5 | 240 | PW1C221MNN08B5 |
| | 330 | 8×11.5 | 285 | PW1C331MNN08B5 |
| | 470 | 10×12.5 | 380 | PW1C471MNN10C5 |
| | 680 | 10×16 | 530 | PW1C681MNN1016 |
| | 1000 | 10×20 | 680 | PW1C102MNN1020 |
| | 1500 | 12.5×20 | 860 | PW1C152MNN1220 |
| | 2200 | 12.5×25 | 1130 | PW1C222MNN1225 |
| | 3300 | 16×25 | 1270 | PW1C332MNN1625 |
| | 4700 | 16×31.5 | 1570 | PW1C472MNN16N3 |
| | 6800 | 18×35.5 | 1930 | PW1C682MNN18P1 |
| 10000 | 18×40 | 2060 | PW1C103MNN1840 | |
| 25 (1E) | 10 | 5×11 | 43 | PW1E100MNN0511 |
| | 15 | 5×11 | 47 | PW1E150MNN0511 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 25 (1E) | 22 | 5×11 | 60 | PW1E220MNN0511 |
| | 33 | 5×11 | 75 | PW1E330MNN0511 |
| | 47 | 5×11 | 90 | PW1E470MNN0511 |
| | 68 | 6.3×11 | 125 | PW1E680MNN6311 |
| | 100 | 6.3×11 | 145 | PW1E101MNN6311 |
| | 150 | 8×11.5 | 200 | PW1E151MNN08B5 |
| | 220 | 8×11.5 | 250 | PW1E221MNN08B5 |
| | 330 | 10×12.5 | 350 | PW1E331MNN10C5 |
| | 470 | 10×16 | 460 | PW1E471MNN1016 |
| | 680 | 10×20 | 650 | PW1E681MNN1020 |
| | 1000 | 12.5×20 | 830 | PW1E102MNN1220 |
| | 1500 | 12.5×25 | 1020 | PW1E152MNN1225 |
| | 2200 | 16×25 | 1210 | PW1E222MNN1625 |
| | 3300 | 16×31.5 | 1540 | PW1E332MNN16N3 |
| | 4700 | 16×35.5 | 1650 | PW1E472MNN16P1 |
| | 6800 | 18×35.5 | 1950 | PW1E682MNN18P1 |
| | 10000 | 18×40 | 2100 | PW1E103MNN1840 |
| | 35 (1V) | 10 | 5×11 | 47 |
| 15 | | 5×11 | 50 | PW1V150MNN0511 |
| 22 | | 5×11 | 65 | PW1V220MNN0511 |
| 33 | | 5×11 | 88 | PW1V330MNN0511 |
| 47 | | 6.3×11 | 100 | PW1V470MNN6311 |
| 68 | | 6.3×11 | 110 | PW1V680MNN6311 |
| 100 | | 6.3×11 | 150 | PW1V101MNN6311 |
| 150 | | 10×12.5 | 240 | PW1V151MNN10C5 |
| 220 | | 10×12.5 | 320 | PW1V221MNN10C5 |
| 330 | | 10×16 | 420 | PW1V331MNN1016 |
| 470 | | 10×20 | 570 | PW1V471MNN1020 |
| 680 | | 12.5×20 | 730 | PW1V681MNN1220 |
| 1000 | | 12.5×25 | 1000 | PW1V102MNN1225 |
| 1500 | | 16×25 | 1110 | PW1V152MNN1625 |
| 2200 | | 16×31.5 | 1450 | PW1V222MNN16N3 |
| 3300 | | 18×31.5 | 1600 | PW1V332MNN18N3 |
| 4700 | | 18×35.5 | 1910 | PW1V472MNN18P1 |
| 50 (1H) | | 0.47 | 5×11 | 11 |
| | 1 | 5×11 | 16 | PW1H010MNN0511 |
| | 2.2 | 5×11 | 23 | PW1H2R2MNN0511 |
| | 3.3 | 5×11 | 29 | PW1H3R3MNN0511 |
| | 4.7 | 5×11 | 34 | PW1H4R7MNN0511 |
| | 6.8 | 5×11 | 35 | PW1H6R8MNN0511 |
| | 10 | 5×11 | 50 | PW1H100MNN0511 |
| | 15 | 5×11 | 52 | PW1H150MNN0511 |
| | 22 | 5×11 | 75 | PW1H220MNN0511 |
| | 33 | 6.3×11 | 100 | PW1H330MNN6311 |
| | 47 | 6.3×11 | 125 | PW1H470MNN6311 |
| | 68 | 8×11.5 | 159 | PW1H680MNN08B5 |
| | 100 | 8×11.5 | 210 | PW1H101MNN08B5 |
| | 150 | 10×12.5 | 290 | PW1H151MNN10C5 |
| | 220 | 10×16 | 370 | PW1H221MNN1016 |
| | 330 | 10×20 | 550 | PW1H331MNN1020 |
| | 470 | 12.5×20 | 660 | PW1H471MNN1220 |
| | 680 | 12.5×25 | 860 | PW1H681MNN1225 |
| 1000 | 16×25 | 1020 | PW1H102MNN1625 | |
| 1500 | 16×31.5 | 1350 | PW1H152MNN16N3 | |
| 2200 | 18×35.5 | 1690 | PW1H222MNN18P1 | |
| 3300 | 18×40 | 2060 | PW1H332MNN1840 | |
| 63 (1J) | 0.47 | 5×11 | 8 | PW1JR47MNN0511 |
| | 1 | 5×11 | 12 | PW1J010MNN0511 |

ALUMINUM ELECTROLYTIC CAPACITORS



PW Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 63 (1J) | 2.2 | 5×11 | 20 | PW1J2R2MNN0511 |
| | 3.3 | 5×11 | 24 | PW1J3R3MNN0511 |
| | 4.7 | 5×11 | 34 | PW1J4R7MNN0511 |
| | 6.8 | 5×11 | 37 | PW1J6R8MNN0511 |
| | 10 | 5×11 | 50 | PW1J100MNN0511 |
| | 15 | 5×11 | 65 | PW1J150MNN0511 |
| | 22 | 6.3×11 | 85 | PW1J220MNN6311 |
| | 33 | 6.3×11 | 110 | PW1J330MNN6311 |
| | 47 | 8×11.5 | 150 | PW1J470MNN08B5 |
| | 68 | 10×12.5 | 198 | PW1J680MNN10C5 |
| | 100 | 10×12.5 | 250 | PW1J101MNN10C5 |
| | 150 | 10×16 | 330 | PW1J151MNN1016 |
| | 220 | 10×20 | 410 | PW1J221MNN1020 |
| | 330 | 12.5×20 | 550 | PW1J331MNN1220 |
| | 470 | 12.5×25 | 720 | PW1J471MNN1225 |
| | 680 | 16×25 | 1000 | PW1J681MNN1625 |
| | 1000 | 16×31.5 | 1130 | PW1J102MNN16N3 |
| 1500 | 16×35.5 | 1450 | PW1J152MNN16P1 | |
| 2200 | 18×40 | 1780 | PW1J222MNN1840 | |
| 100 (2A) | 0.47 | 5×11 | 12 | PW2AR47MNN0511 |
| | 1 | 5×11 | 18 | PW2A010MNN0511 |
| | 2.2 | 5×11 | 27 | PW2A2R2MNN0511 |
| | 3.3 | 5×11 | 33 | PW2A3R3MNN0511 |
| | 4.7 | 5×11 | 39 | PW2A4R7MNN0511 |
| | 6.8 | 5×11 | 46 | PW2A6R8MNN0511 |
| | 10 | 6.3×11 | 65 | PW2A100MNN6311 |
| | 15 | 6.3×11 | 66 | PW2A150MNN6311 |
| | 22 | 6.3×11 | 85 | PW2A220MNN6311 |
| | 33 | 8×11.5 | 130 | PW2A330MNN08B5 |
| | 47 | 10×12.5 | 165 | PW2A470MNN10C5 |
| | 68 | 10×16 | 200 | PW2A680MNN1016 |
| | 100 | 10×20 | 265 | PW2A101MNN1020 |
| | 150 | 12.5×20 | 335 | PW2A151MNN1220 |
| | 220 | 12.5×25 | 440 | PW2A221MNN1225 |
| | 330 | 16×25 | 660 | PW2A331MNN1625 |
| | 470 | 16×31.5 | 880 | PW2A471MNN16N3 |
| 680 | 16×35.5 | 1202 | PW2A681MNN16P1 | |
| 1000 | 18×35.5 | 1300 | PW2A102MNN18P1 | |
| 160 (2C) | 47 | 10×16 | 310 | PW2C470MNN1016 |
| | 56 | 10×20 | 360 | PW2C560MNN1020 |
| | 68 | 10×25 | 420 | PW2C680MNN1025 |
| | 82 | 10×30 | 460 | PW2C820MNN1030 |
| | 100 | 12.5×20 | 590 | PW2C101MNN1220 |
| | 120 | 12.5×25 | 660 | PW2C121MNN1225 |
| | 150 | 16×20 | 780 | PW2C151MNN1620 |
| | 180 | 16×25 | 850 | PW2C181MNN1625 |
| | 220 | 16×31.5 | 940 | PW2C221MNN16N3 |
| | 330 | 16×35.5 | 1000 | PW2C331MNN16P1 |
| | 390 | 18×31.5 | 1050 | PW2C391MNN18N3 |
| 200 (2D) | 470 | 18×35.5 | 1120 | PW2C471MNN18P1 |
| | 560 | 18×40 | 1190 | PW2C561MNN1840 |
| | 33 | 10×16 | 260 | PW2D330MNN1016 |
| | 47 | 10×20 | 330 | PW2D470MNN1020 |
| | 56 | 10×25 | 380 | PW2D560MNN1025 |
| | 68 | 10×30 | 430 | PW2D680MNN1030 |
| | 82 | 12.5×20 | 480 | PW2D820MNN1220 |
| | 100 | 12.5×25 | 610 | PW2D101MNN1225 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 200 (2D) | 120 | 12.5×30 | 680 | PW2D121MNN1230 |
| | 150 | 16×25 | 800 | PW2D151MNN1625 |
| | 180 | 16×31.5 | 870 | PW2D181MNN16N3 |
| | 220 | 18×25 | 960 | PW2D221MNN1825 |
| | 330 | 18×31.5 | 1050 | PW2D331MNN18N3 |
| | 390 | 18×35.5 | 1120 | PW2D391MNN18P1 |
| | 470 | 18×40 | 1190 | PW2D471MNN1840 |
| | 560 | 18×45 | 1250 | PW2D561MNN1845 |
| | 33 | 10×20 | 280 | PW2E330MNN1020 |
| | 47 | 10×25 | 350 | PW2E470MNN1025 |
| 250 (2E) | 56 | 10×30 | 400 | PW2E560MNN1030 |
| | 68 | 12.5×20 | 450 | PW2E680MNN1220 |
| | 82 | 12.5×25 | 500 | PW2E820MNN1225 |
| | 100 | 16×20 | 630 | PW2E101MNN1620 |
| | 120 | 16×25 | 700 | PW2E121MNN1625 |
| | 150 | 16×31.5 | 820 | PW2E151MNN16N3 |
| | 180 | 18×25 | 900 | PW2E181MNN1825 |
| | 220 | 18×31.5 | 1000 | PW2E221MNN18N3 |
| | 330 | 18×35.5 | 1100 | PW2E331MNN18P1 |
| | 390 | 18×40 | 1190 | PW2E391MNN1840 |
| 400 (2G) | 470 | 18×45 | 1250 | PW2E471MNN1845 |
| | 56 | 12.5×30 | 350 | PW2G560MNN1230 |
| | 68 | 16×25 | 380 | PW2G680MNN1625 |
| | 82 | 16×31.5 | 420 | PW2G820MNN16N3 |
| | 100 | 16×35.5 | 450 | PW2G101MNN16P1 |
| | 120 | 18×31.5 | 520 | PW2G121MNN18N3 |
| | 150 | 18×35.5 | 700 | PW2G151MNN18P1 |
| | 180 | 18×40 | 850 | PW2G181MNN1840 |
| | 47 | 16×20 | 250 | PW2S470MNN1620 |
| | 56 | 16×25 | 300 | PW2S560MNN1625 |
| 420 (2S) | 68 | 16×31.5 | 350 | PW2S680MNN16N3 |
| | 82 | 16×35.5 | 380 | PW2S820MNN16P1 |
| | 100 | 18×31.5 | 420 | PW2S101MNN18N3 |
| | 120 | 18×35.5 | 480 | PW2S121MNN18P1 |
| | 150 | 18×40 | 580 | PW2S151MNN1840 |
| | 180 | 18×45 | 630 | PW2S181MNN1845 |
| 450 (2W) | 47 | 16×25 | 300 | PW2W470MNN1625 |
| | 56 | 16×31.5 | 360 | PW2W560MNN16N3 |
| | 68 | 16×35.5 | 420 | PW2W680MNN16P1 |
| | 82 | 18×31.5 | 480 | PW2W820MNN18N3 |
| | 100 | 18×35.5 | 530 | PW2W101MNN18P1 |
| | 120 | 18×40 | 620 | PW2W121MNN1840 |
| | 150 | 18×45 | 780 | PW2W151MNN1845 |
| 475 (2B) | 180 | 16×25 | 300 | PW2W181MNN1625 |
| | 39 | 16×25 | 300 | PW2B390MNN1625 |
| | 47 | 16×31.5 | 330 | PW2B470MNN16N3 |
| | 56 | 18×25 | 400 | PW2B560MNN1825 |
| | 68 | 18×31.5 | 450 | PW2B680MNN18N3 |
| | 82 | 18×35.5 | 520 | PW2B820MNN18P1 |
| | 100 | 18×40 | 580 | PW2B101MNN1840 |
| | 120 | 18×45 | 670 | PW2B121MNN1845 |
| | 150 | 18×50 | 830 | PW2B151MNN1850 |
| | 500 (2H) | 33 | 16×25 | 320 |
| 39 | | 16×31.5 | 360 | PW2H390MNN16N3 |
| 47 | | 18×25 | 420 | PW2H470MNN1825 |
| 56 | | 18×31.5 | 470 | PW2H560MNN18N3 |
| 68 | | 18×35.5 | 555 | PW2H680MNN18P1 |

ALUMINUM ELECTROLYTIC CAPACITORS



PW Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 500 (2H) | 82 | 18×40 | 610 | PW2H820MNN1840 |
| | 100 | 18×45 | 690 | PW2H101MNN1845 |
| | 120 | 18×50 | 860 | PW2H121MNN1850 |
| 550 (2L) | 10 | 12.5×20 | 125 | PW2L100MNN1220 |
| | 15 | 12.5×25 | 160 | PW2L150MNN1225 |
| | 22 | 12.5×35 | 200 | PW2L220MNN1235W |
| | 33 | 16×30 | 290 | PW2L330MNN1630 |
| | 47 | 18×31.5 | 380 | PW2L470MNN18N3 |
| | 56 | 16×40 | 490 | PW2L560MNN1640 |
| | 68 | 18×35.5 | 596 | PW2L680MNN18P1 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 550 (2L) | 82 | 18×45 | 625 | PW2L820MNN1845 |
| | 100 | 18×50 | 705 | PW2L101MNN1850 |
| 600 (2J) | 10 | 12.5×20 | 224 | PW2J100MNN1220 |
| | 15 | 12.5×25 | 257 | PW2J150MNN1225 |
| | 22 | 12.5×35 | 247 | PW2J220MNN1235W |
| | 33 | 16×30 | 458 | PW2J330MNN1630 |
| | 47 | 18×35.5 | 508 | PW2J470MNN18P1 |
| | 56 | 16×45 | 454 | PW2J560MNN1645 |
| | 68 | 18×45 | 551 | PW2J680MNN1845 |
| | 82 | 18×50 | 583 | PW2J820MNN1850 |

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|-----------|--------------|----------------|------|------|------|------|
| | | 50/60 | 120 | 1K | 10K | 100 |
| 6.3 ~ 250 | 0.47 ~ 68 | 0.75 | 1.00 | 1.57 | 2.00 | 2.00 |
| | 100 ~ 680 | 0.80 | 1.00 | 1.34 | 1.40 | 1.50 |
| | 1000 ~ 22000 | 0.85 | 1.00 | 1.13 | 1.13 | 1.13 |
| 400~600 | --- | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



PV Series

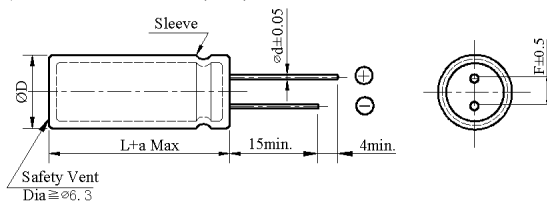
- Downsize and high ripple current
- Load life 2,000 ~ 5,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics | |
|---|--|------------------------------------|
| Category Temperature Range | -40~ +105°C | -25~ +105°C |
| Working Voltage Range | 160~ 450dc | 500Vdc |
| Capacitance Range | 33 ~560 μF | 33~100 μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160 200 250 400 420 450 500 |
| | tanδ(Max) | 0.20 0.20 0.20 0.20 0.20 0.20 0.24 |
| Leakage Current | I=0.03CV + 10μA(160 ~ 600V) I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 400 420 ~ 450 500 |
| | Z(-40°C)/Z(+20°C) | 10 8 6 --- |
| | Z(-25°C)/Z(+20°C) | --- --- --- 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 ~5,000 hours at 105°C. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| | Leakage current | ≦ specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| | Leakage current | ≦ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

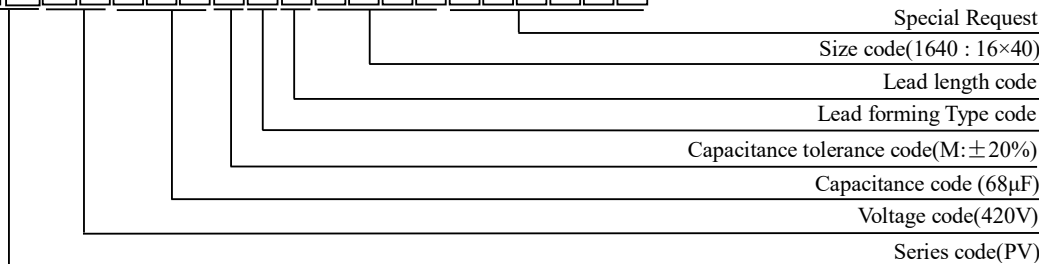
DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

PART NUMBER SYSTEM(Example : 420V 68μF)

P V 2 S 6 8 0 M N N 1 6 4 0



ALUMINUM ELECTROLYTIC CAPACITORS



PV Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 160 (2C) | 33 | 10×16 | 260 | PV2C330MNN1016 |
| | 47 | 10×20 | 330 | PV2C470MNN1020 |
| | 56 | 10×25 | 380 | PV2C560MNN1025 |
| | 68 | 10×30 | 430 | PV2C680MNN1030 |
| | 82 | 12.5×20 | 480 | PV2C820MNN1220 |
| | 100 | 12.5×25 | 610 | PV2C101MNN1225 |
| | 120 | 12.5×30 | 680 | PV2C121MNN1230 |
| | 150 | 16×25 | 800 | PV2C151MNN1625 |
| | 180 | 16×31.5 | 870 | PV2C181MNN16N3 |
| | 220 | 18×25 | 960 | PV2C221MNN1825 |
| | 330 | 18×31.5 | 1050 | PV2C331MNN18N3 |
| | 390 | 18×35.5 | 1120 | PV2C391MNN18P1 |
| | 470 | 18×40 | 1190 | PV2C471MNN1840 |
| | 560 | 18×45 | 1250 | PV2C561MNN1845 |
| 200 (2D) | 33 | 10×20 | 280 | PV2D330MNN1020 |
| | 47 | 10×25 | 350 | PV2D470MNN1025 |
| | 56 | 10×30 | 400 | PV2D560MNN1030 |
| | 68 | 12.5×20 | 450 | PV2D680MNN1220 |
| | 82 | 12.5×25 | 500 | PV2D820MNN1225 |
| | 100 | 16×20 | 630 | PV2D101MNN1620 |
| | 120 | 16×25 | 700 | PV2D121MNN1625 |
| | 150 | 16×31.5 | 820 | PV2D151MNN16N3 |
| | 180 | 18×25 | 900 | PV2D181MNN1825 |
| | 220 | 18×31.5 | 1000 | PV2D221MNN18N3 |
| | 330 | 18×35.5 | 1100 | PV2D331MNN18P1 |
| | 390 | 18×40 | 1190 | PV2D391MNN1840 |
| | 470 | 18×45 | 1250 | PV2D471MNN1845 |
| | 560 | 18×50 | 1320 | PV2D561MNN1850 |
| 250 (2E) | 33 | 10×25 | 300 | PV2E330MNN1025 |
| | 47 | 12.5×16 | 360 | PV2E470MNN1216 |
| | 56 | 12.5×20 | 420 | PV2E560MNN1220 |
| | 68 | 12.5×25 | 470 | PV2E680MNN1225 |
| | 82 | 16×20 | 520 | PV2E820MNN1620 |
| | 100 | 16×25 | 650 | PV2E101MNN1625 |
| | 120 | 18×20 | 720 | PV2E121MNN1820 |
| | 150 | 18×25 | 840 | PV2E151MNN1825 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 250 (2E) | 180 | 18×31.5 | 930 | PV2E181MNN18N3 |
| | 220 | 18×35.5 | 1050 | PV2E221MNN18P1 |
| | 330 | 18×40 | 1190 | PV2E331MNN1840 |
| | 390 | 18×45 | 1250 | PV2E391MNN1845 |
| 400 (2G) | 47 | 16×20 | 280 | PV2G470MNN1620 |
| | 56 | 16×25 | 380 | PV2G560MNN1625 |
| | 68 | 16×31.5 | 400 | PV2G680MNN16N3 |
| | 82 | 16×35.5 | 450 | PV2G820MNN16P1 |
| | 100 | 18×31.5 | 490 | PV2G101MNN18N3 |
| | 120 | 18×35.5 | 560 | PV2G121MNN18P1 |
| | 150 | 18×40 | 750 | PV2G151MNN1840 |
| | 180 | 18×45 | 880 | PV2G181MNN1845 |
| 420 (2S) | 39 | 12.5×30 | 280 | PV2S390MNN1230 |
| | 47 | 16×25 | 350 | PV2S470MNN1625 |
| | 56 | 16×31.5 | 380 | PV2S560MNN16N3 |
| | 68 | 18×25 | 420 | PV2S680MNN1825 |
| | 82 | 18×31.5 | 480 | PV2S820MNN18N3 |
| | 100 | 18×35.5 | 530 | PV2S101MNN18P1 |
| | 120 | 18×40 | 620 | PV2S121MNN1840 |
| | 150 | 18×45 | 800 | PV2S151MNN1845 |
| 450 (2W) | 180 | 18×50 | 920 | PV2S181MNN1850 |
| | 39 | 16×25 | 300 | PV2W390MNN1625 |
| | 47 | 16×31.5 | 320 | PV2W470MNN16N3 |
| | 56 | 16×35.5 | 400 | PV2W560MNN16P1 |
| | 68 | 18×31.5 | 450 | PV2W680MNN18N3 |
| | 82 | 18×35.5 | 510 | PV2W820MNN18P1 |
| | 100 | 18×40 | 570 | PV2W101MNN1840 |
| | 120 | 18×45 | 660 | PV2W121MNN1845 |
| 500 (2H) | 150 | 18×50 | 880 | PV2W151MNN1850 |
| | 33 | 16×31.5 | 335 | PV2H330MNN16N3 |
| | 39 | 16×35.5 | 380 | PV2H390MNN16P1 |
| | 47 | 18×31.5 | 440 | PV2H470MNN18N3 |
| | 56 | 18×35.5 | 490 | PV2H560MNN18P1 |
| | 68 | 18×40 | 580 | PV2H680MNN1840 |
| | 82 | 18×45 | 635 | PV2H820MNN1845 |
| | 100 | 18×50 | 715 | PV2H101MNN1850 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | 100K |
| 160 ~ 500 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



PJ Series

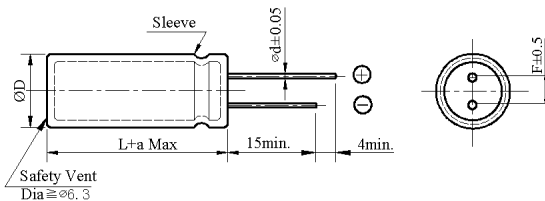
- Downsize and high ripple current
- Load life 10,000 to 12,000 hours at 105°C
- For electronic ballast circuits and other long life applications



◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|---|---|------------------------------------|
| Category Temperature Range | -40~+105°C | -25~+105°C |
| Working Voltage Range | 160~450dc | 500Vdc |
| Capacitance Range | 10~560 μF | 33~82 μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160 200 250 400 420 450 500 |
| | tanδ(Max) | 0.20 0.20 0.24 0.24 0.24 0.24 0.24 |
| Leakage Current | $I=0.03CV + 10\mu A$ I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 400 420~450 500 |
| | Z(-40°C)/Z(+20°C) | 10 8 6 --- |
| | Z(-25°C)/Z(+20°C) | --- --- --- 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 10,000~12,000 hours at 105°C. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value |
| | Leakage current | ≤ specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value |
| | Leakage current | ≤ 500% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

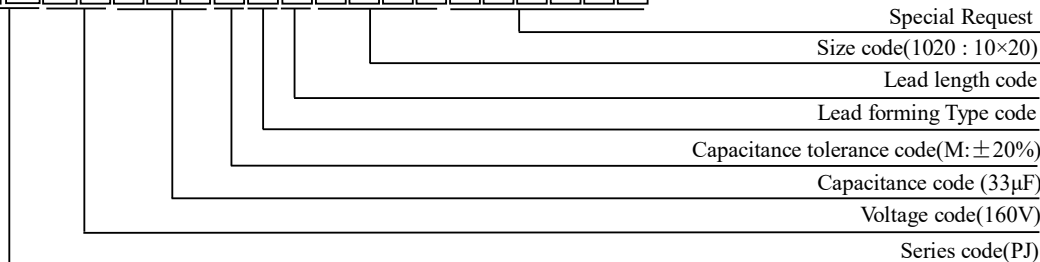
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 160V 33μF)

P J 2 C 3 3 0 M N N 1 0 2 0



ALUMINUM ELECTROLYTIC CAPACITORS



PJ Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 160 (2C) | 33 | 10×20 | 280 | PJ2C330MNN1020 |
| | 47 | 10×25 | 350 | PJ2C470MNN1025 |
| | 56 | 12.5×16 | 400 | PJ2C560MNN1216 |
| | 68 | 12.5×20 | 450 | PJ2C680MNN1220 |
| | 82 | 12.5×25 | 500 | PJ2C820MNN1225 |
| | 100 | 16×20 | 630 | PJ2C101MNN1620 |
| | 120 | 16×25 | 700 | PJ2C121MNN1625 |
| | 150 | 18×20 | 820 | PJ2C151MNN1820 |
| | 180 | 18×25 | 900 | PJ2C181MNN1825 |
| | 220 | 18×31.5 | 1000 | PJ2C221MNN18N3 |
| | 330 | 18×35.5 | 1120 | PJ2C331MNN18P1 |
| | 390 | 18×40 | 1190 | PJ2C391MNN1840 |
| | 470 | 18×45 | 1250 | PJ2C471MNN1845 |
| | 560 | 18×50 | 1320 | PJ2C561MNN1850 |
| 200 (2D) | 47 | 12.5×16 | 360 | PJ2D470MNN1216 |
| | 56 | 12.5×20 | 420 | PJ2D560MNN1220 |
| | 68 | 12.5×25 | 470 | PJ2D680MNN1225 |
| | 82 | 16×20 | 520 | PJ2D820MNN1620 |
| | 100 | 16×25 | 650 | PJ2D101MNN1625 |
| | 120 | 18×20 | 720 | PJ2D121MNN1820 |
| | 150 | 18×25 | 840 | PJ2D151MNN1825 |
| | 180 | 18×31.5 | 930 | PJ2D181MNN18N3 |
| | 220 | 18×35.5 | 1050 | PJ2D221MNN18P1 |
| | 330 | 18×40 | 1190 | PJ2D331MNN1840 |
| | 390 | 18×45 | 1250 | PJ2D391MNN1845 |
| 470 | 18×50 | 1320 | PJ2D471MNN1850 | |
| 250 (2E) | 10 | 10×12.5 | 130 | PJ2E100MNN10C5 |
| | 15 | 10×16 | 170 | PJ2E150MNN1016 |
| | 22 | 10×20 | 200 | PJ2E220MNN1020 |
| | 33 | 12.5×16 | 320 | PJ2E330MNN1216 |
| | 47 | 12.5×20 | 390 | PJ2E470MNN1220 |
| | 56 | 12.5×25 | 460 | PJ2E560MNN1225 |
| | 68 | 16×20 | 520 | PJ2E680MNN1620 |
| | 82 | 16×25 | 560 | PJ2E820MNN1625 |
| | 100 | 18×20 | 680 | PJ2E101MNN1820 |
| | 120 | 18×25 | 750 | PJ2E121MNN1825 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 250 (2E) | 150 | 18×31.5 | 860 | PJ2E151MNN18N3 |
| | 180 | 18×35.5 | 950 | PJ2E181MNN18P1 |
| | 220 | 18×40 | 1130 | PJ2E221MNN1840 |
| | 330 | 18×45 | 1250 | PJ2E331MNN1845 |
| | 390 | 18×50 | 1320 | PJ2E391MNN1850 |
| | 400 (2G) | 39 | 12.5×30 | 280 |
| 47 | | 16×25 | 320 | PJ2G470MNN1625 |
| 56 | | 16×31.5 | 400 | PJ2G560MNN16N3 |
| 68 | | 18×25 | 430 | PJ2G680MNN1825 |
| 82 | | 18×31.5 | 480 | PJ2G820MNN18N3 |
| 100 | | 18×35.5 | 550 | PJ2G101MNN18P1 |
| 120 | | 18×40 | 600 | PJ2G121MNN1840 |
| 150 | | 18×45 | 820 | PJ2G151MNN1845 |
| 180 | | 18×50 | 950 | PJ2G181MNN1850 |
| 420 (2S) | | 39 | 16×25 | 300 |
| | 47 | 18×20 | 380 | PJ2S470MNN1820 |
| | 56 | 18×25 | 420 | PJ2S560MNN1825 |
| | 68 | 18×31.5 | 460 | PJ2S680MNN18N3 |
| | 82 | 18×35.5 | 510 | PJ2S820MNN18P1 |
| | 100 | 18×40 | 580 | PJ2S101MNN1840 |
| | 120 | 18×45 | 650 | PJ2S121MNN1845 |
| | 150 | 18×50 | 850 | PJ2S151MNN1850 |
| 450 (2W) | 39 | 18×20 | 320 | PJ2W390MNN1820 |
| | 47 | 18×25 | 350 | PJ2W470MNN1825 |
| | 56 | 18×31.5 | 450 | PJ2W560MNN18N3 |
| | 68 | 18×35.5 | 500 | PJ2W680MNN18P1 |
| | 82 | 18×40 | 540 | PJ2W820MNN1840 |
| | 100 | 18×45 | 620 | PJ2W101MNN1845 |
| 500 (2H) | 120 | 18×50 | 700 | PJ2W121MNN1850 |
| | 33 | 18×25 | 350 | PJ2H330MNN1825 |
| | 39 | 18×31.5 | 400 | PJ2H390MNN18N3 |
| | 47 | 18×35.5 | 460 | PJ2H470MNN18P1 |
| | 56 | 18×40 | 510 | PJ2H560MNN1840 |
| | 68 | 18×45 | 600 | PJ2H680MNN1845 |
| | 82 | 18×50 | 660 | PJ2H820MNN1850 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | 100K |
| 160 ~ 500 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



PJL Series NEW

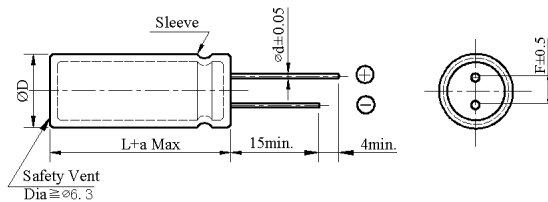
- Downsize and high ripple current
- Load life 12,000 to 15,000 hours at 105°C
- For electronic ballast circuits and other long life applications
- Applied to lighting products



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | |
|---|---|--------------------|-----------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|------------|-----------|-----------------|-------------------|-------|--------|------|------|
| Category Temperature Range | -40~ +105°C | | | | | | | | | | | | | | |
| Working Voltage Range | 160~ 450dc | | | | | | | | | | | | | | |
| Capacitance Range | 6.8~680μF | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>420</td> <td>450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.24</td> <td>0.24</td> <td>0.24</td> </tr> </table> | Rated Voltage (V) | 160 | 200 | 250 | 400 | 420 | 450 | tanδ(Max) | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 |
| Rated Voltage (V) | 160 | 200 | 250 | 400 | 420 | 450 | | | | | | | | | |
| tanδ(Max) | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 | | | | | | | | | |
| Leakage Current | $I=0.03CV + 10\mu A$ I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>160~250</td> <td>400</td> <td>420 ~ 450</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>10</td> <td>8</td> <td>6</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | | | | | | |
| Rated voltage (V) | 160~250 | 400 | 420 ~ 450 | | | | | | | | | | | | |
| Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 12,000~ 15,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> <td>≧ Φ10-12.5</td> <td>12,000</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> <td>≧ Φ16</td> <td>15,000</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Size | Life time (hours) | Dissipation factor(tanδ) | ≦ 200% of the specified value | ≧ Φ10-12.5 | 12,000 | Leakage current | ≦ specified value | ≧ Φ16 | 15,000 | | |
| Capacitance change | ≦ ±20% of the initial value | Size | Life time (hours) | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | ≧ Φ10-12.5 | 12,000 | | | | | | | | | | | | |
| Leakage current | ≦ specified value | ≧ Φ16 | 15,000 | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 500% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 500% of the specified value | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | |
| Leakage current | ≦ 500% of the specified value | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | |

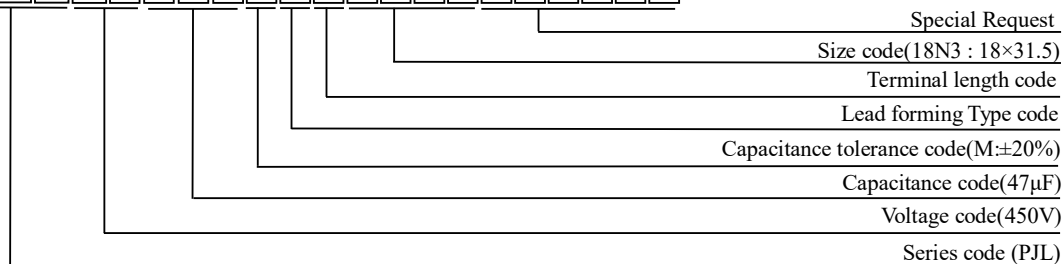
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 450V 47μF)

P J L 2 W 4 7 0 M N N 1 8 N 3



ALUMINUM ELECTROLYTIC CAPACITORS



PJL Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 160 (2C) | 10 | 10×16 | 160 | PJL2C100MNN1016 |
| | 22 | 10×16 | 225 | PJL2C220MNN1016 |
| | 33 | 10×16 | 240 | PJL2C330MNN1016 |
| | 39 | 10×16 | 245 | PJL2C390MNN1016 |
| | 47 | 10×20 | 350 | PJL2C470MNN1020 |
| | 56 | 10×20 | 315 | PJL2C560MNN1020 |
| | 68 | 10×25 | 390 | PJL2C680MNN1025 |
| | 82 | 10×25 | 415 | PJL2C820MNN1025 |
| | 82 | 10×30 | 445 | PJL2C820MNN1030 |
| | 100 | 12.5×20 | 575 | PJL2C101MNN1220 |
| | 120 | 10×35 | 570 | PJL2C121MNN1035 |
| | 120 | 14.5×20 | 675 | PJL2C121MNN1420 |
| | 150 | 10×40 | 665 | PJL2C151MNN1040 |
| | 150 | 10×45 | 695 | PJL2C151MNN1045 |
| | 150 | 12.5×25 | 765 | PJL2C151MNN1225 |
| | 180 | 10×50 | 785 | PJL2C181MNN1050 |
| | 180 | 12.5×30 | 885 | PJL2C181MNN1230 |
| | 180 | 14.5×25 | 890 | PJL2C181MNN1425 |
| | 180 | 16×20 | 855 | PJL2C181MNN1620 |
| | 220 | 16×25 | 1020 | PJL2C221MNN1625 |
| | 220 | 18×20 | 990 | PJL2C221MNN1820 |
| | 270 | 12.5×40 | 1190 | PJL2C271MNN1240W |
| | 270 | 12.5×45 | 1230 | PJL2C271MNN1245W |
| | 270 | 14.5×31.5 | 1170 | PJL2C271MNN14N3 |
| | 270 | 14.5×35.5 | 1210 | PJL2C271MNN14P1 |
| | 330 | 12.5×50 | 1400 | PJL2C331MNN1250W |
| | 330 | 14.5×40 | 1385 | PJL2C331MNN1440 |
| | 330 | 16×31.5 | 1350 | PJL2C331MNN16N3 |
| | 330 | 18×25 | 1290 | PJL2C331MNN1825 |
| | 390 | 14.5×45 | 1545 | PJL2C391MNN1445 |
| | 390 | 16×35.5 | 1500 | PJL2C391MNN16P1 |
| | 470 | 14.5×50 | 1735 | PJL2C471MNN1450 |
| 470 | 16×40 | 1700 | PJL2C471MNN1640 | |
| 470 | 18×31.5 | 1660 | PJL2C471MNN18N3 | |
| 470 | 18×35.5 | 1715 | PJL2C471MNN18P1 | |
| 560 | 16×50 | 1920 | PJL2C561MNN1650 | |
| 560 | 18×40 | 1905 | PJL2C561MNN1840 | |
| 680 | 18×45 | 2130 | PJL2C681MNN1845 | |
| 680 | 18×50 | 2145 | PJL2C681MNN1850 | |
| 200 (2D) | 10 | 10×16 | 160 | PJL2D100MNN1016 |
| | 22 | 10×16 | 190 | PJL2D220MNN1016 |
| | 27 | 10×16 | 200 | PJL2D270MNN1016 |
| | 33 | 10×20 | 270 | PJL2D330MNN1020 |
| | 47 | 10×20 | 290 | PJL2D470MNN1020 |
| | 56 | 10×25 | 345 | PJL2D560MNN1025 |
| | 68 | 10×30 | 405 | PJL2D680MNN1030 |
| | 82 | 12.5×20 | 520 | PJL2D820MNN1220 |
| | 100 | 10×35 | 520 | PJL2D101MNN1035 |
| | 100 | 12.5×25 | 625 | PJL2D101MNN1225 |
| | 100 | 14.5×20 | 615 | PJL2D101MNN1420 |
| | 120 | 10×40 | 595 | PJL2D121MNN1040 |
| | 120 | 10×45 | 620 | PJL2D121MNN1045 |
| | 120 | 12.5×30 | 725 | PJL2D121MNN1230 |
| | 120 | 16×20 | 695 | PJL2D121MNN1620 |
| | 150 | 10×50 | 720 | PJL2D151MNN1050 |
| | 150 | 12.5×35 | 860 | PJL2D151MNN1235W |
| | 150 | 14.5×25 | 810 | PJL2D151MNN1425 |
| | 150 | 16×25 | 830 | PJL2D151MNN1625 |
| | 180 | 14.5×31.5 | 955 | PJL2D181MNN14N3 |
| | 180 | 16×25 | 925 | PJL2D181MNN1625 |
| | 180 | 18×20 | 895 | PJL2D181MNN1820 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|-----------------|
| 200 (2D) | 220 | 12.5×40 | 1075 | PJL2D221MNN1240W | |
| | 220 | 12.5×45 | 1110 | PJL2D221MNN1245W | |
| | 220 | 14.5×35.5 | 1095 | PJL2D221MNN14P1 | |
| | 220 | 18×25 | 1050 | PJL2D221MNN1825 | |
| | 270 | 12.5×50 | 1265 | PJL2D271MNN1250W | |
| | 270 | 14.5×40 | 1250 | PJL2D271MNN1440 | |
| | 270 | 14.5×45 | 1290 | PJL2D271MNN1445 | |
| | 270 | 16×31.5 | 1220 | PJL2D271MNN16N3 | |
| | 270 | 16×35.5 | 1250 | PJL2D271MNN16P1 | |
| | 330 | 14.5×50 | 1450 | PJL2D331MNN1450 | |
| | 330 | 16×40 | 1425 | PJL2D331MNN1640 | |
| | 330 | 18×31.5 | 1395 | PJL2D331MNN18N3 | |
| | 390 | 16×45 | 1575 | PJL2D391MNN1645 | |
| | 390 | 18×35.5 | 1565 | PJL2D391MNN18P1 | |
| | 470 | 16×50 | 1755 | PJL2D471MNN1650 | |
| | 470 | 18×40 | 1745 | PJL2D471MNN1840 | |
| | 470 | 18×45 | 1770 | PJL2D471MNN1845 | |
| | 560 | 18×50 | 1945 | PJL2D561MNN1850 | |
| | 220 (2P) | 27 | 10×16 | 200 | PJL2P270MNN1016 |
| | | 39 | 10×20 | 265 | PJL2P390MNN1020 |
| | | 56 | 10×25 | 345 | PJL2P560MNN1025 |
| | | 56 | 10×30 | 370 | PJL2P560MNN1030 |
| | | 68 | 12.5×20 | 475 | PJL2P680MNN1220 |
| | | 82 | 10×35 | 470 | PJL2P820MNN1035 |
| 82 | | 14.5×20 | 555 | PJL2P820MNN1420 | |
| 100 | | 10×40 | 545 | PJL2P101MNN1040 | |
| 100 | | 10×45 | 565 | PJL2P101MNN1045 | |
| 100 | | 12.5×25 | 625 | PJL2P101MNN1225 | |
| 120 | | 10×50 | 645 | PJL2P121MNN1050 | |
| 120 | | 12.5×30 | 725 | PJL2P121MNN1230 | |
| 120 | | 14.5×25 | 725 | PJL2P121MNN1425 | |
| 120 | | 16×20 | 695 | PJL2P121MNN1620 | |
| 150 | | 12.5×35 | 860 | PJL2P151MNN1235W | |
| 150 | | 16×25 | 845 | PJL2P151MNN1625 | |
| 150 | | 18×20 | 815 | PJL2P151MNN1820 | |
| 180 | | 12.5×40 | 975 | PJL2P181MNN1240W | |
| 180 | | 12.5×45 | 1005 | PJL2P181MNN1245W | |
| 180 | | 14.5×31.5 | 955 | PJL2P181MNN14N3 | |
| 220 | | 12.5×50 | 1145 | PJL2P221MNN1250W | |
| 220 | | 14.5×35.5 | 1095 | PJL2P221MNN14P1 | |
| 220 | | 14.5×40 | 1130 | PJL2P221MNN1440 | |
| 220 | | 16×31.5 | 1100 | PJL2P221MNN16N3 | |
| 220 | 18×25 | 1050 | PJL2P221MNN1825 | | |
| 270 | 14.5×45 | 1285 | PJL2P271MNN1445 | | |
| 270 | 14.5×50 | 1315 | PJL2P271MNN1450 | | |
| 270 | 16×35.5 | 1245 | PJL2P271MNN16P1 | | |
| 270 | 18×31.5 | 1260 | PJL2P271MNN18N3 | | |
| 330 | 16×40 | 1425 | PJL2P331MNN1640 | | |
| 330 | 16×45 | 1450 | PJL2P331MNN1645 | | |
| 330 | 18×35.5 | 1440 | PJL2P331MNN18P1 | | |
| 390 | 16×50 | 1600 | PJL2P391MNN1650 | | |
| 390 | 18×40 | 1590 | PJL2P391MNN1840 | | |
| 390 | 18×45 | 1620 | PJL2P391MNN1845 | | |
| 470 | 18×50 | 1785 | PJL2P471MNN1850 | | |
| 250 (2E) | 10 | 10×16 | 150 | PJL2E100MNN1016 | |
| | 22 | 10×16 | 185 | PJL2E220MNN1016 | |
| | 33 | 10×20 | 240 | PJL2E330MNN1020 | |
| | 47 | 10×25 | 315 | PJL2E470MNN1025 | |
| | 47 | 10×30 | 340 | PJL2E470MNN1030 | |
| | 56 | 12.5×20 | 430 | PJL2E560MNN1220 | |
| | 68 | 10×35 | 430 | PJL2E680MNN1035 | |

ALUMINUM ELECTROLYTIC CAPACITORS



PJL Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 250 (2E) | 68 | 14.5×20 | 505 | PJL2E680MNN1420 |
| | 82 | 10×40 | 495 | PJL2E820MNN1040 |
| | 82 | 10×45 | 515 | PJL2E820MNN1045 |
| | 82 | 12.5×25 | 565 | PJL2E820MNN1225 |
| | 82 | 16×20 | 565 | PJL2E820MNN1620 |
| | 100 | 10×50 | 585 | PJL2E101MNN1050 |
| | 100 | 12.5×30 | 660 | PJL2E101MNN1230 |
| | 100 | 14.5×25 | 665 | PJL2E101MNN1425 |
| | 100 | 16×20 | 635 | PJL2E101MNN1620 |
| | 100 | 18×31.5 | 740 | PJL2E101MNN18N3 |
| | 150 | 12.5×35 | 860 | PJL2E151MNN1235W |
| | 150 | 16×25 | 845 | PJL2E151MNN1625 |
| | 150 | 18×20 | 815 | PJL2E151MNN1820 |
| | 180 | 12.5×40 | 975 | PJL2E181MNN1240W |
| | 180 | 12.5×45 | 1005 | PJL2E181MNN1245W |
| | 180 | 14.5×31.5 | 955 | PJL2E181MNN14N3 |
| | 220 | 12.5×50 | 1145 | PJL2E221MNN1250W |
| | 220 | 14.5×35.5 | 1095 | PJL2E221MNN14P1 |
| | 220 | 14.5×40 | 1130 | PJL2E221MNN1440 |
| | 220 | 16×31.5 | 1100 | PJL2E221MNN16N3 |
| | 220 | 18×25 | 1050 | PJL2E221MNN1825 |
| | 270 | 14.5×45 | 1285 | PJL2E271MNN1445 |
| | 270 | 14.5×50 | 1315 | PJL2E271MNN1450 |
| | 270 | 16×35.5 | 1245 | PJL2E271MNN16P1 |
| | 270 | 18×31.5 | 1260 | PJL2E271MNN18N3 |
| | 330 | 16×40 | 1425 | PJL2E331MNN1640 |
| | 330 | 16×45 | 1450 | PJL2E331MNN1645 |
| | 330 | 18×35.5 | 1440 | PJL2E331MNN18P1 |
| | 390 | 16×50 | 1600 | PJL2E391MNN1650 |
| | 390 | 18×40 | 1590 | PJL2E391MNN1840 |
| | 390 | 18×45 | 1620 | PJL2E391MNN1845 |
| | 470 | 18×50 | 1785 | PJL2E471MNN1850 |
| 350 (2V) | 12 | 10×16 | 135 | PJL2V120MNN1016 |
| | 22 | 10×20 | 200 | PJL2V220MNN1020 |
| | 27 | 10×25 | 240 | PJL2V270MNN1025 |
| | 27 | 10×30 | 255 | PJL2V270MNN1030 |
| | 33 | 12.5×20 | 330 | PJL2V330MNN1220 |
| | 39 | 10×35 | 325 | PJL2V390MNN1035 |
| | 47 | 10×40 | 375 | PJL2V470MNN1040 |
| | 47 | 12.5×25 | 425 | PJL2V470MNN1225 |
| | 47 | 14.5×20 | 420 | PJL2V470MNN1420 |
| | 56 | 10×45 | 425 | PJL2V560MNN1045 |
| | 56 | 12.5×30 | 495 | PJL2V560MNN1230 |
| | 56 | 16×20 | 475 | PJL2V560MNN1620 |
| | 68 | 10×50 | 485 | PJL2V680MNN1050 |
| | 68 | 12.5×35 | 580 | PJL2V680MNN1235W |
| | 68 | 14.5×25 | 545 | PJL2V680MNN1425 |
| | 68 | 18×20 | 550 | PJL2V680MNN1820 |
| | 82 | 12.5×40 | 655 | PJL2V820MNN1240W |
| | 82 | 14.5×31.5 | 645 | PJL2V820MNN14N3 |
| | 82 | 16×25 | 625 | PJL2V820MNN1625 |
| | 100 | 12.5×45 | 750 | PJL2V101MNN1245W |
| | 100 | 12.5×50 | 770 | PJL2V101MNN1250W |
| | 100 | 14.5×35.5 | 740 | PJL2V101MNN14P1 |
| | 100 | 16×31.5 | 740 | PJL2V101MNN16N3 |
| | 100 | 18×25 | 710 | PJL2V101MNN1825 |
| | 120 | 14.5×40 | 835 | PJL2V121MNN1440 |
| | 120 | 14.5×45 | 860 | PJL2V121MNN1445 |
| | 120 | 16×35.5 | 830 | PJL2V121MNN16P1 |
| | 150 | 14.5×50 | 980 | PJL2V151MNN1450 |
| | 150 | 16×40 | 960 | PJL2V151MNN1640 |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|-----------|---------------------|---|------------------|-----------------|
| 350 (2V) | 150 | 16×45 | 975 | PJL2V151MNN1645 | |
| | 150 | 18×31.5 | 940 | PJL2V151MNN18N3 | |
| | 180 | 16×50 | 1090 | PJL2V181MNN1650 | |
| | 180 | 18×35.5 | 1065 | PJL2V181MNN18P1 | |
| | 180 | 18×40 | 1080 | PJL2V181MNN1840 | |
| | 220 | 18×45 | 1210 | PJL2V221MNN1845 | |
| | 220 | 18×50 | 1220 | PJL2V221MNN1850 | |
| | 400 (2G) | 6.8 | 10×16 | 150 | PJL2G6R8MNN1016 |
| | | 10 | 10×16 | 125 | PJL2G100MNN1016 |
| | | 15 | 10×20 | 150 | PJL2G150MNN1020 |
| | | 18 | 10×20 | 180 | PJL2G180MNN1020 |
| | | 22 | 12.5×20 | 210 | PJL2G220MNN1220 |
| 27 | | 10×30 | 255 | PJL2G270MNN1030 | |
| 27 | | 12.5×20 | 300 | PJL2G270MNN1220 | |
| 33 | | 10×35 | 300 | PJL2G330MNN1035 | |
| 33 | | 12.5×25 | 300 | PJL2G330MNN1225 | |
| 39 | | 10×40 | 340 | PJL2G390MNN1040 | |
| 39 | | 10×45 | 355 | PJL2G390MNN1045 | |
| 39 | | 12.5×25 | 390 | PJL2G390MNN1225 | |
| 39 | | 14.5×20 | 385 | PJL2G390MNN1420 | |
| 47 | | 12.5×30 | 455 | PJL2G470MNN1230 | |
| 47 | | 16×20 | 435 | PJL2G470MNN1620 | |
| 56 | | 10×50 | 440 | PJL2G560MNN1050 | |
| 56 | | 14.5×25 | 495 | PJL2G560MNN1425 | |
| 56 | | 18×20 | 500 | PJL2G560MNN1820 | |
| 68 | | 12.5×40 | 600 | PJL2G680MNN1240W | |
| 68 | | 14.5×31.5 | 585 | PJL2G680MNN14N3 | |
| 68 | 16×25 | 570 | PJL2G680MNN1625 | | |
| 82 | 12.5×45 | 680 | PJL2G820MNN1245W | | |
| 82 | 12.5×50 | 700 | PJL2G820MNN1250W | | |
| 82 | 14.5×35.5 | 670 | PJL2G820MNN14P1 | | |
| 82 | 16×31.5 | 670 | PJL2G820MNN16N3 | | |
| 82 | 18×25 | 640 | PJL2G820MNN1825 | | |
| 100 | 14.5×40 | 760 | PJL2G101MNN1440 | | |
| 100 | 14.5×45 | 785 | PJL2G101MNN1445 | | |
| 100 | 16×35.5 | 760 | PJL2G101MNN16P1 | | |
| 100 | 18×31.5 | 780 | PJL2G101MNN18N3 | | |
| 120 | 14.5×50 | 875 | PJL2G121MNN1450 | | |
| 120 | 16×40 | 860 | PJL2G121MNN1640 | | |
| 120 | 16×45 | 875 | PJL2G121MNN1645 | | |
| 120 | 18×31.5 | 840 | PJL2G121MNN18N3 | | |
| 120 | 18×35.5 | 870 | PJL2G121MNN18P1 | | |
| 150 | 16×50 | 995 | PJL2G151MNN1650 | | |
| 150 | 18×40 | 985 | PJL2G151MNN1840 | | |
| 150 | 18×45 | 1095 | PJL2G151MNN1845 | | |
| 220 | 18×50 | 1220 | PJL2G221MNN1850 | | |
| 420 (2S) | 6.8 | 10×16 | 150 | PJL2S6R8MNN1016 | |
| | 10 | 10×20 | 160 | PJL2S100MNN1020 | |
| | 12 | 10×20 | 150 | PJL2S120MNN1020 | |
| | 15 | 10×25 | 185 | PJL2S150MNN1025 | |
| | 15 | 12.5×20 | 265 | PJL2S150MNN1220 | |
| | 18 | 10×30 | 215 | PJL2S180MNN1030 | |
| | 22 | 12.5×20 | 285 | PJL2S220MNN1220 | |
| | 27 | 10×35 | 275 | PJL2S270MNN1035 | |
| | 27 | 10×40 | 290 | PJL2S270MNN1040 | |
| | 27 | 12.5×25 | 340 | PJL2S270MNN1225 | |
| | 27 | 14.5×20 | 335 | PJL2S270MNN1420 | |
| | 33 | 10×45 | 335 | PJL2S330MNN1045 | |
| | 33 | 12.5×30 | 400 | PJL2S330MNN1230 | |
| | 33 | 16×20 | 420 | PJL2S330MNN1620 | |
| | 39 | 10×50 | 375 | PJL2S390MNN1050 | |

ALUMINUM ELECTROLYTIC CAPACITORS



PJL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 420 (2S) | 39 | 14.5×25 | 435 | PJL2S390MNN1425 |
| | 47 | 12.5×35 | 505 | PJL2S470MNN1235W |
| | 47 | 16×25 | 500 | PJL2S470MNN1625 |
| | 47 | 18×20 | 480 | PJL2S470MNN1820 |
| | 56 | 12.5×40 | 570 | PJL2S560MNN1240W |
| | 56 | 12.5×45 | 590 | PJL2S560MNN1245W |
| | 56 | 14.5×31.5 | 590 | PJL2S560MNN14N3 |
| | 68 | 12.5×50 | 670 | PJL2S680MNN1250W |
| | 68 | 14.5×35.5 | 640 | PJL2S680MNN14P1 |
| | 68 | 14.5×40 | 660 | PJL2S680MNN1440 |
| | 68 | 16×31.5 | 645 | PJL2S680MNN16N3 |
| | 68 | 18×25 | 615 | PJL2S680MNN1825 |
| | 82 | 18×31.5 | 730 | PJL2S820MNN18N3 |
| | 100 | 14.5×50 | 845 | PJL2S101MNN1450 |
| | 100 | 16×40 | 825 | PJL2S101MNN1640 |
| | 100 | 16×45 | 840 | PJL2S101MNN1645 |
| | 100 | 18×35.5 | 835 | PJL2S101MNN18P1 |
| | 120 | 16×50 | 935 | PJL2S121MNN1650 |
| | 120 | 18×40 | 930 | PJL2S121MNN1840 |
| | 120 | 18×45 | 945 | PJL2S121MNN1845 |
| 150 | 18×50 | 1060 | PJL2S151MNN1850 | |
| 450 (2W) | 6.8 | 10×16 | 105 | PJL2W6R8MNN1016 |
| | 10 | 10×20 | 140 | PJL2W100MNN1020 |
| | 12 | 10×20 | 150 | PJL2W120MNN1020 |
| | 15 | 10×25 | 185 | PJL2W150MNN1025 |
| | 15 | 12.5×20 | 200 | PJL2W150MNN1220 |
| | 18 | 10×30 | 215 | PJL2W180MNN1030 |
| | 18 | 12.5×20 | 255 | PJL2W180MNN1220 |
| | 22 | 10×35 | 250 | PJL2W220MNN1035 |
| | 22 | 12.5×20 | 250 | PJL2W220MNN1220 |
| | 27 | 10×40 | 290 | PJL2W270MNN1040 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 450 (2W) | 27 | 10×45 | 305 | PJL2W270MNN1045 |
| | 27 | 12.5×25 | 340 | PJL2W270MNN1225 |
| | 27 | 14.5×20 | 335 | PJL2W270MNN1420 |
| | 33 | 12.5×30 | 400 | PJL2W330MNN1230 |
| | 33 | 14.5×25 | 400 | PJL2W330MNN1425 |
| | 33 | 16×20 | 385 | PJL2W330MNN1620 |
| | 39 | 10×50 | 375 | PJL2W390MNN1050 |
| | 39 | 12.5×35 | 460 | PJL2W390MNN1235W |
| | 39 | 18×20 | 440 | PJL2W390MNN1820 |
| | 47 | 12.5×40 | 525 | PJL2W470MNN1240W |
| | 47 | 14.5×31.5 | 515 | PJL2W470MNN14N3 |
| | 47 | 16×25 | 500 | PJL2W470MNN1625 |
| | 47 | 18×20 | 530 | PJL2W470MNN1820 |
| | 56 | 12.5×45 | 590 | PJL2W560MNN1245W |
| | 56 | 14.5×35.5 | 580 | PJL2W560MNN14P1 |
| | 56 | 16×31.5 | 585 | PJL2W560MNN16N3 |
| | 56 | 18×25 | 560 | PJL2W560MNN1825 |
| | 68 | 12.5×50 | 670 | PJL2W680MNN1250 |
| | 68 | 14.5×40 | 660 | PJL2W680MNN1440 |
| | 68 | 14.5×45 | 680 | PJL2W680MNN1445 |
| | 68 | 16×35.5 | 660 | PJL2W680MNN16P1 |
| | 68 | 18×31.5 | 680 | PJL2W680MNN18N3 |
| | 82 | 16×40 | 750 | PJL2W820MNN1640 |
| | 82 | 16×45 | 760 | PJL2W820MNN1645 |
| | 82 | 18×31.5 | 730 | PJL2W820MNN18N3 |
| | 100 | 16×50 | 855 | PJL2W101MNN1650 |
| | 100 | 18×35.5 | 835 | PJL2W101MNN18P1 |
| | 120 | 18×45 | 930 | PJL2W121MNN1845 |
| | 120 | 18×45 | 945 | PJL2W121MNN1845 |
| | 150 | 18×50 | 1060 | PJL2W151MNN1850 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Cap(μF) | Frequency (Hz) | | | |
|---------|----------------|------|------|------|
| | 120 | 1K | 10K | 100K |
| <100 | 1.00 | 1.75 | 2.25 | 2.50 |
| ≥100 | 1.00 | 1.67 | 2.05 | 2.25 |

ALUMINUM ELECTROLYTIC CAPACITORS



MW Series

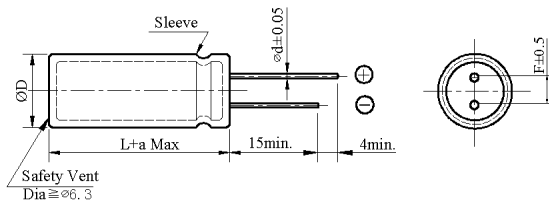
- Low ESR
- Load life 2,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | -40~ +105°C |
| Working Voltage Range | 160~ 450dc |
| Capacitance Range | 33 ~560 µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 160~450 |
| | tanδ(Max) 0.15 |
| Leakage Current | I=0.03CV + 10µA I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) 160~250 400 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) 10 8 6 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. |
| | Capacitance change ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) ≤ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance change ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) ≤ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) |

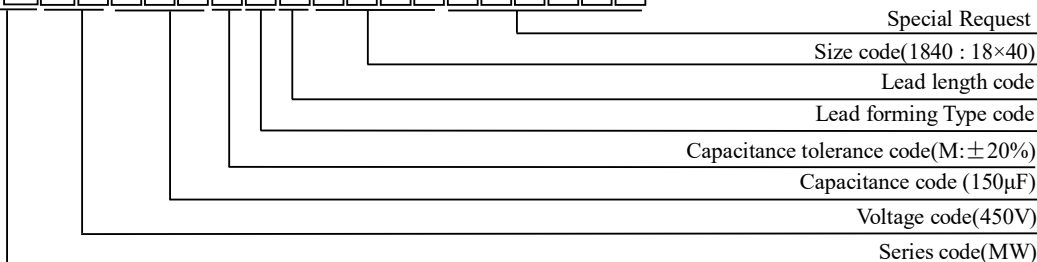
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 450V 150µF)

M W 2 W 1 5 1 M N N 1 8 4 0



ALUMINUM ELECTROLYTIC CAPACITORS



MW Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 160 (2C) | 47 | 10×16 | 380 | MW2C470MNN1016 |
| | 56 | 10×20 | 500 | MW2C560MNN1020 |
| | 68 | 10×25 | 560 | MW2C680MNN1025 |
| | 82 | 10×30 | 600 | MW2C820MNN1030 |
| | 100 | 12.5×20 | 720 | MW2C101MNN1220 |
| | 120 | 12.5×25 | 770 | MW2C121MNN1225 |
| | 150 | 16×20 | 870 | MW2C151MNN1620 |
| | 180 | 16×25 | 1050 | MW2C181MNN1625 |
| | 220 | 16×31.5 | 1095 | MW2C221MNN16N3 |
| | 330 | 16×35.5 | 1150 | MW2C331MNN16P1 |
| | 390 | 18×31.5 | 1320 | MW2C391MNN18N3 |
| | 470 | 18×35.5 | 1375 | MW2C471MNN18P1 |
| 200 (2D) | 560 | 18×40 | 1440 | MW2C561MNN1840 |
| | 33 | 10×16 | 350 | MW2D330MNN1016 |
| | 47 | 10×20 | 420 | MW2D470MNN1020 |
| | 56 | 10×25 | 520 | MW2D560MNN1025 |
| | 68 | 10×30 | 580 | MW2D680MNN1030 |
| | 82 | 12.5×20 | 630 | MW2D820MNN1220 |
| | 100 | 12.5×25 | 745 | MW2D101MNN1225 |
| | 120 | 12.5×30 | 800 | MW2D121MNN1230 |
| | 150 | 16×25 | 930 | MW2D151MNN1625 |
| | 180 | 16×31.5 | 1090 | MW2D181MNN16N3 |
| | 220 | 18×25 | 1120 | MW2D221MNN1825 |
| | 330 | 18×31.5 | 1190 | MW2D331MNN18N3 |
| 250 (2E) | 390 | 18×35.5 | 1350 | MW2D391MNN18P1 |
| | 470 | 18×40 | 1400 | MW2D471MNN1840 |
| | 560 | 18×45 | 1460 | MW2D561MNN1845 |
| | 33 | 10×20 | 360 | MW2E330MNN1020 |
| | 47 | 10×25 | 440 | MW2E470MNN1025 |
| | 56 | 10×30 | 540 | MW2E560MNN1030 |
| | 68 | 12.5×20 | 620 | MW2E680MNN1220 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 250 (2E) | 82 | 12.5×25 | 660 | MW2E820MNN1225 |
| | 100 | 16×20 | 780 | MW2E101MNN1620 |
| | 120 | 16×25 | 850 | MW2E121MNN1625 |
| | 150 | 16×31.5 | 950 | MW2E151MNN16N3 |
| | 180 | 18×25 | 1120 | MW2E181MNN1825 |
| | 220 | 18×31.5 | 1190 | MW2E221MNN18N3 |
| | 330 | 18×35.5 | 1220 | MW2E331MNN18P1 |
| | 390 | 18×40 | 1385 | MW2E391MNN1840 |
| | 470 | 18×45 | 1460 | MW2E471MNN1845 |
| | 400 (2G) | 56 | 12.5×30 | 410 |
| 68 | | 16×23 | 450 | MW2G680MNN1623 |
| 82 | | 16×25 | 560 | MW2G820MNN1625 |
| 100 | | 16×31.5 | 650 | MW2G101MNN16N3 |
| 120 | | 18×28 | 780 | MW2G121MNN1828 |
| 150 | | 18×31.5 | 960 | MW2G151MNN18N3 |
| 420 (2S) | 180 | 18×35.5 | 1000 | MW2G181MNN18P1 |
| | 47 | 16×20 | 380 | MW2S470MNN1620 |
| | 56 | 16×23 | 450 | MW2S560MNN1623 |
| | 68 | 16×25 | 510 | MW2S680MNN1625 |
| | 82 | 16×31.5 | 595 | MW2S820MNN16N3 |
| | 100 | 18×28 | 660 | MW2S101MNN1828 |
| | 120 | 18×31.5 | 820 | MW2S121MNN18N3 |
| | 150 | 18×35.5 | 970 | MW2S151MNN18P1 |
| | 180 | 18×40 | 1050 | MW2S181MNN1840 |
| | 450 (2W) | 47 | 16×23 | 400 |
| 56 | | 16×25 | 480 | MW2W560MNN1625 |
| 68 | | 16×31.5 | 550 | MW2W680MNN16N3 |
| 82 | | 18×25 | 620 | MW2W820MNN1825 |
| 100 | | 18×31.5 | 680 | MW2W101MNN18N3 |
| 120 | | 18×35.5 | 840 | MW2W121MNN18P1 |
| 150 | 18×40 | 1000 | MW2W151MNN1840 | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | | |
|-----------|-----------|----------------|------|------|------|------|
| | | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 450 | 68 ~ 220 | 0.80 | 1.00 | 1.40 | 1.40 | 1.40 |
| | 330 ~ 470 | 0.90 | 1.00 | 1.13 | 1.13 | 1.13 |

ALUMINUM ELECTROLYTIC CAPACITORS



MV Series

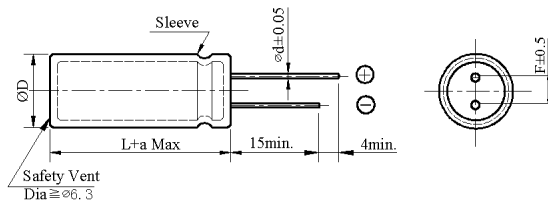
- Low ESR
- High ripple current
- Load life 5,000 hours at 105°C



◆ SPECIFICATIONS

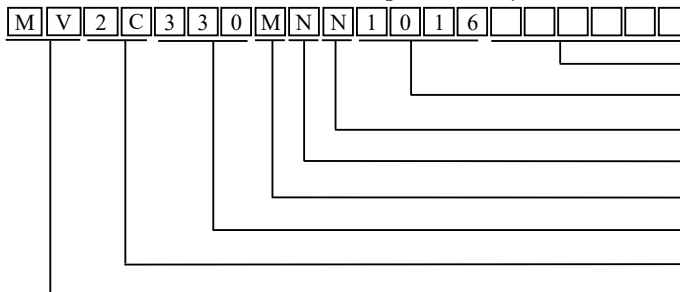
| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | -40~ +105°C |
| Working Voltage Range | 160~ 450dc |
| Capacitance Range | 33 ~560 µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 160~450 |
| | tanδ(Max) 0.15 |
| Leakage Current | I=0.03CV + 10µA I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) 160~250 400 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) 10 8 6 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. |
| | Capacitance change ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) ≤ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance change ≤ ±20% of the initial value |
| | Dissipation factor(tanδ) ≤ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) |

◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 160V 33µF)



ALUMINUM ELECTROLYTIC CAPACITORS



MV Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 160 (2C) | 33 | 10×16 | 350 | MV2C330MNN1016 |
| | 47 | 10×20 | 400 | MV2C470MNN1020 |
| | 56 | 10×25 | 520 | MV2C560MNN1025 |
| | 68 | 10×30 | 580 | MV2C680MNN1030 |
| | 82 | 12.5×20 | 630 | MV2C820MNN1220 |
| | 100 | 12.5×25 | 745 | MV2C101MNN1225 |
| | 120 | 12.5×30 | 800 | MV2C121MNN1230 |
| | 150 | 16×25 | 960 | MV2C151MNN1625 |
| | 180 | 16×31.5 | 1090 | MV2C181MNN16N3 |
| | 220 | 18×25 | 1120 | MV2C221MNN1825 |
| | 330 | 18×31.5 | 1190 | MV2C331MNN18N3 |
| | 390 | 18×35.5 | 1350 | MV2C391MNN18P1 |
| | 470 | 18×40 | 1400 | MV2C471MNN1840 |
| 560 | 18×45 | 1460 | MV2C561MNN1845 | |
| 200 (2D) | 33 | 10×20 | 360 | MV2D330MNN1020 |
| | 47 | 10×25 | 440 | MV2D470MNN1025 |
| | 56 | 10×30 | 540 | MV2D560MNN1030 |
| | 68 | 12.5×20 | 600 | MV2D680MNN1220 |
| | 82 | 12.5×25 | 650 | MV2D820MNN1225 |
| | 100 | 16×20 | 760 | MV2D101MNN1620 |
| | 120 | 16×25 | 820 | MV2D121MNN1625 |
| | 150 | 16×31.5 | 950 | MV2D151MNN16N3 |
| | 180 | 18×25 | 1120 | MV2D181MNN1825 |
| | 220 | 18×31.5 | 1190 | MV2D221MNN18N3 |
| | 330 | 18×35.5 | 1220 | MV2D331MNN18P1 |
| | 390 | 18×40 | 1385 | MV2D391MNN1840 |
| | 470 | 18×45 | 1430 | MV2D471MNN1845 |
| 560 | 18×50 | 1495 | MV2D561MNN1850 | |
| 250 (2E) | 33 | 10×25 | 380 | MV2E330MNN1025 |
| | 47 | 12.5×16 | 460 | MV2E470MNN1216 |
| | 56 | 12.5×20 | 560 | MV2E560MNN1220 |
| | 68 | 12.5×25 | 630 | MV2E680MNN1225 |
| | 82 | 16×20 | 680 | MV2E820MNN1620 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 250 (2E) | 100 | 16×25 | 800 | MV2E101MNN1625 |
| | 120 | 18×20 | 880 | MV2E121MNN1820 |
| | 150 | 18×25 | 980 | MV2E151MNN1825 |
| | 180 | 18×31.5 | 1160 | MV2E181MNN18N3 |
| | 220 | 18×35.5 | 1220 | MV2E221MNN18P1 |
| | 330 | 18×40 | 1350 | MV2E331MNN1840 |
| | 390 | 18×45 | 1420 | MV2E391MNN1845 |
| 400 (2G) | 47 | 16×20 | 360 | MV2G470MNN1620 |
| | 56 | 16×23 | 450 | MV2G560MNN1623 |
| | 68 | 16×25 | 500 | MV2G680MNN1625 |
| | 82 | 16×31.5 | 595 | MV2G820MNN16N3 |
| | 100 | 18×25 | 660 | MV2G101MNN1825 |
| | 120 | 18×31.5 | 800 | MV2G121MNN18N3 |
| | 150 | 18×35.5 | 970 | MV2G151MNN18P1 |
| 180 | 18×40 | 1050 | MV2G181MNN1840 | |
| 420 (2S) | 39 | 12.5×25 | 360 | MV2S390MNN1225 |
| | 47 | 16×23 | 400 | MV2S470MNN1623 |
| | 56 | 16×25 | 480 | MV2S560MNN1625 |
| | 68 | 18×23 | 550 | MV2S680MNN1823 |
| | 82 | 18×25 | 620 | MV2S820MNN1825 |
| | 100 | 18×31.5 | 680 | MV2S101MNN18N3 |
| | 120 | 18×35.5 | 835 | MV2S121MNN18P1 |
| | 150 | 18×40 | 990 | MV2S151MNN1840 |
| 180 | 18×45 | 1100 | MV2S181MNN1845 | |
| 450 (2W) | 39 | 16×23 | 390 | MV2W390MNN1623 |
| | 47 | 16×25 | 420 | MV2W470MNN1625 |
| | 56 | 16×31.5 | 510 | MV2W560MNN16N3 |
| | 68 | 18×25 | 595 | MV2W680MNN1825 |
| | 82 | 18×31.5 | 650 | MV2W820MNN18N3 |
| | 100 | 18×35.5 | 700 | MV2W101MNN18P1 |
| | 120 | 18×40 | 865 | MV2W121MNN1840 |
| 150 | 18×45 | 1050 | MV2W151MNN1845 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 350 | 0.80 | 1.00 | 1.20 | 1.30 | 1.40 |
| 400 ~ 450 | 0.80 | 1.00 | 1.15 | 1.25 | 1.35 |

ALUMINUM ELECTROLYTIC CAPACITORS



MJ Series

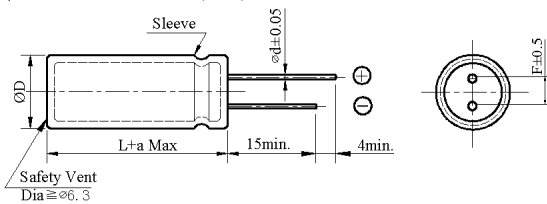
- For electronic ballast circuits and long life
- Low ESR
- High ripple current
- Load life 8,000 to 10,000 hours at 105°C



◆ SPECIFICATIONS

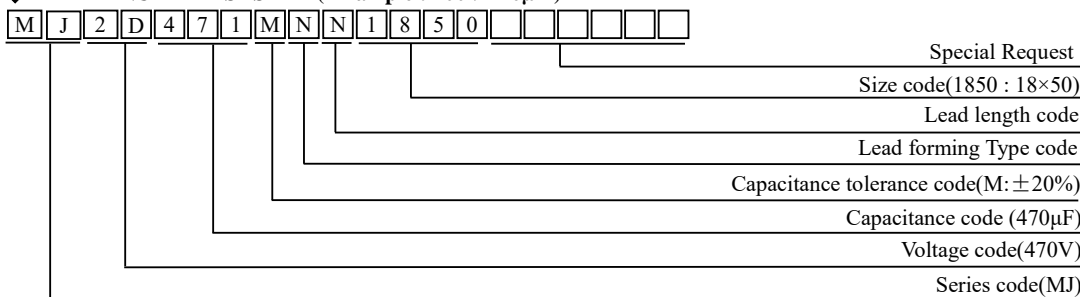
| Item | Performance Characteristics | | | |
|---|---|-------------------------------|-----|-----------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 10 ~560 μF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~450 | | |
| | tanδ(Max) | 0.15 | | |
| Leakage Current | I=0.03CV + 10μA I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 10,000 (8,000 hours for Φ 10) hours at 105°C. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| Others | Leakage current | | | |
| | ≦ 200% of the specified value | | | |
| | Conforms to JIS-C-5101-4 (1998) | | | |

◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 200V 470μF)



ALUMINUM ELECTROLYTIC CAPACITORS



MJ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|----------------|
| 160 (2C) | 33 | 10×20 | 360 | MJ2C330MNN1020 |
| | 47 | 10×25 | 420 | MJ2C470MNN1025 |
| | 56 | 12.5×16 | 540 | MJ2C560MNN1216 |
| | 68 | 12.5×20 | 600 | MJ2C680MNN1220 |
| | 82 | 12.5×25 | 650 | MJ2C820MNN1225 |
| | 100 | 16×20 | 760 | MJ2C101MNN1620 |
| | 120 | 16×25 | 830 | MJ2C121MNN1625 |
| | 150 | 18×20 | 960 | MJ2C151MNN1820 |
| | 180 | 18×25 | 1120 | MJ2C181MNN1825 |
| | 220 | 18×31.5 | 1190 | MJ2C221MNN18N3 |
| | 330 | 18×35.5 | 1220 | MJ2C331MNN18P1 |
| | 390 | 18×40 | 1385 | MJ2C391MNN1840 |
| | 470 | 18×45 | 1430 | MJ2C471MNN1845 |
| | 560 | 18×50 | 1495 | MJ2C561MNN1850 |
| 200 (2D) | 47 | 12.5×16 | 460 | MJ2D470MNN1216 |
| | 56 | 12.5×20 | 560 | MJ2D560MNN1220 |
| | 68 | 12.5×25 | 620 | MJ2D680MNN1225 |
| | 82 | 16×20 | 660 | MJ2D820MNN1620 |
| | 100 | 16×25 | 780 | MJ2D101MNN1625 |
| | 120 | 18×20 | 850 | MJ2D121MNN1820 |
| | 150 | 18×25 | 980 | MJ2D151MNN1825 |
| | 180 | 18×31.5 | 1160 | MJ2D181MNN18N3 |
| | 220 | 18×35.5 | 1220 | MJ2D221MNN18P1 |
| | 330 | 18×40 | 1350 | MJ2D331MNN1840 |
| | 390 | 18×45 | 1420 | MJ2D391MNN1845 |
| 470 | 18×50 | 1460 | MJ2D471MNN1850 | |
| 250 (2E) | 10 | 10×12.5 | 185 | MJ2E100MNN10C5 |
| | 15 | 10×16 | 230 | MJ2E150MNN1016 |
| | 22 | 10×20 | 300 | MJ2E220MNN1020 |
| | 33 | 12.5×16 | 400 | MJ2E330MNN1216 |
| | 47 | 12.5×20 | 480 | MJ2E470MNN1220 |
| | 56 | 12.5×25 | 580 | MJ2E560MNN1225 |
| | 68 | 16×20 | 650 | MJ2E680MNN1620 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|----------------|----------------|
| 250 (2E) | 82 | 16×25 | 700 | MJ2E820MNN1625 | |
| | 100 | 18×20 | 830 | MJ2E101MNN1820 | |
| | 120 | 18×25 | 900 | MJ2E121MNN1825 | |
| | 150 | 18×31.5 | 1000 | MJ2E151MNN18N3 | |
| | 180 | 18×35.5 | 1190 | MJ2E181MNN18P1 | |
| | 220 | 18×40 | 1280 | MJ2E221MNN1840 | |
| | 330 | 18×45 | 1385 | MJ2E331MNN1845 | |
| | 390 | 18×50 | 1460 | MJ2E391MNN1850 | |
| | 400 (2W) | 39 | 12.5×25 | 360 | MJ2G390MNN1225 |
| | | 47 | 16×23 | 380 | MJ2G470MNN1623 |
| 56 | | 16×25 | 480 | MJ2G560MNN1625 | |
| 68 | | 18×23 | 550 | MJ2G680MNN1823 | |
| 82 | | 18×25 | 620 | MJ2G820MNN1825 | |
| 100 | | 18×31.5 | 680 | MJ2G101MNN18N3 | |
| 120 | | 18×35.5 | 820 | MJ2G121MNN18P1 | |
| 150 | | 18×40 | 980 | MJ2G151MNN1840 | |
| 180 | 18×45 | 1100 | MJ2G181MNN1845 | | |
| 420 (2S) | 39 | 16×23 | 390 | MJ2S390MNN1623 | |
| | 47 | 18×20 | 420 | MJ2S470MNN1820 | |
| | 56 | 18×23 | 510 | MJ2S560MNN1823 | |
| | 68 | 18×25 | 600 | MJ2S680MNN1825 | |
| | 82 | 18×31.5 | 650 | MJ2S820MNN18N3 | |
| | 100 | 18×35.5 | 700 | MJ2S101MNN18P1 | |
| | 120 | 18×40 | 850 | MJ2S121MNN1840 | |
| | 150 | 18×45 | 1000 | MJ2S151MNN1845 | |
| 450 (2W) | 39 | 18×20 | 420 | MJ2W390MNN1820 | |
| | 47 | 18×23 | 450 | MJ2W470MNN1823 | |
| | 56 | 18×25 | 550 | MJ2W560MNN1825 | |
| | 68 | 18×31.5 | 630 | MJ2W680MNN18N3 | |
| | 82 | 18×35.5 | 680 | MJ2W820MNN18P1 | |
| | 100 | 18×40 | 720 | MJ2W101MNN1840 | |
| | 120 | 18×45 | 880 | MJ2W121MNN1845 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Cap(μF) | Frequency (Hz) | | | |
|-----------|----------------|------|------|------|
| | 120 | 1K | 10K | 100K |
| 6.8 ~ 82 | 1.00 | 1.75 | 2.25 | 2.50 |
| 100 ~ 330 | 1.00 | 1.67 | 1.75 | 2.25 |

ALUMINUM ELECTROLYTIC CAPACITORS



MZ Series

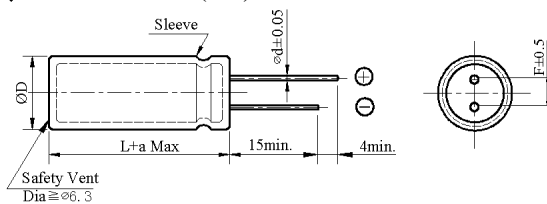
- Low ESR
- Load life 2,000 hours at 105°C
- Ideal for low profile power supply applications



◆ SPECIFICATIONS

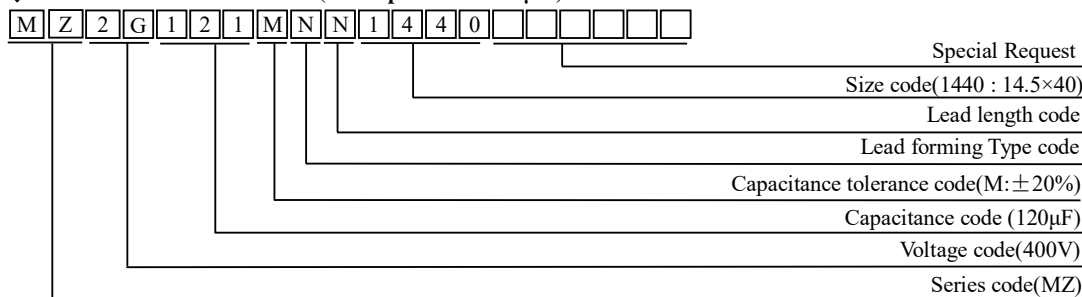
| Item | Performance Characteristics | | | |
|---|---|-------------------------------|-----|---------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 200~ 450dc | | | |
| Capacitance Range | 18 ~270 µF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 200~450 | | |
| | tanδ(Max) | 0.15 | | |
| Leakage Current | I=0.03CV + 10µA I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 200 ~ 250 | 400 | 420~450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| | Leakage current | ≦ specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| | Leakage current | ≦ 200% of the specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

◆ DIMENSIONS (mm)



| ΦD | 8 | 10 | 12.5 | 14.5 |
|----|--------------|------------|---------------------------------|------------|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 3.5 | 5.0 | 5.0 | 7.5 |
| a | L+ 1.5 Max | L+ 1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+ 2.0 Max |

◆ PART NUMBER SYSTEM(Example : 400V 120µF)



ALUMINUM ELECTROLYTIC CAPACITORS



MZ Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 200 (2D) | 82 | 10×30 | 400 | MZ2D820MNN1030 |
| | 100 | 10×35 | 460 | MZ2D101MNN1035 |
| | 120 | 10×40 | 480 | MZ2D121MNN1040 |
| | 150 | 12.5×30 | 600 | MZ2D151MNN1230 |
| | 180 | 12.5×35 | 680 | MZ2D181MNN1235W |
| | 220 | 12.5×40 | 770 | MZ2D221MNN1240W |
| | 220 | 14.5×35 | 785 | MZ2D221MNN1435 |
| | 270 | 14.5×40 | 890 | MZ2D271MNN1440 |
| 400 (2G) | 27 | 8×35 | 235 | MZ2G270MNN0835 |
| | 33 | 8×45 | 230 | MZ2G330MNN0845 |
| | 33 | 10×25 | 245 | MZ2G330MNN1025 |
| | 39 | 8×50 | 290 | MZ2G390MNN0850 |
| | 39 | 10×30 | 300 | MZ2G390MNN1030 |
| | 47 | 10×35 | 330 | MZ2G470MNN1035 |
| | 56 | 10×40 | 400 | MZ2G560MNN1040 |
| | 56 | 12.5×30 | 410 | MZ2G560MNN1230 |
| | 68 | 12.5×35 | 420 | MZ2G680MNN1235W |
| | 68 | 14.5×25 | 435 | MZ2G680MNN1425 |
| | 82 | 12.5×40 | 500 | MZ2G820MNN1240W |
| | 82 | 14.5×30 | 515 | MZ2G820MNN1430 |
| | 100 | 12.5×45 | 580 | MZ2G101MNN1245W |
| | 100 | 14.5×35 | 630 | MZ2G101MNN1435 |
| 120 | 14.5×40 | 665 | MZ2G121MNN1440 | |
| 420 (2S) | 22 | 8×35 | 210 | MZ2S220MNN0835 |
| | 22 | 10×25 | 215 | MZ2S220MNN1025 |
| | 27 | 8×40 | 245 | MZ2S270MNN0840 |
| | 27 | 10×30 | 260 | MZ2S270MNN1030 |
| | 33 | 10×35 | 295 | MZ2S330MNN1035 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|----------------|
| 420 (2S) | 39 | 12.5×25 | 330 | MZ2S390MNN1225 | |
| | 47 | 10×40 | 340 | MZ2S470MNN1040 | |
| | 47 | 12.5×30 | 360 | MZ2S470MNN1230 | |
| | 56 | 10×45 | 410 | MZ2S560MNN1045 | |
| | 56 | 12.5×30 | 420 | MZ2S560MNN1230 | |
| | 68 | 12.5×35 | 450 | MZ2S680MNN1235W | |
| | 68 | 14.5×30 | 465 | MZ2S680MNN1430 | |
| | 82 | 12.5×40 | 530 | MZ2S820MNN1240W | |
| | 82 | 14.5×35 | 540 | MZ2S820MNN1435 | |
| | 100 | 12.5×50 | 630 | MZ2S101MNN1250W | |
| | 100 | 14.5×40 | 660 | MZ2S101MNN1440 | |
| | 120 | 14.5×45 | 675 | MZ2S121MNN1445 | |
| | 450 (2W) | 18 | 8×35 | 190 | MZ2W180MNN0835 |
| | | 22 | 8×40 | 230 | MZ2W220MNN0840 |
| 22 | | 10×25 | 230 | MZ2W220MNN1025 | |
| 27 | | 10×30 | 270 | MZ2W270MNN1030 | |
| 33 | | 12.5×25 | 330 | MZ2W330MNN1225 | |
| 39 | | 10×40 | 340 | MZ2W390MNN1040 | |
| 47 | | 10×45 | 350 | MZ2W470MNN1045 | |
| 47 | | 14.5×25 | 380 | MZ2W470MNN1425 | |
| 56 | | 12.5×35 | 415 | MZ2W560MNN1235W | |
| 56 | | 14.5×30 | 435 | MZ2W560MNN1430 | |
| 68 | | 12.5×40 | 460 | MZ2W680MNN1240W | |
| 68 | | 14.5×35 | 470 | MZ2W680MNN1435 | |
| 82 | | 12.5×45 | 535 | MZ2W820MNN1245W | |
| 82 | | 14.5×40 | 550 | MZ2W820MNN1440 | |
| 100 | | 14.5×45 | 670 | MZ2W101MNN1445 | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Cap(μF) | Frequency (Hz) | | | |
|-----------|-----------|----------------|------|------|------|
| | | 120 | 1K | 10K | 100K |
| 200 ~ 450 | 18 ~ 82 | 1.00 | 1.50 | 1.75 | 1.80 |
| | 100 ~ 270 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



MA Series

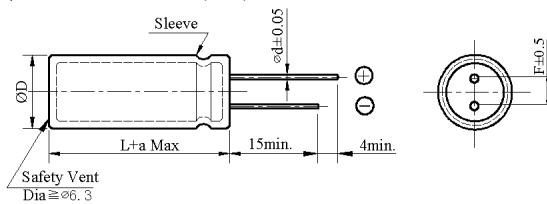
- Low ESR
- 105°C long life 5,000 hours, ultra miniature size
body diameter of $\Phi 10\text{mm}$ to $\Phi 14.5\text{mm}$ with high ripple current capability



◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|---|---|--------------------------------------|
| Category Temperature Range | -40~ +105°C | |
| Working Voltage Range | 400~ 450dc | |
| Capacitance Range | 27~120 μF | |
| Capacitance Tolerance | $\pm 20\%$ (at 25°C and 120Hz) | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | Rated Voltage (V) | 200~450 |
| | tan δ (Max) | 0.15 |
| Leakage Current | $I = 0.03CV + 10\mu\text{A}$ I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 400 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. | |
| | Capacitance change | $\leq \pm 20\%$ of the initial value |
| | Dissipation factor(tan δ) | $\leq 200\%$ of the specified value |
| | Leakage current | \leq specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | |
| | Capacitance change | $\leq \pm 20\%$ of the initial value |
| | Dissipation factor(tan δ) | $\leq 200\%$ of the specified value |
| | Leakage current | $\leq 200\%$ of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

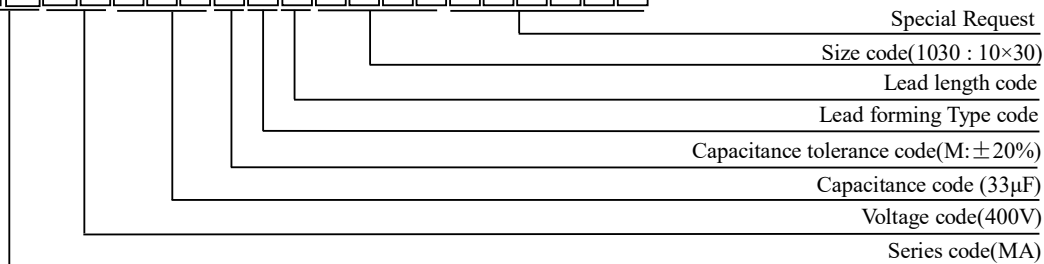
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 14.5 |
|----------|----------------------------|--|------------|
| ΦD | $\Phi D + 0.5 \text{ Max}$ | | |
| Φd | 0.6 | 0.6 | 0.8 |
| F | 5.0 | 5.0 | 7.5 |
| a | L+ 1.5 Max | $\leq 35 L+1.5\text{Max}$ $\geq 40 L+2.0 \text{ Max}$ | L+ 2.0 Max |

◆ PART NUMBER SYSTEM(Example : 400V 33 μF)

M A 2 G 3 3 0 M N N 1 0 3 0



ALUMINUM ELECTROLYTIC CAPACITORS



MA Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 400 (2G) | 33 | 10×30 | 260 | MA2G330MNN1030 |
| | 39 | 10×40 | 330 | MA2G390MNN1040 |
| | 47 | 10×45 | 393 | MA2G470MNN1045 |
| | 56 | 10×50 | 435 | MA2G560MNN1050 |
| | 56 | 12.5×35 | 440 | MA2G560MNN1235W |
| | 68 | 12.5×40 | 555 | MA2G680MNN1240W |
| | 82 | 12.5×45 | 580 | MA2G820MNN1245W |
| | 82 | 14.5×35 | 575 | MA2G820MNN1435 |
| | 100 | 12.5×50 | 645 | MA2G101MNN1250W |
| | 100 | 14.5×50 | 655 | MA2G101MNN1440 |
| 420 (2S) | 120 | 14.5×50 | 675 | MA2G121MNN1450 |
| | 33 | 10×35 | 270 | MA2S330MNN1035 |
| | 39 | 10×40 | 340 | MA2S390MNN1040 |
| | 47 | 10×45 | 405 | MA2S470MNN1045 |
| | 56 | 10×50 | 465 | MA2S560MNN1050 |
| | 56 | 12.5×40 | 497 | MA2S560MNN1240W |
| | 68 | 12.5×40 | 555 | MA2S680MNN1240W |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 420 (2S) | 68 | 14.5×35 | 560 | MA2S680MNN1435 |
| | 82 | 12.5×45 | 610 | MA2S820MNN1245W |
| | 82 | 14.5×40 | 620 | MA2S820MNN1440 |
| | 100 | 14.5×45 | 670 | MA2S101MNN1445 |
| | 120 | 14.5×50 | 690 | MA2S121MNN1450 |
| | 450 (2W) | 27 | 10×30 | 260 |
| 33 | | 10×40 | 280 | MA2W330MNN1040 |
| 39 | | 10×45 | 350 | MA2W390MNN1045 |
| 47 | | 10×50 | 390 | MA2W470MNN1050 |
| 47 | | 12.5×35 | 405 | MA2W470MNN1235W |
| 56 | | 12.5×40 | 505 | MA2W560MNN1240W |
| 68 | | 12.5×45 | 560 | MA2W680MNN1245W |
| 68 | | 14.5×40 | 565 | MA2W680MNN1440 |
| 82 | | 12.5×50 | 625 | MA2W820MNN1250W |
| 82 | | 14.5×45 | 650 | MA2W820MNN1445 |
| 100 | | 14.5×50 | 708 | MA2W101MNN1450 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60(50) | 120 | 500 | 1K | ≥10K |
| 400 ~ 450 | 0.80 | 1.00 | 1.25 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



MQ Series

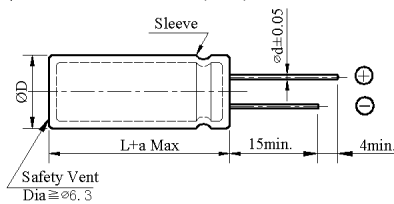
- Low ESR
- 105°C long life 10,000 hours, miniature size
body diameter of $\Phi 10\text{mm}$ to $\Phi 14.5\text{mm}$ with high ripple current capability



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | |
|---|--|--------------------------------------|---------|-----|---------|
| Category Temperature Range | -40~ +105°C | | | | |
| Working Voltage Range | 160~ 450dc | | | | |
| Capacitance Range | 27~390 μF | | | | |
| Capacitance Tolerance | $\pm 20\%$ (at 25°C and 120Hz) | | | | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 350~450 | | |
| | tan δ (Max) | 0.15 | 0.15 | | |
| Leakage Current | I=0.03CV + 10 μA I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 350 | 400 | 420~450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 8 | 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105°C. | | | | |
| | Capacitance change | $\leq \pm 20\%$ of the initial value | | | |
| | Dissipation factor(tan δ) | $\leq 200\%$ of the specified value | | | |
| | Leakage current | \leq specified value | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | |
| | Capacitance change | $\leq \pm 20\%$ of the initial value | | | |
| | Dissipation factor(tan δ) | $\leq 200\%$ of the specified value | | | |
| | Leakage current | $\leq 200\%$ of the specified value | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | |

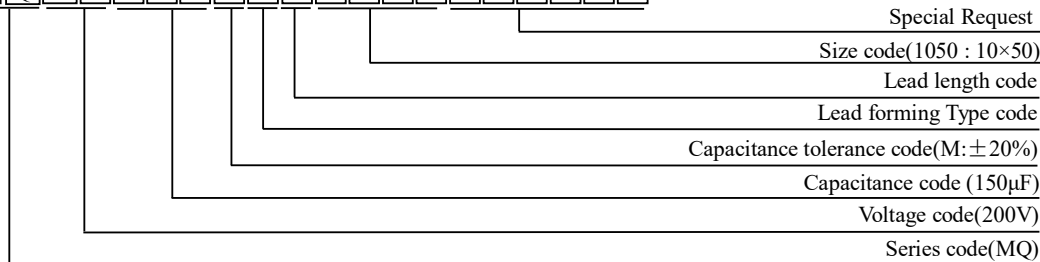
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 14.5 |
|----------------|----------------------------------|--|------------|
| ΦD | $\Phi\text{D} + 0.5 \text{ Max}$ | | |
| Φd | 0.6 | 0.6 | 0.8 |
| F | 5.0 | 5.0 | 7.5 |
| a | L+ 1.5 Max | $\leq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$ | L+ 2.0 Max |

◆ PART NUMBER SYSTEM(Example : 200V 150 μF)

M Q 2 D 1 5 1 M N N 1 0 5 0





MQ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 120 | 10×35 | 570 | MQ2C121MNN1035 |
| | 150 | 10×40 | 665 | MQ2C151MNN1040 |
| | 150 | 10×45 | 695 | MQ2C151MNN1045 |
| | 180 | 10×50 | 785 | MQ2C181MNN1050 |
| | 220 | 10×55 | 880 | MQ2C221MNN1055 |
| | 220 | 12.5×35 | 890 | MQ2C221MNN1235W |
| | 270 | 12.5×45 | 1000 | MQ2C271MNN1245W |
| | 330 | 12.5×50 | 1150 | MQ2C331MNN1250W |
| | 330 | 14.5×40 | 1145 | MQ2C331MNN1440 |
| | 390 | 14.5×45 | 1210 | MQ2C391MNN1445 |
| 200 (2D) | 100 | 10×35 | 520 | MQ2D101MNN1035 |
| | 120 | 10×40 | 595 | MQ2D121MNN1040 |
| | 120 | 10×45 | 620 | MQ2D121MNN1045 |
| | 150 | 10×50 | 690 | MQ2D151MNN1050 |
| | 150 | 12.5×35 | 813 | MQ2D151MNN1235W |
| | 180 | 12.5×40 | 935 | MQ2D181MNN1240W |
| | 220 | 12.5×45 | 970 | MQ2D221MNN1245W |
| | 220 | 14.5×35 | 960 | MQ2D221MNN1435 |
| | 270 | 12.5×50 | 1050 | MQ2D271MNN1250W |
| | 270 | 14.5×40 | 1150 | MQ2D271MNN1440 |
| 220 (2P) | 330 | 14.5×50 | 1210 | MQ2D331MNN1450 |
| | 82 | 10×35 | 470 | MQ2P820MNN1035 |
| | 100 | 10×40 | 545 | MQ2P101MNN1040 |
| | 100 | 10×45 | 565 | MQ2P101MNN1045 |
| | 120 | 10×50 | 590 | MQ2P121MNN1050 |
| | 120 | 12.5×35 | 780 | MQ2P121MNN1235W |
| | 150 | 12.5×40 | 873 | MQ2P151MNN1240W |
| | 180 | 12.5×45 | 1002 | MQ2P181MNN1245W |
| | 220 | 12.5×50 | 1145 | MQ2P221MNN1250W |
| | 270 | 14.5×50 | 1315 | MQ2P271MNN1450 |
| 250 (2E) | 68 | 10×35 | 430 | MQ2E680MNN1035 |
| | 82 | 10×40 | 495 | MQ2E820MNN1040 |
| | 100 | 10×50 | 585 | MQ2E101MNN1050 |
| | 120 | 12.5×35 | 795 | MQ2E121MNN1235W |
| | 150 | 12.5×40 | 890 | MQ2E151MNN1240W |
| | 150 | 14.5×35 | 830 | MQ2E151MNN1435 |
| | 180 | 12.5×50 | 1015 | MQ2E181MNN1250W |
| | 180 | 14.5×40 | 1015 | MQ2E181MNN1440 |
| | 220 | 14.5×45 | 1150 | MQ2E221MNN1445 |
| | 220 | 14.5×50 | 1150 | MQ2E221MNN1450 |
| 350 (2V) | 39 | 10×35 | 300 | MQ2V390MNN1035 |
| | 47 | 10×40 | 335 | MQ2V470MNN1040 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 350 (2V) | 56 | 10×45 | 405 | MQ2V560MNN1045 |
| | 68 | 12.5×35 | 520 | MQ2V680MNN1235W |
| | 82 | 12.5×40 | 580 | MQ2V820MNN1240W |
| | 100 | 12.5×45 | 625 | MQ2V101MNN1245W |
| | 120 | 14.5×40 | 745 | MQ2V121MNN1440 |
| | 150 | 14.5×50 | 780 | MQ2V151MNN1450 |
| 400 (2G) | 33 | 10×35 | 300 | MQ2G330MNN1035 |
| | 39 | 10×40 | 340 | MQ2G390MNN1040 |
| | 47 | 10×45 | 420 | MQ2G470MNN1045 |
| | 56 | 12.5×35 | 470 | MQ2G560MNN1235W |
| | 68 | 12.5×40 | 555 | MQ2G680MNN1240W |
| | 82 | 12.5×45 | 600 | MQ2G820MNN1245W |
| 420 (2S) | 82 | 14.5×35 | 620 | MQ2G820MNN1435 |
| | 100 | 14.5×40 | 700 | MQ2G101MNN1440 |
| | 120 | 14.5×50 | 800 | MQ2G121MNN1450 |
| | 27 | 10×35 | 275 | MQ2S270MNN1035 |
| | 33 | 10×40 | 325 | MQ2S330MNN1040 |
| | 39 | 10×45 | 390 | MQ2S390MNN1045 |
| 420 (2S) | 39 | 12.5×30 | 395 | MQ2S390MNN1230 |
| | 47 | 10×50 | 440 | MQ2S470MNN1050 |
| | 47 | 12.5×35 | 455 | MQ2S470MNN1235W |
| | 56 | 12.5×40 | 524 | MQ2S560MNN1240W |
| | 68 | 12.5×45 | 570 | MQ2S680MNN1245W |
| | 68 | 14.5×40 | 560 | MQ2S680MNN1440 |
| 450 (2W) | 82 | 12.5×50 | 645 | MQ2S820MNN1250W |
| | 82 | 14.5×45 | 630 | MQ2S820MNN1445 |
| | 100 | 14.5×50 | 725 | MQ2S101MNN1450 |
| | 27 | 10×40 | 280 | MQ2W270MNN1040 |
| | 33 | 10×45 | 310 | MQ2W330MNN1045 |
| | 33 | 12.5×30 | 373 | MQ2W330MNN1230 |
| 450 (2W) | 39 | 10×50 | 415 | MQ2W390MNN1050 |
| | 39 | 12.5×35 | 425 | MQ2W390MNN1235W |
| | 47 | 12.5×40 | 490 | MQ2W470MNN1240W |
| | 47 | 14.5×30 | 480 | MQ2W470MNN1430 |
| | 56 | 12.5×45 | 538 | MQ2W560MNN1245W |
| | 56 | 14.5×35 | 545 | MQ2W560MNN1435 |
| 450 (2W) | 68 | 12.5×50 | 600 | MQ2W680MNN1250W |
| | 68 | 14.5×40 | 580 | MQ2W680MNN1440 |
| | 82 | 14.5×50 | 670 | MQ2W820MNN1450 |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60(50) | 120 | 500 | 1K | ≥10K |
| 160 ~ 250 | 0.80 | 1.00 | 1.20 | 1.30 | 1.40 |
| 350 ~ 450 | 0.80 | 1.00 | 1.25 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



SW Series

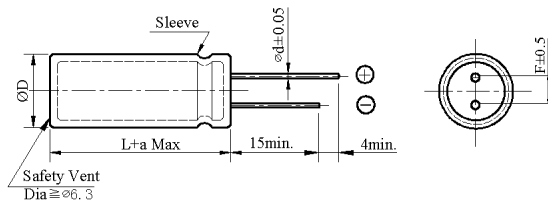
- Counter plan product for safety
- Load life 2,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | |
|---|---|-------------------------------|---------|-----------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 22 ~680 μF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 400~450 | |
| | tanδ(Max) | 0.12 | 0.15 | |
| Leakage Current | I=0.02CV or 3000 μA whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| | Leakage current | ≦ specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| | Leakage current | ≦ 200% of the specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

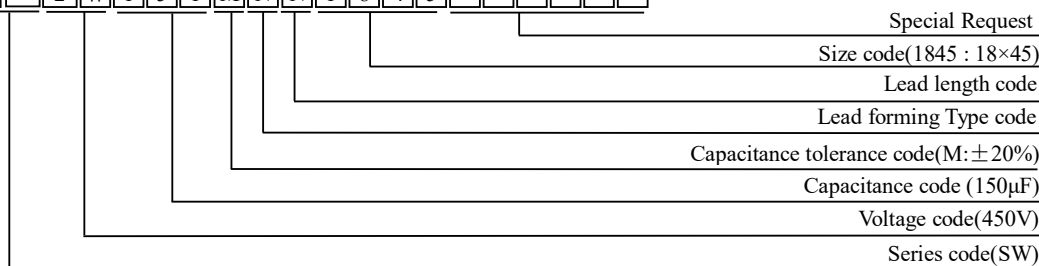
DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

PART NUMBER SYSTEM(Example : 450V 150μF)

S W 2 W 1 5 1 M N N 1 8 4 5



ALUMINUM ELECTROLYTIC CAPACITORS



SW Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 100 | 10×30 | 410 | SW2C101MNN1030 |
| | 120 | 10×35 | 500 | SW2C121MNN1035 |
| | 150 | 10×40 | 575 | SW2C151MNN1040 |
| | 180 | 10×50 | 640 | SW2C181MNN1050 |
| | 180 | 12.5×30 | 620 | SW2C181MNN1230 |
| | 220 | 12.5×35 | 740 | SW2C221MNN1235W |
| | 220 | 16×25 | 725 | SW2C221MNN1625 |
| | 270 | 12.5×45 | 860 | SW2C271MNN1245W |
| | 270 | 16×30 | 830 | SW2C271MNN1630 |
| | 330 | 12.5×50 | 930 | SW2C331MNN1250W |
| | 330 | 16×31.5 | 910 | SW2C331MNN16N3 |
| | 330 | 18×25 | 895 | SW2C331MNN1825 |
| | 470 | 18×31.5 | 1210 | SW2C471MNN18N3 |
| | 560 | 18×35.5 | 1350 | SW2C561MNN18P1 |
| | 680 | 18×40 | 1460 | SW2C681MNN1840 |
| | 200 (2D) | 82 | 10×35 | 435 |
| 100 | | 10×40 | 470 | SW2D101MNN1040 |
| 120 | | 10×45 | 535 | SW2D121MNN1045 |
| 150 | | 12.5×35 | 610 | SW2D151MNN1235W |
| 180 | | 12.5×40 | 700 | SW2D181MNN1240W |
| 220 | | 12.5×50 | 860 | SW2D221MNN1250W |
| 220 | | 16×31.5 | 825 | SW2D221MNN16N3 |
| 270 | | 16×35.5 | 860 | SW2D271MNN16P1 |
| 270 | | 18×30 | 855 | SW2D271MNN1830 |
| 330 | | 16×40 | 1150 | SW2D331MNN1640 |
| 330 | | 18×35.5 | 1200 | SW2D331MNN18P1 |
| 470 | | 18×45 | 1380 | SW2D471MNN1845 |
| 560 | | 18×50 | 1500 | SW2D561MNN1850 |
| 220 (2P) | 68 | 10×35 | 380 | SW2P680MNN1035 |
| | 82 | 10×40 | 450 | SW2P820MNN1040 |
| | 100 | 10×45 | 505 | SW2P101MNN1045 |
| | 120 | 10×50 | 580 | SW2P121MNN1050 |
| | 120 | 12.5×35 | 540 | SW2P121MNN1235W |
| | 150 | 12.5×40 | 620 | SW2P151MNN1240W |
| | 180 | 12.5×45 | 715 | SW2P181MNN1245W |
| | 220 | 16×35.5 | 870 | SW2P221MNN16P1 |
| | 270 | 16×40 | 930 | SW2P271MNN1640 |
| | 270 | 18×30 | 910 | SW2P271MNN1830 |
| | 330 | 16×45 | 1200 | SW2P331MNN1645 |
| | 330 | 18×35.5 | 1245 | SW2P331MNN18P1 |
| | 470 | 18×45 | 1400 | SW2P471MNN1845 |
| 250 (2E) | 68 | 10×40 | 395 | SW2E680MNN1040 |
| | 82 | 10×45 | 480 | SW2E820MNN1045 |
| | 100 | 10×50 | 550 | SW2E101MNN1050 |
| | 100 | 12.5×35 | 530 | SW2E101MNN1235W |
| | 120 | 12.5×40 | 565 | SW2E121MNN1240W |
| | 150 | 12.5×45 | 635 | SW2E151MNN1245W |
| | 180 | 12.5×50 | 740 | SW2E181MNN1250W |
| | 180 | 16×31.5 | 730 | SW2E181MNN16N3 |
| | 220 | 16×40 | 950 | SW2E221MNN1640 |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 250 (2E) | 220 | 18×30 | 920 | SW2E221MNN1830 |
| | 270 | 16×45 | 1100 | SW2E271MNN1645 |
| | 270 | 18×35.5 | 1030 | SW2E271MNN18P1 |
| | 330 | 18×40 | 1300 | SW2E331MNN1840 |
| | 470 | 18×50 | 1460 | SW2E471MNN1850 |
| | 400 (2G) | 27 | 10×30 | 250 |
| 33 | | 10×35 | 275 | SW2G330MNN1035 |
| 39 | | 10×40 | 305 | SW2G390MNN1040 |
| 47 | | 10×45 | 330 | SW2G470MNN1045 |
| 47 | | 12.5×30 | 320 | SW2G470MNN1230 |
| 56 | | 12.5×35 | 375 | SW2G560MNN1235W |
| 68 | | 12.5×40 | 455 | SW2G680MNN1240W |
| 82 | | 12.5×50 | 535 | SW2G820MNN1250W |
| 82 | | 16×31.5 | 530 | SW2G820MNN16N3 |
| 100 | | 16×35.5 | 615 | SW2G101MNN16P1 |
| 120 | | 16×40 | 730 | SW2G121MNN1640 |
| 120 | | 18×31.5 | 700 | SW2G121MNN18N3 |
| 150 | | 18×40 | 845 | SW2G151MNN1840 |
| 180 | | 18×45 | 950 | SW2G181MNN1845 |
| 220 | 18×50 | 1100 | SW2G221MNN1850 | |
| 420 (2S) | 22 | 10×30 | 210 | SW2S220MNN1030 |
| | 27 | 10×35 | 260 | SW2S270MNN1035 |
| | 33 | 10×40 | 290 | SW2S330MNN1040 |
| | 39 | 10×45 | 315 | SW2S390MNN1045 |
| | 47 | 10×50 | 350 | SW2S470MNN1050 |
| | 47 | 12.5×35 | 340 | SW2S470MNN1235W |
| | 56 | 12.5×40 | 395 | SW2S560MNN1240W |
| | 68 | 12.5×45 | 480 | SW2S680MNN1245W |
| | 68 | 16×31.5 | 470 | SW2S680MNN16N3 |
| | 82 | 16×35.5 | 560 | SW2S820MNN16P1 |
| | 100 | 16×40 | 670 | SW2S101MNN1640 |
| | 100 | 18×31.5 | 655 | SW2S101MNN18N3 |
| | 120 | 18×35.5 | 750 | SW2S121MNN18P1 |
| | 150 | 18×45 | 900 | SW2S151MNN1845 |
| 180 | 18×50 | 1040 | SW2S181MNN1850 | |
| 450 (2W) | 22 | 10×30 | 225 | SW2W220MNN1030 |
| | 27 | 10×35 | 280 | SW2W270MNN1035 |
| | 33 | 10×40 | 305 | SW2W330MNN1040 |
| | 39 | 10×50 | 330 | SW2W390MNN1050 |
| | 47 | 12.5×40 | 390 | SW2W470MNN1240W |
| | 56 | 12.5×45 | 450 | SW2W560MNN1245W |
| | 68 | 12.5×50 | 570 | SW2W680MNN1250W |
| | 68 | 16×35.5 | 560 | SW2W680MNN16P1 |
| | 82 | 16×40 | 630 | SW2W820MNN1640 |
| | 82 | 18×31.5 | 605 | SW2W820MNN18N3 |
| | 100 | 16×45 | 740 | SW2W101MNN1645 |
| | 100 | 18×35.5 | 720 | SW2W101MNN18P1 |
| | 120 | 18×40 | 805 | SW2W121MNN1840 |
| | 150 | 18×45 | 950 | SW2W151MNN1845 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 450 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



SQ Series

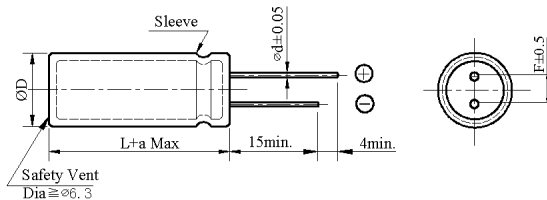
- Counter plan product for safety
- Load life 5,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | -40~ +105°C |
| Working Voltage Range | 160~ 450dc |
| Capacitance Range | 22 ~680 μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 160~250 400~450 |
| | tanδ(Max) 0.12 0.15 |
| Leakage Current | I=0.02CV or 3000 μA whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) 160~250 400 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) 10 8 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. |
| | Capacitance change ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance change ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) |

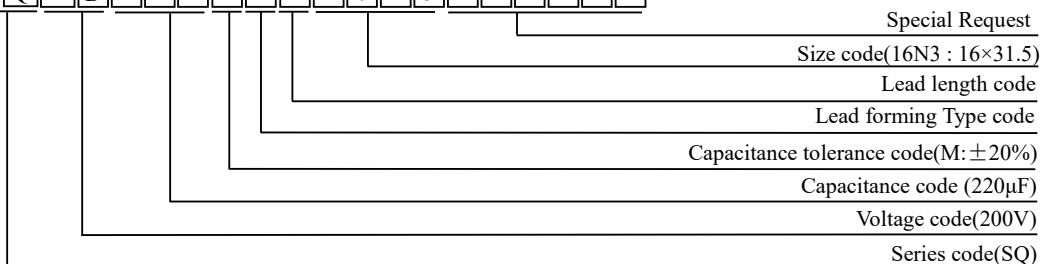
DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

PART NUMBER SYSTEM(Example : 200V 220μF)

S Q 2 D 2 2 1 M N N 1 6 N 3



ALUMINUM ELECTROLYTIC CAPACITORS



SQ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 100 | 10×30 | 425 | SQ2C101MNN1030 |
| | 120 | 10×35 | 510 | SQ2C121MNN1035 |
| | 150 | 10×40 | 590 | SQ2C151MNN1040 |
| | 150 | 12.5×30 | 570 | SQ2C151MNN1230 |
| | 180 | 10×50 | 655 | SQ2C181MNN1050 |
| | 180 | 12.5×35 | 640 | SQ2C181MNN1235W |
| | 220 | 12.5×40 | 770 | SQ2C221MNN1240W |
| | 220 | 16×25 | 735 | SQ2C221MNN1625 |
| | 270 | 12.5×45 | 880 | SQ2C271MNN1245W |
| | 270 | 16×30 | 860 | SQ2C271MNN1630 |
| | 330 | 12.5×50 | 945 | SQ2C331MNN1250W |
| | 330 | 16×35.5 | 930 | SQ2C331MNN16P1 |
| | 330 | 18×30 | 920 | SQ2C331MNN1830 |
| | 470 | 18×35.5 | 1240 | SQ2C471MNN18P1 |
| | 560 | 18×40 | 1375 | SQ2C561MNN1840 |
| | 680 | 18×45 | 1480 | SQ2C681MNN1845 |
| 200 (2D) | 82 | 10×35 | 450 | SQ2D820MNN1035 |
| | 100 | 10×40 | 485 | SQ2D101MNN1040 |
| | 120 | 10×45 | 545 | SQ2D121MNN1045 |
| | 150 | 12.5×35 | 630 | SQ2D151MNN1235W |
| | 180 | 12.5×45 | 725 | SQ2D181MNN1245W |
| | 220 | 12.5×50 | 880 | SQ2D221MNN1250W |
| | 220 | 16×31.5 | 865 | SQ2D221MNN16N3 |
| | 270 | 16×40 | 890 | SQ2D271MNN1640 |
| | 270 | 18×30 | 875 | SQ2D271MNN1830 |
| | 330 | 16×45 | 1180 | SQ2D331MNN1645 |
| | 330 | 18×35.5 | 1250 | SQ2D331MNN18P1 |
| | 470 | 18×45 | 1410 | SQ2D471MNN1845 |
| 560 | 18×50 | 1520 | SQ2D561MNN1850 | |
| 220 (2P) | 68 | 10×35 | 410 | SQ2P680MNN1035 |
| | 82 | 10×40 | 465 | SQ2P820MNN1040 |
| | 100 | 10×45 | 520 | SQ2P101MNN1045 |
| | 120 | 10×50 | 590 | SQ2P121MNN1050 |
| | 120 | 12.5×35 | 560 | SQ2P121MNN1235W |
| | 150 | 12.5×40 | 645 | SQ2P151MNN1240W |
| | 180 | 12.5×50 | 740 | SQ2P181MNN1250W |
| | 220 | 16×35.5 | 900 | SQ2P221MNN16P1 |
| | 270 | 16×40 | 960 | SQ2P271MNN1640 |
| | 270 | 18×31.5 | 935 | SQ2P271MNN18N3 |
| | 330 | 16×50 | 1240 | SQ2P331MNN1650 |
| | 330 | 18×40 | 1280 | SQ2P331MNN1840 |
| 470 | 18×50 | 1440 | SQ2P471MNN1850 | |
| 250 (2E) | 68 | 10×40 | 425 | SQ2E680MNN1040 |
| | 82 | 10×45 | 485 | SQ2E820MNN1045 |
| | 100 | 12.5×35 | 550 | SQ2E101MNN1235W |
| | 120 | 12.5×40 | 575 | SQ2E121MNN1240W |
| | 150 | 12.5×50 | 655 | SQ2E151MNN1250W |
| | 180 | 16×35.5 | 770 | SQ2E181MNN16P1 |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 250 (2E) | 220 | 16×40 | 965 | SQ2E221MNN1640 |
| | 220 | 18×31.5 | 950 | SQ2E221MNN18N3 |
| | 270 | 16×50 | 1120 | SQ2E271MNN1650 |
| | 270 | 18×40 | 1070 | SQ2E271MNN1840 |
| | 330 | 18×45 | 1350 | SQ2E331MNN1845 |
| | 400 (2G) | 27 | 10×30 | 265 |
| 33 | | 10×35 | 280 | SQ2G330MNN1035 |
| 39 | | 10×40 | 315 | SQ2G390MNN1040 |
| 47 | | 10×45 | 350 | SQ2G470MNN1045 |
| 47 | | 12.5×35 | 340 | SQ2G470MNN1235W |
| 56 | | 12.5×40 | 385 | SQ2G560MNN1240W |
| 68 | | 12.5×45 | 465 | SQ2G680MNN1245W |
| 82 | | 12.5×50 | 555 | SQ2G820MNN1250W |
| 82 | | 16×35.5 | 545 | SQ2G820MNN16P1 |
| 100 | | 16×40 | 630 | SQ2G101MNN1640 |
| 120 | | 16×45 | 760 | SQ2G121MNN1645 |
| 120 | | 18×35.5 | 735 | SQ2G121MNN18P1 |
| 420 (2S) | 150 | 18×40 | 870 | SQ2G151MNN1840 |
| | 180 | 18×45 | 980 | SQ2G181MNN1845 |
| | 22 | 10×30 | 220 | SQ2S220MNN1030 |
| | 27 | 10×35 | 270 | SQ2S270MNN1035 |
| | 33 | 10×40 | 305 | SQ2S330MNN1040 |
| | 39 | 10×45 | 325 | SQ2S390MNN1045 |
| | 47 | 10×50 | 370 | SQ2S470MNN1050 |
| | 47 | 12.5×40 | 360 | SQ2S470MNN1240W |
| | 56 | 12.5×45 | 405 | SQ2S560MNN1245W |
| | 68 | 12.5×50 | 490 | SQ2S680MNN1250W |
| | 68 | 16×35.5 | 485 | SQ2S680MNN16P1 |
| | 82 | 16×40 | 590 | SQ2S820MNN1640 |
| 450 (2W) | 100 | 16×45 | 695 | SQ2S101MNN1645 |
| | 100 | 18×35.5 | 680 | SQ2S101MNN18P1 |
| | 120 | 18×40 | 775 | SQ2S121MNN1840 |
| | 150 | 18×45 | 930 | SQ2S151MNN1845 |
| | 180 | 18×50 | 1070 | SQ2S181MNN1850 |
| | 22 | 10×35 | 235 | SQ2W220MNN1035 |
| | 27 | 10×40 | 290 | SQ2W270MNN1040 |
| | 33 | 10×45 | 315 | SQ2W330MNN1045 |
| | 39 | 10×50 | 350 | SQ2W390MNN1050 |
| | 39 | 12.5×40 | 335 | SQ2W390MNN1240W |
| | 47 | 12.5×45 | 405 | SQ2W470MNN1245W |
| | 56 | 12.5×50 | 470 | SQ2W560MNN1250W |
| 68 | 16×40 | 590 | SQ2W680MNN1640 | |
| 82 | 16×45 | 650 | SQ2W820MNN1645 | |
| 82 | 18×35 | 630 | SQ2W820MNN1835 | |
| 100 | 16×50 | 770 | SQ2W101MNN1650 | |
| 100 | 18×40 | 750 | SQ2W101MNN1840 | |
| 120 | 18×45 | 835 | SQ2W121MNN1845 | |
| 150 | 18×50 | 980 | SQ2W151MNN1850 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 250 | 0.80 | 1.00 | 1.20 | 1.30 | 1.40 |
| 400 ~ 450 | 0.80 | 1.00 | 1.15 | 1.25 | 1.35 |

ALUMINUM ELECTROLYTIC CAPACITORS



SJ Series

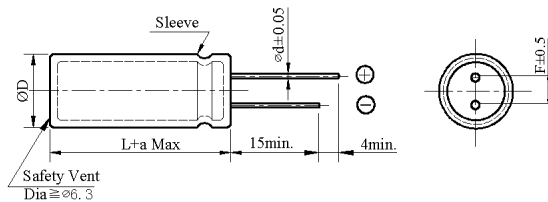
- Counter plan product for safety
- Load life 10,000 hours at 105°C



SPECIFICATIONS

| Item | Performance Characteristics | | | |
|---|--|-------------------------------|---------|-----------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 22 ~680 μF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 400~450 | |
| | tanδ(Max) | 0.12 | 0.15 | |
| Leakage Current | I=0.02CV or 3000 μA whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105°C. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | |
| Others | Leakage current | | | |
| | Conforms to JIS-C-5101-4 (1998) | | | |

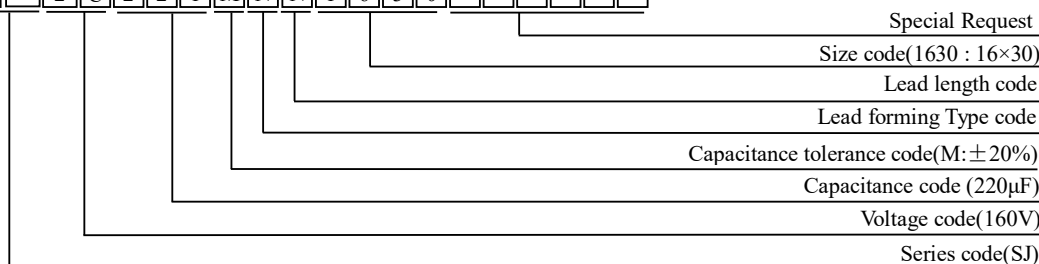
DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|-------------|---------------------------------|-----------|-----|
| ΦD | ΦD +0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L+1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L+1.5 Max | |

PART NUMBER SYSTEM(Example : 160V 220μF)

S J 2 C 2 2 1 M N N 1 6 3 0



ALUMINUM ELECTROLYTIC CAPACITORS



SJ Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|----------------|
| 160 (2C) | 100 | 10×35 | 445 | SJ2C101MNN1035 | |
| | 120 | 10×40 | 525 | SJ2C121MNN1040 | |
| | 150 | 10×50 | 610 | SJ2C151MNN1050 | |
| | 150 | 12.5×35 | 595 | SJ2C151MNN1235W | |
| | 180 | 12.5×40 | 670 | SJ2C181MNN1240W | |
| | 220 | 12.5×45 | 785 | SJ2C221MNN1245W | |
| | 220 | 16×30 | 760 | SJ2C221MNN1630 | |
| | 270 | 12.5×50 | 905 | SJ2C271MNN1250W | |
| | 270 | 16×35.5 | 880 | SJ2C271MNN16P1 | |
| | 270 | 18×30 | 870 | SJ2C271MNN1830 | |
| | 330 | 16×40 | 960 | SJ2C331MNN1640 | |
| | 330 | 18×31.5 | 945 | SJ2C331MNN18N3 | |
| | 470 | 18×40 | 1270 | SJ2C471MNN1840 | |
| | 560 | 18×45 | 1400 | SJ2C561MNN1845 | |
| 680 | 18×50 | 1520 | SJ2C681MNN1850 | | |
| 200 (2D) | 82 | 10×40 | 460 | SJ2D820MNN1040 | |
| | 100 | 10×45 | 490 | SJ2D101MNN1045 | |
| | 120 | 10×50 | 555 | SJ2D121MNN1050 | |
| | 150 | 12.5×40 | 650 | SJ2D151MNN1240W | |
| | 180 | 12.5×45 | 745 | SJ2D181MNN1245W | |
| | 220 | 12.5×50 | 900 | SJ2D221MNN1250W | |
| | 220 | 16×35.5 | 885 | SJ2D221MNN16P1 | |
| | 270 | 16×40 | 910 | SJ2D271MNN1640 | |
| | 270 | 18×31.5 | 890 | SJ2D271MNN18N3 | |
| | 330 | 16×45 | 1210 | SJ2D331MNN1645 | |
| | 330 | 18×35.5 | 1285 | SJ2D331MNN18P1 | |
| | 470 | 18×45 | 1450 | SJ2D471MNN1845 | |
| | 560 | 18×50 | 1550 | SJ2D561MNN1850 | |
| | 220 (2P) | 68 | 10×40 | 425 | SJ2P680MNN1040 |
| 82 | | 10×45 | 480 | SJ2P820MNN1045 | |
| 100 | | 10×50 | 545 | SJ2P101MNN1050 | |
| 120 | | 12.5×40 | 580 | SJ2P121MNN1240W | |
| 150 | | 12.5×45 | 670 | SJ2P151MNN1245W | |
| 180 | | 12.5×50 | 765 | SJ2P181MNN1250W | |
| 220 | | 16×40 | 930 | SJ2P221MNN1640 | |
| 270 | | 16×45 | 990 | SJ2P271MNN1645 | |
| 270 | | 18×35.5 | 975 | SJ2P271MNN18P1 | |
| 330 | | 16×50 | 1270 | SJ2P331MNN1650 | |
| 330 | | 18×40 | 1300 | SJ2P331MNN1840 | |
| 470 | | 18×50 | 1475 | SJ2P471MNN1850 | |
| 250 (2E) | | 68 | 10×45 | 440 | SJ2E680MNN1045 |
| | | 82 | 10×50 | 505 | SJ2E820MNN1050 |
| | 100 | 12.5×40 | 570 | SJ2E101MNN1240W | |
| | 120 | 12.5×50 | 610 | SJ2E121MNN1250W | |
| | 120 | 16×30 | 590 | SJ2E121MNN1630 | |
| | 150 | 16×35.5 | 735 | SJ2E151MNN16P1 | |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 250 (2E) | 180 | 16×40 | 820 | SJ2E181MNN1640 |
| | 220 | 16×50 | 1050 | SJ2E221MNN1650 |
| | 220 | 18×40 | 1010 | SJ2E221MNN1840 |
| | 270 | 18×45 | 1120 | SJ2E271MNN1845 |
| | 330 | 18×50 | 1380 | SJ2E331MNN1850 |
| | 400 (2G) | 27 | 10×35 | 280 |
| 33 | | 10×40 | 295 | SJ2G330MNN1040 |
| 39 | | 10×45 | 325 | SJ2G390MNN1045 |
| 47 | | 10×50 | 370 | SJ2G470MNN1050 |
| 47 | | 12.5×35 | 360 | SJ2G470MNN1235W |
| 56 | | 12.5×40 | 400 | SJ2G560MNN1240W |
| 68 | | 12.5×45 | 475 | SJ2G680MNN1245W |
| 82 | | 12.5×50 | 580 | SJ2G820MNN1250W |
| 82 | | 16×35.5 | 575 | SJ2G820MNN16P1 |
| 100 | | 16×40 | 655 | SJ2G101MNN1640 |
| 100 | | 18×31.5 | 635 | SJ2G101MNN18N3 |
| 120 | | 16×45 | 780 | SJ2G121MNN1645 |
| 120 | | 18×40 | 765 | SJ2G121MNN1840 |
| 150 | | 18×45 | 890 | SJ2G151MNN1845 |
| 180 | 18×50 | 1000 | SJ2G181MNN1850 | |
| 420 (2S) | 22 | 10×35 | 240 | SJ2S220MNN1035 |
| | 27 | 10×40 | 285 | SJ2S270MNN1040 |
| | 33 | 10×45 | 320 | SJ2S330MNN1045 |
| | 39 | 10×50 | 345 | SJ2S390MNN1050 |
| | 47 | 12.5×40 | 385 | SJ2S470MNN1240W |
| | 56 | 12.5×45 | 420 | SJ2S560MNN1245W |
| | 68 | 12.5×50 | 520 | SJ2S680MNN1250W |
| | 68 | 16×35.5 | 515 | SJ2S680MNN16P1 |
| | 82 | 16×40 | 620 | SJ2S820MNN1640 |
| | 100 | 16×45 | 730 | SJ2S101MNN1645 |
| | 100 | 18×35.5 | 715 | SJ2S101MNN18P1 |
| | 120 | 18×45 | 800 | SJ2S121MNN1845 |
| | 150 | 18×50 | 955 | SJ2S151MNN1850 |
| | 450 (2W) | 22 | 10×40 | 260 |
| 27 | | 10×45 | 310 | SJ2W270MNN1045 |
| 33 | | 10×50 | 340 | SJ2W330MNN1050 |
| 33 | | 12.5×35 | 330 | SJ2W330MNN1235W |
| 39 | | 12.5×40 | 365 | SJ2W390MNN1240W |
| 47 | | 12.5×45 | 440 | SJ2W470MNN1245W |
| 56 | | 12.5×50 | 510 | SJ2W560MNN1250W |
| 68 | | 16×40 | 630 | SJ2W680MNN1640 |
| 82 | | 16×45 | 690 | SJ2W820MNN1645 |
| 82 | | 18×35.5 | 670 | SJ2W820MNN18P1 |
| 100 | | 18×40 | 800 | SJ2W101MNN1840 |
| 120 | | 18×50 | 880 | SJ2W121MNN1850 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 450 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



VW Series

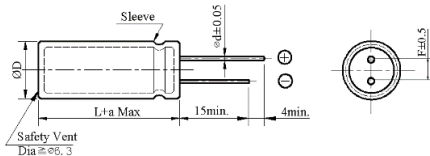
- Capacitor for over voltage application
- Load life 2,000 hours at 105°C



◆ SPECIFICATIONS

| Item | Performance Characteristics | | | |
|---|---|-------------------------------|------------------|---------------------------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 18 ~270 µF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 400~450 | |
| | tanδ(Max) | 0.12 | 0.15 | |
| Leakage Current | I=0.02CV or 3000 µA whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Charge and Discharge | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35°C. | | | |
| | Frequency | Number of cycles | Voltage waveform | Capacitance change |
| | 5Hz | 200million times | | ±20% of the initial value |
| | | | | Dissipation factor(tanδ) |
| | | | Leakage current | ≤ specified value |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | | | |
| | Capacitance change | ≤ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≤ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

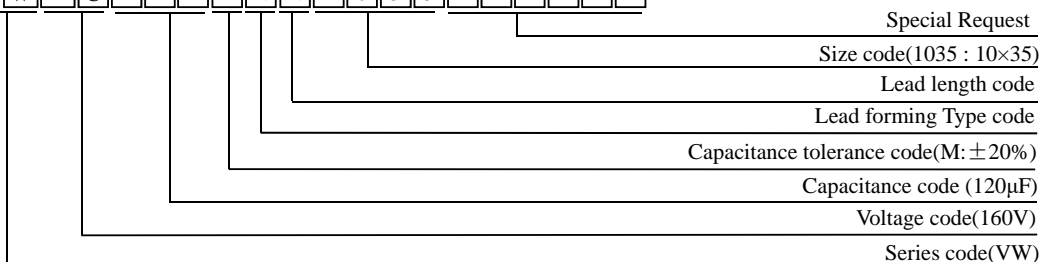
◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|--------------|---------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 160V 120µF)

V W 2 C 1 2 1 M N N 1 0 3 5



ALUMINUM ELECTROLYTIC CAPACITORS



VW Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 100 | 10×30 | 395 | VW2C101MNN1030 |
| | 120 | 10×35 | 480 | VW2C121MNN1035 |
| | 150 | 10×40 | 555 | VW2C151MNN1040 |
| | 180 | 10×50 | 615 | VW2C181MNN1050 |
| | 180 | 12.5×30 | 595 | VW2C181MNN1230 |
| | 220 | 12.5×35 | 710 | VW2C221MNN1235W |
| | 220 | 16×25 | 695 | VW2C221MNN1625 |
| | 270 | 12.5×45 | 825 | VW2C271MNN1245W |
| | 270 | 16×30 | 800 | VW2C271MNN1630 |
| | 330 | 12.5×50 | 890 | VW2C331MNN1250W |
| | 330 | 16×31.5 | 875 | VW2C331MNN16N3 |
| | 330 | 18×25 | 860 | VW2C331MNN1825 |
| | 470 | 18×31.5 | 1160 | VW2C471MNN18N3 |
| | 560 | 18×35.5 | 1295 | VW2C561MNN18P1 |
| | 680 | 18×40 | 1400 | VW2C681MNN1840 |
| 200 (2D) | 82 | 10×35 | 420 | VW2D820MNN1035 |
| | 100 | 10×40 | 450 | VW2D101MNN1040 |
| | 120 | 10×45 | 515 | VW2D121MNN1045 |
| | 150 | 12.5×35 | 585 | VW2D151MNN1235W |
| | 180 | 12.5×40 | 670 | VW2D181MNN1240W |
| | 220 | 12.5×50 | 830 | VW2D221MNN1250W |
| | 220 | 16×31.5 | 795 | VW2D221MNN16N3 |
| | 270 | 16×35.5 | 825 | VW2D271MNN16P1 |
| | 270 | 18×30 | 820 | VW2D271MNN1830 |
| | 330 | 16×40 | 1105 | VW2D331MNN1640 |
| | 330 | 18×35.5 | 1150 | VW2D331MNN18P1 |
| | 470 | 18×45 | 1325 | VW2D471MNN1845 |
| 560 | 18×50 | 1440 | VW2D561MNN1850 | |
| 220 (2P) | 68 | 10×35 | 365 | VW2P680MNN1035 |
| | 82 | 10×40 | 435 | VW2P820MNN1040 |
| | 100 | 10×45 | 480 | VW2P101MNN1045 |
| | 120 | 10×50 | 555 | VW2P121MNN1050 |
| | 120 | 12.5×35 | 520 | VW2P121MNN1235W |
| | 150 | 12.5×40 | 595 | VW2P151MNN1240W |
| | 180 | 12.5×45 | 685 | VW2P181MNN1245W |
| | 220 | 16×35.5 | 840 | VW2P221MNN16P1 |
| | 270 | 16×40 | 900 | VW2P271MNN1640 |
| | 270 | 18×30 | 875 | VW2P271MNN1830 |
| | 330 | 16×45 | 1150 | VW2P331MNN1645 |
| | 330 | 18×35.5 | 1195 | VW2P331MNN18P1 |
| 470 | 18×45 | 1350 | VW2P471MNN1845 | |
| 250 (2E) | 68 | 10×40 | 380 | VW2E680MNN1040 |
| | 82 | 10×45 | 460 | VW2E820MNN1045 |
| | 100 | 10×50 | 530 | VW2E101MNN1050 |
| | 100 | 12.5×35 | 510 | VW2E101MNN1235W |
| | 120 | 12.5×40 | 545 | VW2E121MNN1240W |
| | 150 | 12.5×45 | 610 | VW2E151MNN1245W |
| | 180 | 12.5×50 | 710 | VW2E181MNN1250W |
| | 180 | 16×31.5 | 700 | VW2E181MNN16N3 |
| | 220 | 16×40 | 915 | VW2E221MNN1640 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|----------------|
| 250 (2E) | 220 | 18×30 | 880 | VW2E221MNN1830 | |
| | 270 | 16×45 | 1060 | VW2E271MNN1645 | |
| | 270 | 18×35.5 | 990 | VW2E271MNN18P1 | |
| | 330 | 18×40 | 1250 | VW2E331MNN1840 | |
| | 470 | 18×50 | 1400 | VW2E471MNN1850 | |
| | 400 (2G) | 27 | 10×30 | 240 | VW2G270MNN1030 |
| 33 | | 10×35 | 265 | VW2G330MNN1035 | |
| 39 | | 10×40 | 290 | VW2G390MNN1040 | |
| 47 | | 10×45 | 320 | VW2G470MNN1045 | |
| 47 | | 12.5×30 | 310 | VW2G470MNN1230 | |
| 56 | | 12.5×35 | 360 | VW2G560MNN1235W | |
| 68 | | 12.5×40 | 435 | VW2G680MNN1240W | |
| 82 | | 12.5×50 | 515 | VW2G820MNN1250W | |
| 82 | | 16×31.5 | 510 | VW2G820MNN16N3 | |
| 100 | | 16×35.5 | 590 | VW2G101MNN16P1 | |
| 120 | | 16×40 | 700 | VW2G121MNN1640 | |
| 120 | | 18×31.5 | 675 | VW2G121MNN18N3 | |
| 150 | | 18×40 | 810 | VW2G151MNN1840 | |
| 180 | | 18×45 | 915 | VW2G181MNN1845 | |
| 220 | 18×50 | 1055 | VW2G221MNN1850 | | |
| 420 (2S) | 22 | 10×30 | 202 | VW2S220MNN1030 | |
| | 27 | 10×35 | 250 | VW2S270MNN1035 | |
| | 33 | 10×40 | 280 | VW2S330MNN1040 | |
| | 39 | 10×45 | 305 | VW2S390MNN1045 | |
| | 47 | 10×50 | 335 | VW2S470MNN1050 | |
| | 47 | 12.5×35 | 325 | VW2S470MNN1235W | |
| | 56 | 12.5×40 | 380 | VW2S560MNN1240W | |
| | 68 | 12.5×45 | 460 | VW2S680MNN1245W | |
| | 68 | 16×31.5 | 450 | VW2S680MNN16N3 | |
| | 82 | 16×35.5 | 540 | VW2S820MNN16P1 | |
| | 100 | 16×40 | 645 | VW2S101MNN1640 | |
| | 100 | 18×31.5 | 630 | VW2S101MNN18N3 | |
| | 120 | 18×35.5 | 720 | VW2S121MNN18P1 | |
| | 150 | 18×45 | 865 | VW2S151MNN1845 | |
| | 180 | 18×50 | 1000 | VW2S181MNN1850 | |
| | 450 (2W) | 22 | 10×30 | 215 | VW2W220MNN1030 |
| | | 27 | 10×35 | 270 | VW2W270MNN1035 |
| | | 33 | 10×40 | 295 | VW2W330MNN1040 |
| 39 | | 10×50 | 320 | VW2W390MNN1050 | |
| 47 | | 12.5×40 | 375 | VW2W470MNN1240W | |
| 56 | | 12.5×45 | 430 | VW2W560MNN1245W | |
| 68 | | 12.5×50 | 545 | VW2W680MNN1250W | |
| 68 | | 16×35.5 | 535 | VW2W680MNN16P1 | |
| 82 | | 16×40 | 605 | VW2W820MNN1640 | |
| 82 | | 18×31.5 | 580 | VW2W820MNN18N3 | |
| 100 | | 16×45 | 710 | VW2W101MNN1645 | |
| 100 | | 18×35.5 | 690 | VW2W101MNN18P1 | |
| 120 | | 18×40 | 775 | VW2W121MNN1840 | |
| 150 | | 18×45 | 920 | VW2W151MNN1845 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 450 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS

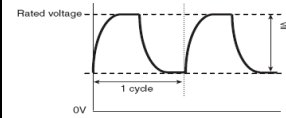


VQ Series

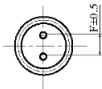
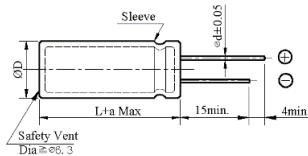
- Capacitor for over voltage application
- Load life 5,000 hours at 105°C



◆ SPECIFICATIONS

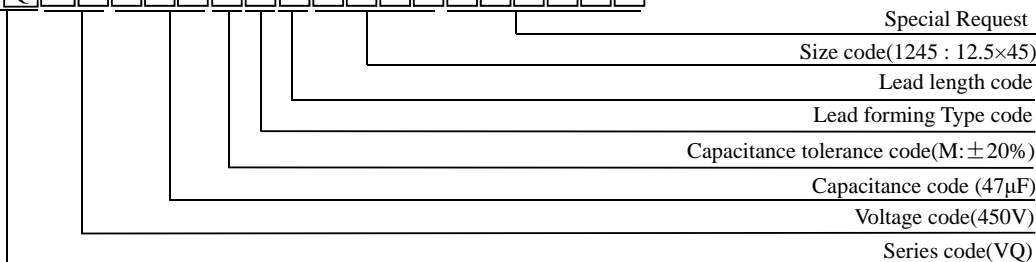
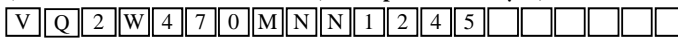
| Item | Performance Characteristics | | | |
|---|---|-------------------------------|---|---|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 22 ~680 μF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 400~450 | |
| | tanδ(Max) | 0.12 | 0.15 | |
| Leakage Current | I=0.02CV or 3000 μA whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Charge and Discharge | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35°C. | | | |
| | Frequency | Number of cycles | Voltage waveform | Capacitance change |
| | 5Hz | 200million times |  | ±20% of the initial value |
| | | | | Dissipation factor(tanδ) ≤ 200% of the specified value Leakage current ≤ specified value |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. | | | |
| | Capacitance change | ≤ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≤ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | |
| Others | Leakage current ≤ 200% of the specified value | | | |
| | Conforms to JIS-C-5101-4 (1998) | | | |

◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|--------------|---------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | ≤ 35 L+1.5Max ≥ 40 L+2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 450V 47μF)



ALUMINUM ELECTROLYTIC CAPACITORS



VQ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 160 (2C) | 100 | 10×30 | 410 | VQ2C101MNN1030 |
| | 120 | 10×35 | 490 | VQ2C121MNN1035 |
| | 150 | 10×40 | 565 | VQ2C151MNN1040 |
| | 150 | 12.5×30 | 545 | VQ2C151MNN1230 |
| | 180 | 10×50 | 630 | VQ2C181MNN1050 |
| | 180 | 12.5×35 | 615 | VQ2C181MNN1235W |
| | 220 | 12.5×40 | 740 | VQ2C221MNN1240W |
| | 220 | 16×25 | 705 | VQ2C221MNN1625 |
| | 270 | 12.5×45 | 845 | VQ2C271MNN1245W |
| | 270 | 16×30 | 825 | VQ2C271MNN1630 |
| | 330 | 12.5×50 | 910 | VQ2C331MNN1250W |
| | 330 | 16×35.5 | 900 | VQ2C331MNN16P1 |
| | 330 | 18×30 | 890 | VQ2C331MNN1830 |
| | 470 | 18×35.5 | 1190 | VQ2C471MNN18P1 |
| | 560 | 18×40 | 1320 | VQ2C561MNN1840 |
| | 680 | 18×45 | 1425 | VQ2C681MNN1845 |
| 200 (2D) | 82 | 10×35 | 430 | VQ2D820MNN1035 |
| | 100 | 10×40 | 465 | VQ2D101MNN1040 |
| | 120 | 10×45 | 520 | VQ2D121MNN1045 |
| | 150 | 12.5×35 | 605 | VQ2D151MNN1235W |
| | 180 | 12.5×45 | 700 | VQ2D181MNN1245W |
| | 220 | 12.5×50 | 845 | VQ2D221MNN1250W |
| | 220 | 16×31.5 | 830 | VQ2D221MNN16N3 |
| | 270 | 16×40 | 855 | VQ2D271MNN1640 |
| | 270 | 18×30 | 840 | VQ2D271MNN1830 |
| | 330 | 16×45 | 1135 | VQ2D331MNN1645 |
| | 330 | 18×35.5 | 1200 | VQ2D331MNN18P1 |
| | 470 | 18×45 | 1355 | VQ2D471MNN1845 |
| 560 | 18×50 | 1460 | VQ2D561MNN1850 | |
| 220 (2P) | 68 | 10×35 | 395 | VQ2P680MNN1035 |
| | 82 | 10×40 | 445 | VQ2P820MNN1040 |
| | 100 | 10×45 | 500 | VQ2P101MNN1045 |
| | 120 | 10×50 | 565 | VQ2P121MNN1050 |
| | 120 | 12.5×35 | 540 | VQ2P121MNN1235W |
| | 150 | 12.5×40 | 620 | VQ2P151MNN1240W |
| | 180 | 12.5×50 | 710 | VQ2P181MNN1250W |
| | 220 | 16×35.5 | 865 | VQ2P221MNN16P1 |
| | 270 | 16×40 | 920 | VQ2P271MNN1640 |
| | 270 | 18×31.5 | 900 | VQ2P271MNN18N3 |
| | 330 | 16×50 | 1190 | VQ2P331MNN1650 |
| | 330 | 18×40 | 1230 | VQ2P331MNN1840 |
| 470 | 18×50 | 1385 | VQ2P471MNN1850 | |
| 250 (2E) | 68 | 10×40 | 410 | VQ2E680MNN1040 |
| | 82 | 10×45 | 465 | VQ2E820MNN1045 |
| | 100 | 12.5×35 | 530 | VQ2E101MNN1235W |
| | 120 | 12.5×40 | 555 | VQ2E121MNN1240W |
| | 150 | 12.5×50 | 630 | VQ2E151MNN1250W |
| | 180 | 16×35.5 | 740 | VQ2E181MNN16P1 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 250 (2E) | 220 | 16×40 | 925 | VQ2E221MNN1640 |
| | 220 | 18×31.5 | 910 | VQ2E221MNN18N3 |
| | 270 | 16×50 | 1080 | VQ2E271MNN1650 |
| | 270 | 18×40 | 1025 | VQ2E271MNN1840 |
| | 330 | 18×45 | 1300 | VQ2E331MNN1845 |
| | 400 (2G) | 27 | 10×30 | 255 |
| 33 | | 10×35 | 270 | VQ2G330MNN1035 |
| 39 | | 10×40 | 300 | VQ2G390MNN1040 |
| 47 | | 10×45 | 335 | VQ2G470MNN1045 |
| 47 | | 12.5×35 | 325 | VQ2G470MNN1235W |
| 56 | | 12.5×40 | 370 | VQ2G560MNN1240W |
| 68 | | 12.5×45 | 445 | VQ2G680MNN1245W |
| 82 | | 12.5×50 | 535 | VQ2G820MNN1250W |
| 82 | | 16×35.5 | 520 | VQ2G820MNN16P1 |
| 100 | | 16×40 | 605 | VQ2G101MNN1640 |
| 120 | | 16×45 | 730 | VQ2G121MNN1645 |
| 120 | | 18×35.5 | 705 | VQ2G121MNN18P1 |
| 420 (2S) | 150 | 18×40 | 835 | VQ2G151MNN1840 |
| | 180 | 18×45 | 940 | VQ2G181MNN1845 |
| | 22 | 10×30 | 210 | VQ2S220MNN1030 |
| | 27 | 10×35 | 260 | VQ2S270MNN1035 |
| | 33 | 10×40 | 295 | VQ2S330MNN1040 |
| | 39 | 10×45 | 310 | VQ2S390MNN1045 |
| | 47 | 10×50 | 355 | VQ2S470MNN1050 |
| | 47 | 12.5×40 | 345 | VQ2S470MNN1240W |
| | 56 | 12.5×45 | 390 | VQ2S560MNN1245W |
| | 68 | 12.5×50 | 470 | VQ2S680MNN1250W |
| | 68 | 16×35.5 | 465 | VQ2S680MNN16P1 |
| | 82 | 16×40 | 565 | VQ2S820MNN1640 |
| 450 (2W) | 100 | 16×45 | 670 | VQ2S101MNN1645 |
| | 100 | 18×35.5 | 655 | VQ2S101MNN18P1 |
| | 120 | 18×40 | 750 | VQ2S121MNN1840 |
| | 150 | 18×45 | 900 | VQ2S151MNN1845 |
| | 180 | 18×50 | 1030 | VQ2S181MNN1850 |
| | 22 | 10×35 | 225 | VQ2W220MNN1035 |
| | 27 | 10×40 | 280 | VQ2W270MNN1040 |
| | 33 | 10×45 | 300 | VQ2W330MNN1045 |
| | 39 | 10×50 | 335 | VQ2W390MNN1050 |
| | 39 | 12.5×40 | 320 | VQ2W390MNN1240W |
| | 47 | 12.5×45 | 390 | VQ2W470MNN1245W |
| | 56 | 12.5×50 | 450 | VQ2W560MNN1250W |
| 68 | 16×40 | 565 | VQ2W680MNN1640 | |
| 82 | 16×45 | 630 | VQ2W820MNN1645 | |
| 82 | 18×35.5 | 610 | VQ2W820MNN18P1 | |
| 100 | 16×50 | 740 | VQ2W101MNN1650 | |
| 100 | 18×40 | 720 | VQ2W101MNN1840 | |
| 120 | 18×45 | 805 | VQ2W121MNN1845 | |
| 150 | 18×50 | 950 | VQ2W151MNN1850 | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 250 | 0.80 | 1.00 | 1.20 | 1.30 | 1.40 |
| 400 ~ 450 | 0.80 | 1.00 | 1.15 | 1.25 | 1.35 |

ALUMINUM ELECTROLYTIC CAPACITORS



VJ Series

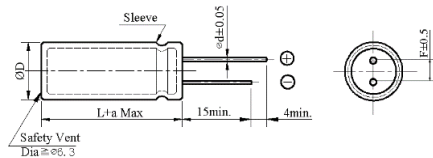
- Capacitor for over voltage application
- Load life 10,000 hours at 105°C



◆ SPECIFICATIONS

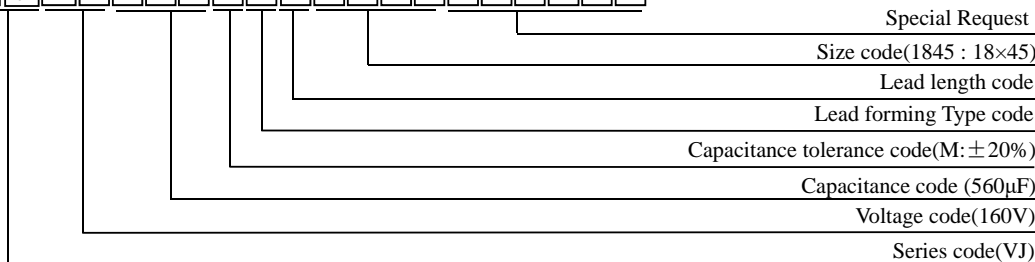
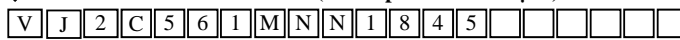
| Item | Performance Characteristics | | | |
|---|---|-----------------------------|------------------|--------------------|
| Category Temperature Range | -40~ +105°C | | | |
| Working Voltage Range | 160~ 450dc | | | |
| Capacitance Range | 22 ~680 µF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160~250 | 400~450 | |
| | tanδ(Max) | 0.12 | 0.15 | |
| Leakage Current | I=0.02CV or 3000 µA whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 2 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 160~250 | 400 | 420 ~ 450 |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 |
| Charge and Discharge | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35°C. | | | |
| | Frequency | Number of cycles | Voltage waveform | Capacitance change |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105°C. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≦ ±20% of the initial value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

◆ DIMENSIONS (mm)



| ΦD | 10 | 12.5 | 16 | 18 |
|----|--------------|---------------------------------|-------------|-----|
| ΦD | ΦD + 0.5 Max | | | |
| Φd | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| a | L + 1.5 Max | ≦ 35 L+1.5Max ≧ 40 L+2.0 Max | L + 1.5 Max | |

◆ PART NUMBER SYSTEM(Example : 160V 560µF)



ALUMINUM ELECTROLYTIC CAPACITORS



VJ Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|----------------|
| 160 (2C) | 100 | 10×35 | 430 | VJ2C101MNN1035 | |
| | 120 | 10×40 | 505 | VJ2C121MNN1040 | |
| | 150 | 10×50 | 585 | VJ2C151MNN1050 | |
| | 150 | 12.5×35 | 570 | VJ2C151MNN1235W | |
| | 180 | 12.5×40 | 650 | VJ2C181MNN1240W | |
| | 220 | 12.5×45 | 755 | VJ2C221MNN1245W | |
| | 220 | 16×30 | 730 | VJ2C221MNN1630 | |
| | 270 | 12.5×50 | 870 | VJ2C271MNN1250W | |
| | 270 | 16×35.5 | 845 | VJ2C271MNN16P1 | |
| | 270 | 18×30 | 835 | VJ2C271MNN1830 | |
| | 330 | 16×40 | 920 | VJ2C331MNN1640 | |
| | 330 | 18×31.5 | 905 | VJ2C331MNN18N3 | |
| | 470 | 18×40 | 1220 | VJ2C471MNN1840 | |
| | 560 | 18×45 | 1345 | VJ2C561MNN1845 | |
| 680 | 18×50 | 1460 | VJ2C681MNN1850 | | |
| 200 (2D) | 82 | 10×40 | 440 | VJ2D820MNN1040 | |
| | 100 | 10×45 | 470 | VJ2D101MNN1045 | |
| | 120 | 10×50 | 535 | VJ2D121MNN1050 | |
| | 150 | 12.5×40 | 630 | VJ2D151MNN1240W | |
| | 180 | 12.5×45 | 715 | VJ2D181MNN1245W | |
| | 220 | 12.5×50 | 865 | VJ2D221MNN1250W | |
| | 220 | 16×35.5 | 850 | VJ2D221MNN16P1 | |
| | 270 | 16×40 | 875 | VJ2D271MNN1640 | |
| | 270 | 18×31.5 | 860 | VJ2D271MNN18N3 | |
| | 330 | 16×45 | 1165 | VJ2D331MNN1645 | |
| | 330 | 18×35.5 | 1240 | VJ2D331MNN18P1 | |
| | 470 | 18×45 | 1400 | VJ2D471MNN1845 | |
| | 560 | 18×50 | 1490 | VJ2D561MNN1850 | |
| | 220 (2P) | 68 | 10×40 | 410 | VJ2P680MNN1040 |
| 82 | | 10×45 | 460 | VJ2P820MNN1045 | |
| 100 | | 10×50 | 525 | VJ2P101MNN1050 | |
| 120 | | 12.5×40 | 560 | VJ2P121MNN1240W | |
| 150 | | 12.5×45 | 645 | VJ2P151MNN1245W | |
| 180 | | 12.5×50 | 740 | VJ2P181MNN1250W | |
| 220 | | 16×40 | 895 | VJ2P221MNN1640 | |
| 270 | | 16×45 | 950 | VJ2P271MNN1645 | |
| 270 | | 18×35.5 | 940 | VJ2P271MNN18P1 | |
| 330 | | 16×50 | 1220 | VJ2P331MNN1650 | |
| 330 | | 18×40 | 1250 | VJ2P331MNN1840 | |
| 470 | | 18×50 | 1420 | VJ2P471MNN1850 | |
| 250 (2E) | | 68 | 10×45 | 425 | VJ2E680MNN1045 |
| | | 82 | 10×50 | 480 | VJ2E820MNN1050 |
| | 100 | 12.5×40 | 550 | VJ2E101MNN1240W | |
| | 120 | 12.5×50 | 590 | VJ2E121MNN1250W | |
| | 120 | 16×30 | 570 | VJ2E121MNN1630 | |
| | 150 | 16×35.5 | 710 | VJ2E151MNN16P1 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 250 (2E) | 180 | 16×40 | 790 | VJ2E181MNN1640 |
| | 220 | 16×50 | 1005 | VJ2E221MNN1650 |
| | 220 | 18×40 | 970 | VJ2E221MNN1840 |
| | 270 | 18×45 | 1080 | VJ2E271MNN1845 |
| | 330 | 18×50 | 1330 | VJ2E331MNN1850 |
| | 400 (2G) | 27 | 10×35 | 270 |
| 33 | | 10×40 | 285 | VJ2G330MNN1040 |
| 39 | | 10×45 | 310 | VJ2G390MNN1045 |
| 47 | | 10×50 | 355 | VJ2G470MNN1050 |
| 47 | | 12.5×35 | 345 | VJ2G470MNN1235W |
| 56 | | 12.5×40 | 380 | VJ2G560MNN1240W |
| 68 | | 12.5×45 | 460 | VJ2G680MNN1245W |
| 82 | | 12.5×50 | 560 | VJ2G820MNN1250W |
| 82 | | 16×35.5 | 550 | VJ2G820MNN16P1 |
| 100 | | 16×40 | 630 | VJ2G101MNN1640 |
| 100 | | 18×31.5 | 610 | VJ2G101MNN18N3 |
| 120 | | 16×45 | 750 | VJ2G121MNN1645 |
| 120 | | 18×40 | 735 | VJ2G121MNN1840 |
| 150 | | 18×45 | 855 | VJ2G151MNN1845 |
| 180 | 18×50 | 960 | VJ2G181MNN1850 | |
| 420 (2S) | 22 | 10×35 | 230 | VJ2S220MNN1035 |
| | 27 | 10×40 | 275 | VJ2S270MNN1040 |
| | 33 | 10×45 | 310 | VJ2S330MNN1045 |
| | 39 | 10×50 | 330 | VJ2S390MNN1050 |
| | 47 | 12.5×40 | 370 | VJ2S470MNN1240W |
| | 56 | 12.5×45 | 400 | VJ2S560MNN1245W |
| | 68 | 12.5×50 | 500 | VJ2S680MNN1250W |
| | 68 | 16×35.5 | 490 | VJ2S680MNN16P1 |
| | 82 | 16×40 | 595 | VJ2S820MNN1640 |
| | 100 | 16×45 | 700 | VJ2S101MNN1645 |
| | 100 | 18×35.5 | 685 | VJ2S101MNN18P1 |
| | 120 | 18×45 | 770 | VJ2S121MNN1845 |
| | 150 | 18×50 | 920 | VJ2S151MNN1850 |
| | 450 (2W) | 22 | 10×40 | 250 |
| 27 | | 10×45 | 300 | VJ2W270MNN1045 |
| 33 | | 10×50 | 325 | VJ2W330MNN1050 |
| 33 | | 12.5×35 | 315 | VJ2W330MNN1235W |
| 39 | | 12.5×40 | 350 | VJ2W390MNN1240W |
| 47 | | 12.5×45 | 420 | VJ2W470MNN1245W |
| 56 | | 12.5×50 | 490 | VJ2W560MNN1250W |
| 68 | | 16×40 | 605 | VJ2W680MNN1640 |
| 82 | | 16×45 | 660 | VJ2W820MNN1645 |
| 82 | | 18×35.5 | 640 | VJ2W820MNN18P1 |
| 100 | | 18×40 | 770 | VJ2W101MNN1840 |
| 120 | | 18×50 | 845 | VJ2W121MNN1850 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 160 ~ 450 | 0.80 | 1.00 | 1.30 | 1.40 | 1.50 |

ALUMINUM ELECTROLYTIC CAPACITORS



PART NUMBER SYSTEM (III)

◆ SNAP-IN TYPE

| Series | Rated Voltage | Capacitance | Tolerance | Terminal Type | Terminal Length | Case Dimension | Special Request |
|---------|---------------|-------------|-----------|---------------|-----------------|----------------|-----------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| □ □ (□) | □ □ | □ □ □ | □ | □ | □ | □ □ □ □ | □ □ □ □ □ □ |

(1) Series

| Series | GM | GV | PL | PK | PG | PO | PI | TWH | TG | GD | PX |
|--------|----|----|----|----|----|----|----|-----|----|----|----|
| | | | | | | | | | | | |

(2) Rated Voltage

| Code | 1C | 1E | 1F | 1V | 1H | 1J | 1K | 2A | 2C | 2Z | 2D | 2P | 2E | 2V | 2G | 2S | 2W | 2H |
|------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| WV | 16 | 25 | 30 | 35 | 50 | 63 | 80 | 100 | 160 | 180 | 200 | 220 | 250 | 350 | 400 | 420 | 450 | 500 |

(3) Capacitance

| Code | 470 | 101 | 471 | 102 | 472 | 473 | 683 |
|------|-----|-----|-----|------|------|-------|-------|
| μF | 47 | 100 | 470 | 1000 | 4700 | 47000 | 68000 |

(4) Capacitance Tolerance

| Code | J | Q | R | K | V | M | H |
|------|----|-----------|----------|-----|-----------|-----|----------|
| % | ±5 | +30 / -10 | +20 / -0 | ±10 | +20 / -10 | ±20 | +20 / -5 |

(5) Terminal Type

| Code | K | N | R |
|-------------|----------------|------------------|-------------------|
| Description | Four Terminals | Snap-in Terminal | Forming & Cutting |

(6) Terminal Length

| Code | D | 4 | N | 6 |
|-----------|------|------|------|------|
| Length | 4.0 | 4.5 | 5.5 | 6.3 |
| Tolerance | ±0.5 | ±0.5 | ±0.5 | ±1.0 |

(7) Case Dimension

| Code | 2225 | 2530 | 2545 | 2550 | 3035 | 3540 | 3550 |
|------|---------|---------|---------|---------|---------|---------|---------|
| Size | 22 × 25 | 25 × 30 | 25 × 45 | 25 × 50 | 30 × 35 | 35 × 40 | 35 × 50 |

(8) Special Request

| Code | R | F | L | D |
|-------------|---------------------------|---------------------|---------------------|------------------------|
| Description | High Rated Ripple Current | Endurance | Low Leakage Current | Low Dissipation Factor |
| Code | H | E | P | --- |
| Description | High Temperature | Low Impedance & ESR | PET Sleeve | --- |

ALUMINUM ELECTROLYTIC CAPACITORS



GM Series



- Large size for PCB board mounting hole type

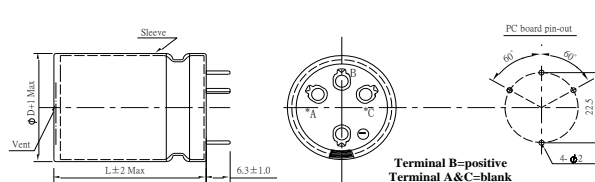
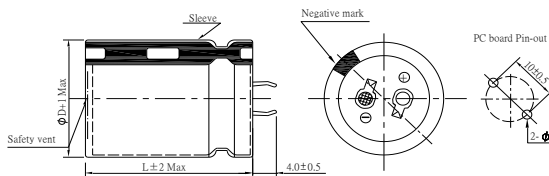
◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|--|--|---|
| Category Temperature Range | -40 ~ +85°C | -25 ~ +85°C |
| Working Voltage Range | 16 ~ 100Vdc | 160 ~ 550Vdc |
| Capacitance Range | 820 ~ 68,000μF | 47 ~ 3,300 μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 16 25 35 50 63 80~100 160~250 350~450 500~550 |
| | tanδ(Max) | 0.35 0.35 0.25 0.25 0.25 0.20 0.15 0.15 0.20 |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | |
| Leakage Current | I=0.02CV or 3000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 16 25 35 50 63 80 100 160~250 350~400 420~550 |
| | Z(-40°C)/Z(+20°C) | 15 10 8 6 6 5 5 — — — |
| Z(-25°C)/Z(+20°C) | | — — — — — — — 4 4 8 |
| (at 120Hz) | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85°C. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| Others | Leakage current | |
| | ≦ 200% of the specified value | |
| | Conforms to JIS-C-5101-4 (1998) | |

◆ DIMENSIONS (mm)

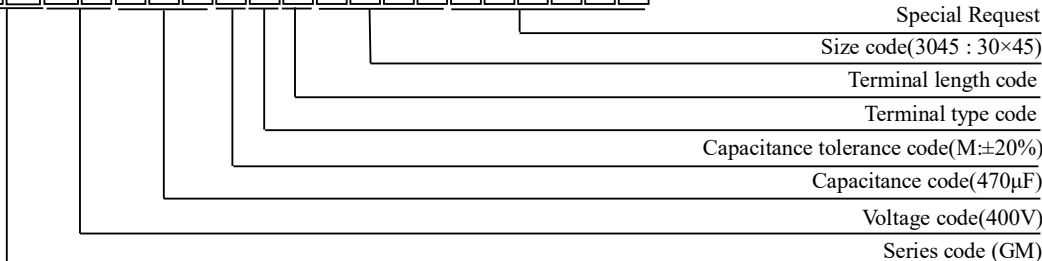
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



◆ PART NUMBER SYSTEM (Example : 400V 470μF)

G M 2 G 4 7 1 M N D 3 0 4 5 Y



ALUMINUM ELECTROLYTIC CAPACITORS



GM Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-------------------|
| 16 (1C) | 8200 | 22×25 | 2510 | GM1C822MND2225Y |
| | 10000 | 22×25 | 2770 | GM1C103MND2225Y |
| | 12000 | 22×30 | 2890 | GM1C123MND2230Y |
| | 12000 | 25.4×25 | 2890 | GM1C123MND2525YJY |
| | 15000 | 22×35 | 3390 | GM1C153MND2235Y |
| | 15000 | 25.4×30 | 3390 | GM1C153MND2530YJY |
| | 15000 | 30×25 | 3660 | GM1C153MND3025Y |
| | 18000 | 22×40 | 3900 | GM1C183MND2240Y |
| | 18000 | 25.4×35 | 3900 | GM1C183MND2535YJY |
| | 18000 | 30×25 | 4000 | GM1C183MND3025Y |
| | 22000 | 22×50 | 4370 | GM1C223MND2250Y |
| | 22000 | 25.4×40 | 4260 | GM1C223MND2540YJY |
| | 22000 | 30×30 | 4210 | GM1C223MND3030Y |
| | 22000 | 35×25 | 4170 | GM1C223MND3525Y |
| | 27000 | 25.4×45 | 4625 | GM1C273MND2545YJY |
| | 27000 | 30×35 | 4820 | GM1C273MND3035Y |
| | 27000 | 35×30 | 4650 | GM1C273MND3530Y |
| | 33000 | 25.4×50 | 5250 | GM1C333MND2550YJY |
| | 33000 | 30×40 | 5360 | GM1C333MND3040Y |
| | 33000 | 35×30 | 5250 | GM1C333MND3530Y |
| | 39000 | 30×45 | 6010 | GM1C393MND3045Y |
| | 39000 | 35×35 | 5950 | GM1C393MND3535Y |
| | 47000 | 30×50 | 6790 | GM1C473MND3050Y |
| | 47000 | 35×40 | 6760 | GM1C473MND3540Y |
| | 56000 | 35×45 | 7620 | GM1C563MND3545Y |
| 68000 | 35×50 | 8630 | GM1C683MND3550Y | |
| 25 (1E) | 5600 | 22×25 | 2210 | GM1E562MND2225Y |
| | 6800 | 22×30 | 2500 | GM1E682MND2230Y |
| | 6800 | 25.4×25 | 2540 | GM1E682MND2525YJY |
| | 8200 | 22×35 | 2740 | GM1E822MND2235Y |
| | 8200 | 25.4×25 | 2760 | GM1E822MND2525YJY |
| | 10000 | 22×40 | 3090 | GM1E103MND2240Y |
| | 10000 | 25.4×30 | 3100 | GM1E103MND2530YJY |
| | 10000 | 30×25 | 3210 | GM1E103MND3025Y |
| | 12000 | 22×45 | 3480 | GM1E123MND2245Y |
| | 12000 | 25.4×35 | 3410 | GM1E123MND2535YJY |
| | 12000 | 30×30 | 3860 | GM1E123MND3030Y |
| | 12000 | 35×25 | 3540 | GM1E123MND3525Y |
| | 15000 | 22×50 | 4000 | GM1E153MND2250Y |
| | 15000 | 25.4×40 | 3920 | GM1E153MND2540YJY |
| | 15000 | 30×30 | 4000 | GM1E153MND3030Y |
| | 15000 | 35×25 | 3950 | GM1E153MND3525Y |
| | 18000 | 25.4×45 | 4450 | GM1E183MND2545YJY |
| | 18000 | 30×35 | 4460 | GM1E183MND3035Y |
| | 18000 | 35×30 | 4630 | GM1E183MND3530Y |
| | 22000 | 25.4×50 | 5050 | GM1E223MND2550YJY |
| | 22000 | 30×45 | 5210 | GM1E223MND3045Y |
| | 22000 | 35×35 | 5160 | GM1E223MND3535Y |
| | 27000 | 30×50 | 5940 | GM1E273MND3050Y |
| | 27000 | 35×40 | 2920 | GM1E273MND3540Y |
| | 33000 | 35×45 | 6750 | GM1E333MND3545Y |
| 39000 | 35×50 | 7560 | GM1E393MND3550Y | |
| 35 (1V) | 3900 | 22×25 | 2220 | GM1V392MND2225Y |
| | 4700 | 22×30 | 2410 | GM1V472MND2230Y |
| | 4700 | 25.4×25 | 2400 | GM1V472MND2525YJY |
| | 5600 | 22×35 | 2750 | GM1V562MND2235Y |
| | 5600 | 25.4×25 | 2695 | GM1V562MND2525YJY |
| | 6800 | 22×40 | 2800 | GM1V682MND2240Y |
| | 6800 | 25.4×30 | 2740 | GM1V682MND2530YJY |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|-------------------|-------------------|
| 35 (1V) | 6800 | 25.4×30 | 2740 | GM1V682MND2530YJY | |
| | 6800 | 30×25 | 2970 | GM1V682MND3025Y | |
| | 8200 | 22×45 | 3470 | GM1V822MND2245Y | |
| | 8200 | 25.4×35 | 3100 | GM1V822MND2535YJY | |
| | 8200 | 30×30 | 3130 | GM1V822MND3030Y | |
| | 8200 | 35×25 | 3065 | GM1V822MND3525Y | |
| | 10000 | 22×50 | 3570 | GM1V103MND2250Y | |
| | 10000 | 25.4×40 | 3500 | GM1V103MND2540YJY | |
| | 10000 | 30×30 | 3495 | GM1V103MND3030Y | |
| | 10000 | 35×25 | 3495 | GM1V103MND3525Y | |
| | 12000 | 25.4×45 | 3950 | GM1V123MND2545YJY | |
| | 12000 | 30×35 | 4010 | GM1V123MND3035Y | |
| | 12000 | 35×30 | 4420 | GM1V123MND3530Y | |
| | 15000 | 25.4×50 | 4500 | GM1V153MND2550YJY | |
| | 15000 | 30×40 | 4520 | GM1V153MND3040Y | |
| | 15000 | 35×35 | 5010 | GM1V153MND3535Y | |
| | 18000 | 30×45 | 5425 | GM1V183MND3045Y | |
| | 18000 | 35×40 | 5540 | GM1V183MND3540Y | |
| | 22000 | 30×50 | 5915 | GM1V223MND3050Y | |
| | 22000 | 35×45 | 6040 | GM1V223MND3545Y | |
| | 27000 | 35×50 | 6890 | GM1V273MND3550Y | |
| | 50 (1H) | 2200 | 22×25 | 1910 | GM1H222MND2225Y |
| | | 3300 | 22×30 | 2370 | GM1H332MND2230Y |
| | | 3300 | 25.4×25 | 2350 | GM1H332MND2525YJY |
| | | 3900 | 22×35 | 2650 | GM1H392MND2235Y |
| 3900 | | 25.4×30 | 2650 | GM1H392MND2530YJY | |
| 3900 | | 30×25 | 2595 | GM1H392MND3025Y | |
| 4700 | | 22×40 | 2990 | GM1H472MND2240Y | |
| 4700 | | 25.4×35 | 2950 | GM1H472MND2535YJY | |
| 4700 | | 30×25 | 2810 | GM1H472MND3025Y | |
| 5600 | | 22×45 | 3360 | GM1H562MND2245Y | |
| 5600 | | 25.4×35 | 3300 | GM1H562MND2535YJY | |
| 5600 | | 30×30 | 3370 | GM1H562MND3030Y | |
| 5600 | | 35×25 | 3420 | GM1H562MND3525Y | |
| 6800 | | 22×50 | 3810 | GM1H682MND2250Y | |
| 6800 | | 25.4×40 | 3750 | GM1H682MND2540YJY | |
| 63 (1J) | 6800 | 30×35 | 3850 | GM1H682MND3035Y | |
| | 6800 | 35×30 | 3850 | GM1H682MND3530Y | |
| | 8200 | 25.4×50 | 4370 | GM1H822MND2550YJY | |
| | 8200 | 30×40 | 4360 | GM1H822MND3040Y | |
| | 8200 | 35×30 | 4410 | GM1H822MND3530Y | |
| | 10000 | 30×45 | 4970 | GM1H103MND3045Y | |
| | 10000 | 35×35 | 4920 | GM1H103MND3535Y | |
| | 12000 | 30×50 | 5600 | GM1H123MND3050Y | |
| | 12000 | 35×40 | 5580 | GM1H123MND3540Y | |
| | 15000 | 35×45 | 6440 | GM1H153MND3545Y | |
| | 18000 | 35×50 | 6710 | GM1H183MND3550Y | |
| | 1800 | 22×25 | 1820 | GM1J182MND2225Y | |
| | 2200 | 22×30 | 2310 | GM1J222MND2230Y | |
| | 2200 | 25.4×25 | 2280 | GM1J222MND2525YJY | |
| | 2700 | 22×35 | 2400 | GM1J272MND2235Y | |
| 2700 | 25.4×25 | 2350 | GM1J272MND2525YJY | | |
| 3300 | 22×35 | 2620 | GM1J332MND2235Y | | |
| 3300 | 25.4×30 | 2600 | GM1J332MND2530YJY | | |
| 3300 | 30×25 | 2780 | GM1J332MND3025Y | | |
| 3900 | 22×40 | 2940 | GM1J392MND2240Y | | |
| 3900 | 25.4×35 | 2950 | GM1J392MND2535YJY | | |
| 3900 | 30×30 | 3000 | GM1J392MND3030Y | | |

ALUMINUM ELECTROLYTIC CAPACITORS



GM Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 63 (1J) | 3900 | 35×25 | 3000 | GM1J392MND3525Y |
| | 4700 | 22×50 | 3390 | GM1J472MND2250Y |
| | 4700 | 25.4×40 | 3300 | GM1J472MND2540YJ |
| | 4700 | 30×30 | 3320 | GM1J472MND3030Y |
| | 4700 | 35×25 | 3360 | GM1J472MND3525Y |
| | 5600 | 25.4×45 | 3720 | GM1J562MND2545YJ |
| | 5600 | 30×35 | 3750 | GM1J562MND3035Y |
| | 5600 | 35×30 | 3760 | GM1J562MND3530Y |
| | 6800 | 25.4×50 | 4220 | GM1J682MND2550YJ |
| | 6800 | 30×40 | 4270 | GM1J682MND3040Y |
| | 6800 | 35×30 | 4180 | GM1J682MND3530Y |
| | 8200 | 30×45 | 4830 | GM1J822MND3045Y |
| | 8200 | 35×35 | 4790 | GM1J822MND3535Y |
| | 10000 | 30×50 | 5490 | GM1J103MND3050Y |
| | 10000 | 35×40 | 5470 | GM1J103MND3540Y |
| | 12000 | 35×45 | 6190 | GM1J123MND3545Y |
| 80 (1K) | 1200 | 22×25 | 1690 | GM1K122MND2225Y |
| | 1500 | 22×25 | 1880 | GM1K152MND2225Y |
| | 1800 | 22×30 | 2140 | GM1K182MND2230Y |
| | 1800 | 25.4×25 | 2210 | GM1K182MND2525YJ |
| | 2200 | 22×35 | 2440 | GM1K222MND2235Y |
| | 2200 | 25.4×30 | 2450 | GM1K222MND2530YJ |
| | 2200 | 30×25 | 2490 | GM1K222MND3025Y |
| | 2700 | 22×40 | 2780 | GM1K272MND2240Y |
| | 2700 | 25.4×35 | 2800 | GM1K272MND2535YJ |
| | 2700 | 30×25 | 2750 | GM1K272MND3025Y |
| | 3300 | 22×45 | 3160 | GM1K332MND2245Y |
| | 3300 | 25.4×40 | 3180 | GM1K332MND2540YJ |
| | 3300 | 30×30 | 3170 | GM1K332MND3030Y |
| | 3300 | 35×25 | 3210 | GM1K332MND3525Y |
| | 3900 | 22×50 | 3520 | GM1K392MND2250Y |
| | 3900 | 25.4×45 | 3550 | GM1K392MND2545YJ |
| | 3900 | 30×35 | 3570 | GM1K392MND3035Y |
| | 3900 | 35×25 | 3500 | GM1K392MND3525Y |
| | 4700 | 25.4×50 | 4000 | GM1K472MND2550YJ |
| | 4700 | 30×40 | 4050 | GM1K472MND3040Y |
| | 4700 | 35×30 | 4090 | GM1K472MND3530Y |
| | 5600 | 30×45 | 4550 | GM1K562MND3045Y |
| | 5600 | 35×35 | 4510 | GM1K562MND3535Y |
| | 6800 | 30×50 | 5160 | GM1K682MND3050Y |
| | 6800 | 35×40 | 5140 | GM1K682MND3540Y |
| | 8200 | 35×45 | 5830 | GM1K822MND3545Y |
| | 10000 | 35×50 | 6630 | GM1K103MND3550Y |
| 100 (2A) | 820 | 22×25 | 1860 | GM2A821MND2225Y |
| | 1200 | 22×30 | 2090 | GM2A122MND2230Y |
| | 1200 | 25.4×25 | 2195 | GM2A122MND2525YJ |
| | 1500 | 22×35 | 2410 | GM2A152MND2235Y |
| | 1500 | 25.4×30 | 2420 | GM2A152MND2530YJ |
| | 1500 | 30×25 | 2460 | GM2A152MND3025Y |
| | 1800 | 22×40 | 2710 | GM2A182MND2240Y |
| | 1800 | 25.4×35 | 2730 | GM2A182MND2535YJ |
| | 1800 | 30×25 | 2720 | GM2A182MND3025Y |
| | 2200 | 22×45 | 3080 | GM2A222MND2245Y |
| | 2200 | 25.4×40 | 3100 | GM2A222MND2540YJ |
| | 2200 | 30×30 | 3090 | GM2A222MND3030Y |
| | 2200 | 35×25 | 3140 | GM2A222MND3525Y |
| | 2700 | 22×50 | 3530 | GM2A272MND2250Y |
| | 2700 | 25.4×45 | 3560 | GM2A272MND2545YJ |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|------------------|------------------|
| 100 (2A) | 2700 | 30×35 | 3550 | GM2A272MND3035Y | |
| | 2700 | 35×30 | 3710 | GM2A272MND3530Y | |
| | 3300 | 25.4×50 | 4050 | GM2A332MND2550YJ | |
| | 3300 | 30×40 | 4050 | GM2A332MND3040Y | |
| | 3300 | 35×30 | 4050 | GM2A332MND3530Y | |
| | 3900 | 30×45 | 4540 | GM2A392MND3045Y | |
| | 3900 | 35×35 | 4490 | GM2A392MND3535Y | |
| | 4700 | 30×50 | 5130 | GM2A472MND3050Y | |
| | 4700 | 35×40 | 5110 | GM2A472MND3540Y | |
| | 5600 | 35×45 | 5750 | GM2A562MND3545Y | |
| | 6800 | 35×50 | 6500 | GM2A682MND3550Y | |
| | 160 (2C) | 390 | 22×25 | 1630 | GM2C391MND2225Y |
| | | 470 | 22×30 | 1860 | GM2C471MND2230Y |
| | | 560 | 22×35 | 2250 | GM2C561MND2235Y |
| | | 560 | 25.4×25 | 2150 | GM2C561MND2525YJ |
| | | 680 | 22×40 | 2350 | GM2C681MND2240Y |
| | | 680 | 25.4×30 | 2330 | GM2C681MND2530YJ |
| | | 820 | 22×45 | 2680 | GM2C821MND2245Y |
| 820 | | 25.4×35 | 2650 | GM2C821MND2535YJ | |
| 820 | | 30×25 | 2640 | GM2C821MND3025Y | |
| 1000 | | 22×50 | 3020 | GM2C102MND2250Y | |
| 1000 | | 25.4×40 | 3000 | GM2C102MND2540YJ | |
| 1000 | | 30×30 | 2960 | GM2C102MND3030Y | |
| 1200 | | 25.4×45 | 3430 | GM2C122MND2545YJ | |
| 1200 | | 30×35 | 3410 | GM2C122MND3035Y | |
| 1200 | | 35×25 | 3400 | GM2C122MND3525Y | |
| 1500 | | 25.4×50 | 3960 | GM2C152MND2550YJ | |
| 1500 | | 30×40 | 3960 | GM2C152MND3040Y | |
| 1500 | | 35×30 | 3940 | GM2C152MND3530Y | |
| 200 (2D) | 1800 | 30×45 | 43200 | GM2C182MND3045Y | |
| | 1800 | 35×35 | 4280 | GM2C182MND3535Y | |
| | 2200 | 30×50 | 4960 | GM2C222MND3050Y | |
| | 2200 | 35×40 | 4960 | GM2C222MND3540Y | |
| | 2700 | 35×45 | 5200 | GM2C272MND3545Y | |
| | 3300 | 35×50 | 5400 | GM2C332MND3550Y | |
| | 200 (2D) | 390 | 22×25 | 1510 | GM2D391MND2225Y |
| | | 470 | 22×30 | 1970 | GM2D471MND2230Y |
| | | 560 | 22×35 | 2180 | GM2D561MND2235Y |
| | | 560 | 25.4×25 | 2150 | GM2D561MND2525YJ |
| | | 680 | 22×40 | 2480 | GM2D681MND2240Y |
| | | 680 | 25.4×30 | 2480 | GM2D681MND2530YJ |
| | | 820 | 22×45 | 2700 | GM2D821MND2245Y |
| | | 820 | 25.4×35 | 2790 | GM2D821MND2535YJ |
| | | 820 | 30×25 | 2780 | GM2D821MND3025Y |
| | | 1000 | 22×50 | 3280 | GM2D102MND2250Y |
| | | 1000 | 25.4×40 | 3280 | GM2D102MND2540YJ |
| | | 1000 | 30×30 | 3000 | GM2D102MND3030Y |
| 1000 | | 35×25 | 3250 | GM2D102MND3525Y | |
| 1200 | | 25.4×45 | 3610 | GM2D122MND2545YJ | |
| 1200 | | 30×35 | 3610 | GM2D122MND3035Y | |
| 1200 | | 35×30 | 3570 | GM2D122MND3530Y | |
| 1500 | | 25.4×50 | 4130 | GM2D152MND2550YJ | |
| 1500 | | 30×40 | 4130 | GM2D152MND3040Y | |
| 1500 | 35×35 | 4060 | GM2D152MND3535Y | | |
| 1800 | 30×45 | 4600 | GM2D182MND3045Y | | |
| 1800 | 35×40 | 4590 | GM2D182MND3540Y | | |
| 2200 | 30×50 | 5250 | GM2D222MND3050Y | | |

ALUMINUM ELECTROLYTIC CAPACITORS



GM Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|----------|----------|---------------------|--|------------------|
| 200 (2D) | 2200 | 35×45 | 5250 | GM2D222MND3545Y | 400 (2G) | 220 | 25.4×40 | 1500 | GM2G221MND2540JY |
| | 2700 | 35×50 | 5320 | GM2D272MND3550Y | | 220 | 30×25 | 1520 | GM2G221MND3025Y |
| 220 (2P) | 330 | 22×25 | 1410 | GM2P331MND2225Y | | 270 | 22×50 | 1670 | GM2G271MND2250Y |
| | 390 | 22×30 | 1580 | GM2P391MND2230Y | | 270 | 25.4×45 | 1650 | GM2G271MND2545JY |
| | 390 | 25.4×25 | 1580 | GM2P391MND2525Y | | 270 | 30×30 | 1700 | GM2G271MND3030Y |
| | 470 | 22×35 | 1800 | GM2P471MND2235Y | | 270 | 35×25 | 1650 | GM2G271MND3525Y |
| | 470 | 25.4×30 | 1800 | GM2P471MND2530Y | | 330 | 25.4×50 | 1900 | GM2G331MND2550JY |
| | 560 | 22×40 | 2030 | GM2P561MND2240Y | | 330 | 30×35 | 1950 | GM2G331MND3035Y |
| | 560 | 25.4×35 | 2030 | GM2P561MND2535Y | | 330 | 35×30 | 1900 | GM2G331MND3530Y |
| | 560 | 30×25 | 2030 | GM2P561MND3025Y | | 390 | 30×40 | 2130 | GM2G391MND3040Y |
| | 680 | 22×45 | 2330 | GM2P681MND2245Y | | 390 | 35×35 | 2130 | GM2G391MND3535Y |
| | 680 | 25.4×40 | 2330 | GM2P681MND2540Y | | 470 | 30×45 | 2390 | GM2G471MND3045Y |
| | 680 | 30×30 | 2330 | GM2P681MND3030Y | | 470 | 35×40 | 2420 | GM2G471MND3540Y |
| | 820 | 22×50 | 2560 | GM2P821MND2250Y | | 560 | 30×50 | 2700 | GM2G561MND3050Y |
| | 820 | 25.4×45 | 2560 | GM2P821MND2545Y | | 560 | 35×45 | 2710 | GM2G561MND3545Y |
| | 820 | 30×35 | 2560 | GM2P821MND3035Y | | 680 | 35×50 | 2970 | GM2G681MND3550Y |
| | 820 | 35×25 | 2560 | GM2P821MND3525Y | | 100 | 22×25 | 970 | GM2S101MND2225Y |
| | 1000 | 25.4×50 | 2850 | GM2P102MND2550Y | | 120 | 22×30 | 1070 | GM2S121MND2230Y |
| | 1000 | 30×40 | 2850 | GM2P102MND3040Y | | 150 | 22×35 | 1300 | GM2S151MND2235Y |
| | 1000 | 35×30 | 2850 | GM2P102MND3530Y | | 150 | 25.4×25 | 1290 | GM2S151MND2525JY |
| | 1200 | 30×45 | 3130 | GM2P122MND3045Y | | 180 | 22×40 | 1480 | GM2S181MND2240Y |
| | 1200 | 35×35 | 3130 | GM2P122MND3535Y | | 180 | 25.4×30 | 1480 | GM2S181MND2530Y |
| 1500 | 30×50 | 3750 | GM2P152MND3050Y | 180 | | 30×25 | 1480 | GM2S181MND3025Y | |
| 1500 | 35×40 | 3750 | GM2P152MND3540Y | 220 | | 22×45 | 1500 | GM2S221MND2245Y | |
| 1800 | 35×45 | 3900 | GM2P182MND3545Y | 220 | 25.4×35 | 1500 | GM2S221MND2535JY | | |
| 2200 | 35×50 | 4050 | GM2P222MND3550Y | 220 | 30×30 | 1500 | GM2S221MND3030Y | | |
| 250 (2E) | 270 | 22×25 | 1310 | GM2E271MND2225Y | 270 | 22×50 | 1940 | GM2S271MND2250Y | |
| | 330 | 22×30 | 1750 | GM2E331MND2230Y | 270 | 25.4×40 | 1940 | GM2S271MND2540JY | |
| | 330 | 25.4×25 | 1610 | GM2E331MND2525JY | 270 | 30×35 | 1940 | GM2S271MND3035Y | |
| | 390 | 22×35 | 1910 | GM2E391MND2235Y | 270 | 35×25 | 1940 | GM2S271MND3525Y | |
| | 390 | 25.4×30 | 1880 | GM2E391MND2530Y | 330 | 25.4×45 | 2170 | GM2S331MND2545JY | |
| | 470 | 22×40 | 2110 | GM2E471MND2240Y | 330 | 30×40 | 2170 | GM2S331MND3040Y | |
| | 470 | 25.4×35 | 2110 | GM2E471MND2535Y | 330 | 35×30 | 2170 | GM2S331MND3530Y | |
| | 470 | 30×25 | 2040 | GM2E471MND3025Y | 390 | 25.4×50 | 2270 | GM2S391MND2550JY | |
| | 560 | 22×45 | 2250 | GM2E561MND2245Y | 390 | 30×45 | 2220 | GM2S391MND3045Y | |
| | 560 | 25.4×40 | 2090 | GM2E561MND2540Y | 390 | 35×35 | 2270 | GM2S391MND3535Y | |
| | 560 | 30×30 | 2250 | GM2E561MND3030Y | 470 | 30×50 | 2500 | GM2S471MND3050Y | |
| | 680 | 22×50 | 2500 | GM2E681MND2250Y | 470 | 35×40 | 2610 | GM2S471MND3540Y | |
| | 680 | 25.4×45 | 2500 | GM2E681MND2545Y | 560 | 35×45 | 2820 | GM2S561MND3545Y | |
| | 680 | 30×35 | 2500 | GM2E681MND3035Y | 680 | 35×50 | 2900 | GM2S681MND3550Y | |
| | 680 | 35×25 | 2750 | GM2E681MND3525Y | 82 | 22×25 | 830 | GM2W820MND2225Y | |
| | 820 | 25.4×50 | 2800 | GM2E821MND2550Y | 100 | 22×30 | 930 | GM2W101MND2230Y | |
| | 820 | 30×40 | 2850 | GM2E821MND3040Y | 120 | 22×35 | 1040 | GM2W121MND2235Y | |
| | 820 | 35×30 | 2900 | GM2E821MND3530Y | 120 | 25.4×25 | 1070 | GM2W121MND2525JY | |
| | 1000 | 30×45 | 3290 | GM2E102MND3045Y | 150 | 22×40 | 1190 | GM2W151MND2240Y | |
| | 1000 | 35×35 | 3320 | GM2E102MND3535Y | 150 | 25.4×30 | 1190 | GM2W151MND2530JY | |
| 1200 | 30×50 | 3580 | GM2E122MND3050Y | 180 | 22×45 | 1350 | GM2W181MND2245Y | | |
| 1200 | 35×40 | 3530 | GM2E122MND3540Y | 180 | 25.4×35 | 1350 | GM2W181MND2535JY | | |
| 1500 | 35×45 | 4040 | GM2E152MND3545Y | 180 | 30×25 | 1380 | GM2W181MND3025Y | | |
| 1800 | 35×50 | 4150 | GM2E182MND3550Y | 220 | 22×50 | 1550 | GM2W221MND2250Y | | |
| 400 (2G) | 100 | 22×25 | 900 | GM2G101MND2225Y | 220 | 25.4×40 | 1500 | GM2W221MND2540JY | |
| | 120 | 22×30 | 1020 | GM2G121MND2230Y | 220 | 30×30 | 1550 | GM2W221MND3030Y | |
| | 120 | 25.4×25 | 1130 | GM2G121MND2525JY | 270 | 25.4×45 | 1780 | GM2W271MND2545JY | |
| | 150 | 22×35 | 1160 | GM2G151MND2235Y | 270 | 30×35 | 1780 | GM2W271MND3035Y | |
| | 150 | 25.4×30 | 1270 | GM2G151MND2530Y | 270 | 35×25 | 1780 | GM2W271MND3525Y | |
| | 180 | 22×40 | 1440 | GM2G181MND2240Y | 330 | 25.4×50 | 2010 | GM2W331MND2550JY | |
| | 180 | 25.4×35 | 1440 | GM2G181MND2535JY | 330 | 30×40 | 2010 | GM2W331MND3040Y | |
| | 220 | 22×45 | 1500 | GM2G221MND2245Y | 330 | 35×30 | 2010 | GM2W331MND3530Y | |

ALUMINUM ELECTROLYTIC CAPACITORS



GM Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-------------------|
| 450 (2W) | 390 | 30×45 | 2240 | GM2W391MND3045Y |
| | 390 | 35×35 | 2240 | GM2W391MND3535Y |
| | 470 | 30×50 | 2530 | GM2W471MND3050Y |
| | 470 | 35×40 | 2530 | GM2W471MND3540Y |
| | 560 | 35×45 | 2620 | GM2W561MND3545Y |
| | 680 | 35×50 | 2700 | GM2W681MND3550Y |
| 500 (2H) | 82 | 22×25 | 785 | GM2H820MND2225Y |
| | 100 | 22×30 | 840 | GM2H101MND2230Y |
| | 100 | 25.4×25 | 800 | GM2H101MND2525YJY |
| | 120 | 22×35 | 920 | GM2H121MND2235Y |
| | 120 | 25.4×30 | 890 | GM2H121MND2530YJY |
| | 150 | 22×40 | 1070 | GM2H151MND2240Y |
| | 150 | 25.4×35 | 1070 | GM2H151MND2535YJY |
| | 150 | 30×25 | 1100 | GM2H151MND3025Y |
| | 180 | 22×45 | 1380 | GM2H181MND2245Y |
| | 180 | 25.4×40 | 1380 | GM2H181MND2540YJY |
| | 180 | 30×30 | 1380 | GM2H181MND3030Y |
| | 180 | 35×25 | 1380 | GM2H181MND3525Y |
| | 220 | 22×50 | 1610 | GM2H221MND2250Y |
| | 220 | 25.4×45 | 1600 | GM2H221MND2545YJY |
| | 220 | 30×35 | 1610 | GM2H221MND3035Y |
| | 220 | 35×30 | 1610 | GM2H221MND3530Y |
| | 270 | 25.4×50 | 1750 | GM2H271MND2550YJY |
| | 270 | 30×40 | 1810 | GM2H271MND3040Y |
| | 270 | 35×35 | 1810 | GM2H271MND3535Y |
| | 330 | 30×45 | 1985 | GM2H331MND3045Y |
| | 330 | 35×40 | 1985 | GM2H331MND3540Y |
| | 390 | 30×50 | 2100 | GM2H391MND3050Y |
| | 390 | 35×45 | 2120 | GM2H391MND3545Y |
| | 470 | 35×50 | 2480 | GM2H471MND3550Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-------------------|
| 550 (2L) | 47 | 22×25 | 385 | GM2L470MND2225Y |
| | 56 | 22×30 | 420 | GM2L560MND2230Y |
| | 56 | 25.4×25 | 420 | GM2L560MND2525YJY |
| | 68 | 22×35 | 465 | GM2L680MND2235Y |
| | 68 | 25.4×25 | 465 | GM2L680MND2525YJY |
| | 82 | 22×40 | 600 | GM2L820MND2240Y |
| | 82 | 25.4×30 | 600 | GM2L820MND2530YJY |
| | 82 | 30×25 | 600 | GM2L820MND3025Y |
| | 100 | 22×45 | 785 | GM2L101MND2245Y |
| | 100 | 25.4×35 | 785 | GM2L101MND2535YJY |
| | 100 | 30×25 | 785 | GM2L101MND3025Y |
| | 100 | 35×25 | 785 | GM2L101MND3525Y |
| | 120 | 22×50 | 840 | GM2L121MND2250Y |
| | 120 | 25.4×40 | 840 | GM2L121MND2540YJY |
| | 120 | 30×30 | 840 | GM2L121MND3030Y |
| | 120 | 35×25 | 840 | GM2L121MND3525Y |
| | 150 | 25.4×45 | 920 | GM2L151MND2545YJY |
| | 150 | 30×35 | 920 | GM2L151MND3035Y |
| | 150 | 35×25 | 920 | GM2L151MND3525Y |
| | 180 | 25.4×50 | 1245 | GM2L181MND2550YJY |
| | 180 | 30×40 | 1245 | GM2L181MND3040Y |
| | 180 | 35×30 | 1245 | GM2L181MND3530Y |
| | 220 | 30×45 | 1380 | GM2L221MND3045Y |
| | 220 | 35×35 | 1380 | GM2L221MND3535Y |
| | 270 | 30×50 | 1610 | GM2L271MND3050Y |
| | 270 | 35×40 | 1610 | GM2L271MND3540Y |
| | 330 | 35×45 | 1810 | GM2L331MND3545Y |
| | 390 | 35×50 | 1985 | GM2L391MND3550Y |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 16 ~ 100 | 0.80 | 1.00 | 1.15 | 1.15 | 1.15 |
| 160 ~ 250 | 0.81 | 1.00 | 1.32 | 1.45 | 1.50 |
| 350 ~ 550 | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



GV Series

- High ripple current
- Load life 5,000 hours at 85°C



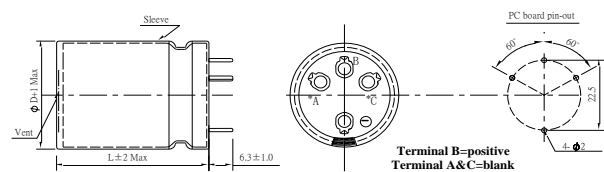
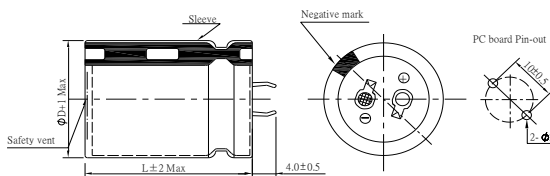
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | |
|--|--|-----------------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|---|---|---|---|
| Category Temperature Range | -25 ~ +85°C | | | | | | | | | | |
| Working Voltage Range | 200 ~ 500Vdc | | | | | | | | | | |
| Capacitance Range | 56 ~ 2200 μF | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>200~450</td> <td>500</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.20</td> </tr> </table> | Rated Voltage (V) | 200~450 | 500 | tanδ(Max) | 0.15 | 0.20 | | | | |
| | Rated Voltage (V) | 200~450 | 500 | | | | | | | | |
| tanδ(Max) | 0.15 | 0.20 | | | | | | | | | |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | | | | | | | | | | |
| Leakage Current | $I = 0.02CV$ or $3000\mu A$, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>200~250</td> <td>400</td> <td>420~450</td> <td>500</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>8</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 200~250 | 400 | 420~450 | 500 | Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | 8 |
| Rated voltage (V) | 200~250 | 400 | 420~450 | 500 | | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | 8 | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85°C. | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied. | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | |

◆ DIMENSIONS (mm)

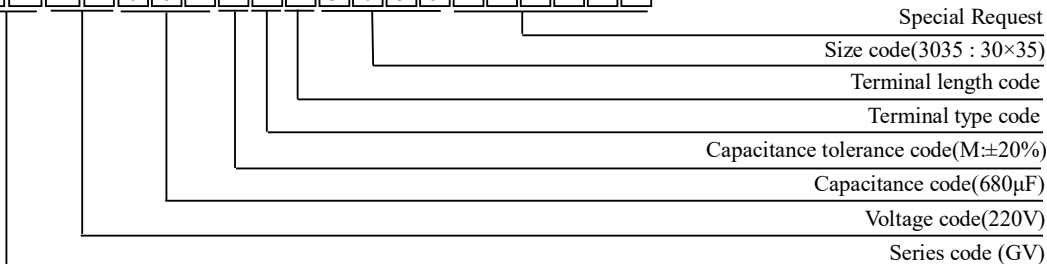
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



◆ PART NUMBER SYSTEM (Example : 220V 680μF)

G V 2 P 6 8 1 M N D 3 0 3 5 Y



ALUMINUM ELECTROLYTIC CAPACITORS



GV Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-------------------|
| 200 (2D) | 330 | 22×25 | 1450 | GV2D331MND2225Y |
| | 390 | 22×30 | 1500 | GV2D391MND2230Y |
| | 390 | 25.4×25 | 1500 | GV2D391MND2525YJY |
| | 470 | 22×35 | 1760 | GV2D471MND2235Y |
| | 470 | 25.4×30 | 1760 | GV2D471MND2530YJY |
| | 560 | 22×40 | 2050 | GV2D561MND2240Y |
| | 560 | 25.4×35 | 2050 | GV2D561MND2535YJY |
| | 560 | 30×25 | 2050 | GV2D561MND3025Y |
| | 680 | 22×45 | 2500 | GV2D681MND2245Y |
| | 680 | 25.4×40 | 2500 | GV2D681MND2540YJY |
| | 680 | 30×30 | 2500 | GV2D681MND3030Y |
| | 820 | 22×50 | 2740 | GV2D821MND2250Y |
| | 820 | 25.4×45 | 2740 | GV2D821MND2545YJY |
| | 820 | 30×35 | 2740 | GV2D821MND3035Y |
| | 820 | 35×25 | 2740 | GV2D821MND3525Y |
| | 1000 | 25.4×50 | 2985 | GV2D102MND2550YJY |
| | 1000 | 30×40 | 2985 | GV2D102MND3040Y |
| | 1000 | 35×30 | 2985 | GV2D102MND3530Y |
| | 1200 | 30×45 | 3300 | GV2D122MND3045Y |
| | 1200 | 35×35 | 3300 | GV2D122MND3535Y |
| 1500 | 30×50 | 3770 | GV2D152MND3050Y | |
| 1500 | 35×40 | 3770 | GV2D152MND3540Y | |
| 1800 | 35×45 | 3870 | GV2D182MND3545Y | |
| 2200 | 35×50 | 4150 | GV2D222MND3550Y | |
| 220 (2P) | 270 | 22×25 | 1390 | GV2P271MND2225Y |
| | 330 | 22×30 | 1530 | GV2P331MND2230Y |
| | 330 | 25.4×25 | 1530 | GV2P331MND2525YJY |
| | 390 | 22×35 | 1800 | GV2P391MND2235Y |
| | 390 | 25.4×30 | 1800 | GV2P391MND2530YJY |
| | 470 | 22×40 | 1910 | GV2P471MND2240Y |
| | 470 | 25.4×35 | 1910 | GV2P471MND2535YJY |
| | 470 | 30×25 | 1910 | GV2P471MND3025Y |
| | 560 | 22×45 | 2200 | GV2P561MND2245Y |
| | 560 | 25.4×40 | 2200 | GV2P561MND2540YJY |
| | 560 | 30×30 | 2200 | GV2P561MND3030Y |
| | 680 | 22×50 | 2530 | GV2P681MND2250Y |
| | 680 | 25.4×45 | 2530 | GV2P681MND2545YJY |
| | 680 | 30×35 | 2530 | GV2P681MND3035Y |
| | 680 | 35×25 | 2530 | GV2P681MND3525Y |
| | 820 | 25.4×50 | 2810 | GV2P821MND2550YJY |
| | 820 | 30×40 | 2810 | GV2P821MND3040Y |
| | 820 | 35×30 | 2810 | GV2P821MND3530Y |
| | 1000 | 30×45 | 3050 | GV2P102MND3045Y |
| | 1000 | 35×35 | 3050 | GV2P102MND3535Y |
| 1200 | 30×50 | 3375 | GV2P122MND3050Y | |
| 1200 | 35×40 | 3375 | GV2P122MND3540Y | |
| 1500 | 35×45 | 3830 | GV2P152MND3545Y | |
| 1800 | 35×50 | 3920 | GV2P182MND3550Y | |
| 250 (2E) | 220 | 22×25 | 1300 | GV2E221MND2225Y |
| | 270 | 22×30 | 1450 | GV2E271MND2230Y |
| | 270 | 25.4×25 | 1450 | GV2E271MND2525YJY |
| | 330 | 22×35 | 1610 | GV2E331MND2235Y |
| | 330 | 25.4×30 | 1610 | GV2E331MND2530YJY |
| | 390 | 22×40 | 1890 | GV2E391MND2240Y |
| | 390 | 25.4×35 | 1890 | GV2E391MND2535YJY |
| | 390 | 30×25 | 1890 | GV2E391MND3025Y |
| | 470 | 22×45 | 2050 | GV2E471MND2245Y |
| | 470 | 25.4×35 | 2050 | GV2E471MND2535YJY |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|-------------------|-------------------|
| 250 (2E) | 470 | 30×30 | 2050 | GV2E471MND3030Y | |
| | 560 | 22×50 | 2270 | GV2E561MND2250Y | |
| | 560 | 25.4×40 | 2270 | GV2E561MND2540YJY | |
| | 560 | 30×35 | 2270 | GV2E561MND3035Y | |
| | 560 | 35×25 | 2270 | GV2E561MND3525Y | |
| | 680 | 25.4×50 | 2545 | GV2E681MND2550YJY | |
| | 680 | 30×40 | 2545 | GV2E681MND3040Y | |
| | 680 | 35×30 | 2545 | GV2E681MND3530Y | |
| | 820 | 30×45 | 2950 | GV2E821MND3045Y | |
| | 820 | 35×35 | 2950 | GV2E821MND3535Y | |
| | 1000 | 30×50 | 3200 | GV2E102MND3050Y | |
| | 1000 | 35×40 | 3200 | GV2E102MND3540Y | |
| | 1200 | 35×45 | 3450 | GV2E122MND3545Y | |
| | 1500 | 35×50 | 4000 | GV2E152MND3550Y | |
| | 400 (2G) | 82 | 22×25 | 770 | GV2G820MND2225Y |
| | | 100 | 22×30 | 920 | GV2G101MND2230Y |
| | | 120 | 22×35 | 1090 | GV2G121MND2235Y |
| | | 120 | 25.4×25 | 1090 | GV2G121MND2525YJY |
| | | 150 | 22×40 | 1210 | GV2G151MND2240Y |
| | | 150 | 25.4×30 | 1210 | GV2G151MND2530YJY |
| 180 | | 22×45 | 1430 | GV2G181MND2245Y | |
| 180 | | 25.4×35 | 1430 | GV2G181MND2535YJY | |
| 180 | | 30×25 | 1430 | GV2G181MND3025Y | |
| 220 | | 22×50 | 1650 | GV2G221MND2250Y | |
| 220 | | 25.4×40 | 1650 | GV2G221MND2540YJY | |
| 220 | | 30×30 | 1650 | GV2G221MND3030Y | |
| 270 | | 25.4×45 | 1745 | GV2G271MND2545YJY | |
| 270 | | 30×35 | 1745 | GV2G271MND3035Y | |
| 270 | | 35×25 | 1745 | GV2G271MND3525Y | |
| 330 | | 25.4×50 | 1940 | GV2G331MND2550YJY | |
| 330 | | 30×40 | 1940 | GV2G331MND3040Y | |
| 330 | | 35×30 | 1940 | GV2G331MND3530Y | |
| 390 | | 30×45 | 2180 | GV2G391MND3045Y | |
| 390 | | 35×35 | 2180 | GV2G391MND3535Y | |
| 470 | 30×50 | 2460 | GV2G471MND3050Y | | |
| 470 | 35×40 | 2460 | GV2G471MND3540Y | | |
| 560 | 35×45 | 2630 | GV2G561MND3545Y | | |
| 680 | 35×50 | 3060 | GV2G681MND3550Y | | |
| 420 (2S) | 82 | 22×25 | 775 | GV2S820MND2225Y | |
| | 100 | 22×30 | 965 | GV2S101MND2230Y | |
| | 120 | 22×35 | 1095 | GV2S121MND2235Y | |
| | 120 | 25.4×25 | 1095 | GV2S121MND2525YJY | |
| | 150 | 22×40 | 1260 | GV2S151MND2240Y | |
| | 150 | 25.4×30 | 1260 | GV2S151MND2530YJY | |
| | 150 | 30×25 | 1260 | GV2S151MND3025Y | |
| | 180 | 22×45 | 1430 | GV2S181MND2245Y | |
| | 180 | 25.4×35 | 1430 | GV2S181MND2535YJY | |
| | 180 | 30×30 | 1430 | GV2S181MND3030Y | |
| | 220 | 22×50 | 1680 | GV2S221MND2250Y | |
| | 220 | 25.4×40 | 1680 | GV2S221MND2540YJY | |
| | 220 | 30×35 | 1680 | GV2S221MND3035Y | |
| | 220 | 35×25 | 1680 | GV2S221MND3525Y | |
| | 270 | 25.4×45 | 1810 | GV2S271MND2545YJY | |
| | 270 | 30×40 | 1810 | GV2S271MND3040Y | |
| | 270 | 35×30 | 1810 | GV2S271MND3530Y | |
| | 330 | 25.4×50 | 1950 | GV2S331MND2550YJY | |
| | 330 | 30×45 | 1950 | GV2S331MND3045Y | |
| | 330 | 35×35 | 1950 | GV2S331MND3535Y | |

ALUMINUM ELECTROLYTIC CAPACITORS



GV Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 420 (2S) | 390 | 30×50 | 2250 | GV2S391MND3050Y |
| | 390 | 35×40 | 2250 | GV2S391MND3540Y |
| | 470 | 35×45 | 2520 | GV2S471MND3545Y |
| | 560 | 35×50 | 2700 | GV2S561MND3550Y |
| 450 (2W) | 56 | 22×25 | 495 | GV2W560MND2225Y |
| | 68 | 22×30 | 770 | GV2W680MND2230Y |
| | 82 | 22×35 | 810 | GV2W820MND2235Y |
| | 82 | 25.4×25 | 810 | GV2W820MND2525YJ |
| | 100 | 22×40 | 980 | GV2W101MND2240Y |
| | 100 | 25.4×30 | 980 | GV2W101MND2530YJ |
| | 120 | 22×45 | 1120 | GV2W121MND2245Y |
| | 120 | 25.4×35 | 1120 | GV2W121MND2535YJ |
| | 120 | 30×25 | 1120 | GV2W121MND3025Y |
| | 150 | 22×50 | 1330 | GV2W151MND2250Y |
| | 150 | 25.4×40 | 1330 | GV2W151MND2540YJ |
| | 150 | 30×30 | 1330 | GV2W151MND3030Y |
| | 150 | 35×25 | 1330 | GV2W151MND3525Y |
| | 180 | 25.4×45 | 1500 | GV2W181MND2545YJ |
| | 180 | 30×35 | 1500 | GV2W181MND3035Y |
| | 180 | 35×30 | 1500 | GV2W181MND3530Y |
| | 220 | 25.4×50 | 1740 | GV2W221MND2550YJ |
| | 220 | 30×40 | 1740 | GV2W221MND3040Y |
| | 220 | 35×35 | 1740 | GV2W221MND3535Y |
| | 270 | 30×45 | 1905 | GV2W271MND3045Y |
| 270 | 35×40 | 1905 | GV2W271MND3540Y | |
| 330 | 30×50 | 1995 | GV2W331MND3050Y | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 450 (2W) | 330 | 35×45 | 1995 | GV2W331MND3545Y |
| | 390 | 35×50 | 2310 | GV2W391MND3550Y |
| 500 (2H) | 56 | 22×25 | 595 | GV2H560MND2225Y |
| | 68 | 22×30 | 630 | GV2H680MND2230Y |
| | 82 | 22×35 | 805 | GV2H820MND2235Y |
| | 82 | 25.4×25 | 805 | GV2H820MND2525YJ |
| | 100 | 22×40 | 900 | GV2H101MND2240Y |
| | 100 | 25.4×30 | 900 | GV2H101MND2530YJ |
| | 120 | 22×45 | 985 | GV2H121MND2245Y |
| | 120 | 25.4×35 | 985 | GV2H121MND2535YJ |
| | 120 | 30×25 | 985 | GV2H121MND3025Y |
| | 150 | 22×50 | 1350 | GV2H151MND2250Y |
| | 150 | 25.4×40 | 1350 | GV2H151MND2540YJ |
| | 150 | 30×30 | 1350 | GV2H151MND3030Y |
| | 150 | 35×25 | 1350 | GV2H151MND3525Y |
| | 180 | 25.4×45 | 1400 | GV2H181MND2545YJ |
| | 180 | 30×35 | 1400 | GV2H181MND3035Y |
| | 180 | 35×30 | 1400 | GV2H181MND3530Y |
| | 220 | 25.4×50 | 1720 | GV2H221MND2550YJ |
| | 220 | 30×40 | 1720 | GV2H221MND3040Y |
| | 220 | 35×35 | 1720 | GV2H221MND3535Y |
| | 270 | 30×45 | 1865 | GV2H271MND3045Y |
| 270 | 35×40 | 1865 | GV2H271MND3540Y | |
| 330 | 30×50 | 2030 | GV2H331MND3050Y | |
| 330 | 35×45 | 2030 | GV2H331MND3545Y | |
| 390 | 35×50 | 2225 | GV2H391MND3550Y | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 200 ~ 250 | 0.80 | 1.00 | 1.15 | 1.17 | 1.20 |
| 400 ~ 500 | 0.90 | 1.00 | 1.10 | 1.12 | 1.15 |

ALUMINUM ELECTROLYTIC CAPACITORS



PL Series



- Load life 2,000 hours at 105°C
- Large size for PCB board mounting hole type

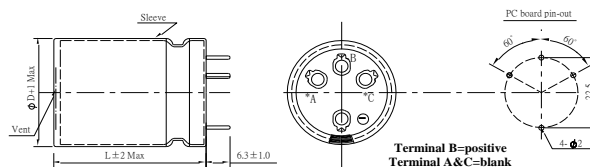
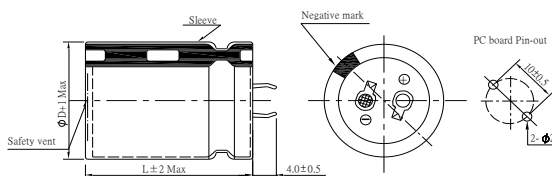
◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|--|---|---|
| Category Temperature Range | -40 ~ +105°C | -25 ~ +105°C |
| Working Voltage Range | 16 ~ 100Vdc | 160 ~ 600Vdc |
| Capacitance Range | 560 ~ 47,000µF | 39 ~ 2,700µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 16 25 35 50 63 80 100~250 350~450 475~600 |
| | tanδ(Max) | 0.35 0.35 0.25 0.25 0.25 0.20 0.15 0.15 0.20 |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. | | |
| Leakage Current | I=0.02CV or 3000µA, whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 16 25 35 50 63 80 100 160~250 350~400 420~600 |
| | Z(-40°C)/Z(+20°C) | 15 10 8 6 6 5 5 — — — |
| | Z(-25°C)/Z(+20°C) | — — — — — — — 4 4 8 |
| (at 120Hz) | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| | Leakage current | ≦ specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | |
| | Capacitance change | ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value |
| | Leakage current | ≦ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

◆ DIMENSIONS (mm)

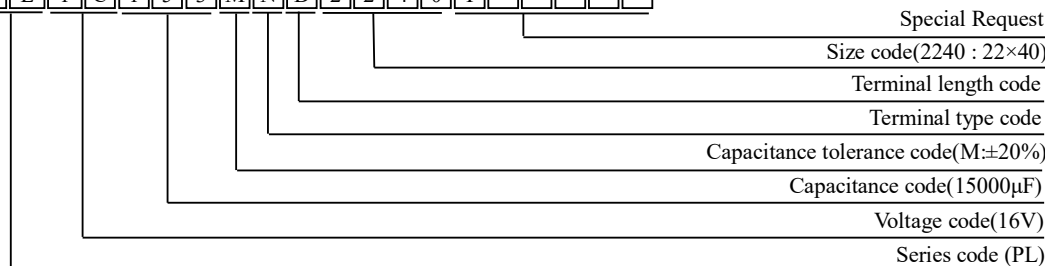
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



◆ PART NUMBER SYSTEM (Example : 16V 15000µF)

P L I C I 5 3 M N D 2 2 4 0 Y



ALUMINUM ELECTROLYTIC CAPACITORS



PL Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 16 (1C) | 6800 | 22×25 | 1570 | PL1C682MND2225Y |
| | 10000 | 22×30 | 1970 | PL1C103MND2230Y |
| | 10000 | 25.4×25 | 1970 | PL1C103MND2525JY |
| | 12000 | 22×35 | 2220 | PL1C123MND2235Y |
| | 12000 | 25.4×30 | 2240 | PL1C123MND2530JY |
| | 12000 | 30×25 | 2450 | PL1C123MND3025Y |
| | 15000 | 22×40 | 2550 | PL1C153MND2240Y |
| | 15000 | 25.4×35 | 2580 | PL1C153MND2535JY |
| | 15000 | 30×25 | 2520 | PL1C153MND3025Y |
| | 18000 | 22×45 | 2870 | PL1C183MND2245Y |
| | 18000 | 25.4×40 | 2920 | PL1C183MND2540JY |
| | 18000 | 30×30 | 2880 | PL1C183MND3030Y |
| | 18000 | 35×25 | 2920 | PL1C183MND3525Y |
| | 22000 | 25.4×45 | 3320 | PL1C223MND2545JY |
| | 22000 | 30×35 | 3290 | PL1C223MND3035Y |
| | 22000 | 35×25 | 3230 | PL1C223MND3525Y |
| | 27000 | 25.4×50 | 3780 | PL1C273MND2550JY |
| | 27000 | 30×40 | 3770 | PL1C273MND3040Y |
| | 27000 | 35×30 | 3580 | PL1C273MND3530Y |
| | 33000 | 30×45 | 4300 | PL1C333MND3045Y |
| 33000 | 35×35 | 4260 | PL1C333MND3535Y | |
| 39000 | 30×50 | 4810 | PL1C393MND3050Y | |
| 39000 | 35×40 | 4790 | PL1C393MND3540Y | |
| 47000 | 35×45 | 5430 | PL1C473MND3545Y | |
| 25 (1E) | 4700 | 22×25 | 1500 | PL1E472MND2225Y |
| | 5600 | 22×25 | 1630 | PL1E562MND2225Y |
| | 6800 | 22×30 | 1860 | PL1E682MND2230Y |
| | 6800 | 25.4×25 | 1870 | PL1E682MND2525JY |
| | 8200 | 22×35 | 2110 | PL1E822MND2235Y |
| | 8200 | 25.4×30 | 2120 | PL1E822MND2530JY |
| | 8200 | 30×25 | 2150 | PL1E822MND3025Y |
| | 10000 | 22×40 | 2390 | PL1E103MND2240Y |
| | 10000 | 25.4×35 | 2420 | PL1E103MND2535JY |
| | 10000 | 30×25 | 2370 | PL1E103MND3025Y |
| | 12000 | 22×45 | 2690 | PL1E123MND2245Y |
| | 12000 | 25.4×40 | 2740 | PL1E123MND2540JY |
| | 12000 | 30×30 | 2700 | PL1E123MND3030Y |
| | 12000 | 35×25 | 2740 | PL1E123MND3525Y |
| | 15000 | 25.4×45 | 3150 | PL1E153MND2545JY |
| | 15000 | 30×35 | 3130 | PL1E153MND3035Y |
| | 15000 | 35×30 | 3270 | PL1E153MND3530Y |
| | 18000 | 25.4×50 | 3540 | PL1E183MND2550JY |
| | 18000 | 30×40 | 3540 | PL1E183MND3040Y |
| | 18000 | 35×30 | 3580 | PL1E183MND3530Y |
| 22000 | 30×45 | 4040 | PL1E223MND3045Y | |
| 22000 | 35×35 | 3800 | PL1E223MND3535Y | |
| 27000 | 35×45 | 4730 | PL1E273MND3545Y | |
| 35 (1V) | 3300 | 22×25 | 1400 | PL1V332MND2225Y |
| | 3900 | 22×30 | 1570 | PL1V392MND2230Y |
| | 4700 | 22×30 | 1720 | PL1V472MND2230Y |
| | 5600 | 22×35 | 1950 | PL1V562MND2235Y |
| | 6800 | 22×40 | 2200 | PL1V682MND2240Y |
| | 8200 | 22×45 | 2610 | PL1V822MND2245Y |
| | 4700 | 25.4×25 | 1800 | PL1V472MND2525JY |
| | 5600 | 25.4×30 | 1960 | PL1V562MND2530JY |
| | 6800 | 25.4×35 | 2230 | PL1V682MND2535JY |
| | 8200 | 25.4×40 | 2610 | PL1V822MND2540JY |
| | 10000 | 25.4×45 | 2850 | PL1V103MND2545JY |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|------------------|
| 35 (1V) | 12000 | 25.4×50 | 3240 | PL1V123MND2550JY | |
| | 5600 | 30×25 | 1990 | PL1V562MND3025Y | |
| | 6800 | 30×25 | 2190 | PL1V682MND3025Y | |
| | 8200 | 30×30 | 2750 | PL1V822MND3030Y | |
| | 10000 | 30×35 | 2900 | PL1V103MND3035Y | |
| | 12000 | 30×40 | 3230 | PL1V123MND3040Y | |
| | 15000 | 30×45 | 3720 | PL1V153MND3045Y | |
| | 8200 | 35×25 | 2750 | PL1V822MND3525Y | |
| | 10000 | 35×30 | 2910 | PL1V103MND3530Y | |
| | 12000 | 35×30 | 3075 | PL1V123MND3530Y | |
| | 15000 | 35×35 | 3670 | PL1V153MND3535Y | |
| | 18000 | 35×40 | 4370 | PL1V183MND3540Y | |
| | 22000 | 35×50 | 4920 | PL1V223MND3550Y | |
| | 50 (1H) | 1800 | 22×25 | 1330 | PL1H182MND2225Y |
| | | 2200 | 22×30 | 1700 | PL1H222MND2230Y |
| | | 2200 | 25.4×25 | 1700 | PL1H222MND2525JY |
| 3300 | | 22×35 | 1930 | PL1H332MND2235Y | |
| 3300 | | 25.4×30 | 1850 | PL1H332MND2530JY | |
| 3900 | | 22×40 | 2160 | PL1H392MND2240Y | |
| 3900 | | 25.4×35 | 2180 | PL1H392MND2535JY | |
| 3900 | | 30×25 | 2070 | PL1H392MND3025Y | |
| 4700 | | 22×45 | 2460 | PL1H472MND2245Y | |
| 4700 | | 25.4×35 | 2390 | PL1H472MND2535JY | |
| 4700 | | 30×30 | 2355 | PL1H472MND3030Y | |
| 4700 | | 35×25 | 2480 | PL1H472MND3525Y | |
| 5600 | | 22×50 | 2750 | PL1H562MND2250Y | |
| 5600 | | 25.4×40 | 2700 | PL1H562MND2540JY | |
| 5600 | | 30×35 | 2760 | PL1H562MND3035Y | |
| 5600 | | 35×25 | 2700 | PL1H562MND3525Y | |
| 63 (1E) | 6800 | 25.4×50 | 3300 | PL1H682MND2550JY | |
| | 6800 | 30×40 | 3300 | PL1H682MND3040Y | |
| | 6800 | 35×30 | 3250 | PL1H682MND3530Y | |
| | 8200 | 30×45 | 3600 | PL1H822MND3045Y | |
| | 8200 | 35×35 | 3550 | PL1H822MND3535Y | |
| | 10000 | 30×50 | 4040 | PL1H103MND3050Y | |
| | 10000 | 35×40 | 4030 | PL1H103MND3540Y | |
| | 12000 | 35×45 | 4550 | PL1H123MND3545Y | |
| | 1200 | 22×25 | 1190 | PL1J122MND2225Y | |
| | 1500 | 22×25 | 1330 | PL1J152MND2225Y | |
| | 1800 | 22×30 | 1510 | PL1J182MND2230Y | |
| | 1800 | 25.4×25 | 1520 | PL1J182MND2525JY | |
| | 2200 | 22×35 | 1730 | PL1J222MND2235Y | |
| | 2200 | 25.4×30 | 1740 | PL1J222MND2530JY | |
| | 2700 | 22×40 | 1970 | PL1J272MND2240Y | |
| | 2700 | 25.4×35 | 1990 | PL1J272MND2535JY | |
| 2700 | 30×25 | 1890 | PL1J272MND3025Y | | |
| 3300 | 22×50 | 2290 | PL1J332MND2250Y | | |
| 3300 | 25.4×40 | 2290 | PL1J332MND2540JY | | |
| 3300 | 30×30 | 2240 | PL1J332MND3030Y | | |
| 3300 | 35×25 | 2155 | PL1J332MND3525Y | | |
| 3900 | 25.4×45 | 2540 | PL1J392MND2545JY | | |
| 3900 | 30×35 | 2550 | PL1J392MND3035Y | | |
| 3900 | 35×25 | 2420 | PL1J392MND3525Y | | |
| 4700 | 25.4×50 | 2860 | PL1J472MND2550JY | | |
| 4700 | 30×40 | 2860 | PL1J472MND3040Y | | |
| 4700 | 35×30 | 2790 | PL1J472MND3530Y | | |
| 5600 | 30×45 | 3220 | PL1J562MND3045Y | | |
| 5600 | 35×35 | 3190 | PL1J562MND3535Y | | |

ALUMINUM ELECTROLYTIC CAPACITORS



PL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 63 (1J) | 6800 | 30×50 | 3650 | PL1J682MND3050Y |
| | 6800 | 35×40 | 3640 | PL1J682MND3540Y |
| | 8200 | 35×45 | 3900 | PL1J822MND3545Y |
| | 10000 | 35×50 | 4400 | PL1J103MND3550Y |
| 80 (1K) | 820 | 22×25 | 1110 | PL1K821MND2225Y |
| | 1000 | 22×25 | 1220 | PL1K102MND2225Y |
| | 1200 | 22×30 | 1380 | PL1K122MND2230Y |
| | 1200 | 25.4×25 | 1390 | PL1K122MND2525YJY |
| | 1500 | 22×35 | 1590 | PL1K152MND2235Y |
| | 1500 | 25.4×30 | 1610 | PL1K152MND2530YJY |
| | 1800 | 22×40 | 1800 | PL1K182MND2240Y |
| | 1800 | 25.4×30 | 1760 | PL1K182MND2530YJY |
| | 1800 | 30×25 | 1710 | PL1K182MND3025Y |
| | 2200 | 22×45 | 2040 | PL1K222MND2245Y |
| | 2200 | 25.4×35 | 2010 | PL1K222MND2535YJY |
| | 2200 | 30×30 | 2050 | PL1K222MND3030Y |
| | 2200 | 35×25 | 2070 | PL1K222MND3525Y |
| | 2700 | 25.4×45 | 2360 | PL1K272MND2545YJY |
| | 2700 | 30×35 | 2350 | PL1K272MND3035Y |
| | 2700 | 35×25 | 2290 | PL1K272MND3525Y |
| | 3300 | 25.4×50 | 2680 | PL1K332MND2550YJY |
| | 3300 | 30×40 | 2680 | PL1K332MND3040Y |
| | 3300 | 35×30 | 2980 | PL1K332MND3530Y |
| | 3900 | 30×45 | 3000 | PL1K392MND3045Y |
| 3900 | 35×35 | 2980 | PL1K392MND3535Y | |
| 4700 | 30×50 | 3390 | PL1K472MND3050Y | |
| 4700 | 35×40 | 3380 | PL1K472MND3540Y | |
| 5600 | 35×45 | 3800 | PL1K562MND3545Y | |
| 6800 | 35×50 | 3900 | PL1K682MND3550Y | |
| 100 (2A) | 560 | 22×25 | 1050 | PL2A561MND2225Y |
| | 820 | 22×30 | 1320 | PL2A821MND2230Y |
| | 820 | 25.4×25 | 1330 | PL2A821MND2525YJY |
| | 1000 | 22×35 | 1500 | PL2A102MND2235Y |
| | 1000 | 25.4×30 | 1510 | PL2A102MND2530YJY |
| | 1200 | 22×40 | 1690 | PL2A122MND2240Y |
| | 1200 | 25.4×35 | 1710 | PL2A122MND2535YJY |
| | 1200 | 30×25 | 1680 | PL2A122MND3025Y |
| | 1500 | 22×45 | 1940 | PL2A152MND2245Y |
| | 1500 | 25.4×40 | 1980 | PL2A152MND2540YJY |
| | 1500 | 30×30 | 1950 | PL2A152MND3030Y |
| | 1500 | 35×25 | 1980 | PL2A152MND3525Y |
| | 1800 | 25.4×45 | 2230 | PL2A182MND2545YJY |
| | 1800 | 30×35 | 2200 | PL2A182MND3035Y |
| | 1800 | 35×25 | 2170 | PL2A182MND3525Y |
| | 2200 | 25.4×50 | 2565 | PL2A222MND2550YJY |
| | 2200 | 30×40 | 2650 | PL2A222MND3040Y |
| | 2200 | 35×30 | 2565 | PL2A222MND3530Y |
| | 2700 | 30×45 | 2880 | PL2A272MND3045Y |
| | 2700 | 35×35 | 2860 | PL2A272MND3535Y |
| 3300 | 30×50 | 3280 | PL2A332MND3050Y | |
| 3300 | 35×40 | 3270 | PL2A332MND3540Y | |
| 3900 | 35×45 | 3670 | PL2A392MND3545Y | |
| 4700 | 35×50 | 3800 | PL2A472MND3550Y | |
| 160 (2C) | 390 | 22×25 | 1215 | PL2C391MND2225Y |
| | 470 | 22×30 | 1330 | PL2C471MND2230Y |
| | 560 | 22×35 | 1460 | PL2C561MND2235Y |
| | 560 | 25.4×25 | 1460 | PL2C561MND2525YJY |
| | 680 | 22×40 | 1750 | PL2C681MND2240Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 160 (2C) | 680 | 25.4×30 | 1730 | PL2C681MND2530YJY |
| | 820 | 22×45 | 2000 | PL2C821MND2245Y |
| | 820 | 25.4×35 | 2000 | PL2C821MND2535YJY |
| | 820 | 30×25 | 2000 | PL2C821MND3025Y |
| | 1000 | 22×50 | 2110 | PL2C102MND2250Y |
| | 1000 | 25.4×40 | 2150 | PL2C102MND2540YJY |
| | 1000 | 30×30 | 2110 | PL2C102MND3030Y |
| | 1000 | 35×25 | 2130 | PL2C102MND3525Y |
| | 1200 | 25.4×45 | 2315 | PL2C122MND2545YJY |
| | 1200 | 30×35 | 2490 | PL2C122MND3035Y |
| | 1200 | 35×30 | 2315 | PL2C122MND3530Y |
| | 1500 | 25.4×50 | 2675 | PL2C152MND2550YJY |
| | 1500 | 30×40 | 2675 | PL2C152MND3040Y |
| | 1500 | 35×35 | 2675 | PL2C152MND3535Y |
| | 1800 | 30×45 | 3140 | PL2C182MND3045Y |
| | 1800 | 35×40 | 3140 | PL2C182MND3540Y |
| | 2200 | 30×50 | 3580 | PL2C222MND3050Y |
| | 2200 | 35×45 | 3580 | PL2C222MND3545Y |
| | 2700 | 35×50 | 3600 | PL2C272MND3550Y |
| | 200 (2D) | 270 | 22×25 | 1100 |
| 330 | | 22×30 | 1250 | PL2D331MND2230Y |
| 390 | | 22×35 | 1310 | PL2D391MND2235Y |
| 390 | | 25.4×25 | 1310 | PL2D391MND2525YJY |
| 470 | | 22×40 | 1335 | PL2D471MND2240Y |
| 470 | | 25.4×30 | 1400 | PL2D471MND2530YJY |
| 560 | | 22×45 | 1600 | PL2D561MND2245Y |
| 560 | | 25.4×35 | 1560 | PL2D561MND2535YJY |
| 560 | | 30×25 | 1600 | PL2D561MND3025Y |
| 680 | | 22×50 | 1650 | PL2D681MND2250Y |
| 680 | | 25.4×40 | 1700 | PL2D681MND2540YJY |
| 680 | | 30×30 | 1720 | PL2D681MND3030Y |
| 820 | | 25.4×45 | 1935 | PL2D821MND2545YJY |
| 820 | | 30×35 | 1935 | PL2D821MND3035Y |
| 820 | | 35×25 | 1935 | PL2D821MND3525Y |
| 1000 | | 25.4×50 | 2040 | PL2D102MND2550YJY |
| 1000 | | 30×40 | 2185 | PL2D102MND3040Y |
| 1000 | | 35×30 | 2185 | PL2D102MND3530Y |
| 1200 | | 30×45 | 2515 | PL2D122MND3045Y |
| 1200 | | 35×35 | 2515 | PL2D122MND3535Y |
| 1500 | 30×50 | 2925 | PL2D152MND3050Y | |
| 1500 | 35×40 | 2925 | PL2D152MND3540Y | |
| 1800 | 35×45 | 3000 | PL2D182MND3545Y | |
| 2200 | 35×50 | 3150 | PL2D222MND3550Y | |
| 220 (2P) | 270 | 22×25 | 990 | PL2P271MND2225Y |
| | 330 | 22×30 | 1160 | PL2P331MND2230Y |
| | 390 | 22×35 | 1340 | PL2P391MND2235Y |
| | 390 | 25.4×25 | 1350 | PL2P391MND2525YJY |
| | 470 | 22×40 | 1400 | PL2P471MND2240Y |
| | 470 | 25.4×30 | 1400 | PL2P471MND2530YJY |
| | 560 | 22×45 | 1550 | PL2P561MND2245Y |
| | 560 | 25.4×35 | 1550 | PL2P561MND2535YJY |
| | 560 | 30×25 | 1550 | PL2P561MND3025Y |
| | 680 | 22×50 | 1750 | PL2P681MND2250Y |
| | 680 | 25.4×40 | 1750 | PL2P681MND2540YJY |
| | 680 | 30×30 | 1700 | PL2P681MND3030Y |
| | 820 | 25.4×45 | 1930 | PL2P821MND2545YJY |
| | 820 | 30×35 | 1900 | PL2P821MND3035Y |
| | 820 | 35×25 | 1930 | PL2P821MND3525Y |

ALUMINUM ELECTROLYTIC CAPACITORS



PL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 220 (2P) | 1000 | 25.4×50 | 2280 | PL2P102MND2550JY |
| | 1000 | 30×40 | 2280 | PL2P102MND3040Y |
| | 1000 | 35×30 | 2300 | PL2P102MND3530Y |
| | 1200 | 30×45 | 2380 | PL2P122MND3045Y |
| | 1200 | 35×35 | 2380 | PL2P122MND3535Y |
| | 1500 | 30×50 | 2500 | PL2P152MND3050Y |
| | 1500 | 35×40 | 2500 | PL2P152MND3540Y |
| | 1800 | 35×45 | 2600 | PL2P182MND3545Y |
| 250 (2E) | 270 | 22×25 | 950 | PL2E271MND2225Y |
| | 330 | 22×30 | 1200 | PL2E331MND2230Y |
| | 330 | 25.4×25 | 1260 | PL2E331MND2525YJY |
| | 390 | 22×35 | 1415 | PL2E391MND2235Y |
| | 390 | 25.4×30 | 1420 | PL2E391MND2530JY |
| | 470 | 22×40 | 1490 | PL2E471MND2240Y |
| | 470 | 25.4×35 | 1490 | PL2E471MND2535JY |
| | 470 | 30×25 | 1500 | PL2E471MND3025Y |
| | 560 | 22×45 | 1700 | PL2E561MND2245Y |
| | 560 | 25.4×40 | 1700 | PL2E561MND2540JY |
| | 560 | 30×30 | 1700 | PL2E561MND3030Y |
| | 560 | 35×25 | 1700 | PL2E561MND3525Y |
| | 680 | 22×50 | 1870 | PL2E681MND2250Y |
| | 680 | 25.4×45 | 1870 | PL2E681MND2545JY |
| | 680 | 30×35 | 1900 | PL2E681MND3035Y |
| | 680 | 35×30 | 1910 | PL2E681MND3530Y |
| | 820 | 25.4×50 | 2000 | PL2E821MND2550JY |
| | 820 | 30×40 | 2020 | PL2E821MND3040Y |
| | 820 | 35×35 | 2000 | PL2E821MND3535Y |
| | 1000 | 30×45 | 2030 | PL2E102MND3045Y |
| | 1000 | 35×40 | 2185 | PL2E102MND3540Y |
| | 1200 | 30×50 | 2300 | PL2E122MND3050Y |
| | 1200 | 35×45 | 2300 | PL2E122MND3545Y |
| | 1500 | 35×50 | 2400 | PL2E152MND3550Y |
| 400 (2G) | 100 | 22×25 | 700 | PL2G101MND2225Y |
| | 120 | 22×30 | 730 | PL2G121MND2230Y |
| | 150 | 22×35 | 800 | PL2G151MND2235Y |
| | 150 | 25.4×25 | 795 | PL2G151MND2525JY |
| | 180 | 22×40 | 890 | PL2G181MND2240Y |
| | 180 | 25.4×30 | 890 | PL2G181MND2530JY |
| | 220 | 22×45 | 1070 | PL2G221MND2245Y |
| | 220 | 25.4×35 | 1070 | PL2G221MND2535JY |
| | 220 | 30×25 | 1070 | PL2G221MND3025Y |
| | 270 | 22×50 | 1100 | PL2G271MND2250Y |
| | 270 | 25.4×40 | 1110 | PL2G271MND2540JY |
| | 270 | 30×30 | 1100 | PL2G271MND3030Y |
| | 270 | 35×25 | 1100 | PL2G271MND3525Y |
| | 330 | 25.4×45 | 1150 | PL2G331MND2545JY |
| | 330 | 30×35 | 1150 | PL2G331MND3035Y |
| | 330 | 35×30 | 1280 | PL2G331MND3530Y |
| | 390 | 25.4×50 | 1550 | PL2G391MND2550JY |
| | 390 | 30×40 | 1500 | PL2G391MND3040Y |
| | 390 | 35×35 | 1530 | PL2G391MND3535Y |
| | 470 | 30×45 | 1600 | PL2G471MND3045Y |
| | 470 | 35×40 | 1620 | PL2G471MND3540Y |
| | 560 | 30×50 | 1900 | PL2G561MND3050Y |
| | 560 | 35×45 | 1900 | PL2G561MND3545Y |
| | 680 | 35×50 | 2000 | PL2G681MND3550Y |
| 420 (2S) | 100 | 22×25 | 700 | PL2S101MND2225Y |
| | 120 | 22×30 | 780 | PL2S121MND2230Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-------------------|-----------------|
| 420 (2S) | 120 | 25.4×25 | 770 | PL2S121MND2525JY | |
| | 150 | 22×35 | 840 | PL2S151MND2235Y | |
| | 150 | 25.4×30 | 820 | PL2S151MND2530JY | |
| | 180 | 22×40 | 950 | PL2S181MND2240Y | |
| | 180 | 25.4×35 | 910 | PL2S181MND2535Y | |
| | 180 | 30×25 | 950 | PL2S181MND3025Y | |
| | 220 | 22×45 | 1050 | PL2S221MND2245Y | |
| | 220 | 25.4×40 | 1050 | PL2S221MND2540JY | |
| | 220 | 30×30 | 1070 | PL2S221MND3030Y | |
| | 270 | 22×50 | 1150 | PL2S271MND2250Y | |
| | 270 | 25.4×45 | 1160 | PL2S271MND2545JY | |
| | 270 | 30×35 | 1160 | PL2S271MND3035Y | |
| | 270 | 35×25 | 1160 | PL2S271MND3525Y | |
| | 330 | 25.4×50 | 1300 | PL2S331MND2550JY | |
| | 330 | 30×40 | 1350 | PL2S331MND3040Y | |
| | 330 | 35×30 | 1360 | PL2S331MND3530Y | |
| | 390 | 30×45 | 1600 | PL2S391MND3045Y | |
| | 390 | 35×35 | 1590 | PL2S391MND3535Y | |
| | 470 | 30×50 | 1850 | PL2S471MND3050Y | |
| | 470 | 35×40 | 1870 | PL2S471MND3540Y | |
| | 560 | 35×45 | 2100 | PL2S561MND3545Y | |
| | 680 | 35×50 | 2210 | PL2S681MND3550Y | |
| | 450 (2W) | 100 | 22×25 | 680 | PL2W101MND2225Y |
| | | 120 | 22×30 | 720 | PL2W121MND2230Y |
| 120 | | 25.4×25 | 750 | PL2W121MND2525YJY | |
| 150 | | 22×35 | 840 | PL2W151MND2235Y | |
| 150 | | 25.4×30 | 840 | PL2W151MND2530JY | |
| 180 | | 22×40 | 1000 | PL2W181MND2240Y | |
| 180 | | 25.4×35 | 980 | PL2W181MND2535JY | |
| 180 | | 30×25 | 980 | PL2W181MND3025Y | |
| 220 | | 22×45 | 1120 | PL2W221MND2245Y | |
| 220 | | 25.4×40 | 1120 | PL2W221MND2540JY | |
| 220 | | 30×30 | 1100 | PL2W221MND3030Y | |
| 270 | | 22×50 | 1200 | PL2W271MND2250Y | |
| 270 | | 25.4×45 | 1210 | PL2W271MND2545JY | |
| 270 | | 30×35 | 1210 | PL2W271MND3035Y | |
| 270 | | 35×25 | 1220 | PL2W271MND3525Y | |
| 330 | | 25.4×50 | 1390 | PL2W331MND2550JY | |
| 330 | | 30×40 | 1390 | PL2W331MND3040Y | |
| 330 | | 35×30 | 1390 | PL2W331MND3530Y | |
| 390 | | 30×45 | 1450 | PL2W391MND3045Y | |
| 390 | | 35×35 | 1480 | PL2W391MND3535Y | |
| 470 | | 30×50 | 1650 | PL2W471MND3050Y | |
| 470 | | 35×40 | 1650 | PL2W471MND3540Y | |
| 560 | | 35×45 | 1700 | PL2W561MND3545Y | |
| 680 | | 35×50 | 1820 | PL2W681MND3550Y | |
| 475 (2B) | 68 | 22×25 | 600 | PL2B680MND2225Y | |
| | 82 | 22×30 | 700 | PL2B820MND2230Y | |
| | 82 | 25.4×25 | 690 | PL2B820MND2525JY | |
| | 100 | 22×35 | 800 | PL2B101MND2235Y | |
| | 100 | 25.4×25 | 790 | PL2B101MND2525JY | |
| | 120 | 22×40 | 880 | PL2B121MND2240Y | |
| | 120 | 25.4×30 | 900 | PL2B121MND2530JY | |
| | 120 | 30×25 | 890 | PL2B121MND3025Y | |
| | 150 | 25.4×45 | 1050 | PL2B151MND2545JY | |
| | 150 | 25.4×35 | 1030 | PL2B151MND3535JY | |
| | 150 | 30×25 | 1040 | PL2B151MND3025Y | |
| | 180 | 22×50 | 1160 | PL2B181MND2250Y | |

ALUMINUM ELECTROLYTIC CAPACITORS



PL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 475 (2B) | 180 | 25.4×40 | 1120 | PL2B181MND2540JY |
| | 180 | 30×30 | 1160 | PL2B181MND3030Y |
| | 180 | 35×25 | 1150 | PL2B181MND3525Y |
| | 220 | 25.4×45 | 1380 | PL2B221MND2545JY |
| | 220 | 30×35 | 1340 | PL2B221MND3035Y |
| | 220 | 35×30 | 1130 | PL2B221MND3530Y |
| | 270 | 30×40 | 1480 | PL2B271MND3040Y |
| 500 (2H) | 270 | 35×35 | 1500 | PL2B271MND3535Y |
| | 47 | 22×25 | 410 | PL2H470MND2225Y |
| | 56 | 22×25 | 500 | PL2H560MND2225Y |
| | 68 | 22×30 | 580 | PL2H680MND2230Y |
| | 82 | 22×30 | 700 | PL2H820MND2230Y |
| | 82 | 25.4×25 | 730 | PL2H820MND2525JY |
| | 100 | 22×35 | 800 | PL2H101MND2235Y |
| | 100 | 25.4×30 | 810 | PL2H101MND2530JY |
| | 120 | 22×40 | 900 | PL2H121MND2240Y |
| | 120 | 25.4×35 | 890 | PL2H121MND2535JY |
| | 120 | 30×25 | 900 | PL2H121MND3025Y |
| | 150 | 22×50 | 1150 | PL2H151MND2250Y |
| | 150 | 25.4×40 | 1100 | PL2H151MND2540JY |
| | 150 | 30×30 | 1070 | PL2H151MND3030Y |
| | 150 | 35×25 | 1090 | PL2H151MND3525Y |
| | 180 | 25.4×45 | 1220 | PL2H181MND2545JY |
| | 180 | 30×35 | 1200 | PL2H181MND3035Y |
| | 180 | 35×30 | 1190 | PL2H181MND3530Y |
| | 220 | 25.4×50 | 1330 | PL2H221MND2550JY |
| | 220 | 30×40 | 1300 | PL2H221MND3040Y |
| 220 | 35×35 | 1290 | PL2H221MND3535Y | |
| 270 | 30×45 | 1400 | PL2H271MND3045Y | |
| 270 | 35×40 | 1380 | PL2H271MND3540Y | |
| 550 (2L) | 39 | 22×25 | 330 | PL2L390MND2225Y |
| | 47 | 22×30 | 400 | PL2L470MND2230Y |
| | 47 | 25.4×25 | 400 | PL2L470MND2525JY |
| | 56 | 22×35 | 450 | PL2L560MND2235Y |
| | 56 | 25.4×30 | 450 | PL2L560MND2530JY |
| | 68 | 22×40 | 520 | PL2L680MND2240Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|------------------|
| 550 (2L) | 68 | 25.4×35 | 520 | PL2L680MND2535JY | |
| | 82 | 22×45 | 600 | PL2L820MND2245Y | |
| | 82 | 25.4×40 | 600 | PL2L820MND2540JY | |
| | 82 | 30×25 | 600 | PL2L820MND3025Y | |
| | 100 | 22×50 | 720 | PL2L101MND2250Y | |
| | 100 | 25.4×45 | 720 | PL2L101MND2545JY | |
| | 100 | 30×30 | 720 | PL2L101MND3030Y | |
| | 120 | 25.4×50 | 830 | PL2L121MND2550JY | |
| | 120 | 30×35 | 830 | PL2L121MND3035Y | |
| | 120 | 35×25 | 830 | PL2L121MND3525Y | |
| | 150 | 30×40 | 960 | PL2L151MND3040Y | |
| | 150 | 35×30 | 960 | PL2L151MND3530Y | |
| | 180 | 30×45 | 1050 | PL2L181MND3045Y | |
| | 180 | 35×35 | 1050 | PL2L181MND3535Y | |
| | 220 | 30×50 | 1170 | PL2L221MND3050Y | |
| | 220 | 35×40 | 1170 | PL2L221MND3540Y | |
| | 270 | 35×45 | 1300 | PL2L271MND3545Y | |
| | 330 | 35×50 | 1420 | PL2L331MND3550Y | |
| | 600 (2J) | 100 | 22×50 | 770 | PL2J101MND2250Y |
| | | 100 | 25.4×45 | 770 | PL2J101MND2545JY |
| 100 | | 30×30 | 830 | PL2J101MND3030Y | |
| 100 | | 35×25 | 850 | PL2J101MND3525Y | |
| 120 | | 22×55 | 880 | PL2J121MND2255Y | |
| 120 | | 25.4×50 | 880 | PL2J121MND2550JY | |
| 120 | | 30×35 | 930 | PL2J121MND3035Y | |
| 120 | | 35×25 | 960 | PL2J121MND3525Y | |
| 150 | | 25.4×55 | 1030 | PL2J151MND2555JY | |
| 150 | | 30×40 | 1060 | PL2J151MND3040Y | |
| 150 | | 35×30 | 1060 | PL2J151MND3530Y | |
| 180 | | 30×45 | 1180 | PL2J181MND3045Y | |
| 180 | | 35×35 | 1180 | PL2J181MND3535Y | |
| 220 | | 30×55 | 1280 | PL2J221MND3055Y | |
| 220 | | 35×40 | 1350 | PL2J221MND3540Y | |
| 270 | | 35×45 | 1490 | PL2J271MND3545Y | |
| 330 | | 35×50 | 1650 | PL2J331MND3550Y | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 16 ~ 100 | 0.95 | 1.00 | 1.05 | 1.08 | 1.08 |
| 160 ~ 250 | 0.81 | 1.00 | 1.32 | 1.45 | 1.50 |
| 350 ~ 600 | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



PK Series

- Long life and high temperature, down size and high ripple current
- Load life 3,000 hours at 105°C



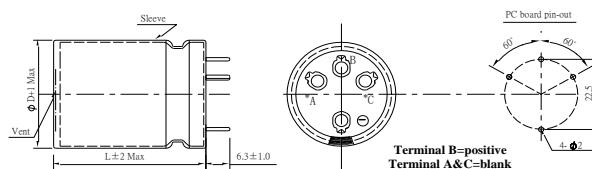
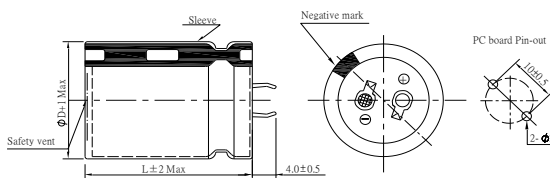
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|-------------------|-----|-----|-----------|------|------|------|------|------|------|------|------|
| Category Temperature Range | -25 ~ +105°C | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 200 ~ 500Vdc | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 56 ~ 2,200µF | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>200</td> <td>220</td> <td>250</td> <td>350</td> <td>400</td> <td>420</td> <td>450</td> <td>500</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> </tr> </table> | Rated Voltage (V) | 200 | 220 | 250 | 350 | 400 | 420 | 450 | 500 | tanδ(Max) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.20 |
| | Rated Voltage (V) | 200 | 220 | 250 | 350 | 400 | 420 | 450 | 500 | | | | | | | | | | |
| tanδ(Max) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.20 | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | | |
| Leakage Current | $I = 0.02CV$ or $3000\mu A$, whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>200~250</td> <td>350</td> <td>400</td> <td>420~450</td> <td>500</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>4</td> <td>8</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 200~250 | 350 | 400 | 420~450 | 500 | Z(-25°C)/Z(+20°C) | 4 | 4 | 4 | 8 | 8 | | | | | | |
| Rated voltage (V) | 200~250 | 350 | 400 | 420~450 | 500 | | | | | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 4 | 4 | 8 | 8 | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)

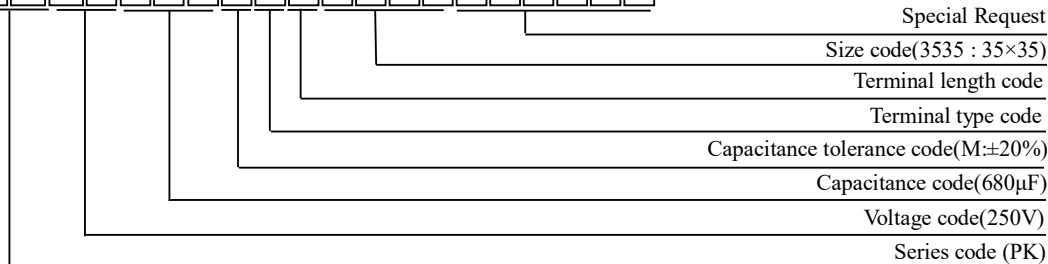
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



◆ PART NUMBER SYSTEM (Example : 250V 680µF)

P K 2 E 6 8 1 M N D 3 5 3 5 Y



ALUMINUM ELECTROLYTIC CAPACITORS



PK Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 200 (2D) | 270 | 22×25 | 1100 | PK2D271MND2225Y |
| | 330 | 22×30 | 1250 | PK2D331MND2230Y |
| | 390 | 22×35 | 1340 | PK2D391MND2235Y |
| | 390 | 25.4×25 | 1350 | PK2D391MND2525YJY |
| | 470 | 22×40 | 1540 | PK2D471MND2240Y |
| | 470 | 25.4×30 | 1500 | PK2D471MND2530YJY |
| | 560 | 22×45 | 1670 | PK2D561MND2245Y |
| | 560 | 25.4×35 | 1670 | PK2D561MND2535YJY |
| | 560 | 30×25 | 1670 | PK2D561MND3025Y |
| | 680 | 22×50 | 1780 | PK2D681MND2250Y |
| | 680 | 25.4×40 | 1780 | PK2D681MND2540YJY |
| | 680 | 30×30 | 1750 | PK2D681MND3030Y |
| | 820 | 25.4×45 | 2040 | PK2D821MND2545YJY |
| | 820 | 30×35 | 2040 | PK2D821MND3035Y |
| | 820 | 35×25 | 2040 | PK2D821MND3525Y |
| | 1000 | 25.4×50 | 2450 | PK2D102MND2550YJY |
| | 1000 | 30×40 | 2300 | PK2D102MND3040Y |
| | 1000 | 35×30 | 2300 | PK2D102MND3530Y |
| | 1200 | 30×45 | 2650 | PK2D122MND3045Y |
| | 1200 | 35×35 | 2650 | PK2D122MND3535Y |
| 1500 | 30×50 | 2800 | PK2D152MND3050Y | |
| 1500 | 35×40 | 3080 | PK2D152MND3540YJY | |
| 1800 | 35×45 | 3480 | PK2D182MND3545Y | |
| 2200 | 35×50 | 3520 | PK2D222MND3550Y | |
| 220 (2P) | 220 | 22×25 | 1000 | PK2P221MND2225Y |
| | 270 | 22×30 | 1150 | PK2P271MND2230Y |
| | 330 | 22×35 | 1250 | PK2P331MND2235Y |
| | 330 | 25.4×25 | 1250 | PK2P331MND2525YJY |
| | 390 | 22×40 | 1400 | PK2P391MND2240Y |
| | 390 | 25.4×30 | 1400 | PK2P391MND2530YJY |
| | 470 | 22×45 | 1520 | PK2P471MND2245Y |
| | 470 | 25.4×35 | 1450 | PK2P471MND2535YJY |
| | 470 | 30×25 | 1450 | PK2P471MND3025Y |
| | 560 | 22×50 | 1700 | PK2P561MND2250Y |
| | 560 | 25.4×40 | 1700 | PK2P561MND2540YJY |
| | 560 | 30×30 | 1700 | PK2P561MND3030Y |
| | 680 | 25.4×45 | 1780 | PK2P681MND2545YJY |
| | 680 | 30×35 | 1780 | PK2P681MND3035Y |
| | 680 | 35×25 | 1780 | PK2P681MND3525Y |
| | 820 | 25.4×50 | 2100 | PK2P821MND2550YJY |
| | 820 | 30×40 | 2100 | PK2P821MND3040Y |
| | 820 | 35×30 | 2100 | PK2P821MND3530Y |
| | 1000 | 30×45 | 2400 | PK2P102MND3045Y |
| | 1000 | 35×35 | 2400 | PK2P102MND3535Y |
| 1200 | 30×50 | 2600 | PK2P122MND3050Y | |
| 1200 | 35×40 | 2600 | PK2P122MND3540Y | |
| 1500 | 35×45 | 3000 | PK2P152MND3545Y | |
| 1800 | 35×50 | 3130 | PK2P182MND3550Y | |
| 250 (2E) | 220 | 22×25 | 1000 | PK2E221MND2225Y |
| | 270 | 22×30 | 1110 | PK2E271MND2230Y |
| | 270 | 25.4×25 | 1180 | PK2E271MND2525YJY |
| | 330 | 22×35 | 1250 | PK2E331MND2235Y |
| | 330 | 25.4×30 | 1300 | PK2E331MND2530YJY |
| | 390 | 22×40 | 1420 | PK2E391MND2240Y |
| | 390 | 25.4×35 | 1400 | PK2E391MND2535YJY |
| | 390 | 30×25 | 1450 | PK2E391MND3025Y |
| | 470 | 22×45 | 1610 | PK2E471MND2245Y |
| | 470 | 25.4×40 | 1650 | PK2E471MND2540YJY |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 250 (2E) | 470 | 30×30 | 1650 | PK2E471MND3030Y |
| | 470 | 35×25 | 1610 | PK2E471MND3525Y |
| | 560 | 22×50 | 1790 | PK2E561MND2250Y |
| | 560 | 25.4×45 | 1790 | PK2E561MND2545YJY |
| | 560 | 30×35 | 1800 | PK2E561MND3035Y |
| | 560 | 35×30 | 1800 | PK2E561MND3530Y |
| | 680 | 25.4×50 | 2000 | PK2E681MND2550YJY |
| | 680 | 30×40 | 2000 | PK2E681MND3040Y |
| | 680 | 35×35 | 2000 | PK2E681MND3535Y |
| | 820 | 30×45 | 2140 | PK2E821MND3045Y |
| | 820 | 35×40 | 2160 | PK2E821MND3540Y |
| | 1000 | 30×50 | 2470 | PK2E102MND3050Y |
| | 1000 | 35×45 | 2470 | PK2E102MND3545Y |
| | 1200 | 35×50 | 2760 | PK2E122MND3550Y |
| | 82 | 22×25 | 580 | PK2G820MND2225Y |
| | 100 | 22×30 | 700 | PK2G101MND2230Y |
| | 120 | 22×35 | 770 | PK2G121MND2235Y |
| | 120 | 25.4×25 | 770 | PK2G121MND2525YJY |
| | 150 | 22×40 | 900 | PK2G151MND2240Y |
| | 150 | 25.4×30 | 880 | PK2G151MND2530YJY |
| 180 | 22×45 | 1020 | PK2G181MND2245Y | |
| 180 | 25.4×35 | 1020 | PK2G181MND2535YJY | |
| 180 | 30×25 | 1020 | PK2G181MND3025Y | |
| 220 | 22×50 | 1150 | PK2G221MND2250Y | |
| 220 | 25.4×40 | 1100 | PK2G221MND2540YJY | |
| 220 | 30×30 | 1100 | PK2G221MND3030Y | |
| 270 | 25.4×45 | 1220 | PK2G271MND2545YJY | |
| 270 | 30×35 | 1290 | PK2G271MND3035Y | |
| 270 | 35×25 | 1220 | PK2G271MND3525Y | |
| 330 | 25.4×50 | 1470 | PK2G331MND2550YJY | |
| 330 | 30×40 | 1470 | PK2G331MND3040Y | |
| 330 | 35×30 | 1440 | PK2G331MND3530Y | |
| 390 | 30×45 | 1660 | PK2G391MND3045Y | |
| 390 | 35×35 | 1600 | PK2G391MND3535Y | |
| 470 | 30×50 | 1900 | PK2G471MND3050Y | |
| 470 | 35×40 | 1900 | PK2G471MND3540Y | |
| 560 | 35×45 | 2070 | PK2G561MND3545Y | |
| 680 | 35×50 | 2270 | PK2G681MND3550Y | |
| 82 | 22×25 | 640 | PK2S820MND2225Y | |
| 100 | 22×30 | 700 | PK2S101MND2230Y | |
| 120 | 22×35 | 810 | PK2S121MND2235Y | |
| 120 | 25.4×25 | 810 | PK2S121MND2525YJY | |
| 150 | 22×40 | 930 | PK2S151MND2240Y | |
| 150 | 25.4×30 | 950 | PK2S151MND2530YJY | |
| 180 | 22×45 | 1040 | PK2S181MND2245Y | |
| 180 | 25.4×35 | 1020 | PK2S181MND2535YJY | |
| 180 | 30×25 | 1060 | PK2S181MND3025Y | |
| 220 | 22×50 | 1200 | PK2S221MND2250Y | |
| 220 | 25.4×40 | 1180 | PK2S221MND2540YJY | |
| 220 | 30×30 | 1180 | PK2S221MND3030Y | |
| 220 | 35×25 | 1180 | PK2S221MND3525Y | |
| 270 | 25.4×45 | 1360 | PK2S271MND2545YJY | |
| 270 | 30×35 | 1360 | PK2S271MND3035Y | |
| 270 | 35×30 | 1300 | PK2S271MND3530Y | |
| 330 | 25.4×50 | 1500 | PK2S331MND2550YJY | |
| 330 | 30×40 | 1480 | PK2S331MND3040Y | |
| 330 | 35×35 | 1550 | PK2S331MND3535Y | |
| 390 | 30×45 | 1700 | PK2S391MND3045Y | |

ALUMINUM ELECTROLYTIC CAPACITORS



PK Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 420 (2S) | 390 | 35×40 | 1710 | PK2S391MND3540Y |
| | 470 | 30×50 | 1900 | PK2S471MND3050Y |
| | 470 | 35×45 | 1950 | PK2S471MND3545Y |
| | 560 | 35×50 | 2170 | PK2S561MND3550Y |
| | 680 | 35×55 | 2200 | PK2S681MND3555Y |
| 450 (2W) | 82 | 22×25 | 640 | PK2W820MND2225Y |
| | 100 | 22×30 | 690 | PK2W101MND2230Y |
| | 100 | 25.4×25 | 690 | PK2W101MND2525Y |
| | 120 | 22×35 | 810 | PK2W121MND2235Y |
| | 120 | 25.4×30 | 810 | PK2W121MND2530Y |
| | 150 | 22×40 | 940 | PK2W151MND2240Y |
| | 150 | 25.4×35 | 930 | PK2W151MND2535Y |
| | 150 | 30×25 | 930 | PK2W151MND3025Y |
| | 180 | 22×45 | 1060 | PK2W181MND2245Y |
| | 180 | 25.4×40 | 1060 | PK2W181MND2540Y |
| | 180 | 30×30 | 1060 | PK2W181MND3030Y |
| | 220 | 22×50 | 1200 | PK2W221MND2250Y |
| | 220 | 25.4×45 | 1200 | PK2W221MND2545Y |
| | 220 | 30×35 | 1180 | PK2W221MND3035Y |
| | 220 | 35×25 | 1240 | PK2W221MND3525Y |
| | 270 | 25.4×50 | 1320 | PK2W271MND2550Y |
| | 270 | 30×40 | 1340 | PK2W271MND3040Y |
| | 270 | 35×30 | 1400 | PK2W271MND3530Y |
| | 330 | 30×45 | 1520 | PK2W331MND3045Y |
| | 330 | 35×35 | 1500 | PK2W331MND3535Y |
| | 390 | 30×50 | 1730 | PK2W391MND3050Y |
| | 390 | 35×40 | 1710 | PK2W391MND3540Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 450 (2W) | 470 | 35×45 | 1950 | PK2W471MND3545Y |
| | 560 | 35×50 | 2010 | PK2W561MND3550Y |
| | 56 | 22×25 | 510 | PK2H560MND2225Y |
| | 68 | 22×30 | 580 | PK2H680MND2230Y |
| | 82 | 22×35 | 720 | PK2H820MND2235Y |
| | 82 | 25.4×25 | 740 | PK2H820MND2525Y |
| | 100 | 22×40 | 830 | PK2H101MND2240Y |
| | 100 | 25.4×30 | 820 | PK2H101MND2530Y |
| | 120 | 22×45 | 930 | PK2H121MND2245Y |
| | 120 | 25.4×35 | 930 | PK2H121MND2535Y |
| 500 (2H) | 120 | 30×25 | 910 | PK2H121MND3025Y |
| | 150 | 22×50 | 1020 | PK2H151MND2250Y |
| | 150 | 25.4×40 | 1020 | PK2H151MND2540Y |
| | 150 | 30×30 | 1040 | PK2H151MND3030Y |
| | 180 | 25.4×45 | 1200 | PK2H181MND2545Y |
| | 180 | 30×35 | 1170 | PK2H181MND3035Y |
| | 180 | 35×25 | 1100 | PK2H181MND3525Y |
| | 220 | 25.4×50 | 1300 | PK2H221MND2550Y |
| | 220 | 30×40 | 1310 | PK2H221MND3040Y |
| | 220 | 35×30 | 1320 | PK2H221MND3530Y |
| | 270 | 30×45 | 1410 | PK2H271MND3045Y |
| | 270 | 35×35 | 1420 | PK2H271MND3535Y |
| | 330 | 30×50 | 1510 | PK2H331MND3050Y |
| | 330 | 35×40 | 1560 | PK2H331MND3540Y |
| | 390 | 35×45 | 1700 | PK2H391MND3545Y |
| | 470 | 35×50 | 1900 | PK2H471MND3550Y |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 200 ~ 250 | 0.81 | 1.00 | 1.32 | 1.45 | 1.50 |
| 350 ~ 500 | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



PG Series

- Smaller size with higher ripple current
- Load life 5,000 hours at 105°C



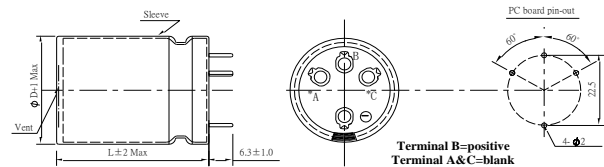
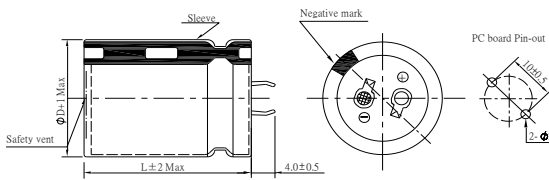
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|-----|-----|-----------|------|------|------|------|------|------|------|
| Category Temperature Range | -25 ~ +105°C | | | | | | | | | | | | | | | | |
| Working Voltage Range | 200 ~ 500Vdc | | | | | | | | | | | | | | | | |
| Capacitance Range | 56 ~ 1,800µF | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>200</td> <td>220</td> <td>250</td> <td>400</td> <td>420</td> <td>450</td> <td>500</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.25</td> <td>0.25</td> <td>0.25</td> <td>0.25</td> </tr> </table> | Rated Voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | 500 | tanδ(Max) | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | 0.25 |
| | Rated Voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | 500 | | | | | | | | | |
| tanδ(Max) | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | 0.25 | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | |
| Leakage Current | $I = 0.02CV$ or $3000\mu A$, whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>200~250</td> <td>400</td> <td>420~450</td> <td>500</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>8</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 200~250 | 400 | 420~450 | 500 | Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | 8 | | | | | | |
| Rated voltage (V) | 200~250 | 400 | 420~450 | 500 | | | | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | 8 | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | | | | | | | | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)

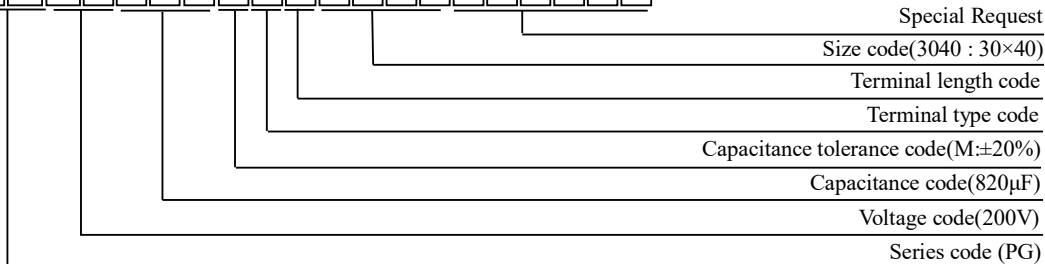
Terminal Code : ND : Standard

Terminal Code :K6 (Φ 35)



◆ PART NUMBER SYSTEM (Example : 200V 820µF)

P G 2 D 8 2 I M N D 3 0 4 0 Y



ALUMINUM ELECTROLYTIC CAPACITORS



PG Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 200 (2D) | 220 | 22×25 | 900 | PG2D221MND2225Y |
| | 270 | 22×30 | 1100 | PG2D271MND2230Y |
| | 330 | 22×35 | 1150 | PG2D331MND2235Y |
| | 330 | 25.4×25 | 1150 | PG2D331MND2525YJY |
| | 390 | 22×40 | 1310 | PG2D391MND2240Y |
| | 390 | 25.4×30 | 1310 | PG2D391MND2530YJY |
| | 470 | 22×45 | 1450 | PG2D471MND2245Y |
| | 470 | 25.4×35 | 1450 | PG2D471MND2535YJY |
| | 470 | 30×25 | 1450 | PG2D471MND3025Y |
| | 560 | 22×50 | 1550 | PG2D561MND2250Y |
| | 560 | 25.4×40 | 1580 | PG2D561MND2540YJY |
| | 560 | 30×30 | 1600 | PG2D561MND3030Y |
| | 680 | 25.4×45 | 1780 | PG2D681MND2545YJY |
| | 680 | 30×35 | 1780 | PG2D681MND3035Y |
| | 680 | 35×25 | 1780 | PG2D681MND3525Y |
| | 820 | 25.4×50 | 1950 | PG2D821MND2550YJY |
| | 820 | 30×40 | 1950 | PG2D821MND3040Y |
| | 820 | 35×30 | 1950 | PG2D821MND3530Y |
| | 1000 | 30×45 | 2300 | PG2D102MND3045Y |
| | 1000 | 35×35 | 2300 | PG2D102MND3535Y |
| 1200 | 30×50 | 2530 | PG2D122MND3050Y | |
| 1200 | 35×40 | 2650 | PG2D122MND3540Y | |
| 1500 | 35×45 | 3080 | PG2D152MND3545Y | |
| 1800 | 35×50 | 3120 | PG2D182MND3550Y | |
| 220 (2P) | 180 | 22×25 | 920 | PG2P181MND2225Y |
| | 220 | 22×30 | 990 | PG2P221MND2230Y |
| | 270 | 22×35 | 1040 | PG2P271MND2235Y |
| | 270 | 25.4×25 | 1040 | PG2P271MND2525YJY |
| | 330 | 22×40 | 1300 | PG2P331MND2240Y |
| | 330 | 25.4×30 | 1260 | PG2P331MND2530YJY |
| | 390 | 22×45 | 1420 | PG2P391MND2245Y |
| | 390 | 25.4×35 | 1450 | PG2P391MND2535YJY |
| | 390 | 30×25 | 1420 | PG2P391MND3025Y |
| | 470 | 22×50 | 1580 | PG2P471MND2250Y |
| | 470 | 25.4×40 | 1540 | PG2P471MND2540YJY |
| | 470 | 30×30 | 1540 | PG2P471MND3030Y |
| | 560 | 25.4×45 | 1660 | PG2P561MND2545YJY |
| | 560 | 30×35 | 1650 | PG2P561MND3035Y |
| | 560 | 35×25 | 1650 | PG2P561MND3525Y |
| | 680 | 25.4×50 | 1850 | PG2P681MND2550YJY |
| | 680 | 30×40 | 1820 | PG2P681MND3040Y |
| | 680 | 35×30 | 1780 | PG2P681MND3530Y |
| | 820 | 30×45 | 2000 | PG2P821MND3045Y |
| | 820 | 35×35 | 1930 | PG2P821MND3535Y |
| 1000 | 30×50 | 2350 | PG2P102MND3050Y | |
| 1000 | 35×40 | 2330 | PG2P102MND3540Y | |
| 1200 | 35×45 | 2650 | PG2P122MND3545Y | |
| 1500 | 35×50 | 2960 | PG2P152MND3550Y | |
| 250 (2E) | 180 | 22×25 | 950 | PG2E181MND2225Y |
| | 220 | 22×30 | 1000 | PG2E221MND2230Y |
| | 270 | 22×35 | 1150 | PG2E271MND2235Y |
| | 270 | 25.4×25 | 1150 | PG2E271MND2525YJY |
| | 330 | 22×40 | 1200 | PG2E331MND2240Y |
| | 330 | 25.4×30 | 1200 | PG2E331MND2530YJY |
| | 330 | 30×25 | 1200 | PG2E331MND3025Y |
| | 390 | 22×45 | 1440 | PG2E391MND2245Y |
| | 390 | 25.4×35 | 1430 | PG2E391MND2535YJY |
| | 390 | 30×30 | 1430 | PG2E391MND3030Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 250 (2E) | 470 | 22×50 | 1600 | PG2E471MND2250Y |
| | 470 | 25.4×40 | 1600 | PG2E471MND2540YJY |
| | 470 | 30×35 | 1650 | PG2E471MND3035Y |
| | 470 | 35×25 | 1600 | PG2E471MND3525Y |
| | 560 | 25.4×45 | 1780 | PG2E561MND2545YJY |
| | 560 | 30×40 | 1800 | PG2E561MND3040Y |
| | 560 | 35×30 | 1800 | PG2E561MND3530Y |
| | 680 | 25.4×50 | 1850 | PG2E681MND2550YJY |
| | 680 | 30×45 | 1870 | PG2E681MND3045Y |
| | 680 | 35×35 | 2000 | PG2E681MND3535Y |
| | 820 | 30×50 | 2060 | PG2E821MND3050Y |
| | 820 | 35×40 | 2150 | PG2E821MND3540Y |
| | 1000 | 35×45 | 2380 | PG2E102MND3545Y |
| | 1200 | 35×50 | 3000 | PG2E122MND3550Y |
| | 68 | 22×25 | 520 | PG2G680MND2225Y |
| | 82 | 22×30 | 640 | PG2G820MND2230Y |
| | 100 | 22×35 | 660 | PG2G101MND2235Y |
| | 100 | 25.4×25 | 660 | PG2G101MND2525YJY |
| | 120 | 22×40 | 750 | PG2G121MND2240Y |
| | 120 | 25.4×30 | 750 | PG2G121MND2530YJY |
| 150 | 22×45 | 860 | PG2G151MND2245Y | |
| 150 | 25.4×30 | 860 | PG2G151MND2530YJY | |
| 150 | 30×25 | 820 | PG2G151MND3025Y | |
| 180 | 22×50 | 900 | PG2G181MND2250Y | |
| 180 | 25.4×35 | 890 | PG2G181MND2535YJY | |
| 180 | 30×30 | 870 | PG2G181MND3030Y | |
| 220 | 25.4×40 | 1120 | PG2G221MND2540YJY | |
| 220 | 30×35 | 1100 | PG2G221MND3035Y | |
| 220 | 35×25 | 1100 | PG2G221MND3525Y | |
| 270 | 25.4×45 | 1260 | PG2G271MND2545YJY | |
| 270 | 30×40 | 1220 | PG2G271MND3040Y | |
| 270 | 35×30 | 1220 | PG2G271MND3530Y | |
| 330 | 25.4×50 | 1300 | PG2G331MND2550YJY | |
| 330 | 30×45 | 1430 | PG2G331MND3045Y | |
| 330 | 35×35 | 1430 | PG2G331MND3535Y | |
| 390 | 30×50 | 1600 | PG2G391MND3050Y | |
| 390 | 35×40 | 1600 | PG2G391MND3540Y | |
| 470 | 35×45 | 1810 | PG2G471MND3545Y | |
| 560 | 35×50 | 2070 | PG2G561MND3550Y | |
| 68 | 22×25 | 460 | PG2S680MND2225Y | |
| 82 | 22×30 | 650 | PG2S820MND2230Y | |
| 100 | 22×35 | 680 | PG2S101MND2235Y | |
| 100 | 25.4×25 | 680 | PG2S101MND2525YJY | |
| 120 | 22×40 | 730 | PG2S121MND2240Y | |
| 120 | 25.4×30 | 760 | PG2S121MND2530YJY | |
| 150 | 22×45 | 860 | PG2S151MND2245Y | |
| 150 | 25.4×35 | 860 | PG2S151MND2535YJY | |
| 150 | 30×25 | 860 | PG2S151MND3025Y | |
| 180 | 22×50 | 960 | PG2S181MND2250Y | |
| 180 | 25.4×40 | 950 | PG2S181MND2540YJY | |
| 180 | 30×30 | 970 | PG2S181MND3030Y | |
| 180 | 35×25 | 950 | PG2S181MND3525Y | |
| 220 | 25.4×45 | 1080 | PG2S221MND2545YJY | |
| 220 | 30×35 | 1140 | PG2S221MND3035Y | |
| 220 | 35×30 | 1070 | PG2S221MND3530Y | |
| 270 | 25.4×50 | 1330 | PG2S271MND2550YJY | |
| 270 | 30×40 | 1310 | PG2S271MND3040Y | |
| 270 | 35×35 | 1380 | PG2S271MND3535Y | |



PG Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 420 (2S) | 330 | 30×45 | 1480 | PG2S331MND3045Y |
| | 330 | 35×40 | 1480 | PG2S331MND3540Y |
| | 390 | 30×50 | 1500 | PG2S391MND3050Y |
| | 390 | 35×45 | 1630 | PG2S391MND3545Y |
| | 470 | 35×50 | 1950 | PG2S471MND3550Y |
| | 560 | 35×55 | 2170 | PG2S561MND3555Y |
| 450 (2W) | 68 | 22×25 | 490 | PG2W680MND2225Y |
| | 82 | 22×30 | 580 | PG2W820MND2230Y |
| | 82 | 25.4×25 | 580 | PG2W820MND2525Y |
| | 100 | 22×35 | 690 | PG2W101MND2235Y |
| | 100 | 25.4×30 | 700 | PG2W101MND2530Y |
| | 120 | 22×40 | 770 | PG2W121MND2240Y |
| | 120 | 25.4×35 | 830 | PG2W121MND2535Y |
| | 120 | 30×25 | 810 | PG2W121MND3025Y |
| | 150 | 22×45 | 880 | PG2W151MND2245Y |
| | 150 | 25.4×40 | 880 | PG2W151MND2540Y |
| | 150 | 30×30 | 880 | PG2W151MND3030Y |
| | 180 | 22×50 | 900 | PG2W181MND2250Y |
| | 180 | 25.4×45 | 920 | PG2W181MND2545Y |
| | 180 | 30×35 | 1030 | PG2W181MND3035Y |
| | 180 | 35×25 | 1050 | PG2W181MND3525Y |
| | 220 | 25.4×50 | 1200 | PG2W221MND2550Y |
| | 220 | 30×40 | 1170 | PG2W221MND3040Y |
| | 220 | 35×30 | 1200 | PG2W221MND3530Y |
| | 270 | 30×45 | 1340 | PG2W271MND3045Y |
| | 270 | 35×35 | 1330 | PG2W271MND3535Y |
| 330 | 30×50 | 1510 | PG2W331MND3050Y | |
| 330 | 35×40 | 1390 | PG2W331MND3540Y | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 450 (2W) | 390 | 35×45 | 1710 | PG2W391MND3545Y |
| | 470 | 35×50 | 1830 | PG2W471MND3550Y |
| 500 (2H) | 56 | 22×25 | 560 | PG2H560MND2225Y |
| | 68 | 22×30 | 610 | PG2H680MND2230Y |
| | 68 | 25.4×25 | 650 | PG2H680MND2525Y |
| | 82 | 22×35 | 720 | PG2H820MND2235Y |
| | 82 | 25.4×30 | 740 | PG2H820MND2530Y |
| | 82 | 30×25 | 740 | PG2H820MND3025Y |
| | 100 | 22×40 | 770 | PG2H101MND2240Y |
| | 100 | 25.4×35 | 780 | PG2H101MND2535Y |
| | 100 | 30×25 | 820 | PG2H101MND3025Y |
| | 120 | 22×45 | 930 | PG2H121MND2245Y |
| | 120 | 25.4×40 | 930 | PG2H121MND2540Y |
| | 120 | 30×30 | 910 | PG2H121MND3030Y |
| | 120 | 35×25 | 880 | PG2H121MND3525Y |
| | 150 | 22×50 | 1080 | PG2H151MND2250Y |
| | 150 | 25.4×45 | 1080 | PG2H151MND2545Y |
| | 150 | 30×35 | 1040 | PG2H151MND3035Y |
| | 150 | 35×25 | 1080 | PG2H151MND3525Y |
| | 180 | 25.4×50 | 1100 | PG2H181MND2550Y |
| | 180 | 30×40 | 1170 | PG2H181MND3040Y |
| | 180 | 35×30 | 1100 | PG2H181MND3530Y |
| | 220 | 30×45 | 1330 | PG2H221MND3045Y |
| | 220 | 35×35 | 1230 | PG2H221MND3535Y |
| | 270 | 30×50 | 1500 | PG2H271MND3050Y |
| | 270 | 35×40 | 1420 | PG2H271MND3540Y |
| | 330 | 35×45 | 1600 | PG2H331MND3545Y |
| | 390 | 35×50 | 1780 | PG2H391MND3550Y |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50/60 | 120 | 1K | 10K | 100K |
| 200 ~ 250 | 0.80 | 1.00 | 1.20 | 1.30 | 1.40 |
| 400 ~ 500 | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 |

ALUMINUM ELECTROLYTIC CAPACITORS



PO Series



- Load life 2,000 hours at 105°C
- For server product

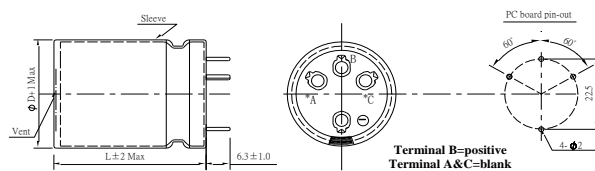
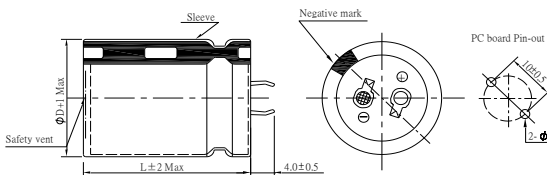
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | |
|--|---|-------------------------------|---------|------------|
| Category Temperature Range | -25 ~ +105°C | | | |
| Working Voltage Range | 400 ~ 450Vdc | | | |
| Capacitance Range | 68 ~ 680µF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 400 | 420 | 450 |
| | tanδ(Max) | 0.15 | 0.20 | 0.20 |
| Leakage Current | $I \leq 3 \sqrt{CV}$ I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) | 400 | 420~450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 4 | 8 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | | | |
| | Capacitance change | ≤ ±20% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 200% of the specified value | | |
| | Leakage current | ≤ The initial specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitors are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance change | ≤ ±15% of the initial value | | |
| | Dissipation factor(tanδ) | ≤ 150% of the specified value | | |
| | Leakage current | ≤ The initial specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

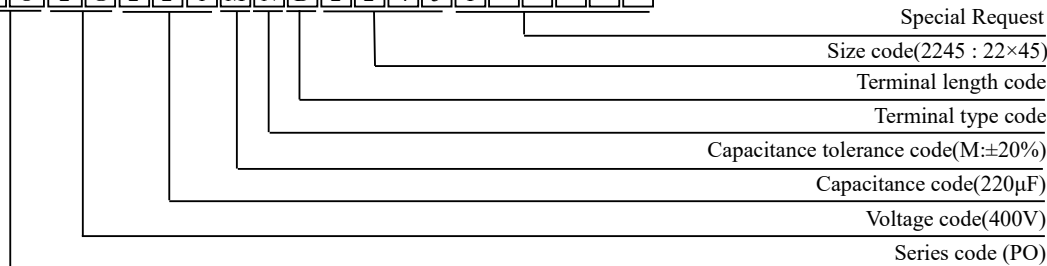
◆ DIMENSIONS (mm)

Terminal Code : ND : Standard

Terminal Code : K6 (Φ 35)



◆ PART NUMBER SYSTEM (Example : 400V 220µF)



ALUMINUM ELECTROLYTIC CAPACITORS



PO Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 400 (2G) | 100 | 22×25 | 660 | PO2G101MND2225Y |
| | 120 | 22×30 | 670 | PO2G121MND2230Y |
| | 150 | 22×35 | 840 | PO2G151MND2235Y |
| | 150 | 25.4×30 | 840 | PO2G151MND2530JY |
| | 180 | 22×40 | 900 | PO2G181MND2240Y |
| | 180 | 25.4×30 | 900 | PO2G181MND2530JY |
| | 220 | 22×45 | 1050 | PO2G221MND2245Y |
| | 220 | 25.4×35 | 1050 | PO2G221MND2535JY |
| | 220 | 30×30 | 1050 | PO2G221MND3030Y |
| | 270 | 22×50 | 1160 | PO2G271MND2250Y |
| | 270 | 25.4×40 | 1160 | PO2G271MND2540JY |
| | 270 | 30×30 | 1160 | PO2G271MND3030Y |
| | 270 | 35×30 | 1160 | PO2G271MND3530Y |
| | 330 | 25.4×50 | 1360 | PO2G331MND2550JY |
| | 330 | 30×35 | 1360 | PO2G331MND3035Y |
| | 330 | 35×30 | 1360 | PO2G331MND3530Y |
| | 390 | 25.4×55 | 1470 | PO2G391MND2555JY |
| | 390 | 30×40 | 1470 | PO2G391MND3040Y |
| | 390 | 35×35 | 1470 | PO2G391MND3535Y |
| | 470 | 30×45 | 1500 | PO2G471MND3045Y |
| 470 | 35×40 | 1500 | PO2G471MND3540Y | |
| 560 | 30×55 | 1800 | PO2G561MND3055Y | |
| 560 | 35×40 | 1800 | PO2G561MND3540Y | |
| 680 | 35×50 | 2010 | PO2G681MND3550Y | |
| 420 (2S) | 82 | 22×25 | 600 | PO2S820MND2225Y |
| | 100 | 22×30 | 630 | PO2S101MND2230Y |
| | 100 | 25.4×25 | 630 | PO2S101MND2525JY |
| | 120 | 22×35 | 770 | PO2S121MND2235Y |
| | 120 | 25.4×25 | 770 | PO2S121MND2525JY |
| | 150 | 22×40 | 800 | PO2S151MND2240Y |
| | 150 | 25.4×30 | 800 | PO2S151MND2530JY |
| | 150 | 30×25 | 800 | PO2S151MND3025Y |
| | 180 | 22×40 | 860 | PO2S181MND2240Y |
| | 180 | 25.4×35 | 860 | PO2S181MND2535JY |
| | 180 | 30×30 | 860 | PO2S181MND3030Y |
| | 220 | 22×50 | 990 | PO2S221MND2250Y |
| | 220 | 25.4×40 | 990 | PO2S221MND2540JY |
| | 220 | 30×30 | 990 | PO2S221MND3030Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|------------------|
| 420 (2S) | 220 | 35×25 | 990 | PO2S221MND3525Y | |
| | 270 | 25.4×45 | 1180 | PO2S271MND2545JY | |
| | 270 | 30×40 | 1180 | PO2S271MND3040Y | |
| | 270 | 35×30 | 1180 | PO2S271MND3530Y | |
| | 330 | 25.4×55 | 1350 | PO2S331MND2555JY | |
| | 330 | 30×40 | 1350 | PO2S331MND3040Y | |
| | 330 | 35×35 | 1350 | PO2S331MND3535Y | |
| | 390 | 30×45 | 1530 | PO2S391MND3045Y | |
| | 390 | 35×40 | 1530 | PO2S391MND3540Y | |
| | 470 | 30×50 | 1760 | PO2S471MND3050Y | |
| | 470 | 35×40 | 1760 | PO2S471MND3540Y | |
| | 560 | 35×50 | 1990 | PO2S561MND3550Y | |
| | 680 | 35×55 | 2090 | PO2S681MND3555Y | |
| | 450 (2W) | 68 | 22×25 | 480 | PO2W680MND2225Y |
| | | 82 | 22×30 | 530 | PO2W820MND2230Y |
| | | 100 | 22×30 | 600 | PO2W101MND2230Y |
| | | 100 | 25.4×25 | 600 | PO2W101MND2525JY |
| | | 120 | 22×35 | 680 | PO2W121MND2235Y |
| 120 | | 25.4×30 | 680 | PO2W121MND2530JY | |
| 150 | | 22×40 | 750 | PO2W151MND2240Y | |
| 150 | | 25.4×35 | 750 | PO2W151MND2535JY | |
| 150 | | 30×25 | 750 | PO2W151MND3025Y | |
| 180 | | 22×50 | 820 | PO2W181MND2250Y | |
| 180 | | 25.4×40 | 820 | PO2W181MND2540JY | |
| 180 | | 30×30 | 820 | PO2W181MND3030Y | |
| 220 | | 25.4×45 | 950 | PO2W221MND2545JY | |
| 220 | | 30×35 | 950 | PO2W221MND3035Y | |
| 220 | | 35×30 | 950 | PO2W221MND3530Y | |
| 270 | | 25.4×50 | 1130 | PO2W271MND2550JY | |
| 270 | | 30×40 | 1130 | PO2W271MND3040Y | |
| 270 | | 35×30 | 1130 | PO2W271MND3530Y | |
| 330 | 30×45 | 1380 | PO2W331MND3045Y | | |
| 330 | 35×35 | 1380 | PO2W331MND3535Y | | |
| 390 | 30×50 | 1470 | PO2W391MND3050Y | | |
| 390 | 35×40 | 1470 | PO2W391MND3540Y | | |
| 470 | 35×45 | 1650 | PO2W471MND3545Y | | |
| 560 | 35×50 | 1800 | PO2W561MND3550Y | | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

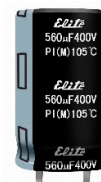
| Vdc | Frequency (Hz) | | | | | |
|-----------|----------------|------|------|------|------|------|
| | 50 | 120 | 300 | 1K | 10K | 50K |
| 400 ~ 450 | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



PI Series

- Load life 3,000 hours at 105°C
- For server product



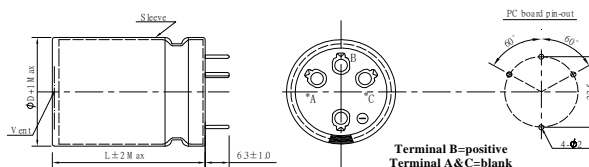
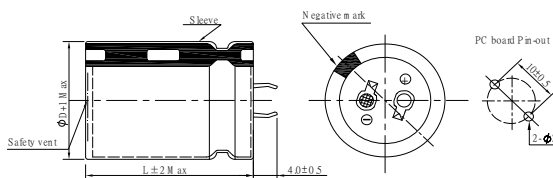
SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | |
|--|--|--------------------|-----------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|------|------|
| Category Temperature Range | -25 ~ +105°C | | | | | | | | |
| Working Voltage Range | 400 ~ 450Vdc | | | | | | | | |
| Capacitance Range | 56 ~ 680μF | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>400</td> <td>420</td> <td>450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> </tr> </table> | Rated Voltage (V) | 400 | 420 | 450 | tanδ(Max) | 0.15 | 0.20 | 0.20 |
| Rated Voltage (V) | 400 | 420 | 450 | | | | | | |
| tanδ(Max) | 0.15 | 0.20 | 0.20 | | | | | | |
| Leakage Current | $I \leq 3 \sqrt{CV}$ I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>400</td> <td>420~450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 400 | 420~450 | Z(-25°C)/Z(+20°C) | 4 | 8 | | |
| Rated voltage (V) | 400 | 420~450 | | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 8 | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ The initial specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ The initial specified value | | |
| Capacitance change | ≦ ±20% of the initial value | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | |
| Leakage current | ≦ The initial specified value | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±15% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 150% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ The initial specified value</td> </tr> </table> | Capacitance change | ≦ ±15% of the initial value | Dissipation factor(tanδ) | ≦ 150% of the specified value | Leakage current | ≦ The initial specified value | | |
| Capacitance change | ≦ ±15% of the initial value | | | | | | | | |
| Dissipation factor(tanδ) | ≦ 150% of the specified value | | | | | | | | |
| Leakage current | ≦ The initial specified value | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | |

DIMENSIONS (mm)

Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



PART NUMBER SYSTEM (Example : 400V 330μF)



- Special Request
- Size code(3530 : 35×30)
- Terminal length code
- Terminal type code
- Capacitance tolerance code(M:±20%)
- Capacitance code(330μF)
- Voltage code(400V)
- Series code (PI)

ALUMINUM ELECTROLYTIC CAPACITORS



PI Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 400 (2G) | 82 | 22×25 | 610 | PI2G820MND2225Y |
| | 100 | 22×30 | 660 | PI2G101MND2230Y |
| | 100 | 25.4×25 | 670 | PI2G101MND2525Y |
| | 120 | 22×35 | 710 | PI2G121MND2235Y |
| | 120 | 25.4×25 | 710 | PI2G121MND2525Y |
| | 120 | 30×25 | 730 | PI2G121MND3025Y |
| | 150 | 22×40 | 830 | PI2G151MND2240Y |
| | 150 | 25.4×30 | 840 | PI2G151MND2530Y |
| | 150 | 30×25 | 840 | PI2G151MND3025Y |
| | 150 | 35×25 | 840 | PI2G151MND3525Y |
| | 180 | 22×45 | 930 | PI2G181MND2245Y |
| | 180 | 25.4×35 | 930 | PI2G181MND2535Y |
| | 180 | 30×30 | 930 | PI2G181MND3030Y |
| | 180 | 35×25 | 930 | PI2G181MND3525Y |
| | 220 | 22×50 | 1050 | PI2G221MND2250Y |
| | 220 | 25.4×40 | 1050 | PI2G221MND2540Y |
| | 220 | 30×30 | 1050 | PI2G221MND3030Y |
| | 220 | 35×25 | 1050 | PI2G221MND3525Y |
| | 270 | 25.4×45 | 1160 | PI2G271MND2545Y |
| | 270 | 30×35 | 1160 | PI2G271MND3035Y |
| | 270 | 35×30 | 1160 | PI2G271MND3530Y |
| | 330 | 25.4×50 | 1370 | PI2G331MND2550Y |
| | 330 | 30×40 | 1370 | PI2G331MND3040Y |
| | 330 | 35×30 | 1370 | PI2G331MND3530Y |
| | 390 | 25.4×60 | 1440 | PI2G391MND2560Y |
| | 390 | 30×45 | 1440 | PI2G391MND3045Y |
| | 390 | 35×35 | 1440 | PI2G391MND3535Y |
| | 470 | 30×50 | 1810 | PI2G471MND3050Y |
| | 470 | 35×40 | 1810 | PI2G471MND3540Y |
| | 560 | 30×60 | 2000 | PI2G561MND3060Y |
| | 560 | 35×45 | 2000 | PI2G561MND3545Y |
| | 680 | 35×50 | 2150 | PI2G681MND3550Y |
| 420 (2S) | 82 | 22×25 | 610 | PI2S820MND2225Y |
| | 82 | 25.4×25 | 620 | PI2S820MND2525Y |
| | 100 | 22×30 | 660 | PI2S101MND2230Y |
| | 100 | 25.4×25 | 660 | PI2S101MND2525Y |
| | 120 | 22×35 | 710 | PI2S121MND2235Y |
| | 120 | 25.4×30 | 710 | PI2S121MND2530Y |
| | 120 | 30×25 | 710 | PI2S121MND3025Y |
| | 150 | 22×40 | 840 | PI2S151MND2240Y |
| | 150 | 25.4×35 | 840 | PI2S151MND2535Y |
| | 150 | 30×25 | 840 | PI2S151MND3025Y |
| | 180 | 22×45 | 910 | PI2S181MND2245Y |
| | 180 | 25.4×35 | 910 | PI2S181MND2535Y |
| | 180 | 30×30 | 910 | PI2S181MND3030Y |
| | 180 | 35×25 | 910 | PI2S181MND3525Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|-----------------|
| 420 (2S) | 220 | 22×50 | 1050 | PI2S221MND2250Y | |
| | 220 | 25.4×45 | 1050 | PI2S221MND2545Y | |
| | 220 | 30×35 | 1050 | PI2S221MND3035Y | |
| | 220 | 35×25 | 1050 | PI2S221MND3525Y | |
| | 270 | 25.4×50 | 1160 | PI2S271MND2550Y | |
| | 270 | 30×40 | 1160 | PI2S271MND3040Y | |
| | 270 | 35×30 | 1160 | PI2S271MND3530Y | |
| | 330 | 30×45 | 1400 | PI2S331MND3045Y | |
| | 330 | 35×35 | 1400 | PI2S331MND3535Y | |
| | 390 | 30×50 | 1500 | PI2S391MND3050Y | |
| | 390 | 35×40 | 1500 | PI2S391MND3540Y | |
| | 470 | 35×45 | 1810 | PI2S471MND3545Y | |
| | 560 | 35×50 | 2050 | PI2S561MND3550Y | |
| | 680 | 35×60 | 2150 | PI2S681MND3560Y | |
| | 450 (2W) | 56 | 22×25 | 400 | PI2W560MND2225Y |
| | | 68 | 22×30 | 510 | PI2W680MND2230Y |
| | | 68 | 25.4×25 | 510 | PI2W680MND2525Y |
| | | 82 | 22×30 | 610 | PI2W820MND2230Y |
| | | 82 | 25.4×25 | 610 | PI2W820MND2525Y |
| | | 100 | 22×35 | 660 | PI2W101MND2235Y |
| 100 | | 25.4×30 | 660 | PI2W101MND2530Y | |
| 100 | | 30×25 | 660 | PI2W101MND3025Y | |
| 120 | | 22×40 | 760 | PI2W121MND2240Y | |
| 120 | | 25.4×35 | 760 | PI2W121MND2535Y | |
| 120 | | 30×25 | 760 | PI2W121MND3025Y | |
| 120 | | 35×25 | 760 | PI2W121MND3525Y | |
| 150 | | 22×45 | 840 | PI2W151MND2245Y | |
| 150 | | 25.4×35 | 840 | PI2W151MND2535Y | |
| 150 | | 30×30 | 840 | PI2W151MND3030Y | |
| 150 | | 35×25 | 840 | PI2W151MND3525Y | |
| 180 | | 22×50 | 960 | PI2W181MND2250Y | |
| 180 | | 25.4×40 | 960 | PI2W181MND2540Y | |
| 180 | | 30×30 | 960 | PI2W181MND3030Y | |
| 180 | | 35×30 | 960 | PI2W181MND3530Y | |
| 220 | 25.4×45 | 1070 | PI2W221MND2545Y | | |
| 220 | 30×35 | 1070 | PI2W221MND3035Y | | |
| 220 | 35×30 | 1070 | PI2W221MND3530Y | | |
| 270 | 25.4×60 | 1120 | PI2W271MND2560Y | | |
| 270 | 30×40 | 1120 | PI2W271MND3040Y | | |
| 270 | 35×35 | 1120 | PI2W271MND3535Y | | |
| 330 | 30×50 | 1380 | PI2W331MND3050Y | | |
| 330 | 35×40 | 1380 | PI2W331MND3540Y | | |
| 390 | 30×60 | 1440 | PI2W391MND3060Y | | |
| 390 | 35×40 | 1440 | PI2W391MND3540Y | | |
| 470 | 35×50 | 1760 | PI2W471MND3550Y | | |
| 560 | 35×60 | 1820 | PI2W561MND3560Y | | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | | |
|-----------|----------------|------|------|------|------|------|
| | 50 | 120 | 300 | 1K | 10K | 50K |
| 400 ~ 450 | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



TWH Series NEW



- Load life 2,000 hours at 125°C
- High ripple current, high reliability

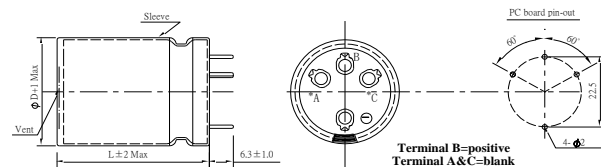
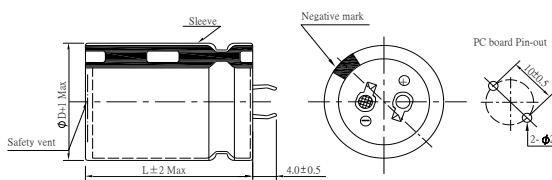
◆ SPECIFICATIONS

| Item | Performance Characteristics |
|--|---|
| Category Temperature Range | -25 ~ +125°C |
| Working Voltage Range | 400~450Vdc |
| Capacitance Range | 82 ~ 820µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 400~450 |
| | tanδ(Max) 0.20 |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | |
| Leakage Current | I=0.02CV or 3000µA, whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) 400~500 |
| | Z(-25°C)/Z(+20°C) 8 |
| (at 120Hz) | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 125°C. |
| | Capacitance change ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Leakage current ≦ specified value | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 125°C without voltage applied. |
| | Capacitance change ≦ ±20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Leakage current ≦ 200% of the specified value | |
| Others | Conforms to JIS-C-5101-4 (1998) |

◆ DIMENSIONS (mm)

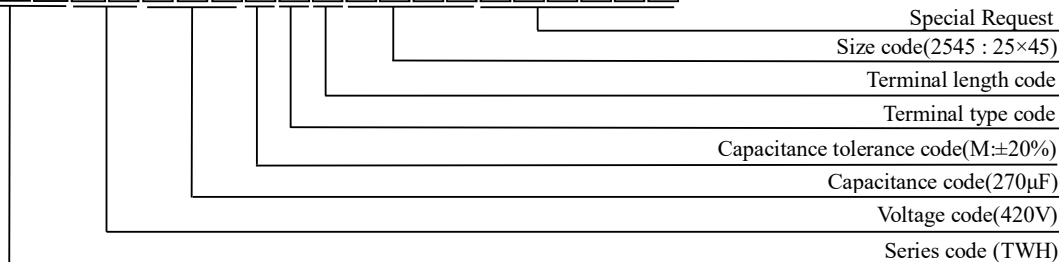
Terminal Code : ND : Standard

Terminal Code :K6 (Φ 35)



◆ PART NUMBER SYSTEM (Example : 420V 270µF)

T W H 2 S 2 7 1 M N D 2 5 4 5 Y



ALUMINUM ELECTROLYTIC CAPACITORS



TWH Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 400 (2G) | 82 | 22×25 | 790 | TWH2G820MNN2225Y |
| | 100 | 22×30 | 910 | TWH2G101MNN2230Y |
| | 120 | 22×30 | 980 | TWH2G121MNN2230Y |
| | 120 | 25×25 | 960 | TWH2G121MNN2525Y |
| | 150 | 22×35 | 1140 | TWH2G151MNN2235Y |
| | 150 | 25×30 | 1120 | TWH2G151MNN2530Y |
| | 180 | 22×40 | 1280 | TWH2G181MNN2240Y |
| | 180 | 25×35 | 1280 | TWH2G181MNN2535Y |
| | 220 | 22×50 | 1500 | TWH2G221MNN2250Y |
| | 220 | 25×40 | 1450 | TWH2G221MNN2540Y |
| | 220 | 30×30 | 1350 | TWH2G221MNN3030Y |
| | 270 | 22×55 | 1690 | TWH2G271MNN2255Y |
| | 270 | 25×45 | 1640 | TWH2G271MNN2545Y |
| | 270 | 30×35 | 1550 | TWH2G271MNN3035Y |
| | 330 | 25×55 | 1900 | TWH2G331MNN2555Y |
| | 330 | 30×40 | 1750 | TWH2G331MNN3040Y |
| | 390 | 25×60 | 2090 | TWH2G391MNN2560Y |
| | 390 | 30×45 | 1940 | TWH2G391MNN3045Y |
| | 390 | 35×35 | 1750 | TWH2G391MNN3535Y |
| | 470 | 30×50 | 2140 | TWH2G471MNN3050Y |
| 470 | 35×40 | 1960 | TWH2G471MNN3540Y | |
| 560 | 30×60 | 2450 | TWH2G561MNN3060Y | |
| 560 | 35×45 | 2160 | TWH2G561MNN3545Y | |
| 680 | 35×55 | 2520 | TWH2G681MNN3555Y | |
| 820 | 35×60 | 2720 | TWH2G821MNN3560Y | |
| 420 (2S) | 82 | 22×25 | 790 | TWH2S820MNN2225Y |
| | 100 | 22×30 | 910 | TWH2S101MNN2230Y |
| | 120 | 22×30 | 990 | TWH2S121MNN2230Y |
| | 120 | 25×25 | 960 | TWH2S121MNN2525Y |
| | 150 | 22×35 | 1140 | TWH2S151MNN2235Y |
| | 150 | 25×30 | 1120 | TWH2S151MNN2530Y |
| | 180 | 22×45 | 1340 | TWH2S181MNN2245Y |
| | 180 | 25×35 | 1280 | TWH2S181MNN2535Y |
| | 220 | 22×50 | 1510 | TWH2S221MNN2250Y |
| | 220 | 25×40 | 1450 | TWH2S221MNN2540Y |
| | 220 | 30×30 | 1350 | TWH2S221MNN3030Y |
| | 270 | 22×60 | 1740 | TWH2S271MNN2260Y |
| | 270 | 25×45 | 1640 | TWH2S271MNN2545Y |
| | 270 | 30×35 | 1540 | TWH2S271MNN3035Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|------------------|
| 420 (2S) | 330 | 25×55 | 1900 | TWH2S331MNN2555Y | |
| | 330 | 30×40 | 1740 | TWH2S331MNN3040Y | |
| | 390 | 25×60 | 2090 | TWH2S391MNN2560Y | |
| | 390 | 30×45 | 1930 | TWH2S391MNN3045Y | |
| | 390 | 35×35 | 1740 | TWH2S391MNN3535Y | |
| | 470 | 30×55 | 2240 | TWH2S471MNN3055Y | |
| | 470 | 35×40 | 1950 | TWH2S471MNN3540Y | |
| | 560 | 30×60 | 2440 | TWH2S561MNN3060Y | |
| | 560 | 35×45 | 2150 | TWH2S561MNN3545Y | |
| | 680 | 35×55 | 2510 | TWH2S681MNN3555Y | |
| | 450 (2W) | 82 | 22×25 | 770 | TWH2W820MNN2225Y |
| | | 100 | 22×30 | 890 | TWH2W101MNN2230Y |
| | | 120 | 22×30 | 940 | TWH2W121MNN2230Y |
| | | 120 | 25×25 | 930 | TWH2W121MNN2525Y |
| | | 150 | 22×40 | 1170 | TWH2W151MNN2240Y |
| 150 | | 25×30 | 1100 | TWH2W151MNN2530Y | |
| 150 | | 30×25 | 1060 | TWH2W151MNN3025Y | |
| 180 | | 22×45 | 1320 | TWH2W181MNN2245Y | |
| 180 | | 25×35 | 1250 | TWH2W181MNN2535Y | |
| 180 | | 30×30 | 1240 | TWH2W181MNN3030Y | |
| 220 | | 22×50 | 1490 | TWH2W221MNN2250Y | |
| 220 | | 25×40 | 1420 | TWH2W221MNN2540Y | |
| 220 | | 30×30 | 1310 | TWH2W221MNN3030Y | |
| 220 | | 35×25 | 1230 | TWH2W221MNN3525Y | |
| 270 | | 22×60 | 1730 | TWH2W271MNN2260Y | |
| 270 | | 25×45 | 1590 | TWH2W271MNN2545Y | |
| 270 | | 30×35 | 1500 | TWH2W271MNN3035Y | |
| 270 | | 35×30 | 1450 | TWH2W271MNN3530Y | |
| 330 | | 25×55 | 1880 | TWH2W331MNN2555Y | |
| 330 | | 30×40 | 1700 | TWH2W331MNN3040Y | |
| 330 | | 35×35 | 1650 | TWH2W331MNN3535Y | |
| 390 | | 30×45 | 1880 | TWH2W391MNN3045Y | |
| 390 | | 35×35 | 1690 | TWH2W391MNN3535Y | |
| 470 | | 30×55 | 2210 | TWH2W471MNN3055Y | |
| 470 | | 35×40 | 1900 | TWH2W471MNN3540Y | |
| 560 | 30×60 | 2390 | TWH2W561MNN3060Y | | |
| 560 | 35×50 | 2260 | TWH2W561MNN3550Y | | |
| 680 | 35×55 | 2470 | TWH2W681MNN3555Y | | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 400 ~ 450 | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



TG Series



- Load life 5,000 hours at 125°C
- High ripple current, high reliability

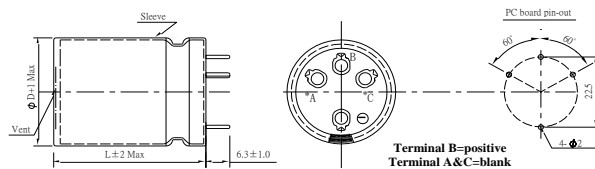
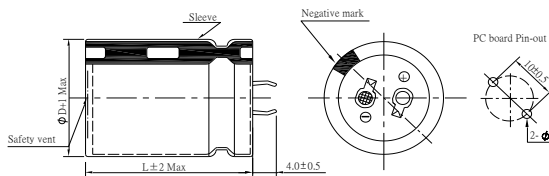
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | |
|--|---|-------------------------------|------|------|------|------|------|------|-----|-----|-------------------|------|------|------|------|------|------|------|------|
| Category Temperature Range | -40 ~ +125°C | | | | | | | | | | | | | | | | | | |
| Working Voltage Range | 10~100Vdc | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 680~47,000µF | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.35</td> <td>0.35</td> <td>0.35</td> <td>0.25</td> <td>0.25</td> <td>0.25</td> <td>0.20</td> <td>0.15</td> </tr> </table> | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | tanδ(Max) | 0.35 | 0.35 | 0.35 | 0.25 | 0.25 | 0.25 | 0.20 | 0.15 |
| | Rated Voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | | | | | | | | | | |
| tanδ(Max) | 0.35 | 0.35 | 0.35 | 0.25 | 0.25 | 0.25 | 0.20 | 0.15 | | | | | | | | | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. | | | | | | | | | | | | | | | | | | | |
| Leakage Current | <p>$I=0.02CV$ or $3000\mu A$, whichever is smaller</p> <p>I: Leakage current (µA) C: Rated capacitance (µF) V: Rated voltage (V)</p> <p>Impress the rated voltage for 5 minutes</p> | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>15</td> <td>15</td> <td>10</td> <td>8</td> <td>6</td> <td>6</td> <td>5</td> <td>5</td> </tr> </table> <p>(at 120Hz)</p> | Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | Z(-25°C)/Z(+20°C) | 15 | 15 | 10 | 8 | 6 | 6 | 5 | 5 |
| Rated voltage (V) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | 15 | 15 | 10 | 8 | 6 | 6 | 5 | 5 | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 125°C. | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| | Leakage current | ≦ specified value | | | | | | | | | | | | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 10,00 hours at 125°C without voltage applied. | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | | | | | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| | Leakage current | ≦ 200% of the specified value | | | | | | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | | | | | | | |

◆ DIMENSIONS (mm)

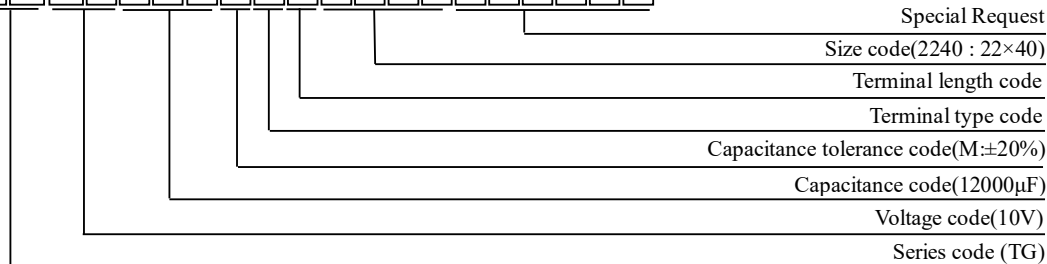
Terminal Code : ND : Standard

Terminal Code :K6 (Φ 35)



◆ PART NUMBER SYSTEM (Example : 10V 12000µF)

T G 1 A 1 2 3 M N D 2 2 4 0 Y



ALUMINUM ELECTROLYTIC CAPACITORS



TG Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 10 (1A) | 6800 | 22×25 | 1140 | TG1A682MND2225Y |
| | 8200 | 22×30 | 1220 | TG1A822MND2230Y |
| | 8200 | 25.4×25 | 1220 | TG1A822MND2525YJY |
| | 10000 | 22×35 | 1445 | TG1A103MND2235Y |
| | 10000 | 25.4×30 | 1445 | TG1A103MND2530YJY |
| | 12000 | 22×40 | 1660 | TG1A123MND2240Y |
| | 12000 | 25.4×35 | 1660 | TG1A123MND2535YJY |
| | 12000 | 30×25 | 1660 | TG1A123MND3025Y |
| | 15000 | 22×45 | 1910 | TG1A153MND2245Y |
| | 15000 | 25.4×40 | 1910 | TG1A153MND2540YJY |
| | 15000 | 30×30 | 1910 | TG1A153MND3030Y |
| | 18000 | 22×50 | 2140 | TG1A183MND2250Y |
| | 18000 | 25.4×45 | 2140 | TG1A183MND2545YJY |
| | 18000 | 30×35 | 2140 | TG1A183MND3035Y |
| | 18000 | 35×25 | 2140 | TG1A183MND3525Y |
| | 22000 | 25.4×50 | 2510 | TG1A223MND2550YJY |
| | 22000 | 30×40 | 2510 | TG1A223MND3040Y |
| | 22000 | 35×30 | 2510 | TG1A223MND3530Y |
| | 27000 | 30×45 | 2800 | TG1A273MND3045Y |
| | 27000 | 35×35 | 2800 | TG1A273MND3535Y |
| 33000 | 30×50 | 3185 | TG1A333MND3050Y | |
| 33000 | 35×40 | 3185 | TG1A333MND3540Y | |
| 39000 | 35×45 | 3570 | TG1A393MND3545Y | |
| 47000 | 35×50 | 3900 | TG1A473MND3550Y | |
| 16 (1C) | 5600 | 22×25 | 1200 | TG1C562MND2225Y |
| | 6800 | 22×30 | 1340 | TG1C682MND2230Y |
| | 6800 | 25.4×25 | 1340 | TG1C682MND2525YJY |
| | 8200 | 22×35 | 1470 | TG1C822MND2235Y |
| | 8200 | 25.4×30 | 1470 | TG1C822MND2530YJY |
| | 8200 | 30×25 | 1470 | TG1C822MND3025Y |
| | 10000 | 22×40 | 1700 | TG1C103MND2240Y |
| | 10000 | 25.4×35 | 1700 | TG1C103MND2535YJY |
| | 10000 | 30×30 | 1700 | TG1C103MND3030Y |
| | 12000 | 22×45 | 1930 | TG1C123MND2245Y |
| | 12000 | 25.4×40 | 1930 | TG1C123MND2540YJY |
| | 12000 | 30×35 | 1930 | TG1C123MND3035Y |
| | 15000 | 22×50 | 2250 | TG1C153MND2250Y |
| | 15000 | 25.4×45 | 2250 | TG1C153MND2545YJY |
| | 15000 | 30×40 | 2250 | TG1C153MND3040Y |
| | 15000 | 35×25 | 2250 | TG1C153MND3525Y |
| | 18000 | 25.4×50 | 2580 | TG1C183MND2550YJY |
| | 18000 | 30×45 | 2580 | TG1C183MND3045Y |
| | 18000 | 35×30 | 2580 | TG1C183MND3530Y |
| | 22000 | 30×50 | 2990 | TG1C223MND3050Y |
| 22000 | 35×35 | 2990 | TG1C223MND3535Y | |
| 27000 | 35×40 | 3293 | TG1C273MND3540Y | |
| 33000 | 35×45 | 3750 | TG1C333MND3545Y | |
| 39000 | 35×50 | 4200 | TG1C393MND3550Y | |
| 25 (1E) | 3900 | 22×25 | 1150 | TG1E392MND2225Y |
| | 4700 | 22×30 | 1280 | TG1E472MND2230Y |
| | 4700 | 25.4×25 | 1280 | TG1E472MND2525YJY |
| | 5600 | 22×35 | 1390 | TG1E562MND2235Y |
| | 5600 | 25.4×30 | 1390 | TG1E562MND2530YJY |
| | 6800 | 22×40 | 1590 | TG1E682MND2240Y |
| | 6800 | 25.4×35 | 1590 | TG1E682MND2535YJY |
| | 8200 | 22×45 | 1800 | TG1E822MND2245Y |
| | 8200 | 25.4×40 | 1800 | TG1E822MND2540YJY |
| | 8200 | 30×25 | 1800 | TG1E822MND3025Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 25 (1E) | 10000 | 22×50 | 2045 | TG1E103MND2250Y |
| | 10000 | 25.4×45 | 2045 | TG1E103MND2545YJY |
| | 10000 | 30×30 | 2045 | TG1E103MND3030Y |
| | 10000 | 35×25 | 2045 | TG1E103MND3525Y |
| | 12000 | 25.4×50 | 2340 | TG1E123MND2550YJY |
| | 12000 | 30×35 | 2340 | TG1E123MND3035Y |
| | 12000 | 35×30 | 2340 | TG1E123MND3530Y |
| | 15000 | 30×40 | 2750 | TG1E153MND3040Y |
| | 15000 | 35×35 | 2750 | TG1E153MND3535Y |
| | 18000 | 30×45 | 3025 | TG1E183MND3045Y |
| | 18000 | 35×40 | 3025 | TG1E183MND3540Y |
| | 22000 | 30×50 | 3420 | TG1E223MND3050Y |
| | 22000 | 35×45 | 3420 | TG1E223MND3545Y |
| | 27000 | 35×50 | 4040 | TG1E273MND3550Y |
| | 2700 | 22×25 | 1085 | TG1V272MND2225Y |
| | 3300 | 22×30 | 1200 | TG1V332MND2230Y |
| | 3900 | 22×35 | 1365 | TG1V392MND2235Y |
| | 35 (1V) | 3900 | 25.4×25 | 1365 |
| 4700 | | 22×40 | 1470 | TG1V472MND2240Y |
| 4700 | | 25.4×30 | 1470 | TG1V472MND2530YJY |
| 4700 | | 30×25 | 1470 | TG1V472MND3025Y |
| 5600 | | 22×45 | 1700 | TG1V562MND2245Y |
| 5600 | | 25.4×35 | 1700 | TG1V562MND2535YJY |
| 5600 | | 30×30 | 1700 | TG1V562MND3030Y |
| 6800 | | 22×50 | 1880 | TG1V682MND2250Y |
| 6800 | | 25.4×40 | 1880 | TG1V682MND2540YJY |
| 6800 | | 30×35 | 1880 | TG1V682MND3035Y |
| 6800 | | 35×25 | 1880 | TG1V682MND3525Y |
| 8200 | | 25.4×45 | 2350 | TG1V822MND2545YJY |
| 8200 | | 30×40 | 2350 | TG1V822MND3040Y |
| 8200 | | 35×30 | 2350 | TG1V822MND3530Y |
| 10000 | | 25.4×50 | 2510 | TG1V103MND2550YJY |
| 10000 | | 30×45 | 2510 | TG1V103MND3045Y |
| 10000 | | 35×35 | 2510 | TG1V103MND3535Y |
| 12000 | | 30×50 | 2830 | TG1V123MND3050Y |
| 12000 | 35×40 | 2830 | TG1V123MND3540Y | |
| 15000 | 35×45 | 3250 | TG1V153MND3545Y | |
| 18000 | 35×50 | 3820 | TG1V183MND3550Y | |
| 50 (1H) | 1500 | 22×25 | 1030 | TG1H152MND2225Y |
| | 1800 | 22×30 | 1170 | TG1H182MND2230Y |
| | 1800 | 25.4×25 | 1170 | TG1H182MND2525YJY |
| | 2200 | 22×35 | 1440 | TG1H222MND2235Y |
| | 2200 | 25.4×30 | 1440 | TG1H222MND2530YJY |
| | 3300 | 22×40 | 1665 | TG1H332MND2240Y |
| | 3300 | 25.4×35 | 1665 | TG1H332MND2535YJY |
| | 3300 | 30×25 | 1665 | TG1H332MND3025Y |
| | 3900 | 22×45 | 1860 | TG1H392MND2245Y |
| | 3900 | 25.4×35 | 1860 | TG1H392MND2535YJY |
| | 3900 | 30×30 | 1860 | TG1H392MND3030Y |
| | 4700 | 22×50 | 2150 | TG1H472MND2250Y |
| | 4700 | 25.4×40 | 2150 | TG1H472MND2540YJY |
| | 4700 | 30×35 | 2150 | TG1H472MND3035Y |
| | 4700 | 35×25 | 2150 | TG1H472MND3525Y |
| | 5600 | 25.4×50 | 2330 | TG1H562MND2550YJY |
| | 5600 | 30×40 | 2330 | TG1H562MND3040Y |
| | 5600 | 35×30 | 2330 | TG1H562MND3530Y |
| 6800 | 30×45 | 2820 | TG1H682MND3045Y | |
| 6800 | 35×35 | 2820 | TG1H682MND3535Y | |

ALUMINUM ELECTROLYTIC CAPACITORS



TG Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-----------------|
| 50 (1H) | 8200 | 30×50 | 3080 | TG1H822MND3050Y |
| | 8200 | 35×40 | 3080 | TG1H822MND3540Y |
| | 10000 | 35×45 | 3450 | TG1H103MND3545Y |
| | 12000 | 35×50 | 3930 | TG1H123MND3550Y |
| 63 (1J) | 1000 | 22×25 | 950 | TG1J102MND2225Y |
| | 1200 | 22×30 | 1030 | TG1J122MND2230Y |
| | 1500 | 22×35 | 1050 | TG1J152MND2235Y |
| | 1500 | 25.4×25 | 1050 | TG1J152MND2525Y |
| | 1800 | 22×40 | 1320 | TG1J182MND2240Y |
| | 1800 | 25.4×30 | 1320 | TG1J182MND2530Y |
| | 2200 | 22×45 | 1515 | TG1J222MND2245Y |
| | 2200 | 25.4×35 | 1515 | TG1J222MND2535Y |
| | 2200 | 30×25 | 1515 | TG1J222MND3025Y |
| | 2700 | 22×50 | 1740 | TG1J272MND2250Y |
| | 2700 | 25.4×40 | 1740 | TG1J272MND2540Y |
| | 2700 | 30×30 | 1740 | TG1J272MND3030Y |
| | 3300 | 25.4×45 | 1980 | TG1J332MND2545Y |
| | 3300 | 30×35 | 1980 | TG1J332MND3035Y |
| | 3300 | 35×25 | 1980 | TG1J332MND3525Y |
| | 3900 | 25.4×50 | 2200 | TG1J392MND2550Y |
| 3900 | 30×40 | 2200 | TG1J392MND3040Y | |
| 3900 | 35×30 | 2200 | TG1J392MND3530Y | |
| 4700 | 30×45 | 1980 | TG1J472MND3045Y | |
| 4700 | 35×35 | 1980 | TG1J472MND3535Y | |
| 5600 | 30×50 | 2200 | TG1J562MND3050Y | |
| 5600 | 35×40 | 2200 | TG1J562MND3540Y | |
| 6800 | 35×45 | 3155 | TG1J682MND3545Y | |
| 8200 | 35×50 | 3400 | TG1J822MND3550Y | |
| 80 (1K) | 820 | 22×25 | 945 | TG1K821MND2225Y |
| | 1000 | 22×30 | 1050 | TG1K102MND2230Y |
| | 1000 | 25.4×25 | 1050 | TG1K102MND2525Y |
| | 1200 | 22×35 | 1200 | TG1K122MND2235Y |
| | 1200 | 25.4×30 | 1200 | TG1K122MND2530Y |
| | 1500 | 22×40 | 1380 | TG1K152MND2240Y |
| | 1500 | 25.4×35 | 1380 | TG1K152MND2535Y |
| | 1500 | 30×25 | 1380 | TG1K152MND3025Y |
| | 1800 | 22×45 | 1555 | TG1K182MND2245Y |
| | 1800 | 25.4×40 | 1555 | TG1K182MND2540Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 125°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|-----------------|-----------------|
| 80 (1K) | 1800 | 30×30 | 1555 | TG1K182MND3030Y | |
| | 2200 | 22×50 | 1790 | TG1K222MND2250Y | |
| | 2200 | 25.4×45 | 1790 | TG1K222MND2545Y | |
| | 2200 | 30×35 | 1790 | TG1K222MND3035Y | |
| | 2200 | 35×25 | 1790 | TG1K222MND3525Y | |
| | 2700 | 25.4×50 | 2040 | TG1K272MND2550Y | |
| | 2700 | 30×40 | 2040 | TG1K272MND3040Y | |
| | 2700 | 35×30 | 2040 | TG1K272MND3530Y | |
| | 3300 | 30×45 | 2320 | TG1K332MND3045Y | |
| | 3300 | 35×35 | 2320 | TG1K332MND3535Y | |
| | 3900 | 30×50 | 2650 | TG1K392MND3050Y | |
| | 3900 | 35×40 | 2650 | TG1K392MND3540Y | |
| | 4700 | 35×45 | 2930 | TG1K472MND3545Y | |
| | 5600 | 35×50 | 3290 | TG1K562MND3550Y | |
| | 100 (2A) | 680 | 22×25 | 1030 | TG2A681MND2225Y |
| | | 820 | 22×30 | 1145 | TG2A821MND2230Y |
| 820 | | 25.4×25 | 1145 | TG2A821MND2525Y | |
| 1000 | | 22×35 | 1280 | TG2A102MND2235Y | |
| 1000 | | 25.4×30 | 1280 | TG2A102MND2530Y | |
| 1200 | | 22×40 | 1460 | TG2A122MND2240Y | |
| 1200 | | 25.4×35 | 1460 | TG2A122MND2535Y | |
| 1200 | | 30×25 | 1460 | TG2A122MND3025Y | |
| 1500 | | 22×45 | 1700 | TG2A152MND2245Y | |
| 1500 | | 25.4×40 | 1700 | TG2A152MND2540Y | |
| 1500 | | 30×30 | 1700 | TG2A152MND3030Y | |
| 1800 | | 22×50 | 1900 | TG2A182MND2250Y | |
| 1800 | | 25.4×45 | 1900 | TG2A182MND2545Y | |
| 1800 | | 30×35 | 1900 | TG2A182MND3035Y | |
| 1800 | | 35×25 | 1900 | TG2A182MND3525Y | |
| 2200 | | 25.4×50 | 2300 | TG2A222MND2550Y | |
| 2200 | 30×40 | 2300 | TG2A222MND3040Y | | |
| 2200 | 35×30 | 2300 | TG2A222MND3530Y | | |
| 2700 | 30×45 | 2460 | TG2A272MND3045Y | | |
| 2700 | 35×35 | 2460 | TG2A272MND3535Y | | |
| 3300 | 30×50 | 2800 | TG2A332MND3050Y | | |
| 3300 | 35×40 | 2800 | TG2A332MND3540Y | | |
| 3900 | 35×45 | 3140 | TG2A392MND3545Y | | |
| 4700 | 35×50 | 3250 | TG2A472MND3550Y | | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 10 ~ 100 | 0.95 | 1.00 | 1.05 | 1.08 | 1.08 |

ALUMINUM ELECTROLYTIC CAPACITORS



GD Series

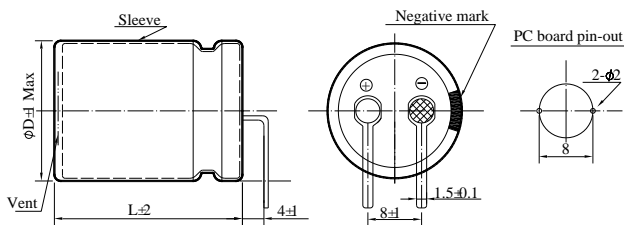
- For $\Phi 22$, $\Phi 25$, suitable for horizontal mounting to assure flat and low profile design



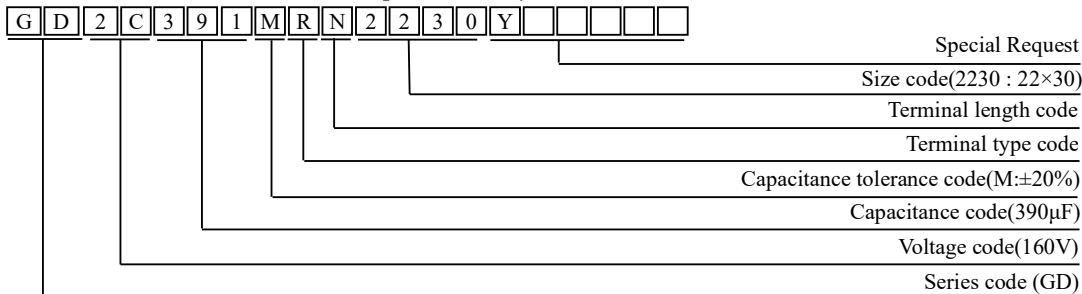
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | |
|---|--|-------------------------------|-----------------------------|--------------------------|-------------------------------|-------------------|-------------------------------|---|---|
| Category Temperature Range | -25 ~ +85°C | | | | | | | | |
| Working Voltage Range | 160 ~ 450Vdc | | | | | | | | |
| Capacitance Range | 82 ~ 1,200 µF | | | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>160~450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> </tr> </table> | Rated Voltage (V) | 160~450 | tanδ(Max) | 0.15 | | | | |
| | Rated Voltage (V) | 160~450 | | | | | | | |
| tanδ(Max) | 0.15 | | | | | | | | |
| Leakage Current | <p>$I=0.02CV$ or $3000\mu A$, whichever is smaller I: Leakage current (μA) C: Rated capacitance (μF) V: Rated voltage (V) Impress the rated voltage for 5 minutes</p> | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>160~250</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>8</td> </tr> </table> <p style="text-align: right;">(at 120Hz)</p> | Rated voltage (V) | 160~250 | 400 | 450 | Z(-25°C)/Z(+20°C) | 4 | 4 | 8 |
| Rated voltage (V) | 160~250 | 400 | 450 | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | | | | | | |
| Endurance | <p>The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85°C.</p> | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ specified value | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | | |
| Leakage current | ≦ specified value | | | | | | | | |
| <p>The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied.</p> | | | | | | | | | |
| Shelf Life | <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ±20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value | | |
| | Capacitance change | ≦ ±20% of the initial value | | | | | | | |
| | Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | |

◆ DIMENSIONS (mm)



◆ PART NUMBER SYSTEM (Example : 160V 390µF)



ALUMINUM ELECTROLYTIC CAPACITORS



GD Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 160 (2C) | 220 | 20×25 | 850 | GD2C221MRN2025Y |
| | 220 | 22×25 | 920 | GD2C221MRN2225Y |
| | 270 | 20×25 | 950 | GD2C271MRN2025Y |
| | 270 | 22×25 | 1000 | GD2C271MRN2225Y |
| | 330 | 20×25 | 1150 | GD2C331MRN2025Y |
| | 330 | 22×25 | 1165 | GD2C331MRN2225Y |
| | 390 | 20×30 | 1325 | GD2C391MRN2030Y |
| | 390 | 22×30 | 1340 | GD2C391MRN2230Y |
| | 470 | 20×35 | 1560 | GD2C471MRN2035Y |
| | 470 | 22×30 | 1625 | GD2C471MRN2230Y |
| | 560 | 20×40 | 1735 | GD2C561MRN2040Y |
| | 560 | 22×35 | 1830 | GD2C561MRN2235Y |
| | 560 | 25.4×30 | 1955 | GD2C561MRN2530JY |
| | 680 | 20×45 | 2085 | GD2C681MRN2045Y |
| | 680 | 22×40 | 2100 | GD2C681MRN2240Y |
| | 680 | 25.4×35 | 2185 | GD2C681MRN2535JY |
| | 820 | 20×50 | 2300 | GD2C821MRN2050Y |
| | 820 | 22×45 | 2455 | GD2C821MRN2245Y |
| | 820 | 25.4×40 | 2530 | GD2C821MRN2540JY |
| | 200 (2D) | 1000 | 20×60 | 2560 |
| 1000 | | 22×50 | 2615 | GD2C102MRN2250Y |
| 1000 | | 25.4×45 | 2900 | GD2C102MRN2545JY |
| 1200 | | 22×55 | 3100 | GD2C122MRN2255Y |
| 1200 | | 25.4×50 | 3125 | GD2C122MRN2550JY |
| 270 | | 20×30 | 1320 | GD2D271MRN2030Y |
| 330 | | 20×30 | 1490 | GD2D331MRN2030Y |
| 390 | | 20×35 | 1660 | GD2D391MRN2035Y |
| 470 | | 20×40 | 1930 | GD2D471MRN2040Y |
| 470 | | 22×35 | 1800 | GD2D471MRN2235Y |
| 560 | | 20×45 | 2000 | GD2D561MRN2045Y |
| 560 | | 22×40 | 1960 | GD2D561MRN2240Y |
| 250 (2E) | 680 | 20×50 | 2300 | GD2D681MRN2050Y |
| | 680 | 22×45 | 2430 | GD2D681MRN2245Y |
| | 680 | 25.4×35 | 2680 | GD2D681MRN2535JY |
| | 820 | 22×50 | 2800 | GD2D821MRN2050Y |
| | 820 | 25.4×40 | 2800 | GD2D821MRN2540JY |
| | 1000 | 22×60 | 3000 | GD2D102MRN2260Y |
| | 1000 | 25.4×45 | 3120 | GD2D102MRN2545JY |
| | 1200 | 25.4×60 | 3440 | GD2D122MRN2560JY |
| 250 (2E) | 220 | 20×30 | 1050 | GD2E221MRN2030Y |
| | 270 | 20×35 | 1155 | GD2E271MRN2035Y |
| | 270 | 22×30 | 1170 | GD2E271MRN2230Y |
| | 330 | 20×40 | 1400 | GD2E331MRN2040Y |
| | 330 | 22×30 | 1495 | GD2E331MRN2230Y |
| | 390 | 20×45 | 1625 | GD2E391MRN2045Y |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|------------------|-----------------|
| 250 (2E) | 390 | 22×35 | 1700 | GD2E391MRN2235Y | |
| | 470 | 20×50 | 1800 | GD2E471MRN2050Y | |
| | 470 | 22×40 | 1955 | GD2E471MRN2240Y | |
| | 470 | 25.4×30 | 2000 | GD2E471MRN2530JY | |
| | 560 | 20×55 | 2100 | GD2E561MRN2055Y | |
| | 560 | 22×45 | 2150 | GD2E561MRN2245Y | |
| | 560 | 25.4×35 | 2185 | GD2E561MRN2535JY | |
| | 680 | 20×60 | 2200 | GD2E681MRN2060Y | |
| | 680 | 22×50 | 2290 | GD2E681MRN2250Y | |
| | 680 | 25.4×40 | 2310 | GD2E681MRN2540JY | |
| | 820 | 22×60 | 2655 | GD2E821MRN2260Y | |
| | 820 | 25.4×45 | 2760 | GD2E821MRN2545JY | |
| | 400 (2G) | 82 | 20×30 | 780 | GD2G820MRN2030Y |
| | | 100 | 20×30 | 900 | GD2G101MRN2030Y |
| 120 | | 20×35 | 1020 | GD2G121MRN2035Y | |
| 150 | | 20×40 | 1170 | GD2G151MRN2040Y | |
| 150 | | 22×35 | 1200 | GD2G151MRN2235Y | |
| 180 | | 20×50 | 1300 | GD2G181MRN2050Y | |
| 180 | | 22×40 | 1380 | GD2G181MRN2240Y | |
| 180 | | 25.4×35 | 1250 | GD2G181MRN2535JY | |
| 220 | | 22×45 | 1550 | GD2G221MRN2245Y | |
| 220 | | 25.4×40 | 1560 | GD2G221MRN2540JY | |
| 270 | | 22×60 | 1700 | GD2G271MRN2260Y | |
| 270 | | 25.4×45 | 1700 | GD2G271MRN2545JY | |
| 450 (2W) | 330 | 25.4×50 | 1900 | GD2G331MRN2550JY | |
| | 390 | 25.4×60 | 2150 | GD2G391MRN2560JY | |
| | 82 | 20×30 | 800 | GD2W820MRN2030Y | |
| | 82 | 22×25 | 815 | GD2W820MRN2225Y | |
| | 100 | 20×30 | 950 | GD2W101MRN2030Y | |
| | 100 | 22×30 | 1000 | GD2W101MRN2230Y | |
| | 120 | 20×35 | 1100 | GD2W121MRN2035Y | |
| | 120 | 22×30 | 1125 | GD2W121MRN2230Y | |
| | 150 | 20×40 | 1200 | GD2W151MRN2040Y | |
| | 150 | 22×35 | 1250 | GD2W151MRN2235Y | |
| | 150 | 25.4×30 | 1280 | GD2W151MRN2530JY | |
| | 180 | 20×45 | 1325 | GD2W181MRN2045Y | |
| | 180 | 22×40 | 1350 | GD2W181MRN2240Y | |
| | 180 | 25.4×35 | 1385 | GD2W181MRN2535JY | |
| | 220 | 20×50 | 1600 | GD2W221MRN2050Y | |
| | 220 | 22×50 | 1625 | GD2W221MRN2250Y | |
| | 220 | 25.4×40 | 1650 | GD2W221MRN2540JY | |
| | 270 | 20×60 | 1750 | GD2W271MRN2060Y | |
| 270 | 22×60 | 1750 | GD2W271MRN2260Y | | |
| 270 | 25.4×50 | 1750 | GD2W271MRN2550JY | | |
| 330 | 25.4×55 | 1950 | GD2W331MRN2555JY | | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | | | |
|-----------|----------------|------|------|------|------|------|------|
| | 50 | 60 | 120 | 300 | 1K | 10K | 50K |
| 160 ~ 250 | 0.81 | 0.85 | 1.00 | 1.17 | 1.32 | 1.45 | 1.50 |
| 400 ~ 450 | 0.77 | 0.82 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



PX Series

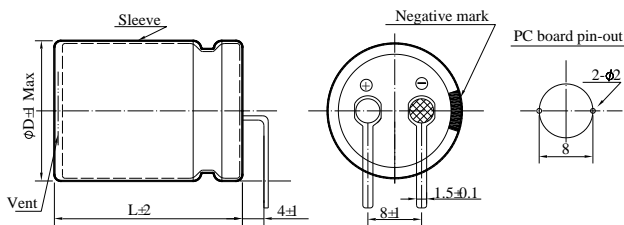
- Load life 105°C 2,000 hours horizontal mounting
- Suitable for flat equipment design



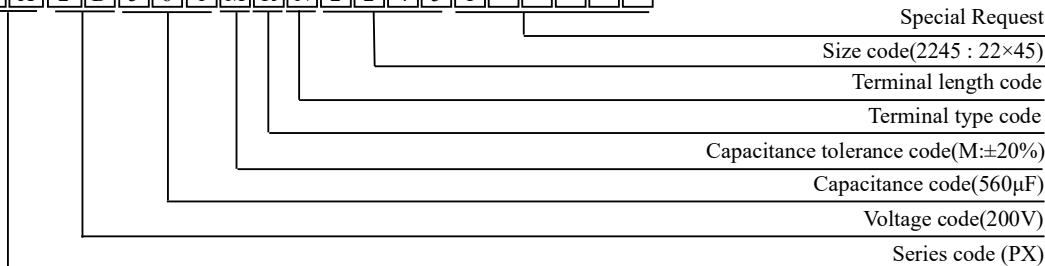
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | |
|---|---|---------------------------------------|---------------------------------------|-----------------------------------|------------------------------------|-------------------|--|--------------------|------|------|------|------|------|
| Category Temperature Range | -25 ~ +105°C | | | | | | | | | | | | |
| Working Voltage Range | 160 ~ 450Vdc | | | | | | | | | | | | |
| Capacitance Range | 68 ~ 1,500 μ F | | | | | | | | | | | | |
| Capacitance Tolerance | \pm 20% (at 25°C and 120Hz) | | | | | | | | | | | | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> </tr> </table> | Rated Voltage (V) | 160 | 200 | 250 | 400 | 450 | tan δ (Max) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| | Rated Voltage (V) | 160 | 200 | 250 | 400 | 450 | | | | | | | |
| tan δ (Max) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | | | | | | | | |
| Leakage Current | I=0.02CV or 3000 μ A, whichever is smaller I : Leakage current (μ A) C : Rated capacitance (μ F) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>160~250</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 160~250 | 400 | 450 | Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | | | | |
| Rated voltage (V) | 160~250 | 400 | 450 | | | | | | | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 4 | 8 | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq Not more than the specified value</td> </tr> </table> | Capacitance change | \leq \pm 20% of the initial value | Dissipation factor(tan δ) | \leq 200% of the specified value | Leakage current | \leq Not more than the specified value | | | | | | |
| | Capacitance change | \leq \pm 20% of the initial value | | | | | | | | | | | |
| Dissipation factor(tan δ) | \leq 200% of the specified value | | | | | | | | | | | | |
| Leakage current | \leq Not more than the specified value | | | | | | | | | | | | |
| The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | |
| Shelf Life | <table border="1"> <tr> <td>Capacitance change</td> <td>\leq \pm20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>\leq 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\leq Not more than the specified value</td> </tr> </table> | Capacitance change | \leq \pm 20% of the initial value | Dissipation factor(tan δ) | \leq 200% of the specified value | Leakage current | \leq Not more than the specified value | | | | | | |
| | Capacitance change | \leq \pm 20% of the initial value | | | | | | | | | | | |
| | Dissipation factor(tan δ) | \leq 200% of the specified value | | | | | | | | | | | |
| Leakage current | \leq Not more than the specified value | | | | | | | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | | | | | | | |

◆ DIMENSIONS (mm)



◆ PART NUMBER SYSTEM (Example : 200V 560 μ F)



ALUMINUM ELECTROLYTIC CAPACITORS



PX Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 160 (2C) | 330 | 20×30 | 1020 | PX2C331MRN2030Y |
| | 390 | 20×35 | 1150 | PX2C391MRN2035Y |
| | 390 | 22×30 | 1170 | PX2C391MRN2230Y |
| | 470 | 20×40 | 1250 | PX2C471MRN2040Y |
| | 470 | 22×30 | 1280 | PX2C471MRN2230Y |
| | 560 | 20×45 | 1420 | PX2C561MRN2045Y |
| | 560 | 22×35 | 1450 | PX2C561MRN2235Y |
| | 680 | 20×50 | 1600 | PX2C681MRN2050Y |
| | 680 | 22×40 | 1640 | PX2C681MRN2240Y |
| | 680 | 25.4×35 | 1700 | PX2C681MRN2535YJY |
| | 820 | 20×55 | 1810 | PX2C821MRN2055Y |
| | 820 | 22×45 | 1850 | PX2C821MRN2245Y |
| | 820 | 25.4×40 | 1920 | PX2C821MRN2540YJY |
| | 1000 | 22×55 | 2100 | PX2C102MRN2255Y |
| | 1000 | 25.4×45 | 2170 | PX2C102MRN2545YJY |
| 200 (2D) | 1200 | 25.4×50 | 2430 | PX2C122MRN2550YJY |
| | 1500 | 25.4×60 | 2620 | PX2C152MRN2560YJY |
| | 270 | 20×30 | 970 | PX2D271MRN2030Y |
| | 330 | 20×35 | 1170 | PX2D331MRN2035Y |
| | 330 | 22×30 | 1200 | PX2D331MRN2230Y |
| | 390 | 20×40 | 1270 | PX2D391MRN2040Y |
| | 390 | 22×35 | 1300 | PX2D391MRN2235Y |
| | 470 | 20×45 | 1410 | PX2D471MRN2045Y |
| | 470 | 22×40 | 1440 | PX2D471MRN2240Y |
| | 560 | 20×55 | 1560 | PX2D561MRN2055Y |
| | 560 | 22×45 | 1600 | PX2D561MRN2245Y |
| | 560 | 25.4×35 | 1600 | PX2D561MRN2535YJY |
| | 680 | 20×60 | 1710 | PX2D681MRN2060Y |
| | 680 | 22×50 | 1750 | PX2D681MRN2250Y |
| | 680 | 25.4×40 | 1760 | PX2D681MRN2540YJY |
| 250 (2E) | 820 | 22×60 | 2100 | PX2D821MRN2260Y |
| | 820 | 25.4×45 | 2100 | PX2D821MRN2545YJY |
| | 1000 | 25.4×50 | 2360 | PX2D102MRN2550YJY |
| | 180 | 20×30 | 820 | PX2E181MRN2030Y |
| | 220 | 20×35 | 950 | PX2E221MRN2035Y |
| | 220 | 22×30 | 970 | PX2E221MRN2230Y |
| | 270 | 20×40 | 1080 | PX2E271MRN2040Y |
| | 270 | 22×35 | 1110 | PX2E271MRN2235Y |
| | 330 | 20×45 | 1230 | PX2E331MRN2045Y |
| | 330 | 22×40 | 1260 | PX2E331MRN2240Y |
| 250 (2E) | 390 | 20×50 | 1380 | PX2E391MRN2050Y |
| | 390 | 22×45 | 1410 | PX2E391MRN2245Y |
| | 390 | 25.4×35 | 1420 | PX2E391MRN2535YJY |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|-------------------|
| 250 (2E) | 470 | 20×60 | 1540 | PX2E471MRN2060Y |
| | 470 | 22×50 | 1580 | PX2E471MRN2250Y |
| | 470 | 25.4×40 | 1610 | PX2E471MRN2540YJY |
| | 560 | 22×55 | 1800 | PX2E561MRN2255Y |
| | 560 | 25.4×45 | 1800 | PX2E561MRN2545YJY |
| | 680 | 25.4×50 | 2030 | PX2E681MRN2550YJY |
| | 820 | 25.4×60 | 2260 | PX2E821MRN2560YJY |
| | 400 (2G) | 68 | 20×30 | 480 |
| 82 | | 20×30 | 540 | PX2G820MRN2030Y |
| 100 | | 20×35 | 600 | PX2G101MRN2035Y |
| 100 | | 22×30 | 620 | PX2G101MRN2230Y |
| 120 | | 20×40 | 710 | PX2G121MRN2040Y |
| 120 | | 22×35 | 730 | PX2G121MRN2235Y |
| 150 | | 20×45 | 830 | PX2G151MRN2045Y |
| 150 | | 22×40 | 850 | PX2G151MRN2240Y |
| 150 | | 25.4×35 | 850 | PX2G151MRN2535YJY |
| 180 | | 20×55 | 930 | PX2G181MRN2055Y |
| 180 | | 22×45 | 950 | PX2G181MRN2245Y |
| 180 | | 25.4×35 | 920 | PX2G181MRN2535YJY |
| 450 (2W) | 220 | 22×50 | 1080 | PX2G221MRN2250Y |
| | 220 | 25.4×40 | 1050 | PX2G221MRN2540YJY |
| | 270 | 22×60 | 1200 | PX2G271MRN2260Y |
| | 270 | 25.4×50 | 1290 | PX2G271MRN2550YJY |
| | 330 | 25.4×60 | 1410 | PX2G331MRN2560YJY |
| | 68 | 20×25 | 500 | PX2W680MRN2025Y |
| | 68 | 22×25 | 520 | PX2W680MRN2225Y |
| | 82 | 20×30 | 630 | PX2W820MRN2030Y |
| | 82 | 22×30 | 660 | PX2W820MRN2230Y |
| | 100 | 20×35 | 650 | PX2W101MRN2035Y |
| | 100 | 22×30 | 685 | PX2W101MRN2230Y |
| | 120 | 20×40 | 750 | PX2W121MRN2040Y |
| | 120 | 22×35 | 790 | PX2W121MRN2235Y |
| | 120 | 25.4×30 | 800 | PX2W121MRN2530YJY |
| | 150 | 20×45 | 870 | PX2W151MRN2045Y |
| | 150 | 22×40 | 895 | PX2W151MRN2240Y |
| | 150 | 25.4×35 | 900 | PX2W151MRN2535YJY |
| | 180 | 20×50 | 1015 | PX2W181MRN2050Y |
| 180 | 22×50 | 1030 | PX2W181MRN2250Y | |
| 180 | 25.4×40 | 1050 | PX2W181MRN2540YJY | |
| 220 | 20×60 | 1150 | PX2W221MRN2060Y | |
| 220 | 22×55 | 1175 | PX2W221MRN2255Y | |
| 220 | 25.4×45 | 1190 | PX2W221MRN2545YJY | |
| 270 | 25.4×55 | 1300 | PX2W271MRN2555YJY | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 50 | 120 | 1K | 10K | ≥50K |
| 160 ~ 250 | 0.81 | 1.00 | 1.32 | 1.45 | 1.50 |
| 400 ~ 450 | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 |

ALUMINUM ELECTROLYTIC CAPACITORS



PART NUMBER SYSTEM (IV)

◆ SPECIAL TYPE

| Series | Rated Voltage | Capacitance | Tolerance | Terminal Type | Case Dimension | Special Request |
|---|---|--|--------------------------|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

(1) Series

| Series | AQ | AN | SC | SA | SL | SK | SX | | |
|--------|----|----|----|----|----|----|----|--|--|
| | | | | | | | | | |

(2) Rated Voltage

| Code | 1C | 1E | 1F | 1V | 1H | 1J | 1K | 2A | 2C | 2Z | 2D | 2P | 2E | 2V | 2G | 2S | 2W | 2H | 2L | 2J |
|------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| WV | 16 | 25 | 30 | 35 | 50 | 63 | 80 | 100 | 160 | 180 | 200 | 220 | 250 | 350 | 400 | 420 | 450 | 500 | 550 | 600 |

(3) Capacitance

| Code | R10 | R47 | 010 | 4R7 | 100 | 470 | 101 | 471 | 102 | 472 | 473 |
|------|-----|------|-----|-----|-----|-----|-----|-----|------|------|-------|
| μF | 0.1 | 0.47 | 1.0 | 4.7 | 10 | 47 | 100 | 470 | 1000 | 4700 | 47000 |

(4) Capacitance Tolerance

| Code | J | Q | R | K | V | M | H |
|------|-----|-----------|----------|------|-----------|------|----------|
| % | ± 5 | +30 / -10 | +20 / -0 | ± 10 | +20 / -10 | ± 20 | +20 / -5 |

(5) Terminal Type

| Code | AC | HU | LS (Screw M5×10) | LA (Screw M5×13) | LB (Screw M6×17) | CA | CL |
|-------------|------------------------|------------------------|---------------------|---------------------|---------------------|------------------|--------------|
| Description | Two Parts of Terminals | Two Vertical Terminals | Two Screw Terminals | | | Snap-in Terminal | Lug Terminal |

(6) Case Dimension

| Code | 3535 | 4095 | 40A5 | 51A5 | 51C0 | 64A0 | 64B0 | 76E3 | 76L5 | 90F0 | 90H0 | 90J0 | 90K5 | 90N0 |
|------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Size | 35×35 | 40×95 | 40×105 | 51×105 | 51×120 | 64×100 | 64×110 | 76×143 | 76×215 | 90×150 | 90×170 | 90×190 | 90×205 | 90×230 |

(7) Special Request

| Code | R | F | L | D |
|-------------|---------------------------|---------------------|---------------------|------------------------|
| Description | High Rated Ripple Current | Endurance | Low Leakage Current | Low Dissipation Factor |
| Code | H | E | P | --- |
| Description | High Temperature | Low Impedance & ESR | PET Sleeve | --- |

ALUMINUM ELECTROLYTIC CAPACITORS



AQ Series

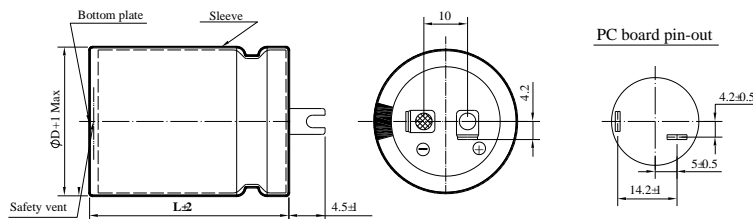


- High ripple current capability
- High stability, suitable for LCD and PDP

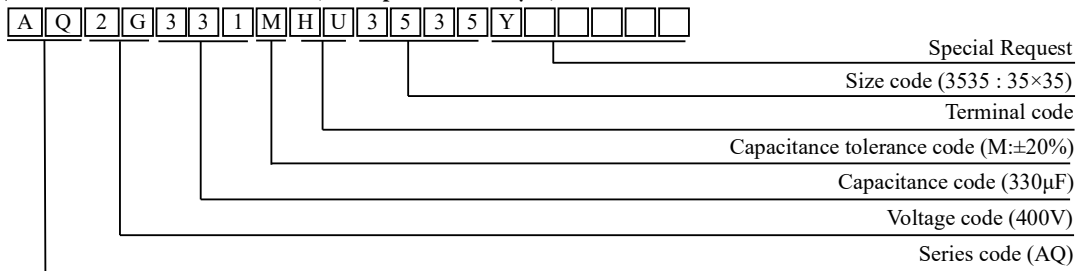
◆ SPECIFICATIONS

| Item | Performance Characteristics | | | | | | |
|---|--|------------------------------|------------------------------|--------------------------|-------------------------------|-----------------|-------------------------------|
| Category Temperature Range | -25 ~ +85°C | | | | | | |
| Working Voltage Range | 400 ~ 450Vdc | | | | | | |
| Capacitance Range | 330 ~ 820μF | | | | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 400 420 450 | | | | | | |
| | tanδ(Max) 0.15 0.15 0.15 | | | | | | |
| Leakage Current | $I = \sqrt{CV}$ or 3000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | | | | |
| Low Temperature Characteristics Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>400</td> <td>420~450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>8</td> </tr> </table> <p style="text-align: right;">(at 120Hz)</p> | Rated voltage (V) | 400 | 420~450 | Z(-25°C)/Z(+20°C) | 4 | 8 |
| | Rated voltage (V) | 400 | 420~450 | | | | |
| Z(-25°C)/Z(+20°C) | 4 | 8 | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ± 20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ Specified value</td> </tr> </table> | Capacitance change | ≦ ± 20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ Specified value |
| Capacitance change | ≦ ± 20% of the initial value | | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | |
| Leakage current | ≦ Specified value | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitors are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>≦ ± 20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≦ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≦ 200% of the specified value</td> </tr> </table> | Capacitance change | ≦ ± 20% of the initial value | Dissipation factor(tanδ) | ≦ 200% of the specified value | Leakage current | ≦ 200% of the specified value |
| | Capacitance change | ≦ ± 20% of the initial value | | | | | |
| Dissipation factor(tanδ) | ≦ 200% of the specified value | | | | | | |
| Leakage current | ≦ 200% of the specified value | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | | | | |

◆ DIMENSIONS (mm)



◆ PART NUMBER SYSTEM (Example : 400V 330μF)



ALUMINUM ELECTROLYTIC CAPACITORS



AQ Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 400 (2G) | 330 | 30×40 | 1500 | AQ2G331MHU3040Y |
| | 330 | 35×35 | 1500 | AQ2G331MHU3535Y |
| | 360 | 30×40 | 1600 | AQ2G361MHU3040Y |
| | 360 | 35×35 | 1600 | AQ2G361MHU3535Y |
| | 390 | 30×40 | 1700 | AQ2G391MHU3040Y |
| | 390 | 35×35 | 1700 | AQ2G391MHU3535Y |
| | 420 | 30×45 | 1800 | AQ2G421MHU3045Y |
| | 420 | 35×40 | 1800 | AQ2G421MHU3540Y |
| | 440 | 30×50 | 1900 | AQ2G441MHU3050Y |
| | 440 | 35×40 | 1900 | AQ2G441MHU3540Y |
| | 470 | 30×50 | 2000 | AQ2G471MHU3050Y |
| | 470 | 35×40 | 2000 | AQ2G471MHU3540Y |
| | 510 | 35×45 | 2150 | AQ2G511MHU3545Y |
| | 560 | 35×50 | 2300 | AQ2G561MHU3550Y |
| | 620 | 35×50 | 2450 | AQ2G621MHU3550Y |
| | 680 | 35×50 | 2600 | AQ2G681MHU3550Y |
| 820 | 35×58 | 2850 | AQ2G821MHU3558Y | |
| 420 (2S) | 330 | 30×40 | 1350 | AQ2S331MHU3040Y |
| | 330 | 35×35 | 1350 | AQ2S331MHU3535Y |
| | 360 | 30×40 | 1450 | AQ2S361MHU3040Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|-----------------|-----------------|
| 420 (2S) | 360 | 35×35 | 1450 | AQ2S361MHU3535Y | |
| | 390 | 30×45 | 1550 | AQ2S391MHU3045Y | |
| | 390 | 35×40 | 1550 | AQ2S391MHU3540Y | |
| | 420 | 30×50 | 1700 | AQ2S421MHU3050Y | |
| | 420 | 35×40 | 1700 | AQ2S421MHU3540Y | |
| | 440 | 30×50 | 1900 | AQ2S441MHU3050Y | |
| | 440 | 35×45 | 1900 | AQ2S441MHU3545Y | |
| | 470 | 35×45 | 2050 | AQ2S471MHU3545Y | |
| | 510 | 35×50 | 2150 | AQ2S511MHU3550Y | |
| | 560 | 35×50 | 2300 | AQ2S561MHU3550Y | |
| | 620 | 35×58 | 2400 | AQ2S621MHU3558Y | |
| | 450 (2W) | 330 | 30×45 | 1250 | AQ2W331MHU3045Y |
| | | 330 | 35×40 | 1250 | AQ2W331MHU3540Y |
| | | 360 | 30×50 | 1350 | AQ2W361MHU3050Y |
| 360 | | 35×40 | 1350 | AQ2W361MHU3540Y | |
| 390 | | 35×45 | 1450 | AQ2W391MHU3545Y | |
| 420 | | 35×45 | 1550 | AQ2W421MHU3545Y | |
| 440 | | 35×50 | 1700 | AQ2W441MHU3550Y | |
| 470 | | 35×50 | 1800 | AQ2W471MHU3550Y | |
| 510 | | 35×58 | 2000 | AQ2W511MHU3558Y | |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 400 ~ 450 | 0.80 | 1.00 | 1.10 | 1.20 | 1.30 |

ALUMINUM ELECTROLYTIC CAPACITORS



AN Series

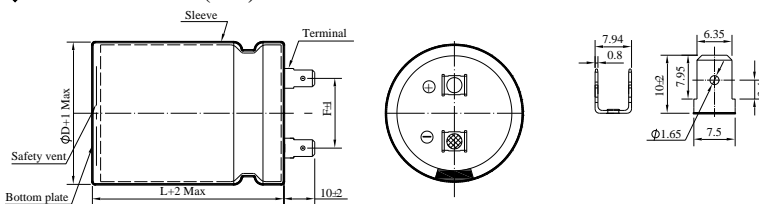


- Load life 3,000 hours 85°C

◆ SPECIFICATIONS

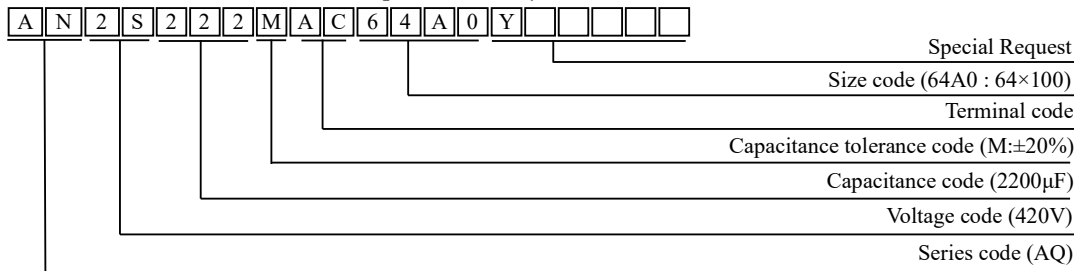
| Item | Performance Characteristics |
|---|--|
| Category Temperature Range | -25 ~ +85°C |
| Working Voltage Range | 400 ~ 450Vdc |
| Capacitance Range | 800 ~ 3,300μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) 400 420 450 |
| | tanδ(Max) 0.15 0.15 0.15 |
| Leakage Current | $I = \sqrt{CV}$ or 3000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes |
| Low Temperature Characteristics Impedance Ratio(MAX) | Rated voltage (V) 400~450 |
| | Z(-25°C)/Z(+20°C) 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85°C. |
| | Capacitance change ≦ ± 20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 85°C without voltage applied. |
| | Capacitance change ≦ ± 20% of the initial value |
| | Dissipation factor(tanδ) ≦ 200% of the specified value |
| Others | Leakage current ≦ 200% of the specified value |
| Conforms to JIS-C-5101-4 (1998) | |

◆ DIMENSIONS (mm)



| ΦD | 35 | 40 | 51 | 64 |
|----|----|----|----|----|
| F± | 14 | 14 | 20 | 25 |

◆ PART NUMBER SYSTEM (Example : 420V 2200μF)



ALUMINUM ELECTROLYTIC CAPACITORS



AN Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 400 (2G) | 800 | 35×80 | 3200 | AN2G801MAC3580Y |
| | 900 | 35×90 | 3600 | AN2G901MAC3590Y |
| | 1000 | 35×100 | 4000 | AN2G102MAC35A0Y |
| | 1200 | 40×100 | 4200 | AN2G122MAC40A0Y |
| | 1300 | 40×100 | 4900 | AN2G132MAC40A0Y |
| | 1500 | 40×120 | 5600 | AN2G152MAC40C0Y |
| | 1800 | 51×90 | 6050 | AN2G182MAC5190Y |
| | 2000 | 51×100 | 6200 | AN2G202MAC51A0Y |
| | 2200 | 51×120 | 6500 | AN2G222MAC51C0Y |
| | 2500 | 51×120 | 6800 | AN2G252MAC51C0Y |
| | 2500 | 64×100 | 6800 | AN2G252MAC64A0Y |
| | 2700 | 64×100 | 7300 | AN2G272MAC64A0Y |
| | 2900 | 64×100 | 7850 | AN2G292MAC64A0Y |
| 3300 | 64×120 | 8100 | AN2G332MAC64C0Y | |
| 420 (2S) | 800 | 35×90 | 3350 | AN2S801MAC3590Y |
| | 900 | 35×100 | 3750 | AN2S901MAC35A0Y |
| | 1000 | 35×100 | 4200 | AN2S102MAC35A0Y |
| | 1200 | 40×120 | 4400 | AN2S122MAC40C0Y |
| | 1300 | 40×120 | 5100 | AN2S132MAC40C0Y |
| | 1500 | 51×100 | 5850 | AN2S152MAC51A0Y |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (mA rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|-----------------|
| 420 (2S) | 1800 | 51×100 | 6350 | AN2S182MAC51A0Y |
| | 2000 | 51×120 | 6500 | AN2S202MAC51C0Y |
| | 2200 | 51×120 | 6800 | AN2S222MAC51C0Y |
| | 2200 | 64×100 | 6800 | AN2S222MAC64A0Y |
| | 2500 | 64×100 | 7150 | AN2S252MAC64A0Y |
| | 2700 | 64×120 | 7650 | AN2S272MAC64C0Y |
| | 2900 | 64×120 | 8200 | AN2S292MAC64C0Y |
| | 450 (2W) | 800 | 35×90 | 3000 |
| 900 | | 35×100 | 3400 | AN2W901MAC35A0Y |
| 1000 | | 40×100 | 3750 | AN2W102MAC40A0Y |
| 1200 | | 40×120 | 3950 | AN2W122MAC40C0Y |
| 1300 | | 51×90 | 4600 | AN2W132MAC5190Y |
| 1500 | | 51×100 | 5250 | AN2W152MAC51A0Y |
| 1800 | | 51×100 | 5700 | AN2W182MAC51A0Y |
| 2000 | | 51×120 | 5850 | AN2W202MAC51C0Y |
| 2000 | | 64×100 | 5850 | AN2W202MAC64A0Y |
| 2200 | | 64×100 | 6100 | AN2W222MAC64A0Y |
| 2500 | | 64×120 | 6400 | AN2W252MAC64C0Y |
| 2700 | | 64×120 | 6850 | AN2W272MAC64C0Y |

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 400 ~ 450 | 0.82 | 1.00 | 1.20 | 1.35 | 1.40 |

ALUMINUM ELECTROLYTIC CAPACITORS



SC Series

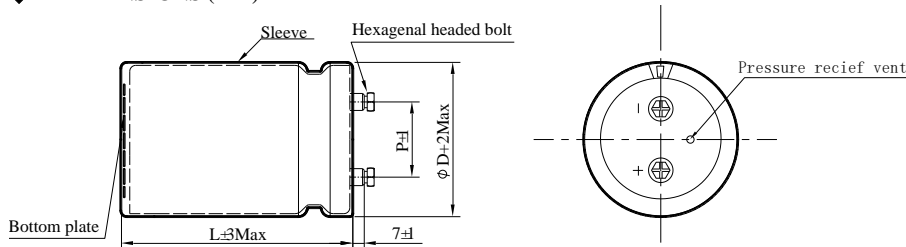


- High ripple, suitable to use in industrial power supplies for inverter circuitry, etc

◆ SPECIFICATIONS

| Item | Performance Characteristics | | | |
|---|--|-------------------------------|---------|---------|
| Category Temperature Range | -25 ~ +85°C | | | |
| Working Voltage Range | 200 ~ 600Vdc | | | |
| Capacitance Range | 820 ~ 33,000μF | | | |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | | | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 200~250 | 340~450 | 500~600 |
| | tanδ(Max) | 0.20 | 0.20 | 0.25 |
| Leakage Current | I=0.01CV or 5000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85°C. | | | |
| | Capacitance change | ≧ ± 15% of the initial value | | |
| | Dissipation factor(tanδ) | ≧ 175% of the specified value | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 85°C without voltage applied. | | | |
| | Capacitance change | ≧ ± 15% of the initial value | | |
| | Dissipation factor(tanδ) | ≧ 175% of the specified value | | |
| Others | Conforms to JIS-C-5101-4 (1998) | | | |

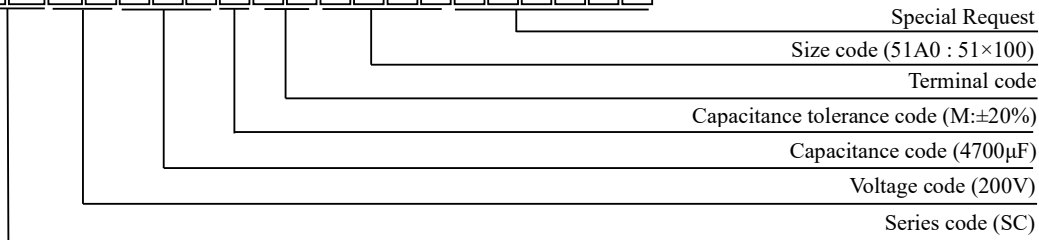
◆ DIMENSIONS (mm)



| ΦD | 51 | 64 | 76 | 90 |
|----|------|------|------|------|
| P± | 22.4 | 28.0 | 31.5 | 31.5 |

◆ PART NUMBER SYSTEM (Example : 200V 4700μF)

S C 2 D 4 7 2 M L S 5 1 A 0 H 1



ALUMINUM ELECTROLYTIC CAPACITORS



SC Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 200 (2D) | 3300 | 51×80 | 4.9 | SC2D332MLS5180H1 |
| | 3900 | 51×80 | 5.3 | SC2D392MLS5180H1 |
| | 4700 | 51×100 | 6.4 | SC2D472MLS51A0H1 |
| | 4700 | 64×80 | 6.4 | SC2D472MLS6480H1 |
| | 5600 | 51×120 | 7.5 | SC2D562MLS51C0H1 |
| | 5600 | 64×80 | 7.5 | SC2D562MLS6480H1 |
| | 6800 | 51×120 | 8.7 | SC2D682MLS51C0H1 |
| | 6800 | 64×100 | 8.7 | SC2D682MLS64A0H1 |
| | 8200 | 64×100 | 9.3 | SC2D822MLS64A0H1 |
| | 10000 | 64×100 | 10.3 | SC2D103MLS64A0H1 |
| | 12000 | 64×120 | 12 | SC2D123MLS64C0H1 |
| | 12000 | 76×100 | 12 | SC2D123MLS76A0H1 |
| | 15000 | 76×100 | 14.4 | SC2D153MLS76A0H1 |
| | 18000 | 76×120 | 16.5 | SC2D183MLS76C0H1 |
| | 18000 | 90×100 | 16.5 | SC2D183MLS90A0H1 |
| | 22000 | 76×150 | 19.6 | SC2D223MLS76F0H1 |
| | 22000 | 90×120 | 19.6 | SC2D223MLS90C0H1 |
| | 27000 | 76×150 | 21.5 | SC2D273MLS76F0H1 |
| 27000 | 90×120 | 21.5 | SC2D273MLS90C0H1 | |
| 33000 | 90×150 | 25.5 | SC2D333MLS90F0H1 | |
| 250 (2E) | 2200 | 51×80 | 3.9 | SC2E222MLS5180H1 |
| | 2700 | 51×80 | 4.4 | SC2E272MLS5180H1 |
| | 3300 | 51×100 | 5.4 | SC2E332MLS51A0H1 |
| | 3900 | 51×120 | 6.2 | SC2E392MLS51C0H1 |
| | 3900 | 64×80 | 6.2 | SC2E392MLS6480H1 |
| | 4700 | 51×120 | 7.1 | SC2E472MLS51C0H1 |
| | 4700 | 64×100 | 7.1 | SC2E472MLS64A0H1 |
| | 5600 | 64×100 | 7.7 | SC2E562MLS64A0H1 |
| | 6800 | 64×120 | 9.1 | SC2E682MLS64C0H1 |
| | 8200 | 64×120 | 10 | SC2E822MLS64C0H1 |
| | 8200 | 76×100 | 10 | SC2E822MLS76A0H1 |
| | 10000 | 76×100 | 11.6 | SC2E103MLS76A0H1 |
| | 12000 | 76×120 | 12.8 | SC2E123MLS76C0H1 |
| | 15000 | 76×120 | 15 | SC2E153MLS76C0H1 |
| | 15000 | 90×100 | 15 | SC2E153MLS90A0H1 |
| | 18000 | 76×150 | 17.6 | SC2E183MLS76F0H1 |
| | 18000 | 90×100 | 14.5 | SC2E183MLS90A0H1 |
| | 22000 | 90×150 | 20.9 | SC2E223MLS90F0H1 |
| 350 (2V) | 1200 | 51×80 | 4.2 | SC2V122MLS5180H1 |
| | 1500 | 51×80 | 4.9 | SC2V152MLS5180H1 |
| | 1800 | 51×100 | 5.6 | SC2V182MLS51A0H1 |
| | 2200 | 51×100 | 6.7 | SC2V222MLS51A0H1 |
| | 2200 | 64×80 | 7 | SC2V222MLS6480H1 |
| | 2700 | 51×120 | 8 | SC2V272MLS51C0H1 |
| | 2700 | 64×100 | 8.4 | SC2V272MLS64A0H1 |
| | 3300 | 64×100 | 9.6 | SC2V332MLS64A0H1 |
| | 3900 | 64×120 | 10.4 | SC2V392MLS64C0H1 |
| | 4700 | 76×100 | 11.9 | SC2V472MLS76A0H1 |
| | 5600 | 76×120 | 13.5 | SC2V562MLS76C0H1 |
| | 5600 | 90×100 | 14.4 | SC2V562MLS90A0H1 |
| | 6800 | 76×150 | 16 | SC2V682MLS76F0H1 |
| | 6800 | 90×120 | 16.2 | SC2V682MLS90C0H1 |
| | 8200 | 76×150 | 18.7 | SC2V822MLS76F0H1 |
| | 8200 | 90×120 | 19 | SC2V822MLS90C0H1 |
| | 10000 | 90×150 | 20 | SC2V103MLS90F0H1 |
| | 12000 | 90×150 | 21.3 | SC2V123MLS90F0H1 |
| 400 (2W) | 1000 | 51×80 | 3.8 | SC2G102MLS5180H1 |
| | 1200 | 51×80 | 4.5 | SC2G122MLS5180H1 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 400 (2G) | 1500 | 51×100 | 5.3 | SC2G152MLS51A0H1 |
| | 1800 | 51×100 | 6 | SC2G182MLS51A0H1 |
| | 1800 | 64×80 | 6.3 | SC2G182MLS6480H1 |
| | 2200 | 51×120 | 7 | SC2G222MLS51C0H1 |
| | 2200 | 64×100 | 6.8 | SC2G222MLS64A0H1 |
| | 2700 | 64×100 | 8.2 | SC2G272MLS64A0H1 |
| | 3300 | 64×120 | 9.6 | SC2G332MLS64C0H1 |
| | 3300 | 76×100 | 9.3 | SC2G332MLS76A0H1 |
| | 3900 | 76×120 | 10.5 | SC2G392MLS76C0H1 |
| | 4700 | 76×120 | 12.3 | SC2G472MLS76C0H1 |
| | 4700 | 90×100 | 13.1 | SC2G472MLS90A0H1 |
| | 5600 | 76×120 | 14.3 | SC2G562MLS76C0H1 |
| | 5600 | 90×100 | 14.5 | SC2G562MLS90A0H1 |
| | 6800 | 76×150 | 16 | SC2G682MLS76F0H1 |
| | 6800 | 90×120 | 16.3 | SC2G682MLS90C0H1 |
| | 8200 | 90×150 | 19 | SC2G822MLS90F0H1 |
| | 10000 | 90×180 | 21 | SC2G103MLS90I0H1 |
| | 450 (2W) | 820 | 51×80 | 3.6 |
| 1000 | | 51×80 | 4 | SC2W102MLS5180H1 |
| 1200 | | 51×100 | 4.7 | SC2W122MLS51A0H1 |
| 1500 | | 51×120 | 5.4 | SC2W152MLS51C0H1 |
| 1500 | | 64×80 | 5.6 | SC2W152MLS6480H1 |
| 1800 | | 51×120 | 5.9 | SC2W182MLS51C0H1 |
| 1800 | | 64×100 | 6.1 | SC2W182MLS64A0H1 |
| 2200 | | 64×100 | 7.2 | SC2W222MLS64A0H1 |
| 2700 | | 64×120 | 8.6 | SC2W272MLS64C0H1 |
| 2700 | | 76×100 | 8.3 | SC2W272MLS76A0H1 |
| 3300 | | 76×100 | 9.7 | SC2W332MLS76A0H1 |
| 3900 | | 76×120 | 11.2 | SC2W392MLS76C0H1 |
| 3900 | | 90×100 | 11.3 | SC2W392MLS90A0H1 |
| 4700 | | 76×150 | 12.9 | SC2W472MLS76F0H1 |
| 4700 | | 90×100 | 13.1 | SC2W472MLS90A0H1 |
| 5600 | | 76×150 | 15.3 | SC2W562MLS76F0H1 |
| 5600 | | 90×120 | 15.3 | SC2W562MLS90C0H1 |
| 8200 | | 90×150 | 17.3 | SC2W822MLS90F0H1 |
| 500 (2H) | 820 | 51×90 | 3.7 | SC2H821MLS5190H1 |
| | 1000 | 51×100 | 4.1 | SC2H102MLS51A0H1 |
| | 1200 | 51×110 | 4.8 | SC2H122MLS51B0H1 |
| | 1500 | 51×130 | 5.6 | SC2H152MLS51D0H1 |
| | 1500 | 64×100 | 5.6 | SC2H152MLS64A0H1 |
| | 1800 | 64×110 | 6.2 | SC2H182MLS64B0H1 |
| | 2200 | 64×120 | 7.3 | SC2H222MLS64C0H1 |
| | 2200 | 76×100 | 7.2 | SC2H222MLS76A0H1 |
| | 2700 | 64×140 | 8.7 | SC2H272MLS64E0H1 |
| | 2700 | 76×110 | 8.5 | SC2H272MLS76B0H1 |
| | 3300 | 76×120 | 9.9 | SC2H332MLS76C0H1 |
| | 3900 | 76×140 | 11.4 | SC2H392MLS76E0H1 |
| | 3900 | 90×110 | 11.3 | SC2H392MLS90B0H1 |
| | 4700 | 76×160 | 13.1 | SC2H472MLS76G0H1 |
| | 4700 | 90×130 | 13.1 | SC2H472MLS90D0H1 |
| | 5600 | 76×190 | 15.4 | SC2H562MLS76J0H1 |
| | 5600 | 90×150 | 15.3 | SC2H562MLS90F0H1 |
| | 8200 | 90×190 | 17.4 | SC2H822MLS90J0H1 |
| 550 (2L) | 820 | 51×90 | 3.9 | SC2L821MLS5190H1 |
| | 1000 | 51×110 | 4.3 | SC2L102MLS51B0H1 |
| | 1200 | 51×130 | 5 | SC2L122MLS51D0H1 |
| | 1200 | 64×90 | 4.8 | SC2L122MLS6490H1 |
| | 1500 | 64×110 | 5.9 | SC2L152MLS64B0H1 |

ALUMINUM ELECTROLYTIC CAPACITORS



SC Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (Arms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 550 (2L) | 1800 | 64×120 | 6.3 | SC2L182MLS64C0H1 |
| | 2200 | 64×140 | 7.5 | SC2L222MLS64E0H1 |
| | 2200 | 76×110 | 7.5 | SC2L222MLS76B0H1 |
| | 2700 | 64×170 | 8.9 | SC2L272MLS64H0H1 |
| | 2700 | 76×130 | 8.7 | SC2L272MLS76D0H1 |
| | 3300 | 76×150 | 10.1 | SC2L332MLS76F0H1 |
| | 3300 | 90×120 | 10.1 | SC2L332MLS90C0H1 |
| | 3900 | 76×170 | 11.6 | SC2L392MLS76H0H1 |
| | 3900 | 90×130 | 11.4 | SC2L392MLS90D0H1 |
| | 4700 | 76×190 | 13.5 | SC2L472MLS76J0H1 |
| | 4700 | 90×150 | 13.2 | SC2L472MLS90F0H1 |
| | 5600 | 90×170 | 15.6 | SC2L562MLS90H0H1 |
| | 6800 | 90×200 | 16.3 | SC2L682MLS90K0H1 |
| 600 (2J) | 1200 | 64×100 | 5.4 | SC2J122MLS64A0H1 |
| | 1500 | 64×120 | 6.6 | SC2J152MLS64C0H1 |

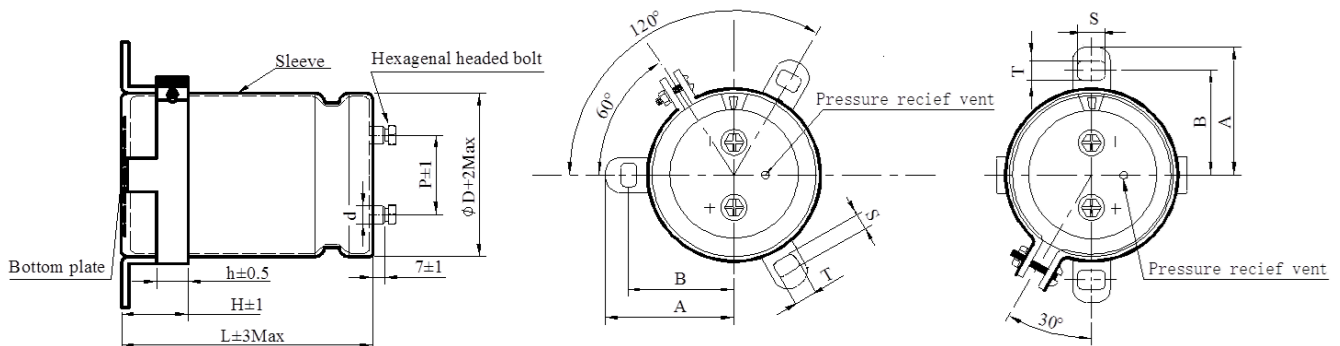
| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (Arms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 600 (2J) | 1800 | 64×135 | 7.5 | SC2J182MLS64D5H1 |
| | 1800 | 76×100 | 7.2 | SC2J182MLS76A0H1 |
| | 2200 | 64×155 | 8.3 | SC2J222MLS64F5H1 |
| | 2200 | 76×120 | 8 | SC2J222MLS76C0H1 |
| | 2700 | 64×185 | 9.7 | SC2J272MLS64I5H1 |
| | 2700 | 76×135 | 9.4 | SC2J272MLS76D5H1 |
| | 3300 | 64×220 | 11 | SC2J332MLS64M0H1 |
| | 3300 | 76×160 | 10.8 | SC2J332MLS76G0H1 |
| | 3900 | 76×185 | 12.4 | SC2J392MLS76I5H1 |
| | 3900 | 90×140 | 12.2 | SC2J392MLS90E0H1 |
| | 4700 | 76×215 | 14.3 | SC2J472MLS76L5H1 |
| | 4700 | 90×165 | 14 | SC2J472MLS90G5H1 |
| | 5600 | 90×190 | 16.5 | SC2J562MLS90J0H1 |
| | 6800 | 90×220 | 17.1 | SC2J682MLS90M0H1 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 200 ~ 450 | 0.82 | 1.00 | 1.20 | 1.35 | 1.40 |
| 500 ~ 600 | 0.80 | 1.00 | 1.10 | 1.30 | 1.35 |

DIMENSIONS (Screw-Mount) [mm]



Terminal pitch and Nominal dia. of bolt

| Terminal Code | ΦD | P±1 | Nominal dia. of bolt | d±0.5 |
|---------------|----|------|----------------------|-------|
| LS | 51 | 22.4 | M5 | 10 |
| | 64 | 28.0 | M5 | 10 |
| | 76 | 31.5 | M5 | 10 |
| | 90 | 31.5 | M5 | 10 |
| LA | 64 | 28.0 | M5 | 13 |
| | 76 | 31.5 | M5 | 13 |
| | 90 | 31.5 | M5 | 13 |
| LB | 76 | 31.5 | M6 | 17 |
| | 90 | 31.5 | M6 | 17 |

Dimensions of mounting bracket

| Leg shape | ΦD | A±2 | B±1 | T±0.5 | S±0.5 | H±1 | h±0.5 |
|-------------------|----|------|------|-------|-------|-----|-------|
| 2 - Leg (Code:K1) | 51 | 40.0 | 34.0 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 46.5 | 40.5 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 53.0 | 46.8 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 60.3 | 54.0 | 7.0 | 5.0 | 35 | 20 |
| | 54 | 36.5 | 31.8 | 7.0 | 5.0 | 30 | 24 |
| 3 - Leg (Code:K2) | 64 | 43.6 | 38.1 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 50.2 | 44.5 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 56.5 | 50.8 | 7.0 | 5.0 | 30 | 24 |

ALUMINUM ELECTROLYTIC CAPACITORS



SA Series

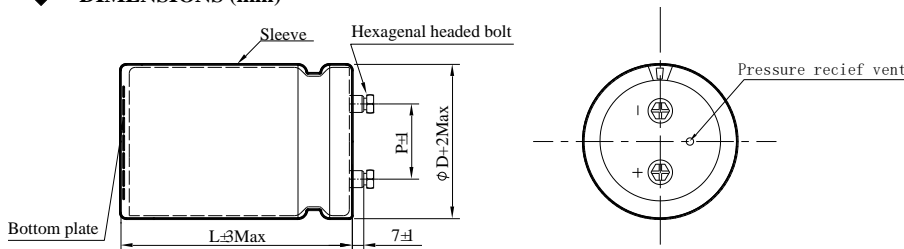


- High ripple, suitable to use in industrial power supplies for inverter circuitry, etc

◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|---|--|---|
| Category Temperature Range | -40 ~ +85°C | -25 ~ +85°C |
| Working Voltage Range | 160 ~ 250Vdc | 350 ~ 450Vdc |
| Capacitance Range | 2,700 ~ 68,000μF | 1,000 ~ 18,000μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 160 200 250 350 400 450 |
| | tanδ(Max) | 0.25 0.25 0.25 0.20 0.20 0.20 |
| Leakage Current | I=0.01CV or 5000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85°C. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 85°C without voltage applied. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

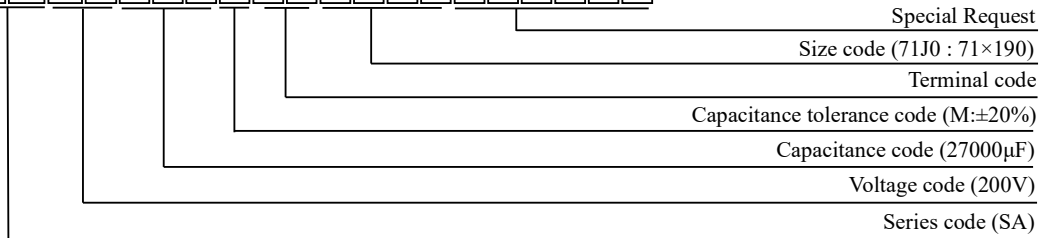
◆ DIMENSIONS (mm)



| | | | | |
|-----|------|------|------|------|
| ΦD | 51 | 64 | 76 | 90 |
| P±1 | 22.4 | 28.0 | 31.5 | 31.5 |

◆ PART NUMBER SYSTEM (Example : 200V 27000μF)

S A 2 D 2 7 3 M L S 7 1 J 0 H 1



ALUMINUM ELECTROLYTIC CAPACITORS



SA Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 160 (2C) | 3900 | 51×80 | 5.1 | SA2C392MLS5180H1 |
| | 4700 | 51×80 | 5.6 | SA2C472MLS5180H1 |
| | 5600 | 51×100 | 6.4 | SA2C562MLS51A0H1 |
| | 6800 | 51×100 | 7.5 | SA2C682MLS51A0H1 |
| | 6800 | 64×80 | 7.2 | SA2C682MLS6480H1 |
| | 8200 | 51×120 | 8.4 | SA2C822MLS51C0H1 |
| | 8200 | 64×100 | 8.1 | SA2C822MLS64A0H1 |
| | 10000 | 51×120 | 11.1 | SA2C103MLS51C0H1 |
| | 10000 | 64×100 | 9.8 | SA2C103MLS64A0H1 |
| | 12000 | 64×100 | 10.8 | SA2C123MLS64A0H1 |
| | 15000 | 64×120 | 12.7 | SA2C153MLS64C0H1 |
| | 18000 | 64×150 | 14 | SA2C183MLS64F0H1 |
| | 18000 | 76×100 | 13.6 | SA2C183MLS76A0H1 |
| | 22000 | 64×150 | 17 | SA2C223MLS64F0H1 |
| | 22000 | 76×120 | 16.6 | SA2C223MLS76C0H1 |
| | 27000 | 76×150 | 18.1 | SA2C273MLS76F0H1 |
| | 27000 | 90×120 | 17.6 | SA2C273MLS90C0H1 |
| | 33000 | 76×150 | 19.4 | SA2C333MLS76F0H1 |
| | 33000 | 90×120 | 18.9 | SA2C333MLS90C0H1 |
| | 39000 | 76×190 | 20.8 | SA2C393MLS76J0H1 |
| 39000 | 90×150 | 20.3 | SA2C393MLS90F0H1 | |
| 47000 | 76×220 | 22.2 | SA2C473MLS76M0H1 | |
| 47000 | 90×170 | 21.7 | SA2C473MLS90H0H1 | |
| 68000 | 90×230 | 22.3 | SA2C683MLS90N0H1 | |
| 200 (2D) | 3300 | 51×80 | 4.5 | SA2D332MLS5180H1 |
| | 3900 | 51×80 | 5.3 | SA2D392MLS5180H1 |
| | 4700 | 51×100 | 7.1 | SA2D472MLS51A0H1 |
| | 4700 | 64×80 | 6.8 | SA2D472MLS6480H1 |
| | 5600 | 51×120 | 8.2 | SA2D562MLS51C0H1 |
| | 5600 | 64×80 | 7.9 | SA2D562MLS6480H1 |
| | 6800 | 51×120 | 9.2 | SA2D682MLS51C0H1 |
| | 6800 | 64×100 | 8.9 | SA2D682MLS64A0H1 |
| | 8200 | 64×100 | 10 | SA2D822MLS64A0H1 |
| | 10000 | 64×120 | 11 | SA2D103MLS64C0H1 |
| | 12000 | 64×140 | 11.5 | SA2D123MLS64E0H1 |
| | 12000 | 76×100 | 11.1 | SA2D123MLS76A0H1 |
| | 15000 | 64×160 | 12.8 | SA2D153MLS64G0H1 |
| | 15000 | 76×120 | 12.4 | SA2D153MLS76C0H1 |
| | 18000 | 76×140 | 13.5 | SA2D183MLS76E0H1 |
| | 18000 | 90×110 | 13 | SA2D183MLS90B0H1 |
| | 22000 | 76×160 | 15.6 | SA2D223MLS76G0H1 |
| | 22000 | 90×130 | 15.1 | SA2D223MLS90D0H1 |
| | 27000 | 76×190 | 17.6 | SA2D273MLS76J0H1 |
| | 27000 | 90×150 | 17.1 | SA2D273MLS90F0H1 |
| 33000 | 76×220 | 18.8 | SA2D333MLS76M0H1 | |
| 33000 | 90×170 | 18.3 | SA2D333MLS90H0H1 | |
| 39000 | 90×200 | 19.6 | SA2D393MLS90K0H1 | |
| 250 (2E) | 2700 | 51×80 | 4.2 | SA2E272MLS5180H1 |
| | 3300 | 51×100 | 5 | SA2E332MLS51A0H1 |
| | 3900 | 51×120 | 5.9 | SA2E392MLS51C0H1 |
| | 3900 | 64×80 | 5.6 | SA2E392MLS6480H1 |
| | 4700 | 51×120 | 6.9 | SA2E472MLS51C0H1 |
| | 4700 | 64×100 | 6.6 | SA2E472MLS64A0H1 |
| | 5600 | 64×100 | 7.8 | SA2E562MLS64A0H1 |
| | 6800 | 64×120 | 8.7 | SA2E682MLS64C0H1 |
| | 8200 | 64×120 | 10.1 | SA2E822MLS64C0H1 |
| | 8200 | 76×100 | 9.7 | SA2E822MLS76A0H1 |
| | 10000 | 64×150 | 11.1 | SA2E103MLS64F0H1 |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number | |
|----------|----------|---------------------|---|------------------|------------------|
| 250 (2E) | 10000 | 76×110 | 11.7 | SA2E103MLS76B0H1 | |
| | 12000 | 64×170 | 13 | SA2E123MLS64H0H1 | |
| | 12000 | 76×130 | 12.6 | SA2E123MLS76D0H1 | |
| | 15000 | 76×150 | 14.9 | SA2E153MLS76F0H1 | |
| | 15000 | 90×120 | 14.4 | SA2E153MLS90C0H1 | |
| | 18000 | 76×170 | 16.4 | SA2E183MLS76H0H1 | |
| | 18000 | 90×130 | 15.9 | SA2E183MLS90D0H1 | |
| | 22000 | 76×200 | 17.9 | SA2E223MLS76K0H1 | |
| | 22000 | 90×160 | 17.4 | SA2E223MLS90G0H1 | |
| | 27000 | 90×180 | 19.3 | SA2E273MLS90I0H1 | |
| | 33000 | 90×220 | 21.2 | SA2E333MLS90M0H1 | |
| | 350 (2V) | 1200 | 51×80 | 5.5 | SA2V122MLS5180H1 |
| | | 1500 | 51×80 | 6.1 | SA2V152MLS5180H1 |
| | | 1800 | 51×100 | 7.4 | SA2V182MLS51A0H1 |
| 2200 | | 51×100 | 7.9 | SA2V222MLS51A0H1 | |
| 2200 | | 64×80 | 7.6 | SA2V222MLS6480H1 | |
| 2700 | | 51×120 | 9.8 | SA2V272MLS51C0H1 | |
| 2700 | | 64×100 | 9.5 | SA2V272MLS64A0H1 | |
| 3300 | | 51×120 | 10.8 | SA2V332MLS51C0H1 | |
| 3300 | | 64×110 | 10.5 | SA2V332MLS64B0H1 | |
| 3900 | | 64×120 | 12.3 | SA2V392MLS64C0H1 | |
| 3900 | | 76×100 | 11.9 | SA2V392MLS76A0H1 | |
| 4700 | | 64×130 | 14.2 | SA2V472MLS64D0H1 | |
| 4700 | | 76×100 | 13.8 | SA2V472MLS76A0H1 | |
| 5600 | | 64×150 | 15.9 | SA2V562MLS64F0H1 | |
| 400 (2G) | 5600 | 76×120 | 15.5 | SA2V562MLS76C0H1 | |
| | 5600 | 90×100 | 15 | SA2V562MLS90A0H1 | |
| | 6800 | 76×150 | 18 | SA2V682MLS76F0H1 | |
| | 6800 | 90×100 | 17.5 | SA2V682MLS90A0H1 | |
| | 8200 | 76×150 | 21 | SA2V822MLS76F0H1 | |
| | 8200 | 90×120 | 20.5 | SA2V822MLS90C0H1 | |
| | 10000 | 90×150 | 25.3 | SA2V103MLS90F0H1 | |
| | 12000 | 90×170 | 28.4 | SA2V123MLS90H0H1 | |
| | 15000 | 90×190 | 34.6 | SA2V153MLS90J0H1 | |
| | 18000 | 90×230 | 39.7 | SA2V183MLS90N0H1 | |
| | 1000 | 51×80 | 5 | SA2G102MLS5180H1 | |
| | 1200 | 51×80 | 5.5 | SA2G122MLS5180H1 | |
| | 1500 | 51×100 | 6.5 | SA2G152MLS51A0H1 | |
| | 1500 | 64×80 | 6.2 | SA2G152MLS6480H1 | |
| 1800 | 51×100 | 7.1 | SA2G182MLS51A0H1 | | |
| 1800 | 64×80 | 6.8 | SA2G182MLS6480H1 | | |
| 2200 | 51×120 | 8.8 | SA2G222MLS51C0H1 | | |
| 2200 | 64×100 | 8.5 | SA2G222MLS64A0H1 | | |
| 2700 | 64×100 | 9.9 | SA2G272MLS64A0H1 | | |
| 3300 | 64×120 | 11.3 | SA2G332MLS64C0H1 | | |
| 3300 | 76×100 | 10.9 | SA2G332MLS76A0H1 | | |
| 3900 | 64×130 | 12.9 | SA2G392MLS64D0H1 | | |
| 3900 | 76×100 | 12.5 | SA2G392MLS76A0H1 | | |
| 4700 | 64×150 | 14.5 | SA2G472MLS64F0H1 | | |
| 4700 | 76×120 | 14.1 | SA2G472MLS76C0H1 | | |
| 4700 | 90×100 | 13.6 | SA2G472MLS90A0H1 | | |
| 5600 | 76×130 | 16.3 | SA2G562MLS76D0H1 | | |
| 5600 | 90×100 | 15.8 | SA2G562MLS90A0H1 | | |
| 6800 | 76×150 | 19.2 | SA2G682MLS76F0H1 | | |
| 6800 | 90×120 | 18.7 | SA2G682MLS90C0H1 | | |
| 8200 | 76×170 | 24 | SA2G822MLS76H0H1 | | |
| 8200 | 90×150 | 23.5 | SA2G822MLS90F0H1 | | |
| 10000 | 76×200 | 26.4 | SA2G103MLS76K0H1 | | |

SA Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 400 (2G) | 10000 | 90×170 | 25.9 | SA2G103MLS90H0H1 |
| | 12000 | 76×230 | 31.5 | SA2G123MLS76N0H1 |
| | 12000 | 90×190 | 31 | SA2G123MLS90J0H1 |
| | 15000 | 90×230 | 36.5 | SA2G153MLS90N0H1 |
| 450 (2W) | 1000 | 51×80 | 5 | SA2W102MLS5180H1 |
| | 1200 | 51×100 | 5.5 | SA2W122MLS51A0H1 |
| | 1200 | 64×80 | 5.2 | SA2W122MLS6480H1 |
| | 1500 | 51×120 | 6.9 | SA2W152MLS51C0H1 |
| | 1500 | 64×100 | 6.6 | SA2W152MLS64A0H1 |
| | 1800 | 51×120 | 8.1 | SA2W182MLS51C0H1 |
| | 1800 | 64×100 | 7.7 | SA2W182MLS64A0H1 |
| | 2200 | 64×100 | 9 | SA2W222MLS64A0H1 |
| | 2700 | 64×120 | 10.3 | SA2W272MLS64C0H1 |
| | 2700 | 76×100 | 9.9 | SA2W272MLS76A0H1 |
| | 3300 | 64×130 | 11.6 | SA2W332MLS64D0H1 |

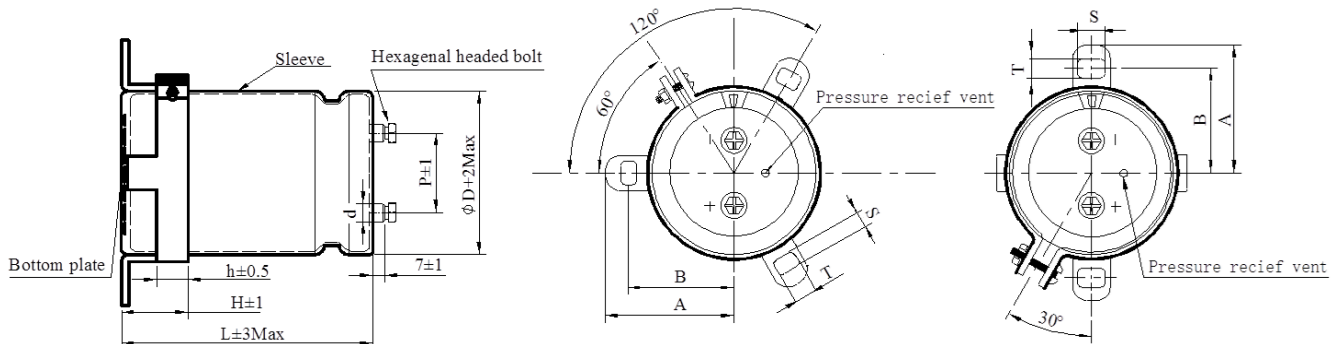
| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 450 (2W) | 3300 | 76×100 | 11.2 | SA2W332MLS76A0H1 |
| | 3900 | 64×150 | 13.4 | SA2W392MLS64F0H1 |
| | 3900 | 76×120 | 13 | SA2W392MLS76C0H1 |
| | 3900 | 90×100 | 12.5 | SA2W392MLS90A0H1 |
| | 4700 | 76×130 | 15 | SA2W472MLS76D0H1 |
| | 4700 | 90×100 | 14.5 | SA2W472MLS90A0H1 |
| | 5600 | 76×150 | 17.5 | SA2W562MLS76F0H1 |
| | 5600 | 90×120 | 17 | SA2W562MLS90C0H1 |
| | 6800 | 76×170 | 21.9 | SA2W682MLS76H0H1 |
| | 6800 | 90×150 | 21.4 | SA2W682MLS90F0H1 |
| | 8200 | 76×200 | 24 | SA2W822MLS76K0H1 |
| | 8200 | 90×170 | 23.5 | SA2W822MLS90H0H1 |
| | 10000 | 76×230 | 28.8 | SA2W103MLS76N0H1 |
| | 10000 | 90×190 | 28.3 | SA2W103MLS90J0H1 |
| | 12000 | 90×230 | 33 | SA2W123MLS90N0H1 |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 160 ~ 450 | 0.82 | 1.00 | 1.20 | 1.35 | 1.40 |

DIMENSIONS (Screw-Mount) [mm]



Terminal pitch and Nominal dia. of bolt

| Terminal Code | ΦD | P±1 | Nominal dia. of bolt | d±0.5 |
|---------------|----|------|----------------------|-------|
| LS | 51 | 22.4 | M5 | 10 |
| | 64 | 28.0 | M5 | 10 |
| | 76 | 31.5 | M5 | 10 |
| | 90 | 31.5 | M5 | 10 |
| LA | 64 | 28.0 | M5 | 13 |
| | 76 | 31.5 | M5 | 13 |
| | 90 | 31.5 | M5 | 13 |
| LB | 76 | 31.5 | M6 | 17 |
| | 90 | 31.5 | M6 | 17 |

Dimensions of mounting bracket

| Leg shape | ΦD | A±2 | B±1 | T±0.5 | S±0.5 | H±1 | h±0.5 |
|-------------------|----|------|------|-------|-------|-----|-------|
| 2 - Leg (Code:K1) | 51 | 40.0 | 34.0 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 46.5 | 40.5 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 53.0 | 46.8 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 60.3 | 54.0 | 7.0 | 5.0 | 35 | 20 |
| 3 - Leg (Code:K2) | 54 | 36.5 | 31.8 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 43.6 | 38.1 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 50.2 | 44.5 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 56.5 | 50.8 | 7.0 | 5.0 | 30 | 24 |

ALUMINUM ELECTROLYTIC CAPACITORS



SL Series

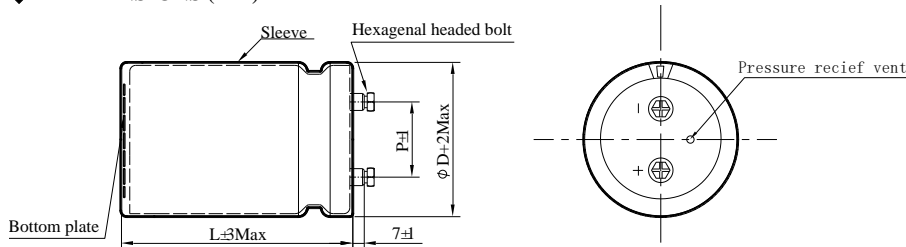


- High ripple current, suitable to use in industrial power supplies for inverter circuitry, etc
- Load life 20,000 hours at 85°C

◆ SPECIFICATIONS

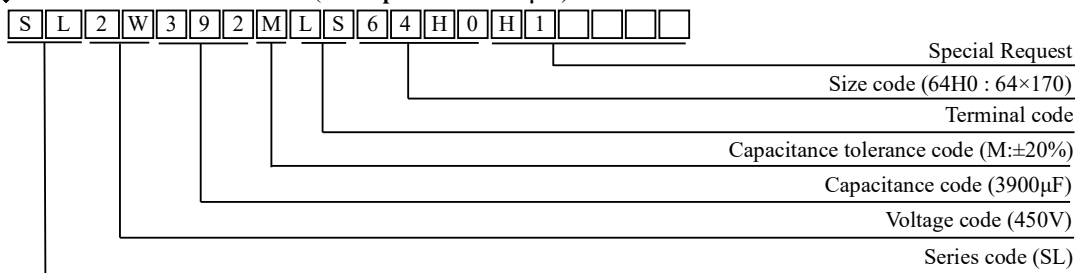
| Item | Performance Characteristics | |
|---|--|----------------------------------|
| Category Temperature Range | -40 ~ +85°C | -25 ~ +85°C |
| Working Voltage Range | 200 ~ 250Vdc | 350 ~ 450Vdc |
| Capacitance Range | 1,500 ~ 39,000μF | 1,000 ~ 15,000μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 200 250 350 400 450 |
| | tanδ(Max) | 0.25 0.25 0.20 0.20 0.20 |
| Leakage Current | I=0.01CV or 5000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 20,000 hours at 85°C . | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 85°C without voltage applied. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

◆ DIMENSIONS (mm)



| ΦD | 51 | 64 | 76 | 90 |
|----|------|------|------|------|
| P± | 22.4 | 28.0 | 31.5 | 31.5 |

◆ PART NUMBER SYSTEM (Example : 450V 3900μF)



ALUMINUM ELECTROLYTIC CAPACITORS



SL Series

◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 200 (2D) | 2200 | 51×80 | 2.9 | SL2D222MND5180H1 |
| | 2700 | 51×100 | 3.4 | SL2D272MND51A0H1 |
| | 3300 | 51×100 | 3.9 | SL2D332MND51A0H1 |
| | 3300 | 64×80 | 3.7 | SL2D332MND6480H1 |
| | 3900 | 51×120 | 4.6 | SL2D392MND51C0H1 |
| | 3900 | 64×100 | 4.4 | SL2D392MND64A0H1 |
| | 4700 | 64×100 | 5.1 | SL2D472MND64A0H1 |
| | 5600 | 64×120 | 6.1 | SL2D562MND64C0H1 |
| | 6800 | 64×120 | 7.2 | SL2D682MND64C0H1 |
| | 6800 | 76×100 | 7 | SL2D682MND76A0H1 |
| | 8200 | 64×120 | 7.9 | SL2D822MND64C0H1 |
| | 8200 | 76×100 | 7.6 | SL2D822MND76A0H1 |
| | 10000 | 64×150 | 8.5 | SL2D103MND64F0H1 |
| | 10000 | 76×120 | 8.2 | SL2D103MND76C0H1 |
| | 12000 | 76×120 | 9.3 | SL2D123MND76C0H1 |
| | 12000 | 90×100 | 8.9 | SL2D123MND90A0H1 |
| | 15000 | 76×150 | 10.4 | SL2D153MND76F0H1 |
| | 15000 | 90×120 | 9.9 | SL2D153MND90C0H1 |
| | 18000 | 76×170 | 13.2 | SL2D183MND76H0H1 |
| | 18000 | 90×120 | 12.7 | SL2D183MND90C0H1 |
| 22000 | 76×190 | 15.7 | SL2D223MND76J0H1 | |
| 22000 | 90×150 | 15.1 | SL2D223MND90F0H1 | |
| 27000 | 76×190 | 15.7 | SL2D273MND76J0H1 | |
| 27000 | 90×150 | 15.1 | SL2D273MND90F0H1 | |
| 33000 | 90×190 | 15.9 | SL2D333MND90J0H1 | |
| 39000 | 90×230 | 18 | SL2D393MND90N0H1 | |
| 250 (2E) | 1500 | 51×80 | 2.4 | SL2E152MND5180H1 |
| | 1800 | 51×100 | 2.8 | SL2E182MND51A0H1 |
| | 2200 | 51×100 | 3.2 | SL2E222MND51A0H1 |
| | 2200 | 64×80 | 3 | SL2E222MND6480H1 |
| | 2700 | 51×120 | 3.7 | SL2E272MND51C0H1 |
| | 2700 | 64×80 | 3.6 | SL2E272MND6480H1 |
| | 3300 | 51×120 | 4.4 | SL2E332MND51C0H1 |
| | 3300 | 64×100 | 4.3 | SL2E332MND64A0H1 |
| | 3900 | 64×100 | 5 | SL2E392MND64A0H1 |
| | 4700 | 64×120 | 5.9 | SL2E472MND64C0H1 |
| | 4700 | 76×100 | 5.6 | SL2E472MND76A0H1 |
| | 5600 | 64×120 | 6.6 | SL2E562MND64C0H1 |
| | 5600 | 76×100 | 6.4 | SL2E562MND76A0H1 |
| | 6800 | 64×150 | 7.3 | SL2E682MND64F0H1 |
| | 6800 | 76×120 | 7.1 | SL2E682MND76C0H1 |
| | 8200 | 64×150 | 8.9 | SL2E822MND64F0H1 |
| | 8200 | 76×120 | 8.6 | SL2E822MND76C0H1 |
| | 10000 | 76×150 | 10 | SL2E103MND76F0H1 |
| | 10000 | 90×120 | 9.6 | SL2E103MND90C0H1 |
| | 12000 | 76×190 | 11.5 | SL2E123MND76J0H1 |
| 12000 | 90×150 | 11.1 | SL2E123MND90F0H1 | |
| 15000 | 90×170 | 12.7 | SL2E153MND90H0H1 | |
| 18000 | 90×190 | 14.1 | SL2E183MND90J0H1 | |
| 22000 | 90×230 | 15.4 | SL2E223MND90N0H1 | |
| 350 (2V) | 1000 | 51×80 | 3.9 | SL2V102MND5180H1 |
| | 1200 | 51×80 | 4.2 | SL2V122MND5180H1 |
| | 1500 | 51×100 | 5.2 | SL2V152MND51A0H1 |

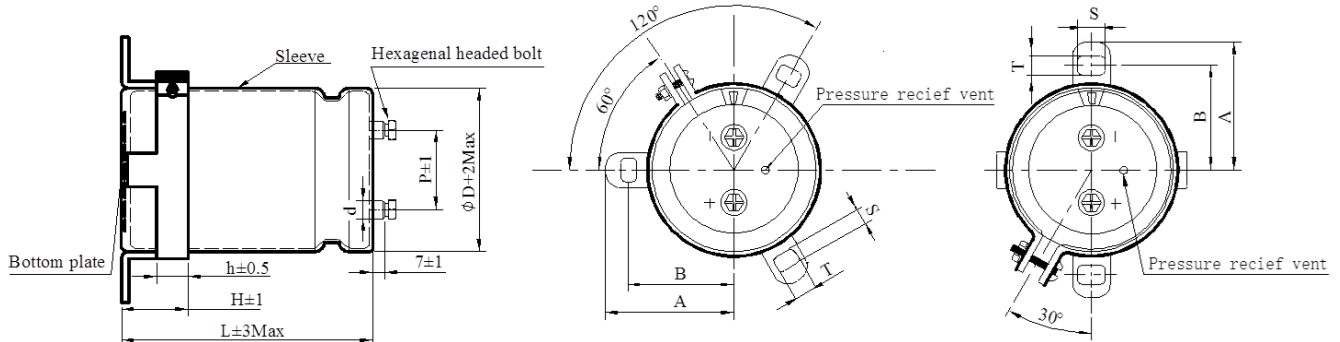
| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 85°C, 120Hz) | Part Number |
|----------|----------|---------------------|---|------------------|
| 350 (2V) | 1800 | 51×100 | 5.7 | SL2V182MND51A0H1 |
| | 1800 | 64×80 | 5.4 | SL2V182MND6480H1 |
| | 2200 | 51×120 | 7.1 | SL2V222MND51C0H1 |
| | 2200 | 64×100 | 6.7 | SL2V222MND64A0H1 |
| | 2700 | 64×100 | 7.7 | SL2V272MND64A0H1 |
| | 3300 | 64×120 | 9.1 | SL2V332MND64C0H1 |
| | 3900 | 64×120 | 10.4 | SL2V392MND64C0H1 |
| | 3900 | 76×100 | 9.8 | SL2V392MND76A0H1 |
| | 4700 | 64×150 | 12.2 | SL2V472MND64F0H1 |
| | 4700 | 76×120 | 11.5 | SL2V472MND76C0H1 |
| | 5600 | 76×120 | 13.1 | SL2V562MND76C0H1 |
| | 5600 | 90×100 | 12.4 | SL2V562MND90A0H1 |
| | 6800 | 76×150 | 15.5 | SL2V682MND76F0H1 |
| | 6800 | 90×120 | 14.7 | SL2V682MND90C0H1 |
| | 8200 | 76×170 | 19 | SL2V822MND76H0H1 |
| | 8200 | 90×150 | 18.1 | SL2V822MND90F0H1 |
| | 10000 | 76×190 | 20.9 | SL2V103MND76J0H1 |
| | 10000 | 90×150 | 19.9 | SL2V103MND90F0H1 |
| | 12000 | 90×190 | 23.8 | SL2V123MND90J0H1 |
| | 15000 | 90×230 | 28.8 | SL2V153MND90N0H1 |
| 400 (2G) | 1000 | 51×80 | 3.9 | SL2G102MND5180H1 |
| | 1200 | 51×100 | 4.6 | SL2G122MND51A0H1 |
| | 1200 | 64×80 | 4.2 | SL2G122MND6480H1 |
| | 1500 | 51×120 | 5.6 | SL2G152MND51C0H1 |
| | 1500 | 64×80 | 6 | SL2G152MND6480H1 |
| | 1800 | 51×120 | 6.4 | SL2G182MND51C0H1 |
| | 1800 | 64×100 | 5.2 | SL2G182MND64A0H1 |
| | 2200 | 64×100 | 6.9 | SL2G222MND64A0H1 |
| | 2700 | 64×120 | 8.2 | SL2G272MND64C0H1 |
| | 2700 | 76×100 | 7.7 | SL2G272MND76A0H1 |
| | 3300 | 64×120 | 9.5 | SL2G332MND64C0H1 |
| | 3300 | 76×100 | 9 | SL2G332MND76A0H1 |
| | 3900 | 64×150 | 11.1 | SL2G392MND64F0H1 |
| | 3900 | 76×120 | 10.5 | SL2G392MND76C0H1 |
| | 3900 | 90×100 | 9.9 | SL2G392MND90A0H1 |
| | 4700 | 76×120 | 12 | SL2G472MND76C0H1 |
| | 4700 | 90×100 | 11.4 | SL2G472MND90A0H1 |
| | 5600 | 76×150 | 14 | SL2G562MND76F0H1 |
| | 5600 | 90×120 | 13.3 | SL2G562MND90C0H1 |
| | 6800 | 76×190 | 17.3 | SL2G682MND76J0H1 |
| 6800 | 90×150 | 16.5 | SL2G682MND90F0H1 | |
| 8200 | 90×170 | 18.1 | SL2G822MND90H0H1 | |
| 10000 | 90×190 | 21.7 | SL2G103MND90J0H1 | |
| 12000 | 90×230 | 25.8 | SL2G123MND90N0H1 | |
| 450 (2W) | 2700 | 64×130 | 10.6 | SL2W272MND64D0H1 |
| | 3300 | 64×155 | 12.7 | SL2W332MND64F5H1 |
| | 3300 | 76×130 | 13 | SL2W332MND76D0H1 |
| | 3900 | 64×170 | 14.4 | SL2W392MND64H0H1 |
| | 4700 | 76×155 | 16.7 | SL2W472MND76F5H1 |
| | 5600 | 76×190 | 20.1 | SL2W562MND76J0H1 |
| | 5600 | 90×155 | 19.9 | SL2W562MND90F5H1 |
| | 8200 | 90×170 | 23 | SL2W682MND90H0H1 |
| 8200 | 90×190 | 26.4 | SL2W822MND90J0H1 | |

SL Series

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 200 ~ 450 | 0.70 | 1.00 | 1.10 | 1.30 | 1.40 |

◆ DIMENSIONS (Screw-Mount) [mm]



◆ Terminal pitch and Nominal dia. of bolt

| Terminal Code | ΦD | P±1 | Nominal dia. of bolt | d±0.5 |
|---------------|----|------|----------------------|-------|
| LS | 51 | 22.4 | M5 | 10 |
| | 64 | 28.0 | M5 | 10 |
| | 76 | 31.5 | M5 | 10 |
| | 90 | 31.5 | M5 | 10 |
| LA | 64 | 28.0 | M5 | 13 |
| | 76 | 31.5 | M5 | 13 |
| | 90 | 31.5 | M5 | 13 |
| LB | 76 | 31.5 | M6 | 17 |
| | 90 | 31.5 | M6 | 17 |

◆ Dimensions of mounting bracket

| Leg shape | ΦD | A±2 | B±1 | T±0.5 | S±0.5 | H±1 | h±0.5 |
|----------------------|----|------|------|-------|-------|-----|-------|
| 2 – Leg (Code:K1) | 51 | 40.0 | 34.0 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 46.5 | 40.5 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 53.0 | 46.8 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 60.3 | 54.0 | 7.0 | 5.0 | 35 | 20 |
| 3 – Leg (Code:K2) | 54 | 36.5 | 31.8 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 43.6 | 38.1 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 50.2 | 44.5 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 56.5 | 50.8 | 7.0 | 5.0 | 30 | 24 |

ALUMINUM ELECTROLYTIC CAPACITORS



SK Series

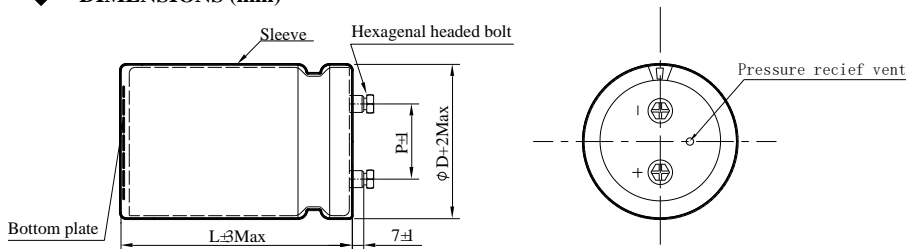


- High ripple current, suitable to use in industrial power supplies for inverter circuitry, etc
- Load life 2,000 hours at 105°C

◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|---|---|-------------------------------|
| Category Temperature Range | -40 ~ +105°C | -25 ~ +105°C |
| Working Voltage Range | 200 ~ 250Vdc | 350 ~ 400Vdc |
| Capacitance Range | 1,500 ~ 39,000µF | 1,000 ~ 15,000µF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 200 250 350 400 |
| | tanδ(Max) | 0.25 0.25 0.20 0.20 |
| Leakage Current | I=0.01CV or 5000µA, whichever is smaller I : Leakage current (µA) C : Rated capacitance (µF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

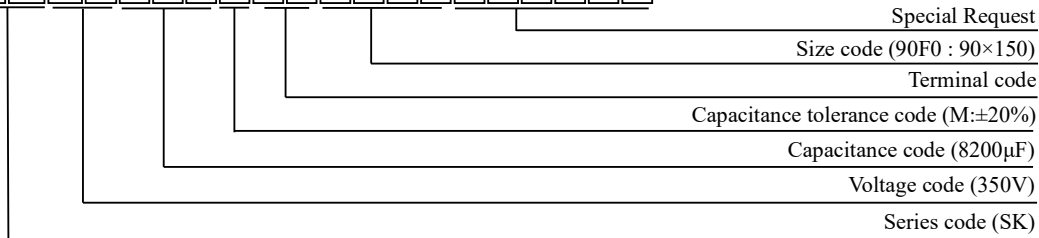
◆ DIMENSIONS (mm)



| | | | | |
|-----|------|------|------|------|
| ΦD | 51 | 64 | 76 | 90 |
| P±1 | 22.4 | 28.0 | 31.5 | 31.5 |

◆ PART NUMBER SYSTEM (Example : 350V 8200µF)

S K 2 V 8 2 2 M L S 9 0 F 0 H 1



ALUMINUM ELECTROLYTIC CAPACITORS



SK Series

STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 200 (2D) | 2200 | 51×80 | 2.9 | SK2D222MLS5180H1 |
| | 2700 | 51×100 | 3.4 | SK2D272MLS51A0H1 |
| | 3300 | 51×100 | 3.9 | SK2D332MLS51A0H1 |
| | 3300 | 64×80 | 3.7 | SK2D332MLS6480H1 |
| | 3900 | 51×120 | 4.6 | SK2D392MLS51C0H1 |
| | 3900 | 64×100 | 4.4 | SK2D392MLS64A0H1 |
| | 4700 | 64×100 | 5.1 | SK2D472MLS64A0H1 |
| | 5600 | 64×120 | 6.1 | SK2D562MLS64C0H1 |
| | 6800 | 64×120 | 7.2 | SK2D682MLS64C0H1 |
| | 6800 | 76×100 | 7 | SK2D682MLS76A0H1 |
| | 8200 | 64×120 | 7.9 | SK2D822MLS64C0H1 |
| | 8200 | 76×100 | 7.6 | SK2D822MLS76A0H1 |
| | 10000 | 64×150 | 8.5 | SK2D103MLS64F0H1 |
| | 10000 | 76×120 | 8.2 | SK2D103MLS76C0H1 |
| | 12000 | 76×120 | 9.3 | SK2D123MLS76C0H1 |
| | 12000 | 90×100 | 8.9 | SK2D123MLS90A0H1 |
| | 15000 | 76×150 | 10.4 | SK2D153MLS76F0H1 |
| | 15000 | 90×120 | 9.9 | SK2D153MLS90C0H1 |
| | 18000 | 76×170 | 13.2 | SK2D183MLS76H0H1 |
| | 18000 | 90×120 | 12.7 | SK2D183MLS90C0H1 |
| 22000 | 76×190 | 15.7 | SK2D223MLS76J0H1 | |
| 22000 | 90×150 | 15.1 | SK2D223MLS90F0H1 | |
| 27000 | 76×190 | 15.7 | SK2D273MLS76J0H1 | |
| 27000 | 90×150 | 15.1 | SK2D273MLS90F0H1 | |
| 33000 | 90×190 | 15.9 | SK2D333MLS90J0H1 | |
| 39000 | 90×230 | 18 | SK2D393MLS90N0H1 | |
| 250 (2E) | 1500 | 51×80 | 2.4 | SK2E152MLS5180H1 |
| | 1800 | 51×100 | 2.8 | SK2E182MLS51A0H1 |
| | 2200 | 51×100 | 3.2 | SK2E222MLS51A0H1 |
| | 2200 | 64×80 | 3 | SK2E222MLS6480H1 |
| | 2700 | 51×120 | 3.7 | SK2E272MLS51C0H1 |
| | 2700 | 64×80 | 3.6 | SK2E272MLS6480H1 |
| | 3300 | 51×120 | 4.4 | SK2E332MLS51C0H1 |
| | 3300 | 64×100 | 4.3 | SK2E332MLS64A0H1 |
| | 3900 | 64×100 | 5 | SK2E392MLS64A0H1 |
| | 4700 | 64×120 | 5.9 | SK2E472MLS64C0H1 |
| | 4700 | 76×100 | 5.6 | SK2E472MLS76A0H1 |
| | 5600 | 64×120 | 6.6 | SK2E562MLS64C0H1 |
| | 5600 | 76×100 | 6.4 | SK2E562MLS76A0H1 |
| | 6800 | 64×150 | 7.3 | SK2E682MLS64F0H1 |
| | 6800 | 76×120 | 7.1 | SK2E682MLS76C0H1 |
| | 8200 | 64×150 | 8.9 | SK2E822MLS64F0H1 |
| | 8200 | 76×120 | 8.6 | SK2E822MLS76C0H1 |
| | 10000 | 76×150 | 10 | SK2E103MLS76F0H1 |
| | 10000 | 90×120 | 9.6 | SK2E103MLS90C0H1 |
| | 12000 | 76×190 | 11.5 | SK2E123MLS76J0H1 |
| 12000 | 90×150 | 11.1 | SK2E123MLS90F0H1 | |
| 15000 | 90×170 | 12.7 | SK2E153MLS90H0H1 | |
| 18000 | 90×190 | 14.1 | SK2E183MLS90J0H1 | |
| 22000 | 90×230 | 15.4 | SK2E223MLS90N0H1 | |

| WV (Vdc) | Cap (μF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 105°C, 120Hz) | Part Number |
|----------|----------|---------------------|--|------------------|
| 350 (2V) | 1000 | 51×80 | 3.9 | SK2V102MLS5180H1 |
| | 1200 | 51×80 | 4.2 | SK2V122MLS5180H1 |
| | 1500 | 51×100 | 5.2 | SK2V152MLS51A0H1 |
| | 1800 | 51×100 | 5.7 | SK2V182MLS51A0H1 |
| | 1800 | 64×80 | 5.4 | SK2V182MLS6480H1 |
| | 2200 | 51×120 | 7.1 | SK2V222MLS51C0H1 |
| | 2200 | 64×100 | 6.7 | SK2V222MLS64A0H1 |
| | 2700 | 64×100 | 7.7 | SK2V272MLS64A0H1 |
| | 3300 | 64×120 | 9.1 | SK2V332MLS64C0H1 |
| | 3900 | 64×120 | 10.4 | SK2V392MLS64C0H1 |
| | 3900 | 76×100 | 9.8 | SK2V392MLS76A0H1 |
| | 4700 | 64×150 | 12.2 | SK2V472MLS64F0H1 |
| | 4700 | 76×120 | 11.5 | SK2V472MLS76C0H1 |
| | 5600 | 76×120 | 13.1 | SK2V562MLS76C0H1 |
| | 5600 | 90×100 | 12.4 | SK2V562MLS90A0H1 |
| | 6800 | 76×150 | 15.5 | SK2V682MLS76F0H1 |
| | 6800 | 90×120 | 14.7 | SK2V682MLS90C0H1 |
| | 8200 | 76×170 | 19 | SK2V822MLS76H0H1 |
| | 8200 | 90×150 | 18.1 | SK2V822MLS90F0H1 |
| | 10000 | 76×190 | 20.9 | SK2V103MLS76J0H1 |
| 10000 | 90×150 | 19.9 | SK2V103MLS90F0H1 | |
| 12000 | 90×190 | 23.8 | SK2V123MLS90J0H1 | |
| 15000 | 90×230 | 28.8 | SK2V153MLS90N0H1 | |
| 400 (2G) | 1000 | 51×80 | 3.9 | SK2G102MLS5180H1 |
| | 1200 | 51×100 | 4.6 | SK2G122MLS51A0H1 |
| | 1200 | 64×80 | 4.2 | SK2G122MLS6480H1 |
| | 1500 | 51×120 | 5.6 | SK2G152MLS51C0H1 |
| | 1500 | 64×80 | 6 | SK2G152MLS6480H1 |
| | 1800 | 51×120 | 6.4 | SK2G182MLS51C0H1 |
| | 1800 | 64×100 | 6.5 | SK2G182MLS64A0H1 |
| | 2200 | 64×100 | 6.9 | SK2G222MLS64A0H1 |
| | 2700 | 64×120 | 8.2 | SK2G272MLS64C0H1 |
| | 2700 | 76×100 | 7.7 | SK2G272MLS76A0H1 |
| | 3300 | 64×120 | 9.5 | SK2G332MLS64C0H1 |
| | 3300 | 76×100 | 9 | SK2G332MLS76A0H1 |
| | 3900 | 64×150 | 11.1 | SK2G392MLS64F0H1 |
| | 3900 | 76×120 | 10.5 | SK2G392MLS76C0H1 |
| | 3900 | 90×100 | 9.9 | SK2G392MLS90A0H1 |
| | 4700 | 76×120 | 12 | SK2G472MLS76C0H1 |
| | 4700 | 90×100 | 11.4 | SK2G472MLS90A0H1 |
| | 5600 | 76×150 | 14 | SK2G562MLS76F0H1 |
| | 5600 | 90×120 | 13.3 | SK2G562MLS90C0H1 |
| | 6800 | 76×190 | 17.3 | SK2G682MLS76J0H1 |
| 6800 | 90×150 | 16.5 | SK2G682MLS90F0H1 | |
| 8200 | 90×170 | 18.1 | SK2G822MLS90H0H1 | |
| 10000 | 90×190 | 21.7 | SK2G103MLS90J0H1 | |
| 12000 | 90×230 | 25.8 | SK2G123MLS90N0H1 | |

RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

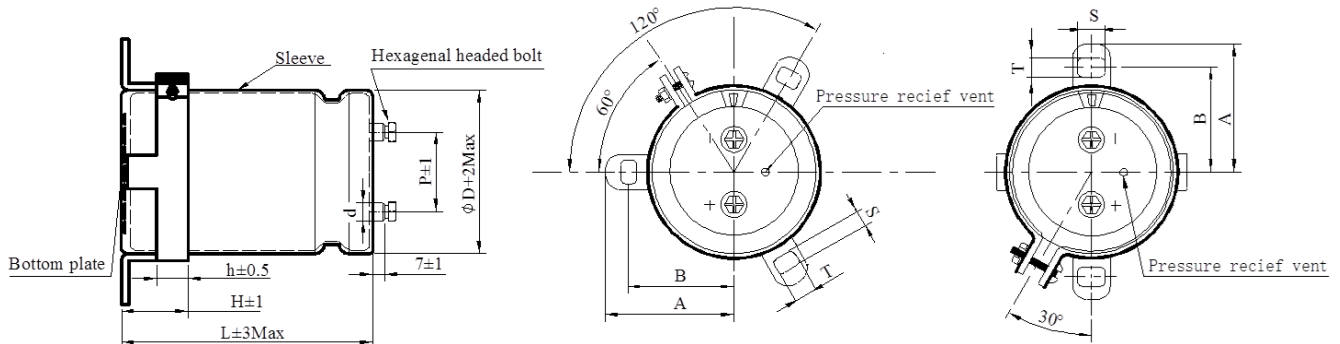
| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 200 ~ 400 | 0.70 | 1.00 | 1.10 | 1.30 | 1.40 |

ALUMINUM ELECTROLYTIC CAPACITORS



SK Series

◆ DIMENSIONS (Screw-Mount) [mm]



◆ Terminal pitch and Nominal dia. of bolt

| Terminal Code | ΦD | P±1 | Nominal dia. of bolt | d±0.5 |
|---------------|----|------|----------------------|-------|
| LS | 51 | 22.4 | M5 | 10 |
| | 64 | 28.0 | M5 | 10 |
| | 76 | 31.5 | M5 | 10 |
| | 90 | 31.5 | M5 | 10 |
| LA | 64 | 28.0 | M5 | 13 |
| | 76 | 31.5 | M5 | 13 |
| | 90 | 31.5 | M5 | 13 |
| LB | 76 | 31.5 | M6 | 17 |
| | 90 | 31.5 | M6 | 17 |

◆ Dimensions of mounting bracket

| Leg shape | ΦD | A±2 | B±1 | T±0.5 | S±0.5 | H±1 | h±0.5 |
|----------------------|----|------|------|-------|-------|-----|-------|
| 2 – Leg (Code:K1) | 51 | 40.0 | 34.0 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 46.5 | 40.5 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 53.0 | 46.8 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 60.3 | 54.0 | 7.0 | 5.0 | 35 | 20 |
| 3 – Leg (Code:K2) | 54 | 36.5 | 31.8 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 43.6 | 38.1 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 50.2 | 44.5 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 56.5 | 50.8 | 7.0 | 5.0 | 30 | 24 |

ALUMINUM ELECTROLYTIC CAPACITORS



SX Series

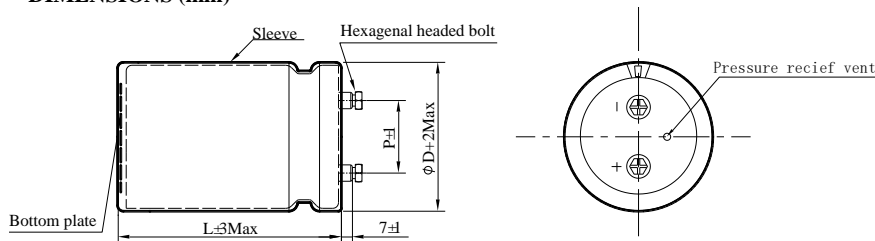


- High ripple current, suitable to use in industrial power supplies for inverter circuitry, etc
- Load life 5,000 hours at 105°C

◆ SPECIFICATIONS

| Item | Performance Characteristics | |
|---|--|--------------------------------------|
| Category Temperature Range | -40 ~ +105°C | -25 ~ +105°C |
| Working Voltage Range | 200 ~ 250Vdc | 350 ~ 450Vdc |
| Capacitance Range | 1,500 ~ 39,000μF | 1,000 ~ 15,000μF |
| Capacitance Tolerance | ±20% (at 25°C and 120Hz) | |
| Dissipation Factor (tanδ) (at 25°C, 120Hz) | Rated Voltage (V) | 200 250 350 400 450 |
| | tanδ(Max) | 0.25 0.25 0.20 0.20 0.20 |
| Leakage Current | I=0.01CV or 5000μA, whichever is smaller I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 5 minutes | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C . | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 500 hours at 105°C without voltage applied. | |
| | Capacitance change | ≧ ± 20% of the initial value |
| | Dissipation factor(tanδ) | ≧ 200% of the specified value |
| Others | Conforms to JIS-C-5101-4 (1998) | |

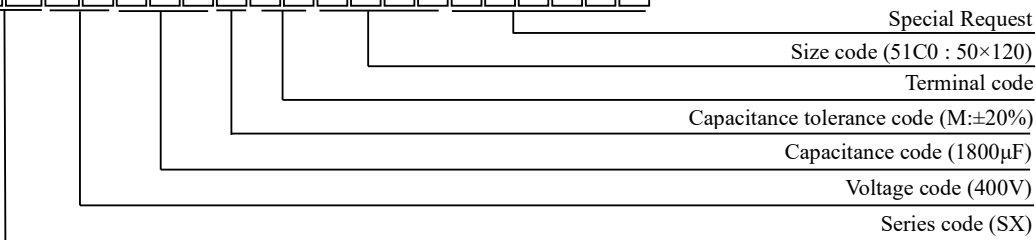
◆ DIMENSIONS (mm)



| | | | | |
|----|------|------|------|------|
| ΦD | 51 | 64 | 76 | 90 |
| P± | 22.4 | 28.0 | 31.5 | 31.5 |

◆ PART NUMBER SYSTEM (Example : 400V 1800μF)

S X 2 G 1 8 2 M L S 5 1 C 0 H 1



ALUMINUM ELECTROLYTIC CAPACITORS



SX Series

STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|------------------|------------------|
| 200 (2D) | 2200 | 51×80 | 2.9 | SX2D222MLS5180H1 | |
| | 2700 | 51×100 | 3.4 | SX2D272MLS51A0H1 | |
| | 3300 | 51×100 | 3.9 | SX2D332MLS51A0H1 | |
| | 3300 | 64×80 | 3.7 | SX2D332MLS6480H1 | |
| | 3900 | 51×120 | 4.6 | SX2D392MLS51C0H1 | |
| | 3900 | 64×100 | 4.4 | SX2D392MLS64A0H1 | |
| | 4700 | 64×100 | 5.1 | SX2D472MLS64A0H1 | |
| | 5600 | 64×120 | 6.1 | SX2D562MLS64C0H1 | |
| | 6800 | 64×120 | 7.2 | SX2D682MLS64C0H1 | |
| | 6800 | 76×100 | 7 | SX2D682MLS76A0H1 | |
| | 8200 | 64×120 | 7.9 | SX2D822MLS64C0H1 | |
| | 8200 | 76×100 | 7.6 | SX2D822MLS76A0H1 | |
| | 10000 | 64×150 | 8.5 | SX2D103MLS64F0H1 | |
| | 10000 | 76×120 | 8.2 | SX2D103MLS76C0H1 | |
| | 12000 | 76×120 | 9.3 | SX2D123MLS76C0H1 | |
| | 12000 | 90×100 | 8.9 | SX2D123MLS90A0H1 | |
| | 15000 | 76×150 | 10.4 | SX2D153MLS76F0H1 | |
| | 15000 | 90×120 | 9.9 | SX2D153MLS90C0H1 | |
| | 18000 | 76×170 | 13.2 | SX2D183MLS76H0H1 | |
| | 18000 | 90×120 | 12.7 | SX2D183MLS90C0H1 | |
| | 22000 | 76×190 | 15.7 | SX2D223MLS76J0H1 | |
| | 22000 | 90×150 | 15.1 | SX2D223MLS90F0H1 | |
| | 27000 | 76×190 | 15.7 | SX2D273MLS76J0H1 | |
| | 27000 | 90×150 | 15.1 | SX2D273MLS90F0H1 | |
| | 33000 | 90×190 | 15.9 | SX2D333MLS90J0H1 | |
| | 39000 | 90×230 | 18 | SX2D393MLS90N0H1 | |
| | 250 (2E) | 1500 | 51×80 | 2.4 | SX2E152MLS5180H1 |
| | | 1800 | 51×100 | 2.8 | SX2E182MLS51A0H1 |
| 2200 | | 51×100 | 3.2 | SX2E222MLS51A0H1 | |
| 2200 | | 64×80 | 3 | SX2E222MLS6480H1 | |
| 2700 | | 51×120 | 3.7 | SX2E272MLS51C0H1 | |
| 2700 | | 64×80 | 3.6 | SX2E272MLS6480H1 | |
| 3300 | | 51×120 | 4.4 | SX2E332MLS51C0H1 | |
| 3300 | | 64×100 | 4.3 | SX2E332MLS64A0H1 | |
| 3900 | | 64×100 | 5 | SX2E392MLS64A0H1 | |
| 4700 | | 64×120 | 5.9 | SX2E472MLS64C0H1 | |
| 4700 | | 76×100 | 5.6 | SX2E472MLS76A0H1 | |
| 5600 | | 64×120 | 6.6 | SX2E562MLS64C0H1 | |
| 5600 | | 76×100 | 6.4 | SX2E562MLS76A0H1 | |
| 6800 | | 64×150 | 7.3 | SX2E682MLS64F0H1 | |
| 6800 | | 76×120 | 7.1 | SX2E682MLS76C0H1 | |
| 8200 | | 64×150 | 8.9 | SX2E822MLS64F0H1 | |
| 8200 | | 76×120 | 8.6 | SX2E822MLS76C0H1 | |
| 10000 | | 76×150 | 10 | SX2E103MLS76F0H1 | |
| 10000 | | 90×120 | 9.6 | SX2E103MLS90C0H1 | |
| 12000 | | 76×190 | 11.5 | SX2E123MLS76J0H1 | |
| 12000 | 90×150 | 11.1 | SX2E123MLS90F0H1 | | |
| 15000 | 90×170 | 12.7 | SX2E153MLS90H0H1 | | |
| 18000 | 90×190 | 14.1 | SX2E183MLS90J0H1 | | |
| 22000 | 90×230 | 15.4 | SX2E223MLS90N0H1 | | |
| 350 (2V) | 1000 | 51×80 | 3.9 | SX2V102MLS5180H1 | |
| | 1200 | 51×80 | 4.2 | SX2V122MLS5180H1 | |
| | 1500 | 51×100 | 5.2 | SX2V152MLS51A0H1 | |

| WV (Vdc) | Cap (µF) | Case Size (mm) ΦD×L | Rated Ripple current (A rms/ 105°C, 120Hz) | Part Number | |
|----------|----------|---------------------|--|------------------|------------------|
| 350 (2V) | 1800 | 51×100 | 5.7 | SX2V182MLS51A0H1 | |
| | 1800 | 64×80 | 5.4 | SX2V182MLS6480H1 | |
| | 2200 | 51×120 | 7.1 | SX2V222MLS51C0H1 | |
| | 2200 | 64×100 | 6.7 | SX2V222MLS64A0H1 | |
| | 2700 | 64×100 | 7.7 | SX2V272MLS64A0H1 | |
| | 3300 | 64×120 | 9.1 | SX2V332MLS64C0H1 | |
| | 3900 | 64×120 | 10.4 | SX2V392MLS64C0H1 | |
| | 3900 | 76×100 | 9.8 | SX2V392MLS76A0H1 | |
| | 4700 | 64×150 | 12.2 | SX2V472MLS64F0H1 | |
| | 4700 | 76×120 | 11.5 | SX2V472MLS76C0H1 | |
| | 5600 | 76×120 | 13.1 | SX2V562MLS76C0H1 | |
| | 5600 | 90×100 | 12.4 | SX2V562MLS90A0H1 | |
| | 6800 | 76×150 | 15.5 | SX2V682MLS76F0H1 | |
| | 6800 | 90×120 | 14.7 | SX2V682MLS90C0H1 | |
| | 8200 | 76×170 | 19 | SX2V822MLS76H0H1 | |
| | 8200 | 90×150 | 18.1 | SX2V822MLS90F0H1 | |
| | 10000 | 76×190 | 20.9 | SX2V103MLS76J0H1 | |
| | 10000 | 90×150 | 19.9 | SX2V103MLS90F0H1 | |
| | 12000 | 90×190 | 23.8 | SX2V123MLS90J0H1 | |
| | 15000 | 90×230 | 28.8 | SX2V153MLS90N0H1 | |
| | 400 (2G) | 1000 | 51×80 | 3.9 | SX2G102MLS5180H1 |
| | | 1200 | 51×100 | 4.6 | SX2G122MLS51A0H1 |
| | | 1200 | 64×80 | 4.2 | SX2G122MLS6480H1 |
| | | 1500 | 51×120 | 5.6 | SX2G152MLS51C0H1 |
| | | 1500 | 64×80 | 6 | SX2G152MLS6480H1 |
| | | 1800 | 51×120 | 6.4 | SX2G182MLS51C0H1 |
| | | 1800 | 64×100 | 5.2 | SX2G182MLS64A0H1 |
| | | 2200 | 64×100 | 6.9 | SX2G222MLS64A0H1 |
| 2700 | | 64×120 | 8.2 | SX2G272MLS64C0H1 | |
| 2700 | | 76×100 | 7.7 | SX2G272MLS76A0H1 | |
| 3300 | | 64×120 | 9.5 | SX2G332MLS64C0H1 | |
| 3300 | | 76×100 | 9 | SX2G332MLS76A0H1 | |
| 3900 | | 64×150 | 11.1 | SX2G392MLS64F0H1 | |
| 3900 | | 76×120 | 10.5 | SX2G392MLS76C0H1 | |
| 3900 | | 90×100 | 9.9 | SX2G392MLS90A0H1 | |
| 4700 | | 76×120 | 12 | SX2G472MLS76C0H1 | |
| 4700 | | 90×100 | 11.4 | SX2G472MLS90A0H1 | |
| 5600 | | 76×150 | 14 | SX2G562MLS76F0H1 | |
| 5600 | | 90×120 | 13.3 | SX2G562MLS90C0H1 | |
| 6800 | | 76×190 | 17.3 | SX2G682MLS76J0H1 | |
| 6800 | 90×150 | 16.5 | SX2G682MLS90F0H1 | | |
| 8200 | 90×170 | 18.1 | SX2G822MLS90H0H1 | | |
| 10000 | 90×190 | 21.7 | SX2G103MLS90J0H1 | | |
| 12000 | 90×230 | 25.8 | SX2G123MLS90N0H1 | | |
| 450 (2W) | 2700 | 64×130 | 13.7 | SX2W272MLS64D0H1 | |
| | 3300 | 64×155 | 16.5 | SX2W332MLS64F5H1 | |
| | 3300 | 76×130 | 16.9 | SX2W332MLS76D0H1 | |
| | 3900 | 64×170 | 18.7 | SX2W392MLS64H0H1 | |
| | 4700 | 76×155 | 21.7 | SX2W472MLS76F5H1 | |
| | 5600 | 76×190 | 26.1 | SX2W562MLS76J0H1 | |
| | 5600 | 90×155 | 24.1 | SX2W562MLS90F5H1 | |
| | 6800 | 90×170 | 27.8 | SX2W682MLS90H0H1 | |
| 8200 | 90×190 | 32 | SX2W822MLS90J0H1 | | |

ALUMINUM ELECTROLYTIC CAPACITORS

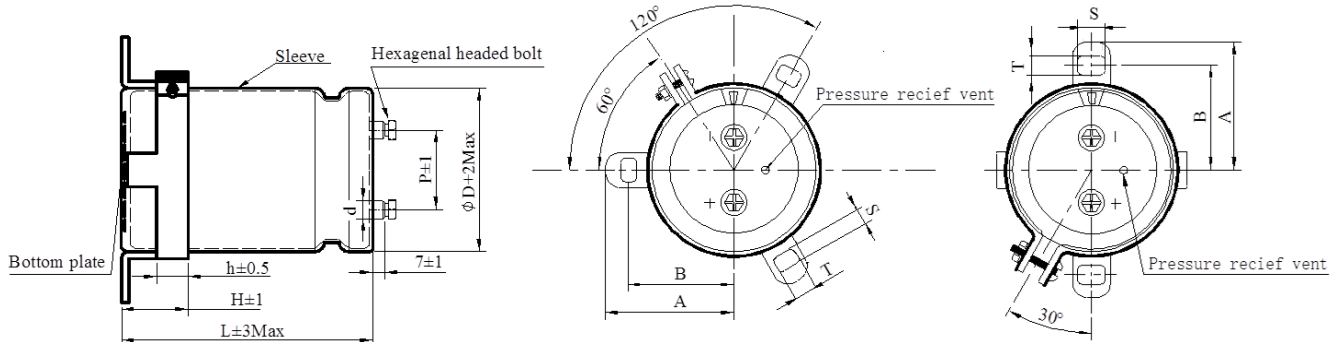


SX Series

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

| Vdc | Frequency (Hz) | | | | |
|-----------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | 10K |
| 200 ~ 450 | 0.70 | 1.00 | 1.10 | 1.30 | 1.40 |

◆ DIMENSIONS (Screw-Mount) [mm]



◆ Terminal pitch and Nominal dia. of bolt

| Terminal Code | ΦD | P±1 | Nominal dia. of bolt | d±0.5 |
|---------------|----|------|----------------------|-------|
| LS | 51 | 22.4 | M5 | 10 |
| | 64 | 28.0 | M5 | 10 |
| | 76 | 31.5 | M5 | 10 |
| | 90 | 31.5 | M5 | 10 |
| LA | 64 | 28.0 | M5 | 13 |
| | 76 | 31.5 | M5 | 13 |
| | 90 | 31.5 | M5 | 13 |
| LB | 76 | 31.5 | M6 | 17 |
| | 90 | 31.5 | M6 | 17 |

◆ Dimensions of mounting bracket

| Leg shape | ΦD | A±2 | B±1 | T±0.5 | S±0.5 | H±1 | h±0.5 |
|----------------------|----|------|------|-------|-------|-----|-------|
| 2 – Leg (Code:K1) | 51 | 40.0 | 34.0 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 46.5 | 40.5 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 53.0 | 46.8 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 60.3 | 54.0 | 7.0 | 5.0 | 35 | 20 |
| 3 – Leg (Code:K2) | 54 | 36.5 | 31.8 | 7.0 | 5.0 | 30 | 24 |
| | 64 | 43.6 | 38.1 | 7.0 | 5.0 | 30 | 24 |
| | 76 | 50.2 | 44.5 | 7.0 | 5.0 | 30 | 24 |
| | 90 | 56.5 | 50.8 | 7.0 | 5.0 | 30 | 24 |