

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.).
 - 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

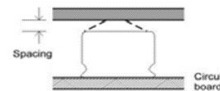
Vibration frequency range	: 10~55~10Hz
Sweep Rate	: 10~55~10Hz/minute
Sweep Method	: Logarithmic
Amplitude or acceleration	: 1.5mm (maximum acceleration is 10G)
Direction of vibration	: X, Y, Z direction
Testing time	: 2 hours per each direction Shock is not applicable normally.

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.

(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 no attempt to re-use capacitor in other circuits or application.

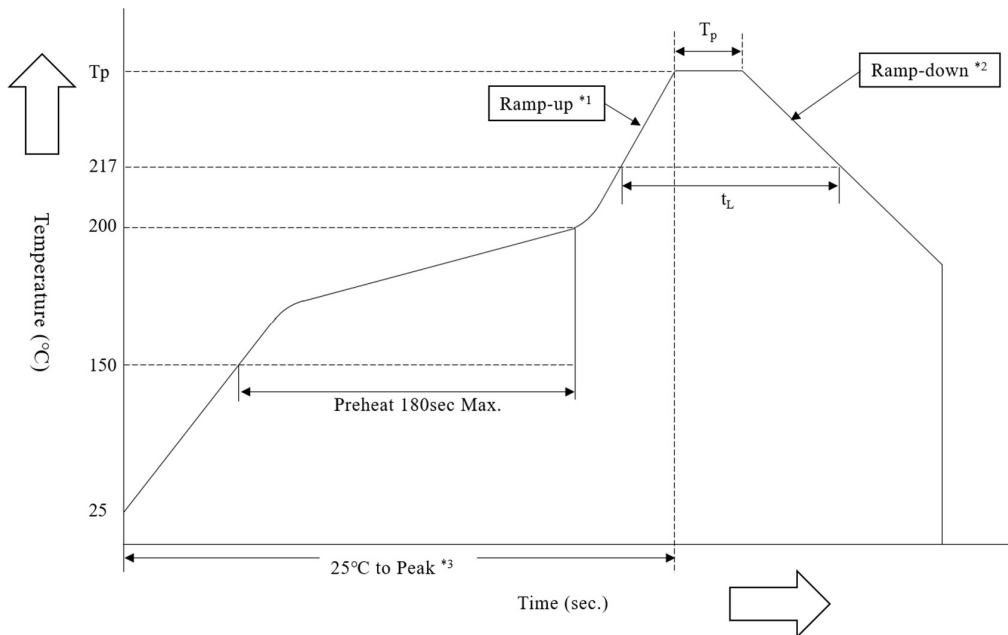
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- (2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force. so please discharge the capacitor using a 1 k Ω resistor.
- (3) Leakage current of the parts that have been stored for more than 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.



Size	Preheat	Time maintained above 217°C	T_p	Peak temp	Reflow number
$\Phi 4\sim\Phi 10$	150~200°C	60 sec Max	5 sec Max	250°C Max	2 Cycle allowed
$\Phi 12.5$	180 sec Max	30 sec Max		240°C Max	

*1 Average ramp-up rate is 3°C/sec. max.

*2 Ramp-down rate is 6°C/sec. max.

*3 Time from 25°C to peak temperature is 8 min max.

- 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.

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, sulfurous 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.

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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.

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◆ MARKING AND DATE CODE

8~12.5 Φ Trade mark Series Negative Polarity CTB 113 Code Rated Capacitance Rated Voltage 5~6.3 Φ Series Negative Polarity B 113 Code Rated Voltage Rated Capacitance 4 Φ Series Negative Polarity B 13 Code Rated Capacitance Rated Voltage																																																																							
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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)
□ □ □	□ □	□ □ □	□	□	□	□ □ □ □	□ □ □ □ □ □ □

(1) Series

Series	CTB	CTC	CTF	CES	CED	CEE	CHJ	CSN
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(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	4.0	5.0	6.3	8.0*	10.0	12.5
Description	2.0	2.2	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

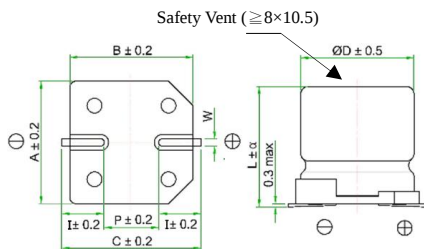
- Standard Series at 105°C
- Load life 1,000 to 2,000 hours at 105°C



SPECIFICATIONS

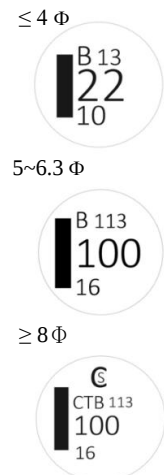
Item	Performance Characteristics										
Category Temperature Range	-55 ~ +105°C										
Working Voltage Range	4 ~ 100Vdc										
Capacitance Range	0.1 ~ 6,800 μF										
Capacitance Tolerance	±20% (at 25°C and 120Hz)										
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)		4	6.3	10	16	25	35	50	63	100
	tanδ(Max)	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	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)	Rated voltage (V)		4	6.3	10	16	25	35	50~63	100	(at 120Hz)
	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	
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.										
	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.										
	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	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
0865	8×6.5	8.0	6.5	0.3	8.3	8.3	8.8	3.3	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

MARKING

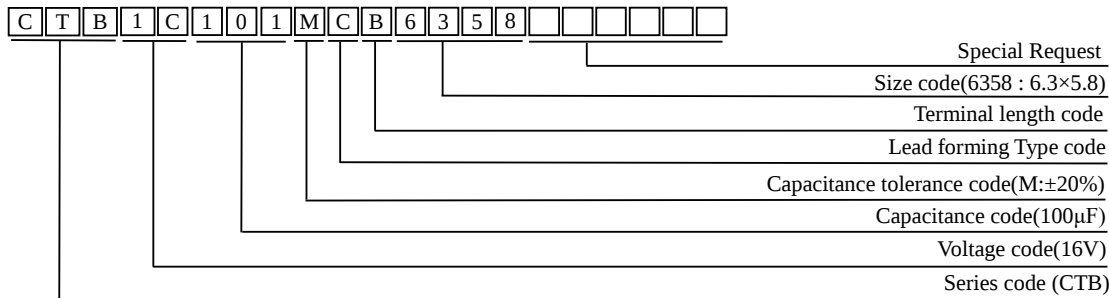


ALUMINUM ELECTROLYTIC CAPACITORS



CTB Series

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



◆ 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
6.3 (0J)	4700	12.5×13.5	600	CTB0G472MCB12D5
	6800	12.5×16	650	CTB0G682MCB1216
	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
10 (1A)	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
	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
16 (1C)	1000	10×10.5	315	CTB1A102MCB10A5
	1500	10×12.5	460	CTB1A152MCB10C5
	2200	12.5×13.5	680	CTB1A222MCB12D5
	33	6.3×5.8	40	CTB1C330MCB6358
	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
25 (1E)	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
	4.7	4×5.8	13	CTB1E4R7MCB0458
	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

CTB Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
25 (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	CTB1E152MCB1216
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	CTB1V102MCB1216
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 (mA rms/ 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	CTB1H471MCB1216
	0.1	4×5.8	0.7	CTB1JR10MCB0458
63 (1J)	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	CTB1J331MCB1216
	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
100 (2A)	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

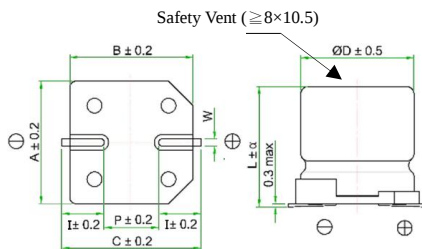
- Long life 2,000 to 5,000 hours at 105°C



SPECIFICATIONS

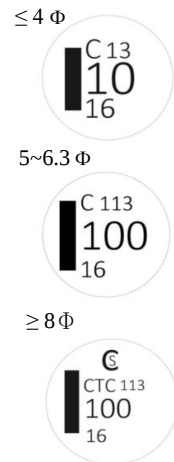
Item	Performance Characteristics									
Category Temperature Range	-55 ~ +105°C									
Working Voltage Range	6.3 ~ 100Vdc									
Capacitance Range	0.1 ~ 3,300 μF									
Capacitance Tolerance	±20% (at 25°C and 120Hz)									
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)		6.3	10	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	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)	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		
Endurance	(at 120Hz)									
	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.									
	Capacitance change		≦ ±30% of the initial value							
	Dissipation factor(tanδ)		≦ 300% of the specified value							
Shelf Life	Leakage current		≦ 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.									
	Capacitance change		≦ ±30% of the initial value							
	Dissipation factor(tanδ)		≦ 300% of the specified value							
Others	Leakage current		≦ 200% of the specified value							
	Conforms to JIS-C-5101-18-2 (1999)									

DIMENSIONS (mm)



Code	Size	ΦD	L	α	A	B	C	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
0865	8×6.5	8.0	6.5	0.3	8.3	8.3	8.8	3.3	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

MARKING

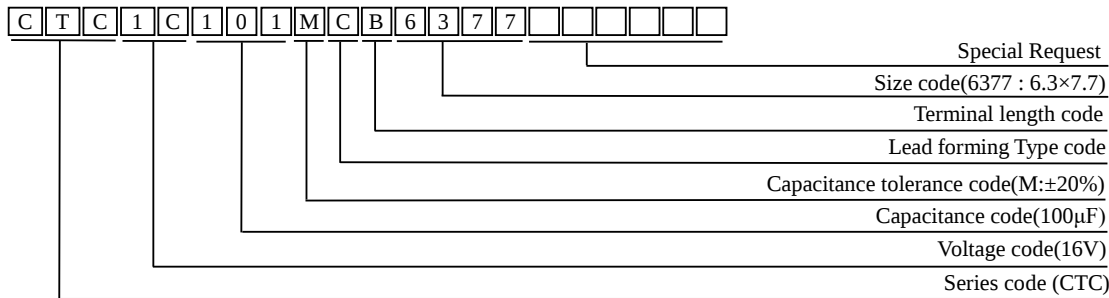


ALUMINUM ELECTROLYTIC CAPACITORS



CTC Series

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



◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mAmps/ 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
10 (1A)	3300	12.5×13.5	800	CTC0J332MCB12D5
	3300	12.5×16	850	CTC0J332MCB1216
	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
16 (1C)	2200	12.5×13.5	510	CTC1A222MCB12D5
	2200	12.5×16	750	CTC1A222MCB1216
	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 (mAmps/ 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
35 (1V)	1000	12.5×13.5	460	CTC1E102MCB12D5
	1500	12.5×16	700	CTC1E152MCB1216
	4.7	4×5.8	16	CTC1V477MCB0458
	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
50 (1H)	680	12.5×13.5	550	CTC1V681MCB12D5
	1000	12.5×16	600	CTC1V102MCB1216
	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

CTC Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA _{rms} /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
63 (1J)	330	12.5×16	600	CTC1H331MCB12I6
	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 (mA _{rms} /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

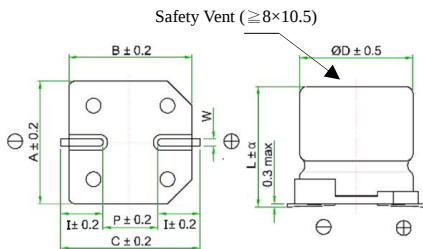
- High Voltage 160V~450V
- Long life 3,000~5,000 hours at 105°C



◆ SPECIFICATIONS

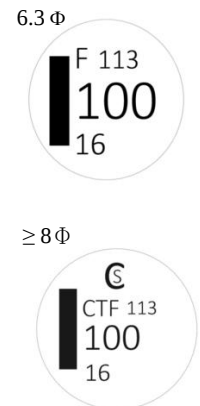
Item	Performance Characteristics																							
Category Temperature Range	-40 ~ +105℃																							
Working Voltage Range	160 ~ 450Vdc																							
Capacitance Range	2.2 ~ 47 μF																							
Capacitance Tolerance	±20% (at 25℃ and 120Hz)																							
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><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><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℃)/Z(+20℃)</td><td>3</td><td>3</td><td>3</td><td>6</td><td>6</td></tr><tr><td>Z(-40℃)/Z(+20℃)</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℃)/Z(+20℃)	3	3	3	6	6	Z(-40℃)/Z(+20℃)	6	6	6	10	10
	Rated voltage (V)	160	200	250	400	450																		
	Z(-25℃)/Z(+20℃)	3	3	3	6	6																		
Z(-40℃)/Z(+20℃)	6	6	6	10	10																			
(at 120Hz)																								
Endurance	The following specifications shall be satisfied when the capacitor are restored to 25℃ after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ 6.3 for 3,000 hours) at 105℃.																							
	<table><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℃ after exposing them for 1,000 hours at 105℃without voltage applied.																							
	<table><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	I	W	P
63A5	6.3×10.5	6.3	10.5	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
08C5	8×12.5	8.0	12.5	0.5	8.3	8.3	9.5	3.2	0.8~1.2	3.1
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
12I6	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

◆ MARKING



◆ **PART NUMBER SYSTEM (Example : 160V 6.8 μ F)**

Field	Length (bits)
Special Request	1
Size code(08A5 : 8×10.5)	2
Terminal length code	1
Lead forming Type code	1
Capacitance tolerance code(M:±20%)	1
Capacitance code(6.8μF)	2
Voltage code(160V)	1
Series code(CTF)	7

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
	47	12.5×16	260	CTF2C470MCB1216
200 (2D)	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
	33	12.5×16	220	CTF2D330MCB1216
250 (2E)	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 (mAmps/ 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	CTF2E220MCB1216
400 (2G)	2.2	6.3×10.5	30	CTF2G2R2MCB63A5
	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

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

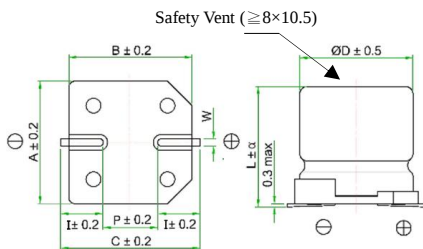
- Low Impedance
- Load life 1,000 to 2,000 hours at 105°C



SPECIFICATIONS

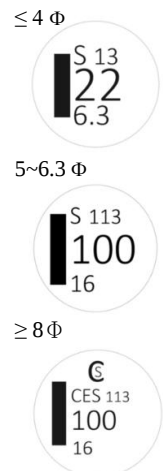
Item	Performance Characteristics							
Category Temperature Range	-55 ~ +105°C							
Working Voltage Range	6.3 ~ 50Vdc							
Capacitance Range	1 ~ 3,300 μF							
Capacitance Tolerance	±20% (at 25°C and 120Hz)							
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)		6.3	10	16	25	35	50
	tanδ(Max)	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)	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.							
	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-5101-18-2 (1999)							

DIMENSIONS (mm)



Code	Size	ΦD	L	α	A	B	C	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
0865	8×6.5	8.0	6.5	0.3	8.3	8.3	8.8	3.3	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

MARKING



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

Special Request

Size code(6377 : 6.3×7.7)

Terminal length code

Lead forming Type code

Capacitance tolerance code(M:±20%)

Capacitance code(100μF)

Voltage code(16V)

Series code (CES)

◆ 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
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	CES1C222MCB1216	
25 (1E)	4.7	4×5.8	3	60	CES1E4R7MCB0458
	6.8	4×5.8	3	60	CES1E6R8MCB0458
	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. (Ω _{max} / 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	CES1E152MCB12I6
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. (Ω _{max} / 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	CES1V102MCB12I6
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	CES1H471MCB12I6

◆ 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

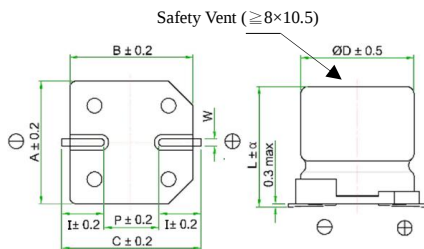
- Extra Low Impedance
- Load life 2,000 to 3,000 hours at 105°C



SPECIFICATIONS

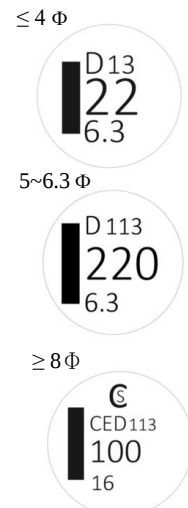
Item	Performance Characteristics							
Category Temperature Range	-55 ~ +105°C							
Working Voltage Range	6.3 ~ 50Vdc							
Capacitance Range	4.7 ~ 3,300 μF							
Capacitance Tolerance	±20% (at 25°C and 120Hz)							
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)		6.3	10	16	25	35	50
	tanδ(Max)	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)	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
Endurance	(at 120Hz)							
	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.							
	Capacitance change		≦ ±30% of the initial value					
	Dissipation factor(tanδ)		≦ 300% of the specified value					
Shelf Life	Leakage current		≦ 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.							
	Capacitance change		≦ ±30% of the initial value					
Others	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	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
0862	8×6.5	8.0	6.5	0.3	8.3	8.3	8.8	3.3	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

MARKING

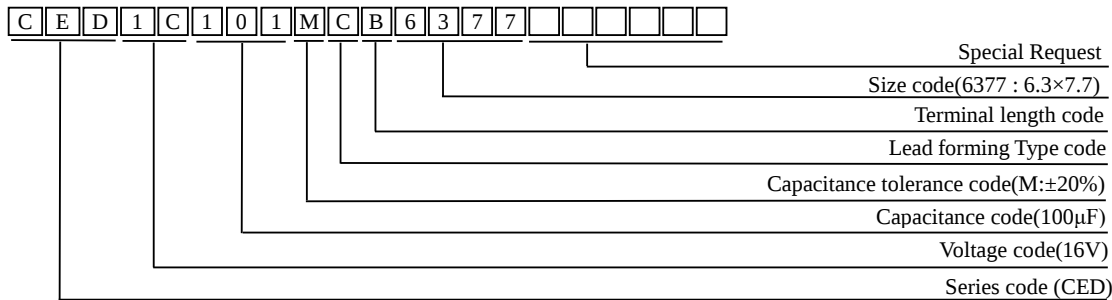


ALUMINUM ELECTROLYTIC CAPACITORS



CED Series

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



◆ 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
10 (1A)	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	CED0J332MCB1216
	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	CED1A222MCB1216
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
25 (1E)	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	CED1C102MCB1216
	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

CED Series

◆ 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
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	CED1V4R7MCB0458
	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 (mAmps/ 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	CED1H4R7MCB0458
50 (1H)	4.7	5×5.8	1.52	85	CED1H4R7MCB0558
	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

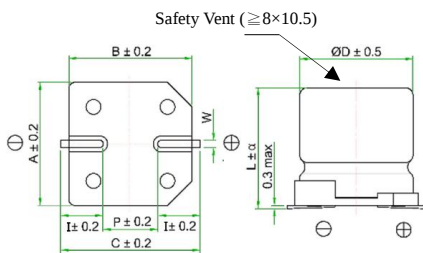
- Extra Low Impedance
- Load life 2,000 to 5,000 hours at 105°C



◆ SPECIFICATIONS

Item	Performance Characteristics																															
Category Temperature Range	-55 ~ +105°C																															
Working Voltage Range	6.3 ~ 100Vdc																															
Capacitance Range	3.3 ~ 3300 μF																															
Capacitance Tolerance	±20% (at 25°C and 120Hz)																															
Dissipation Factor (tanδ) (at 25°C, 120Hz)	<table><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></tr><tr><td rowspan="2">tanδ(Max)</td><td>Φ4 ~ Φ10</td><td>0.26</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.08</td><td>0.08</td><td>0.07</td></tr><tr><td>Φ12.5</td><td>0.26</td><td>0.19</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.10</td><td>0.08</td><td>0.08</td><td>0.07</td></tr></table> When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase.	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	tanδ(Max)	Φ4 ~ Φ10	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07	Φ12.5	0.26	0.19	0.18	0.16	0.14	0.10	0.08	0.08	0.07
Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100																							
tanδ(Max)	Φ4 ~ Φ10	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07																						
	Φ12.5	0.26	0.19	0.18	0.16	0.14	0.10	0.08	0.08	0.07																						
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><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></tr><tr><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><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-55°C)/Z(+20°C)</td><td>4</td><td>4</td><td>4</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	80	100	Z(-25°C)/Z(+20°C)	2	2	2	2	2	2	2	2	2	Z(-55°C)/Z(+20°C)	4	4	4	3	3	3	3	3	3	
Rated voltage (V)	6.3	10	16	25	35	50	63	80	100																							
Z(-25°C)/Z(+20°C)	2	2	2	2	2	2	2	2	2																							
Z(-55°C)/Z(+20°C)	4	4	4	3	3	3	3	3	3																							
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><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><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	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
0865	8×6.5	8.0	6.5	0.3	8.3	8.3	8.8	3.3	0.5~0.8	2.2
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

◆ MARKING

$\leq 4 \Phi$



5~6.3 Φ



$\geq 8 \Phi$



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

Diagram illustrating the marking code structure for the CEE1H101MCA08A5 series, showing the bit positions and their corresponding functions:

- Series code (CEE)
- Voltage code (50V)
- Capacitance code (100μF)
- Capacitance tolerance code (M:±20%)
- Lead forming Type code
- Terminal length code
- Size code (08A5: 8×10.5)
- Special Request

◆ STANDARD RATINGS

STANDARD RATINGS					
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	IMP.D. (Ωmax/ 20℃, 100kHz)	Rated Ripple current (mA rms/ 105℃, 100KHz)	Part Number
6.3 (0J)	22	4×5.8	1.35	90	CEE0J220MCB0458
	33	4×5.8	1.35	90	CEE0J330MCB0458
	33	5×5.8	0.7	160	CEE0J330MCB0558
	47	4×5.8	1.35	90	CEE0J470MCB0458
	47	5×5.8	0.7	160	CEE0J470MCB0558
	56	5×5.8	0.7	160	CEE0J560MCB0558
	68	5×5.8	0.7	160	CEE0J680MCB0558
	68	6.3×5.8	0.36	240	CEE0J680MCB6358
	100	5×5.8	0.7	160	CEE0J101MCB0558
	100	6.3×5.8	0.36	240	CEE0J101MCB6358
	150	6.3×5.8	0.36	240	CEE0J151MCB6358
	220	6.3×5.8	0.36	240	CEE0J221MCB6358
	220	6.3×7.7	0.26	300	CEE0J221MCB6377
	220	8×6.5	0.26	300	CEE0J221MCB0865
	330	6.3×7.7	0.26	300	CEE0J331MCB6377
	330	8×6.5	0.26	300	CEE0J331MCB0865
	470	8×10.5	0.16	600	CEE0J471MCB08A5
	680	8×10.5	0.16	600	CEE0J681MCB08A5
	680	10×10.5	0.08	850	CEE0J681MCB10A5
	1000	8×10.5	0.16	600	CEE0J102MCB08A5
	1000	10×10.5	0.08	850	CEE0J102MCB10A5
	1500	10×10.5	0.08	850	CEE0J152MCB10A5
	1500	10×12.5	0.07	950	CEE0J152MCB10C5
	2200	12.5×13.5	0.06	1100	CEE0J222MCB12D5
	3300	12.5×16	0.055	1200	CEE0J332MCB1216
10 (1A)	22	4×5.8	1.35	90	CEE1A220MCB0458
	33	4×5.8	1.35	90	CEE1A330MCB0458
	33	5×5.8	0.7	160	CEE1A330MCB0558
	47	5×5.8	0.7	160	CEE1A470MCB0558
	47	6.3×5.8	0.36	240	CEE1A470MCB6358
	56	6.3×5.8	0.36	240	CEE1A560MCB6358
	68	6.3×5.8	0.36	240	CEE1A680MCB6358
	100	6.3×5.8	0.36	240	CEE1A101MCB6358
	100	6.3×7.7	0.26	300	CEE1A101MCB6377
	150	6.3×7.7	0.26	300	CEE1A151MCB6377
	220	6.3×5.8	0.36	240	CEE1A221MCB6358
	220	6.3×7.7	0.26	300	CEE1A221MCB6377
	220	8×6.5	0.26	300	CEE1A221MCB0865
	330	8×10.5	0.16	600	CEE1A331MCB08A5
	330	10×10.5	0.08	850	CEE1A331MCB10A5
	470	8×10.5	0.16	600	CEE1A471MCB08A5
	470	10×10.5	0.08	850	CEE1A471MCB10A5
	680	10×10.5	0.08	850	CEE1A681MCB10A5
	1000	10×10.5	0.08	850	CEE1A102MCB10A5
	1000	10×12.5	0.07	950	CEE1A102MCB10C5

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	IMP.D. (Ω _{max} / 20℃, 100kHz)	Rated Ripple current (mAmps/ 105℃, 100KHz)	Part Number
10 (1A)	1500	12.5×13.5	0.06	1100	CEE1A152MCB12D5
	2200	12.5×16	0.055	1200	CEE1A222MCB1216
16 (1C)	10	4×5.8	1.35	90	CEE1C100MCB0458
	15	4×5.8	1.35	90	CEE1C150MCB0458
	22	4×5.8	1.35	90	CEE1C220MCB0458
	22	5×5.8	0.7	160	CEE1C220MCB0558
	33	5×5.8	0.7	160	CEE1C330MCB0558
	33	6.3×5.8	0.36	240	CEE1C330MCB6358
	47	5×5.8	0.7	160	CEE1C470MCB0558
	47	6.3×5.8	0.36	240	CEE1C470MCB6358
	56	6.3×5.8	0.36	240	CEE1C560MCB6358
	68	6.3×5.8	0.36	240	CEE1C680MCB6358
	68	6.3×7.7	0.26	300	CEE1C680MCB6377
	100	6.3×5.8	0.36	240	CEE1C101MCB6358
	100	6.3×7.7	0.26	300	CEE1C101MCB6377
	150	6.3×7.7	0.26	300	CEE1C151MCB6377
	220	6.3×7.7	0.26	300	CEE1C221MCB6377
	220	8×10.5	0.16	600	CEE1C221MCB08A5
	330	8×10.5	0.16	600	CEE1C331MCB08A5
	330	10×10.5	0.08	850	CEE1C331MCB10A5
	470	8×10.5	0.16	600	CEE1C471MCB08A5
	470	10×10.5	0.08	850	CEE1C471MCB10A5
	680	10×10.5	0.08	850	CEE1C681MCB10A5
	680	10×12.5	0.07	950	CEE1C681MCB10C5
1000	12.5×13.5	0.06	1100	CEE1C102MCB12D5	
1000	12.5×16	0.055	1200	CEE1C102MCB1216	
25 (1E)	10	4×5.8	1.35	90	CEE1E100MCB0458
	15	5×5.8	0.7	160	CEE1E150MCB0558
	22	5×5.8	0.7	160	CEE1E220MCB0558
	22	6.3×5.8	0.36	240	CEE1E220MCB6358
	33	5×5.8	0.7	160	CEE1E330MCB0558
	33	6.3×5.8	0.36	240	CEE1E330MCB6358
	47	6.3×5.8	0.36	240	CEE1E470MCB6358
	47	6.3×7.7	0.26	300	CEE1E470MCB6377
	47	8×6.5	0.26	300	CEE1E470MCB0865
	47	8×10.5	0.26	300	CEE1E470MCB08A5
	56	6.3×5.8	0.36	240	CEE1E560MCB6358
	56	6.3×7.7	0.26	300	CEE1E560MCB6377
	68	6.3×7.7	0.26	300	CEE1E680MCB6377
	100	6.3×7.7	0.26	300	CEE1E101MCB6377
	100	8×6.5	0.26	300	CEE1E101MCB0865
	100	8×10.5	0.26	300	CEE1E101MCB08A5
	150	6.3×7.7	0.26	300	CEE1E151MCB6377
	150	8×10.5	0.16	600	CEE1E151MCB08A5
	220	8×10.5	0.16	600	CEE1E221MCB08A5

CEE Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	IMPD. (Ωmax/ 20℃, 100kHz)	Rated Ripple current (mA _{rms} / 105℃, 100kHz)	Part Number
25 (1E)	330	8×10.5	0.16	600	CEE1E331MCB08A5
	330	10×10.5	0.08	850	CEE1E331MCB10A5
	470	10×10.5	0.08	850	CEE1E471MCB10A5
	470	10×12.5	0.07	950	CEE1E471MCB10C5
	680	12.5×13.5	0.06	1100	CEE1E681MCB12D5
	1000	12.5×16	0.055	1200	CEE1E102MCB1216
35 (1V)	4.7	4×5.8	1.35	90	CEE1V4R7MCB0458
	10	4×5.8	1.35	90	CEE1V100MCB0458
	10	5×5.8	0.7	160	CEE1V100MCB0558
	15	5×5.8	0.7	160	CEE1V150MCB0558
	22	5×5.8	0.7	160	CEE1V220MCB0558
	22	6.3×5.8	0.36	240	CEE1V220MCB6358
	33	6.3×5.8	0.36	240	CEE1V330MCB6358
	33	8×6.5	0.26	300	CEE1V330MCB0865
	47	6.3×5.8	0.36	240	CEE1V470MCB6358
	47	6.3×7.7	0.26	300	CEE1V470MCB6377
	47	8×6.5	0.26	300	CEE1V470MCB0865
	56	6.3×7.7	0.26	300	CEE1V560MCB6377
	68	6.3×7.7	0.26	300	CEE1V680MCB6377
	100	6.3×7.7	0.26	300	CEE1V101MCB6377
	100	8×10.5	0.16	600	CEE1V101MCB08A5
	150	8×10.5	0.16	600	CEE1V151MCB08A5
	150	10×10.5	0.08	850	CEE1V151MCB10A5
	220	8×10.5	0.16	600	CEE1V221MCB08A5
	220	10×10.5	0.08	850	CEE1V221MCB10A5
	330	10×10.5	0.08	850	CEE1V331MCB10A5
	470	10×12.5	0.07	950	CEE1V471MCB10C5
	470	12.5×13.5	0.06	1100	CEE1V471MCB12D5
	680	12.5×16	0.055	1200	CEE1V681MCB1216
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

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	IMPD. (Ωmax/ 20℃, 100kHz)	Rated Ripple current (mA _{rms} / 105℃, 100kHz)	Part Number
50 (1H)	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
	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
80 (1K)	220	12.5×13.5	0.16	800	CEE1J221MCB12D5
	3.3	5×5.8	5	25	CEE1K3R3MCB0558
	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
100 (2A)	150	12.5×13.5	0.32	500	CEE1K151MCB12D5
	220	12.5×16	0.26	550	CEE1K221MCB1216
	10	8×10.5	1.3	130	CEE2A100MCB08A5
	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

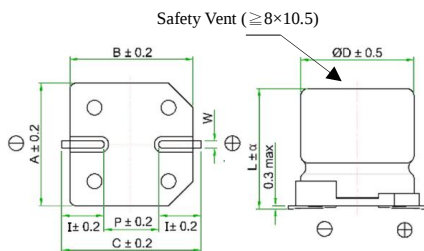
- High temperature at 125°C
- Load life 1,000 to 5,000 hours



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><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><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	(at 120Hz)	
	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																																									
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.																																															
	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.																																															
	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)																																															

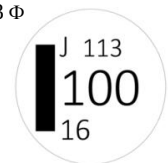
DIMENSIONS (mm)



Code	Size	ΦD	L	α	A	B	C	I	W	P
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1
08A5	8×10.5	8.0	10.5	0.5	8.3	8.3	9.1	3.0	0.8~1.2	3.1
10A5	10×10.5	10.0	10.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
10C5	10×12.5	10.0	12.5	0.5	10.3	10.3	11.0	3.2	0.8~1.2	4.6
12D5	12.5×13.5	12.5	13.5	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6
1216	12.5×16	12.5	16.0	1.0	12.8	12.8	13.8	4.6	0.8~1.2	4.6

MARKING

6.3 Φ



$\geq 8 \Phi$



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

Special Request

Size code(08A5 : 8×10.5)

Terminal length code

Lead forming Type code

Capacitance tolerance code(M:±20%)

Capacitance code(100μF)

Voltage code(16V)

Series code (CHJ)

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
50 (1H)	10	6.3×5.8	3.3	38	CHJ1H100MCB6358
	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
63 (1J)	330	12.5×16	0.18	700	CHJ1H331MCB12I6
	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
100 (2A)	220	12.5×16	0.20	600	CHJ1J221MCB12I6
	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 (mAmps/ 125°C, 120Hz)	Part Number
400 (2G)	4.7	12.5×13.5	65	CHJ2G4R7MCB12D5
450 (2W)	3.3	12.5×16	70	CHJ2W3R3MCB1216

99

ALUMINUM ELECTROLYTIC CAPACITORS



CSN Series

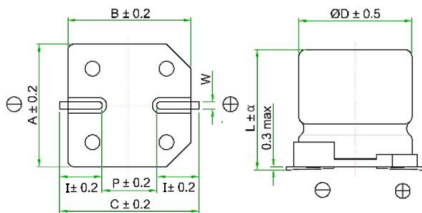
- Bi-polarized with temperature range at -40 to 105°C
- Load life 1,000 hours at 105°C



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><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><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> (at 120Hz)							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																						
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><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><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	I	W	P
0458	4×5.8	4.0	5.8	0.2	4.3	4.3	5.0	2.0	0.5~0.8	1.0
0558	5×5.8	5.0	5.8	0.2	5.3	5.3	5.9	2.2	0.5~0.8	1.5
6358	6.3×5.8	6.3	5.8	0.2	6.6	6.6	7.3	2.6	0.5~0.8	2.1
6377	6.3×7.7	6.3	7.7	0.3	6.6	6.6	7.3	2.6	0.5~0.8	2.1

MARKING

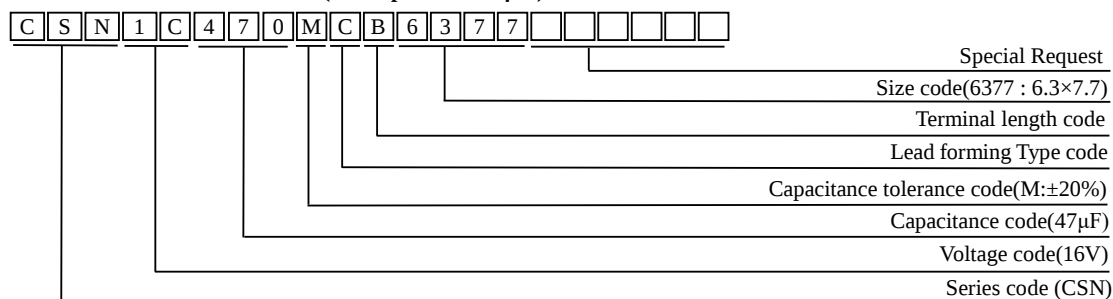
≤ 4 Φ



5~6.3 Φ



◆ **PART NUMBER SYSTEM (Example : 16V 47 μ F)**



WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA _{rms} /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
	100	6.3×7.7	85	CSN1A101MCB6377
16 (1C)	4.7	4×5.8	12	CSN1C4R7MCB0458
	10	5×5.8	23	CSN1C100MCB0558
	22	6.3×5.8	37	CSN1C220MCB6358
	33	6.3×5.8	49	CSN1C330MCB6358
	47	6.3×7.7	75	CSN1C470MCB6377
	100	6.3×7.7	110	CSN1C101MCB6377
25 (1E)	3.3	5×5.8	12	CSN1E3R3MCB0558
	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 (mA rms/ 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

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	3A	2C	2Z	2D	2P	2E	2V	2G	2S	2W
WV	6.3	10	16	25	30	35	50	63	80	100	120	160	180	200	220	250	350	400	420	450
Code	2B	2H	2L	2J																
WV	475	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) 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

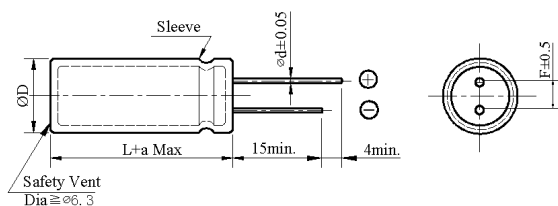
(8) Special Request

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	---

Two electrolytic capacitors are shown side-by-side. Each capacitor is black with two silver leads extending from the right. The text '47µF' and '35V' is printed on the top half of each capacitor.

- ## ◆ SPECIFICATIONS

◆ **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 22 μ F)

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

Special Request

Size code(0507 : 5×7)

Lead length code

Lead forming Type codeCapacitance tolerance code(M: $\pm 20\%$)

Capacitance code (22μF)

Voltage code(35V)

Series code(SS)

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

SS-H Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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℃, 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

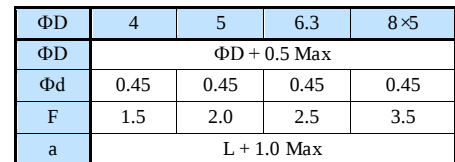
◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

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

Two electrolytic capacitors are shown. Each is a black, rectangular component with two long, thin metal leads extending from the bottom. The top surface of each capacitor is printed with "100µF" and "16V" in white.

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



S	B	1	H	R	4	7	M	N	N	0	4	0	5					
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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
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
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
50 (1H)	47	8×5	68	SB1V470MNN0805
	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 (mAmps/ 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
	220	8×5	92	SB1A221MNN0805H
16 (1C)	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 (mAmps/ 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
	4.7	4×5	15	SB1V470MNN0405H
35 (1V)	10	5×5	22	SB1V100MNN0505H
	22	6.3×5	38	SB1V220MNN6305H
	33	6.3×5	45	SB1V330MNN6305H
	47	8×5	60	SB1V470MNN0805H
	0.1	4×5	0.8	SB1HR10MNN0405H
	0.22	4×5	1.6	SB1HR22MNN0405H
50 (1H)	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

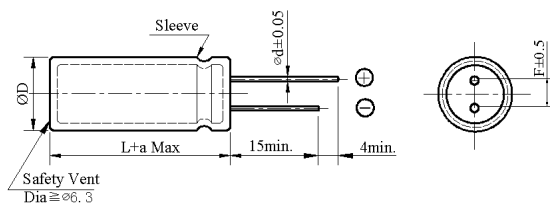
Frequency Multipliers

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

Two electrolytic capacitors are shown. Each capacitor is cylindrical with a black body and a silver top. They are labeled with "47µF" and "35V" in white text. Two long, thin silver leads extend from the bottom of each capacitor.

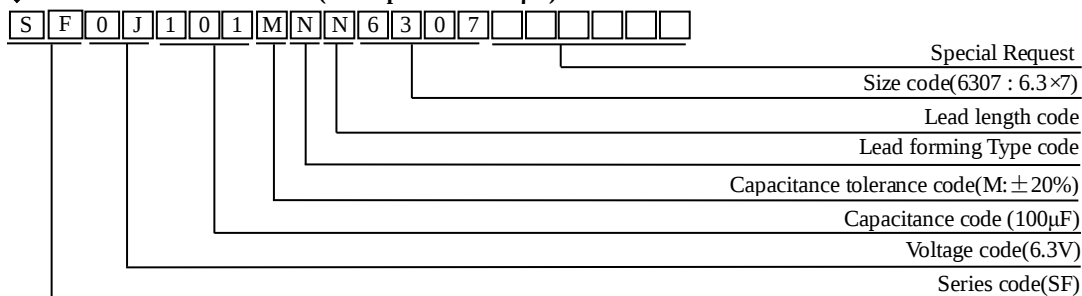
- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



ΦD	4	5	6.3	8
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 100 μ F)**



SF 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	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
16 (1C)	220	8×7	130	SF1A221MNN0807
	6.8	4×7	16	SF1C688MNN0407
	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
25 (1E)	47	6.3×7	67	SF1C470MNN6307
	68	6.3×7	70	SF1C680MNN6307
	68	8×7	78	SF1C680MNN0807
	100	8×7	110	SF1C101MNN0807
	4.7	4×7	17	SF1E4R7MNN0407
	6.8	4×7	19	SF1E6R8MNN0407
	10	4×7	28	SF1E100MNN0407
35 (1V)	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
35 (1V)	100	8×7	115	SF1E101MNN0807
	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 (mA _{rms} /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	SF1HR10MNN0407
	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
63 (1J)	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
63 (1J)	10	6.3×7	38	SF1H100MNN6307
	15	6.3×7	52	SF1H150MNN6307
	22	8×7	63	SF1H220MNN0807
	33	8×7	78	SF1H330MNN0807
	0.1	4×7	1.5	SF1JR10MNN0407
	0.15	4×7	1.8	SF1JR15MNN0407
	0.22	4×7	2.5	SF1JR22MNN0407
63 (1J)	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
63 (1J)	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

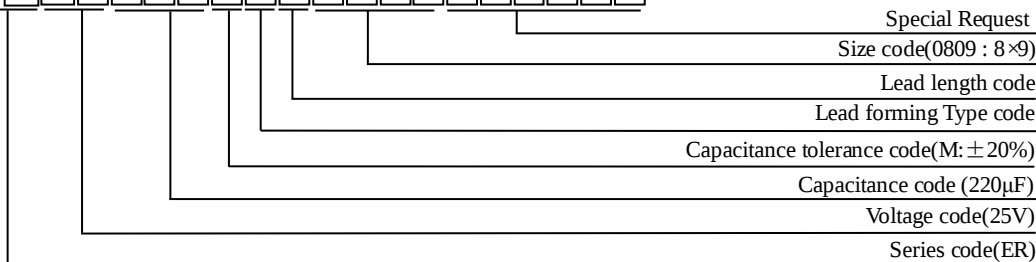
- **Low impedance, high ripple current and miniature size with 7 to 9 mm height**



Item	Performance Characteristics												
Category Temperature Range	-40 ~ +105℃												
Working Voltage Range	6.3 ~ 35Vdc												
Capacitance Range	33 ~ 470 μF												
Capacitance Tolerance	±20% (at 25℃ and 120Hz)												
Dissipation Factor (tanδ) (at 25℃, 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> When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase.	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								
Leakage Current	I=0.01CV or 3 μA, 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></tr> <tr> <td>Z(-40℃)/Z(+20℃)</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℃)/Z(+20℃)	8	6	6	5	4
Rated voltage (V)	6.3	10	16	25	35								
Z(-40℃)/Z(+20℃)	8	6	6	5	4								
Endurance	The following requirements shall be satisfied when the capacitor are restored to 25℃ after the rated voltage applied for 3,000 hours at 105℃. <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℃ after exposing them for 500 hours at 105℃ 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)												

ΦD	8×7	8×9
ΦD	$\Phi D + 0.5 \text{ Max}$	
$d\Phi$	0.45	0.50
F	3.5	
a	L+ 1.0 Max	

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

◆ STANDARD RATINGS

WV (Vdc)	Cap (μ F)	Case Size (mm) $\Phi D \times L$	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
25 (1E)	470	8×9	0.11	535	ER1C471MNN0809
	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
30 (1F)	180	8×9	0.12	760	ER1E181MNN0809
	220	8×9	0.1	800	ER1E221MNN0809
	150	8×7	0.13	680	ER1F151MNN0807
	180	8×9	0.11	765	ER1F181MNN0809
35 (1V)	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 $\leq$ 200K
6.3 ~ 35	33 ~ 82	0.50	0.80	0.98	1.00
	100 ~ 470	0.55	0.85	0.95	1.00

A black electrolytic capacitor with two leads. The top lead is longer than the bottom lead. The text "390µF" and "25V" is printed on the top lead. The text "390µF" is printed on the bottom lead.

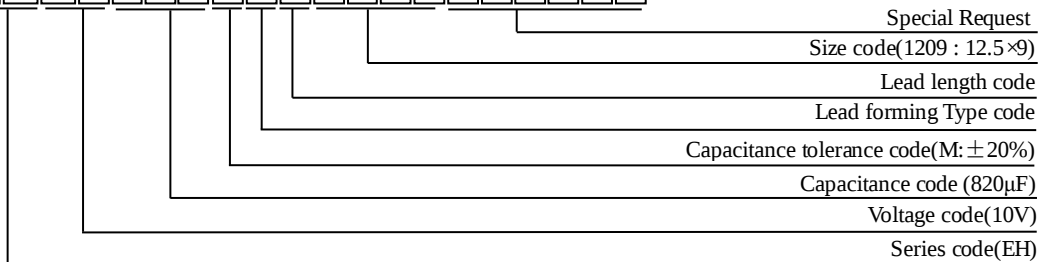
- Low impedance and high ripple current
- Load life 3,000~4,000 hours at 105℃

Item	Performance Characteristics				
Category Temperature Range	-55~ +105℃				
Working Voltage Range	10 ~ 35Vdc				
Capacitance Range	150 ~820 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	10	16	25	35
	tanδ(Max)	0.19	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	I=0.01CV or 3 μA, 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)	10	16	25	35
	Z(-55℃)/Z(+20℃)	3	3	3	3
(at 120Hz)					
Endurance	The following requirements shall be satisfied when the capacitor are restored to 25℃ after the rated voltage applied for 3,000 to 4,000 hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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)				

Technical drawing of a sleeve and pin assembly. The sleeve has an outer diameter $\varnothing D$ and a length $L+a \text{ Max}$. It features a safety vent with a diameter $\text{Dia} \geq \varnothing 6.3$. The pin has a diameter $\varnothing 14 \pm 0.05$ and a length of 15 min. . The assembly is shown in side and end views.

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	

E	H	1	A	8	2	1	M	N	N	1	2	0	9					
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EH Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA _{rms} /105℃, 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℃, 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

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

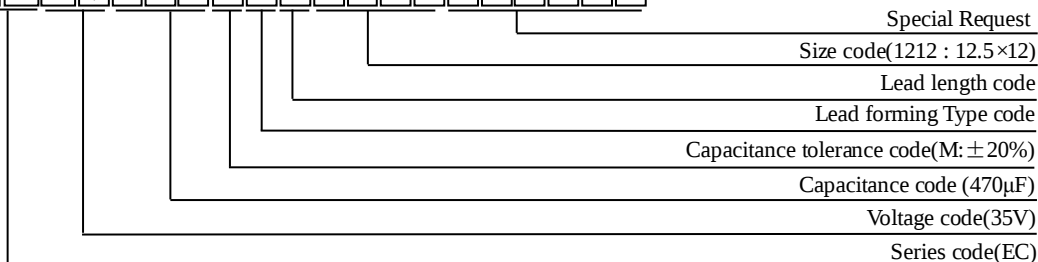


Item	Performance Characteristics												
Category Temperature Range	-40~ +105℃												
Working Voltage Range	10~100Vdc												
Capacitance Range	68~1800 μF												
Capacitance Tolerance	±20% (at 25℃ and 120Hz)												
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table border="1"> <tr> <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> When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase.	Rated Voltage (V)	10	16	25	35	100	tanδ(Max)	0.19	0.16	0.14	0.12	0.08
Rated Voltage (V)	10	16	25	35	100								
tanδ(Max)	0.19	0.16	0.14	0.12	0.08								
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>10</td><td>16</td><td>25</td><td>35</td><td>100</td></tr> <tr> <td>Z(-40℃)/Z(+20℃)</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℃)/Z(+20℃)	6	6	5	4	3
Rated voltage (V)	10	16	25	35	100								
Z(-40℃)/Z(+20℃)	6	6	5	4	3								
Endurance	The following requirements shall be satisfied when the capacitor are restored to 25℃ after the rated voltage applied for 5,000 hours at 105℃. <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℃ after exposing them for 500 hours at 105℃ 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)												

Technical drawing of a sleeve. The drawing includes a side view and a cross-sectional view. The side view shows a cylindrical sleeve with a diameter of $\varnothing D$. The length is divided into three sections: a main body of length $L+a$ (maximum), a middle section of length 15 min., and a final section of length 4 min. A sleeve is shown inserted into the middle section. The sleeve has a diameter of $\varnothing 1 \pm 0.05$. The cross-sectional view shows a circular sleeve with a diameter of $F \pm 0.5$. A safety vent is indicated at the bottom left with the text "Safety Vent Dia $\geq \varnothing 6.3$ ".

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

E	C	1	V	4	7	1	M	N	N	1	2	1	2						
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EC Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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℃, 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

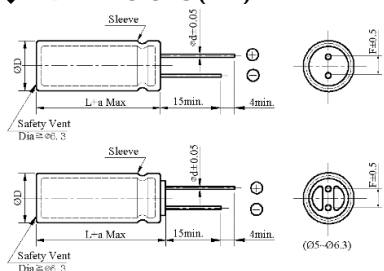
Frequency Multipliers

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

Three electrolytic capacitors are shown, each labeled with "10µF" and "25V". They are cylindrical components with two leads extending from the bottom.

- ## ◆ SPECIFICATIONS

◆ **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				$\leq 35 L + 1.5 \text{Max}$ $\geq 40 L + 2.0 \text{Max}$	L + 1.5 Max	

◆ **PART NUMBER SYSTEM(Example : 250V 2.2 μ F)**

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

Special Request
Size code(10C5 : 10×12.5)
Lead length code
Lead forming Type code
Resistance tolerance code(M: ±20%)
Capacitance code (2.2μF)
Voltage code(250V)
Series code(ND)

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	ND1V47MNN0511
	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
160 (2C)	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
200 (2D)	100	18×31.5	275	ND2C101MNN18N3
	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
250 (2E)	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

ND-H Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
16 (1C)	2200	12.5×25	500	ND1A222MNN1225H
	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
25 (1E)	470	10×16	265	ND1C471MNN1016H
	1000	12.5×20	475	ND1C102MNN1220H
	2200	16×25	625	ND1C222MNN1625H
	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
35 (1V)	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
	4.7	5×11	24	ND1V47R7MNN0511H
	10	5×11	30	ND1V100MNN0511H
	22	6.3×11	44	ND1V220MNN6311H
50 (1H)	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
	0.47	5×11	5	ND1HR47MNN0511H
50 (1H)	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
50 (1H)	100	10×16	150	ND1H101MNN1016H

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	3.3	5×11	20	ND1J3R3MNN0511H
63 (1J)	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
100 (2A)	470	16×35.5	455	ND1J471MNN16P1H
	0.47	5×11	10	ND2AR47MNN0511H
	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
160 (2C)	33	10×16	95	ND2A330MNN1016H
	47	12.5×20	173	ND2A470MNN1220H
	100	12.5×25	205	ND2A101MNN1225H
	220	16×31.5	365	ND2A221MNN16N3H
	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
200 (2D)	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
	0.47	6.3×11	6	ND2DR47MNN6311H
	1	6.3×11	8	ND2D010MNN6311H
250 (2E)	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
	0.47	6.3×11	6	ND2ER47MNN6311H
250 (2E)	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

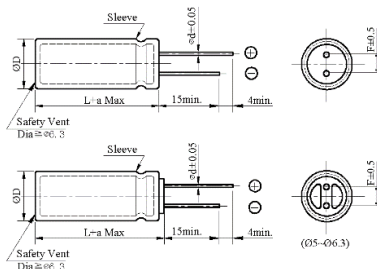
- Low leakage current at 85°C & 105°C



SPECIFICATIONS

Item	Performance Characteristics																													
Series	LB					LB-H																								
Category Temperature Range	-40 ~ +85℃					-40 ~ +105℃																								
Working Voltage Range	6.3 ~ 100 Vdc																													
Capacitance Range	0.47 ~ 4,700 μF																													
Capacitance Tolerance	±20% (at 25℃ and 120Hz)																													
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><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></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>0.10</td><td>0.10</td><td>0.10</td></tr></table>										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
	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)	<table><tr><td>Rated voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50~100</td><td colspan="3" rowspan="2">(at 120Hz)</td></tr><tr><td>Z(-40℃)/Z(+20℃)</td><td>12</td><td>10</td><td>8</td><td>5</td><td>4</td><td>3</td></tr></table>										Rated voltage (V)	6.3	10	16	25	35	50~100	(at 120Hz)			Z(-40℃)/Z(+20℃)	12	10	8	5	4	3			
Rated voltage (V)	6.3	10	16	25	35	50~100	(at 120Hz)																							
Z(-40℃)/Z(+20℃)	12	10	8	5	4	3																								
Endurance	The following requirements shall be satisfied when the capacitor are restored to 25℃ after the rated voltage applied for 2,000 hours at 85℃ (LB) or 1,000 hours at 105℃ (LB-H). <table><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℃ after exposing them for 1,000 hours at 85℃ (LB) or 500 hours at 105℃ (LB-H) without voltage applied. <table><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)



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 : 80V 10 μ F)

L	B	1	K	1	0	0	M	N	N	6	3	1	1						
														Special Request					
														Size code(6311 : 6.3×11)					
														Lead length code					
														Lead forming Type code					
														Capacitance tolerance code(M: $\pm 20\%$)					
														Capacitance code (10 μ F)					
														Voltage code(80V)					
														Series code(LB)					

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	LB1H2R2MNN0511
	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
63 (1J)	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
	2.2	5×11	15	LB1J2R2MNN0511
	3.3	5×11	24	LB1J3R3MNN0511
80 (1K)	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
80 (1K)	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
	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
80 (1K)	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

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	LB1H010MNN0511H
	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
63 (1J)	1000	16×31.5	1020	LB1H102MNN16N3H
	1500	18×40	1320	LB1H152MNN1840H
	2200	18×40	1580	LB1H222MNN1840H
	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
80 (1K)	330	12.5×25	550	LB1J331MNN1225H
	470	16×25	725	LB1J471MNN1625H
	680	16×31.5	1000	LB1J681MNN16N3H
	1000	18×35.5	1220	LB1J102MNN18P1H
	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

LB-H Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	LB2A047MNN0511H
	1	5×11	15	LB2A010MNN0511H
	2.2	5×11	22	LB2A022MNN0511H
	3.3	5×11	27	LB2A033MNN0511H
	4.7	6.3×11	36	LB2A047MNN06311H

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 120Hz)	Part Number
100 (2A)	6.8	6.3×11	45	LB2A068MNN06311H
	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

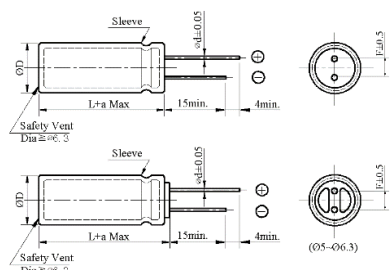
◆ RIPPLE CURRENT MULTIPLIERS

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

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



ΦD	5	6.3	8	10	12.5	16	18
ΦD	$\Phi D + 0.5 \text{ Max}$						
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				$\leq 35 \text{ L}+1.5 \text{ Max}$ $\geq 40 \text{ L}+2.0 \text{ Max}$		L+1.5 Max

◆ **PART NUMBER SYSTEM**(Example : 35V 150 μ F)

S	M	1	V	1	5	1	M	N	N	0	8	B	5						
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Series code(SM)

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
6.3 (0J)	22	5×11	65	SM0J220MNN0511
	33	5×11	80	SM0J330MNN0511
	47	5×11	95	SM0J470MNN0511
	68	5×11	100	SM0J680MNN0511
	100	5×11	134	SM0J101MNN0511
	150	5×11	150	SM0J151MNN0511
	220	5×11	220	SM0J221MNN0511
	330	6.3×11	280	SM0J331MNN6311
	470	6.3×11	360	SM0J471MNN6311
	680	8×11.5	503	SM0J681MNN08B5
	1000	8×11.5	590	SM0J102MNN08B5
	2200	10×16	930	SM0J222MNN1016
	3300	10×20	1230	SM0J332MNN1020
	4700	12.5×20	1520	SM0J472MNN1220
	6800	12.5×25	1920	SM0J682MNN1225
	10000	16×25	2370	SM0J103MNN1625
10 (1A)	15000	16×35.5	2590	SM0J153MNN16P1
	22000	18×35.5	3220	SM0J223MNN18P1
	22	5×11	65	SM1A220MNN0511
	33	5×11	85	SM1A330MNN0511
	47	5×11	100	SM1A470MNN0511
	68	5×11	110	SM1A680MNN0511
	100	5×11	150	SM1A101MNN0511
	150	5×11	160	SM1A151MNN0511
	220	5×11	220	SM1A221MNN0511
	330	6.3×11	300	SM1A331MNN6311
	470	6.3×11	360	SM1A471MNN6311
	680	8×11.5	580	SM1A681MNN08B5
	1000	10×12.5	650	SM1A102MNN10C5
	2200	10×16	1090	SM1A222MNN1016
	3300	12.5×20	1450	SM1A332MNN1220
	4700	12.5×25	1790	SM1A472MNN1225
16 (1C)	6800	16×25	2250	SM1A682MNN1625
	10000	16×31.5	2550	SM1A103MNN16N3
	15000	18×35.5	2880	SM1A153MNN18P1
	22000	18×40	3400	SM1A223MNN1840
	10	5×11	40	SM1C100MNN0511
	22	5×11	75	SM1C220MNN0511
	33	5×11	90	SM1C330MNN0511
	47	5×11	115	SM1C470MNN0511
	68	5×11	120	SM1C680MNN0511
	100	5×11	175	SM1C101MNN0511
	150	6.3×11	210	SM1C151MNN6311
	220	6.3×11	280	SM1C221MNN6311
	330	8×11.5	370	SM1C331MNN08B5
	470	8×11.5	460	SM1C471MNN08B5
	680	10×12.5	690	SM1C681MNN10C5
	1000	10×12.5	720	SM1C102MNN10C5
25 (1E)	2200	12.5×20	1555	SM1C222MNN1220
	3300	12.5×25	1990	SM1C332MNN1225
	4700	16×25	2100	SM1C472MNN1625
	6800	16×31.5	2280	SM1C682MNN16N3
	10000	18×35.5	2750	SM1C103MNN18P1
	4.7	5×11	30	SM1E470MNN0511
	10	5×11	55	SM1E100MNN0511
	22	5×11	80	SM1E220MNN0511
	33	5×11	95	SM1E330MNN0511
	47	5×11	120	SM1E470MNN0511

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 85°C, 120Hz)	Part Number
25 (1E)	68	6.3×11	145	SM1E680MNN6311
	100	6.3×11	190	SM1E101MNN6311
	150	6.3×11	210	SM1E151MNN6311
	220	8×11.5	370	SM1E221MNN08B5
	330	8×11.5	440	SM1E331MNN08B5
	470	10×12.5	550	SM1E471MNN10C5
	680	10×16	605	SM1E681MNN1016
	1000	10×20	930	SM1E102MNN1020
	2200	12.5×25	1550	SM1E222MNN1225
	3300	16×25	1980	SM1E332MNN1625
	4700	16×31.5	2140	SM1E472MNN16N3
	6800	16×35.5	2600	SM1E682MNN16P1
35 (1V)	4.7	5×11	35	SM1V470MNN0511
	10	5×11	60	SM1V100MNN0511
	22	5×11	90	SM1V220MNN0511
	33	5×11	110	SM1V330MNN0511
	47	5×11	135	SM1V470MNN0511
	68	6.3×11	160	SM1V680MNN6311
	100	6.3×11	215	SM1V101MNN6311
	150	8×11.5	290	SM1V151MNN08B5
	220	8×11.5	385	SM1V221MNN08B5
	330	10×12.5	490	SM1V331MNN10C5
	470	10×16	650	SM1V471MNN1016
	680	10×20	820	SM1V681MNN1020
	1000	12.5×20	1200	SM1V102MNN1220
	2200	16×25	1880	SM1V222MNN1625
	3300	16×31.5	2100	SM1V332MNN16N3
	4700	16×35.5	2500	SM1V472MNN16P1
50 (1H)	0.1	5×11	2	SM1HR10MNN0511
	0.22	5×11	3	SM1HR22MNN0511
	0.33	5×11	5	SM1HR33MNN0511
	0.47	5×11	14	SM1HR47MNN0511
	1	5×11	20	SM1H010MNN0511
	2.2	5×11	30	SM1H22MNN0511
	3.3	5×11	37	SM1H33MNN0511
	4.7	5×11	41	SM1H47MNN0511
	10	5×11	65	SM1H100MNN0511
	22	5×11	95	SM1H220MNN0511
	33	5×11	125	SM1H330MNN0511
	47	6.3×11	160	SM1H470MNN6311
	68	6.3×11	210	SM1H680MNN6311
	100	8×11.5	270	SM1H101MNN08B5
	150	10×12.5	345	SM1H151MNN10C5
	220	10×12.5	430	SM1H221MNN10C5
63 (1J)	330	10×16	590	SM1H331MNN1016
	470	10×20	760	SM1H471MNN1020
	680	12.5×20	875	SM1H681MNN1220
	1000	12.5×25	1360	SM1H102MNN1225
	2200	16×35.5	2060	SM1H222MNN16P1
	3300	18×35.5	2500	SM1H332MNN18P1
	4.7	5×11	45	SM1J470MNN0511
	10	5×11	70	SM1J100MNN0511
	22	5×11	100	SM1J220MNN0511
	33	6.3×11	140	SM1J330MNN6311
	47	6.3×11	170	SM1J470MNN6311
	68	8×11.5	220	SM1J680MNN08B5
	100	8×11.5	280	SM1J101MNN08B5
	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
	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
160 (2C)	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
	0.47	5×11	12	SM2DR47MNN0511
	1	5×11	17	SM2D010MNN0511
200 (2D)	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
250 (2E)	1	6.3×11	17	SM2E010MNN6311
	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
	2.2	8×11.5	28	SM2V2R2MNN08B5
	3.3	8×11.5	35	SM2V3R3MNN08B5
350 (2V)	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
	2.2	8×11.5	28	SM2G2R2MNN08B5
400 (2G)	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
	1	8×11.5	19	SM2W010MNN08B5
450 (2W)	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

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	12.5×30	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

EL Series

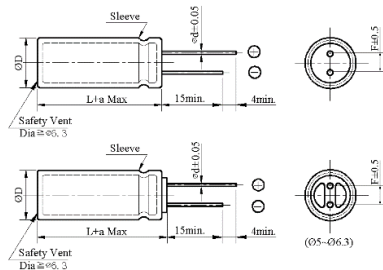
- Suitable for main board
- Extremely low impedance, downsize and high ripple current



SPECIFICATIONS

Item	Performance Characteristics						
Category Temperature Range	-40 ~ +105℃						
Working Voltage Range	6.3 ~ 50Vdc						
Capacitance Range	56 ~ 6,800 μF						
Capacitance Tolerance	±20% (at 25℃ and 120Hz)						
Dissipation Factor (tanδ) (at 25℃, 120Hz)	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 1,000uF, add 0.02 to the value above for each 1,000uF increase.						
Leakage Current	I=0.01CV or 3 μA, 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
	Z(-40℃)/Z(+20℃)	8	6	6	5	4	3
(at 120Hz)							
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃						
	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℃ after exposing them for 500 hours at 105℃ 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)						

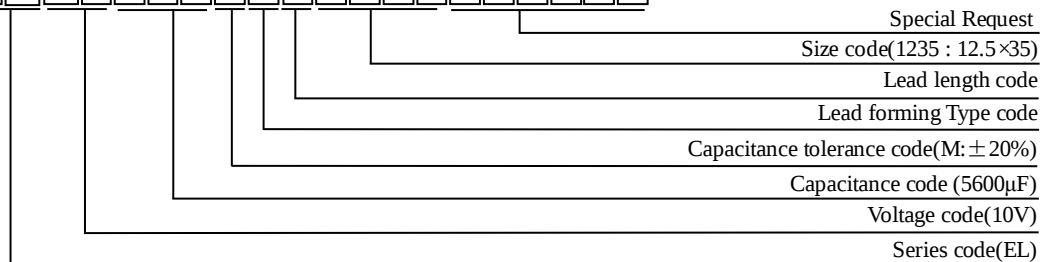
DIMENSIONS (mm)



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	0.8
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)

EL1A562MNN1235



ALUMINUM ELECTROLYTIC CAPACITORS



EL 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)	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
10 (1A)	5600	12.5×35	0.015	0.039	3400	EL0J562MNN1235
	6800	12.5×40	0.016	0.043	3460	EL0J682MNN1240
	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
16 (1C)	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
	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. (Ω _{max} /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
	56	8×11.5	0.64	1.4	385	EL1H560MNN08B5
50 (1H)	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

EB Series

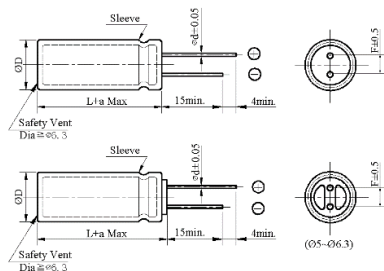
- Extremely low impedance, downsize and high ripple current
- Suitable for main board



SPECIFICATIONS

Item	Performance Characteristics			
Category Temperature Range	-40 ~ +105℃			
Working Voltage Range	6.3 ~ 16Vdc			
Capacitance Range	82 ~ 3,300 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	6.3	10	16
	tanδ(Max)	0.15	0.14	0.12
	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
	Z(-40℃)/Z(+20℃)	8	6	6
	(at 120Hz)			
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 1,000~2,000 hours at 105℃.			
	Capacitance change	≤ ±25% of the initial value		Size
	Dissipation factor(tanδ)	≤ 200% of the specified value		Life time (hours)
	Leakage current	≤ specified value		
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 500 hours at 105℃ 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
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						
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Special Request	
Size code(1025 : 10×25)	
Lead length code	
Lead forming Type code	
Capacitance tolerance code(M: ±20%)	
Capacitance code (3300µF)	
Voltage code(6.3V)	
Series code(EB)	

EB Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Impedance (Ω max/20℃, 100kHz)	Rated Ripple current (mA rms/ 105℃, 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
10 (1A)	2200	10×20	0.013	2550	EB0J222MNN1020
	3300	10×25	0.012	2800	EB0J332MNN1025
	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
16 (1C)	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
	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

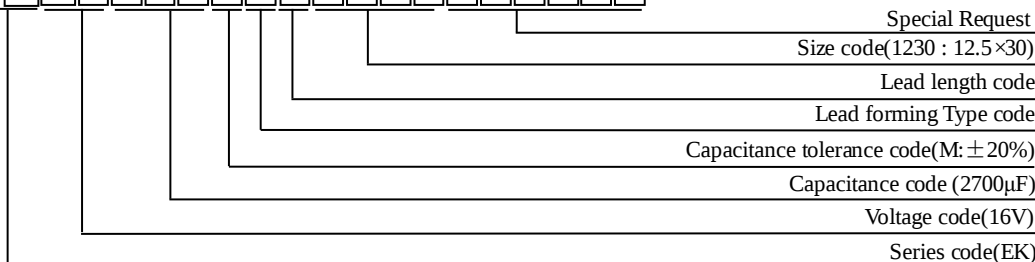
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability



Item	Performance Characteristics												
Category Temperature Range	-40 ~ +105℃												
Working Voltage Range	6.3 ~ 50Vdc												
Capacitance Range	0.10 ~ 6,800 μF												
Capacitance Tolerance	±20% (at 25℃ and 120Hz)												
Dissipation Factor (tanδ) (at 25℃, 120Hz)	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 1,000uF, 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	50						
	Z(-40℃)/Z(+20℃)	8	6	6	5	4	3						
(at 120Hz)													
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000~5,000 hours at 105℃.												
	Capacitance change		≤ ±25% of the initial value				Size						
	Dissipation factor(tanδ)		≤ 200% of the specified value				Life time (hours)						
	Leakage current		≤ specified value				≤ Φ6.3						
							Φ8						
							Φ10						
							≥ Φ12.5						
							5,000						
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 500 hours at 105℃ 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)												

ΦD	5	6.3	8	10	12.5	16
ΦD	$\Phi D + 0.5 \text{ Max}$					
Φd	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				$\geq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$	L + 1.5 Max

E	K	1	C	2	7	2	M	N	N	1	2	3	0				
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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
	4.7	5×11	1.2	100	EK1E4R7MNN0511
	10	5×11	1.2	100	EK1E100MNN0511
25 (1E)	22	5×11	1	120	EK1E220MNN0511
	47	5×11	0.3	250	EK1E471MNN0511
	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
	0.1	5×11	20	38	EK1HR10MNN0511
50 (1H)	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

EK Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	IMPD. (Ω _{max} /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. (Ω _{max} /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

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



Item	Performance Characteristics																				
Category Temperature Range	-55~ +105℃																				
Working Voltage Range	6.3 ~ 63Vdc																				
Capacitance Range	10 ~10,000μF																				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)																				
Dissipation Factor (tanδ) (at 25℃, 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> When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase.	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														
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></tr> <tr> <td>Z(-55℃)/Z(+20℃)</td><td>4</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	Z(-55℃)/Z(+20℃)	4	3	3	3	3	3	3				
Rated voltage (V)	6.3	10	16	25	35	50	63														
Z(-55℃)/Z(+20℃)	4	3	3	3	3	3	3														
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 3,000~7,000 hours at 105℃. <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℃ after exposing them for 1,000 hours at 105℃ 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)																				

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	

E	G	1	C	1	5	2	M	N	N	1	2	2	0						
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Special Request

Size code(1220 : 12.5×20)

Lead length code

Lead forming Type code

Capacitance tolerance code(M: $\pm 20\%$)

Capacitance code (1500 μ F)

Voltage code(16V)

Series code(EG)

ALUMINUM ELECTROLYTIC CAPACITORS



EG 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)	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	EG1A101MNN0511
	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	EG1C470MNN0511
	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 (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)	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
50 (1H)	3900	18×40	0.012	0.032	4280	EG1V392MNN1840
	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

EG Series

◆ STANDARD RATINGS

WV (V _{ac})	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)	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 _{ac})	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)	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(μF)	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

EDJ Series

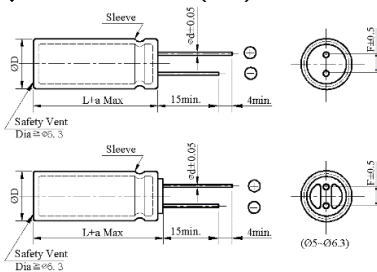
- Suitable for use in high ripple current capability
- Miniaturized, low ESR and low impedance
- Load life 6,000 to 10,000 hours at 105°C



◆ SPECIFICATIONS

Item	Performance Characteristics																																												
Category Temperature Range	-40~ +105℃																																												
Working Voltage Range	6.3~120Vdc																																												
Capacitance Range	8.2 ~ 8200 μF																																												
Capacitance Tolerance	±20% (at 25℃ and 120Hz)																																												
Dissipation Factor (tanδ) (at 25℃, 120Hz)	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)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	120																																		
	Z(-40℃)/Z(+20℃)	3	3	3	3	3	3	3	3	3	4																																		
	(at 120Hz)																																												
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 6,000~10,000 hours at 105℃.																																												
	Capacitance change	≤ ±25% of the initial value (6.3V、10Vdc: ±30%)																																											
	Dissipation factor(tanδ)	≤ 200% of the specified value																																											
	Leakage current	≤ specified value																																											
		<table><tr><th>WV(Vdc) Size</th><th colspan="4">Life time (hours)</th></tr><tr><th></th><th>6.3</th><th>10~50</th><th>63~100</th><th>120</th></tr><tr><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>≥ 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="3">9,000</td><td>---</td></tr><tr><td>≥ Φ10×16</td><td colspan="4">10,000</td></tr></table>										WV(Vdc) Size	Life time (hours)					6.3	10~50	63~100	120	≤ Φ6.3	6,000	7,000	6,000	---	Φ8×11.5	8,000	9,000	8,000	---	≥ Φ8×16	9,000	10,000	9,000	9,000	Φ10×12.5	9,000			---	≥ Φ10×16	10,000		
WV(Vdc) Size	Life time (hours)																																												
	6.3	10~50	63~100	120																																									
≤ Φ6.3	6,000	7,000	6,000	---																																									
Φ8×11.5	8,000	9,000	8,000	---																																									
≥ 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℃ after exposing them for 1,000 hours at 105℃ without voltage applied.																																												
	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+1.5Max ≥ 40 L+2.0 Max	L + 1.5 Max	

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

E D J 0 J 8 2 1 M N N 0 8 B 5

Special Request
 Size code(08B5 : 8×11.5)
 Terminal length code
 Lead forming Type code
 Capacitance tolerance code(M: ±20%)
 Capacitance code(820µF)
 Voltage code(6.3V)
 Series code (EDJ)

ALUMINUM ELECTROLYTIC CAPACITORS



EDJ Series

◆ STANDARD RATINGS

WV (V _{ac})	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
25 (1E)	3900	12.5×35	0.016	0.048	4120	EDJ1C392MNN1235W
	4700	16×25	0.017	0.051	3810	EDJ1C472MNN1625
	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 _{ac})	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	1.2	5.4	220	EDJ1K120MNN0511
	27	6.3×11	0.46	2.1	370	EDJ1K270MNN6311
	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
	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

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)	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	1.2	5.4	220	EDJ2A82MNN0511
	18	6.3×11	0.46	2.1	370	EDJ2A180MNN6311
	33	8×11.5	0.29	1.3	620	EDJ2A330MNN08B5
	47	8×16	0.2	0.9	780	EDJ2A470MNN0816
	56	10×12.5	0.17	0.66	780	EDJ2A560MNN10C5
	68	8×20	0.16	0.66	1040	EDJ2A680MNN0820
	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	0.047	0.14	2210	EDJ2A221MNN1225
	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
	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	0.038	0.12	2430	EDJ2A391MNN1625
	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

EDJ 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		
100 (2A)	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
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

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		
120 (3A)	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(μF)	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

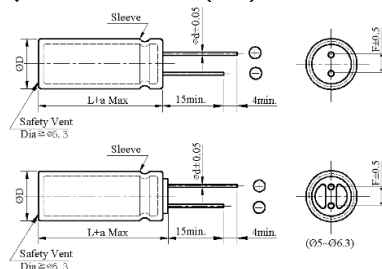
- Miniaturized, low ESR and low impedance
- Suitable for use in high ripple current capability
- Load life 4,000~10,000 hours at 105°C



SPECIFICATIONS

Item	Performance Characteristics									
Category Temperature Range	-55~ +105℃									
Working Voltage Range	6.3 ~ 100Vdc									
Capacitance Range	6.8 ~18,000μF									
Capacitance Tolerance	±20% (at 25℃ and 120Hz)									
Dissipation Factor (tanδ) (at 25℃, 120Hz)	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)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	
	Z(-55℃)/Z(+20℃)	4	3	3	3	3	3	3	3	
Endurance	(at 120Hz)									
	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 4,000~10,000 hours at 105℃.									
	Capacitance change		≦ ±25% of the initial value				Size		Life time (hours)	
	Dissipation factor(tanδ)		≦ 200% of the specified value				6.3~10WV		16~100WV	
	Leakage current		≦ specified value				≦ Φ6.3		4,000	5,000
Shelf Life							Φ8 ~10		6,000	7,000
							≧ Φ12.5		8,000	10,000
	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 1,000 hours at 105℃ 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)									

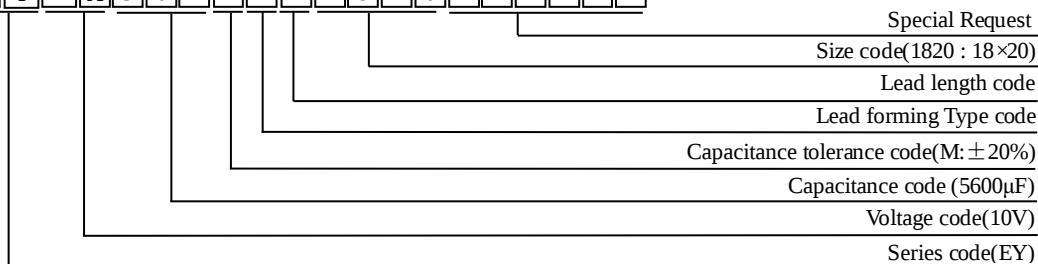
DIMENSIONS (mm)



ΦD	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 : 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	IMPD. (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	IMPD. (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
16 (1C)	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
	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	18×35.5	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
50 (1H)	3300	16×40	0.013	0.038	4090	EY1V332MNN1640
	3900	18×40	0.012	0.033	4290	EY1V392MNN1840
	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
	15	5×11	2.2	9.2	56	EY1J150MNN0511
63 (1J)	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
100 (2A)	1500	18×40	0.035	0.13	2340	EY1J152MNN1840
	6.8	5×11	2.2	9.2	56	EY2A68MNN0511
	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

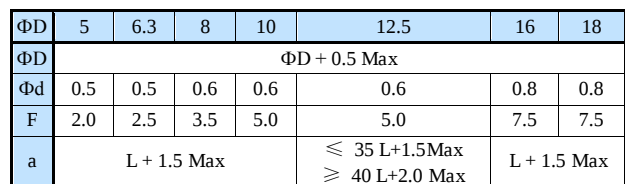
Frequency Multipliers

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

Three electrolytic capacitors are shown, each labeled with "220µF" and "50V". They are connected in parallel.

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



◆ **PART NUMBER SYSTEM**(Example : 50V 2700 μ F)

R	F	1	H	2	7	2	M	N	N	1	8	4	0					
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Series code(RF)

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
16 (1C)	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
	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
35 (1V)	5600	18×31.5	0.014	0.042	4190	RF1E562MNN18N3
	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
50 (1H)	3300	16×35.5	0.014	0.042	4280	RF1V332MNN16P1
	3900	18×35.5	0.012	0.036	4380	RF1V392MNN18P1
	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
63 (1J)	2700	18×35.5	0.013	0.039	4270	RF1H272MNN18P1
	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	1240	RF1J221MNN1025
	330	10×25	0.037	0.45	1990	RF1J331MNN1025
	470	12.5×30	0.1	0.42	2150	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
	12	5×11	0.72	3.2	235	RF1K120MNN0511
	27	6.3×11	0.34	1.5	390	RF1K270MNN6311
80 (1K)	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
100 (2A)	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
	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

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

[illegible]

ΦD	6.3	8	10	12.5	16
ΦD	$\Phi D + 0.5 \text{ Max}$				
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			$\leq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$	L + 1.5 Max

[illegible]

TW Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 125℃, 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
25 (1E)	1000	12.5×20	800	TW1C102MNN1220
	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
35 (1V)	330	10×16	620	TW1E331MNN1016
	470	10×20	800	TW1E471MNN1020
	1000	12.5×25	900	TW1E102MNN1225
	22	8×11.5	78	TW1V220MNN08B5
	33	8×11.5	105	TW1V330MNN08B5
	47	8×11.5	148	TW1V470MNN08B5
50 (1H)	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
	22	8×11.5	150	TW1H220MNN08B5
100 (2A)	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
	4.7	8×11.5	72	TW2A47R7MNN08B5
	10	8×11.5	120	TW2A100MNN08B5

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 125℃, 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
200 (2D)	10	10×20	86	TW2D100MNN1020
	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
250 (2E)	10	10×20	90	TW2E100MNN1020
	22	12.5×20	140	TW2E220MNN1220
	33	12.5×25	188	TW2E330MNN1225
	47	16×25	250	TW2E470MNN1625
	68	16×30	320	TW2E680MNN1630
	4.7	10×20	58	TW2V47R7MNN1020
350 (2V)	10	10×25	94	TW2V100MNN1025
	22	12.5×25	152	TW2V220MNN1225
	33	16×25	208	TW2V330MNN1625
	47	16×30	265	TW2V470MNN1630
	4.7	10×20	60	TW2G47R7MNN1020
	10	10×25	100	TW2G100MNN1025
400 (2G)	22	12.5×30	163	TW2G220MNN1230
	33	16×25	217	TW2G330MNN1625
	47	16×30	280	TW2G470MNN1630
	4.7	10×25	70	TW2W47R7MNN1025
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

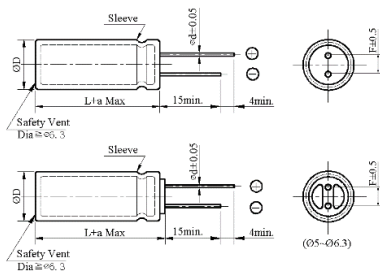
- High temperature 125°C, high reliability
- Load life 3,000~5,000 hours at 125°C



SPECIFICATIONS

Item	Performance Characteristics						
Category Temperature Range	-55~ +125℃						
Working Voltage Range	10 ~ 50Vdc						
Capacitance Range	22~1000μF						
Capacitance Tolerance	±20% (at 25℃ and 120Hz)						
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	10	16	25	35	50	
	tanδ(Max)	0.19	0.16	0.14	0.12	0.10	
	When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF 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)	Rated voltage (V)	10	16	25	35	50	
	Z(-55℃)/Z(+20℃)	6	4	4	4	4	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 3,000~5,000 hours at 125℃.						
	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℃ after exposing them for 1,000 hours at 125℃ 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 : 16V 470 μF)

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

Special Request
 Size code(1016 : 10×16)
 Lead length code
 Lead forming Type code
 Capacitance tolerance code(M: ± 20%)
 Capacitance code (470μF)
 Voltage code(16V)
 Series code(TV)

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
	1000	10×20	800	TV1A102MNN1020
16 (1C)	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
	470	10×20	550	TV1C471MNN1020
	1000	12.5×20	900	TV1C102MNN1220
25 (1E)	22	6.3×11	100	TV1E220MNN6311
	33	8×11.5	115	TV1E330MNN08B5
	47	8×11.5	130	TV1E470MNN08B5
	100	8×11.5	250	TV1E101MNN08B5
	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
	470	12.5×20	895	TV1V471MNN1220
	1000	16×25	1137	TV1V102MNN1625
50 (1H)	22	8×11.5	185	TV1H220MNN08B5
	33	8×11.5	210	TV1H330MNN08B5
	47	8×15	245	TV1H470MNN0815
	100	10×16	480	TV1H101MNN1016
	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

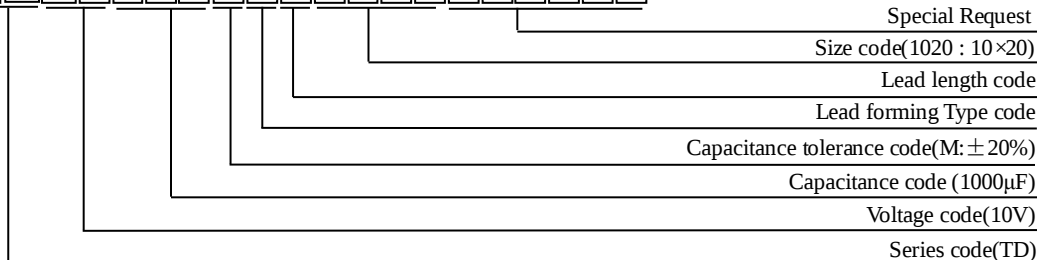
Vdc	Cap(μF)	Frequency (Hz)			
		50/60	120	1K	≥10K
10 ~ 50	<100	0.75	1.00	1.57	2.00
	100 ~ 470	0.80	1.00	1.34	1.50
	>470	0.85	1.00	1.10	1.15

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

[illegible]

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			$\leq 35 L + 1.5 \text{Max}$ $\geq 40 L + 2.0 \text{Max}$	L + 1.5Max	

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

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 130℃, 100kHz)	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
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℃, 100k Hz)	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
200 (2D)	4.7	6.3×11	100	TD2D47R7MNN6311
	5.6	8×11.5	130	TD2D56R6MNN08B5
	6.8	8×11.5	130	TD2D68R6MNN08B5
	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
250 (2E)	4.7	8×11.5	115	TD2E47R7MNN08B5
	5.6	8×11.5	140	TD2E56R6MNN08B5
	6.8	8×11.5	140	TD2E68R6MNN08B5
	10	8×16	220	TD2E100MNN0816
	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
400 (2G)	3.3	8×16	110	TD2G33R3MNN0816
	4.7	8×20	120	TD2G47R7MNN0820
	5.6	10×16	130	TD2G56R6MNN1016
	6.8	10×20	150	TD2G68R6MNN1020
	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
420 (2S)	3.3	8×16	120	TD2S33R3MNN0816
	4.7	8×20	130	TD2S47R7MNN0820
	5.6	10×16	140	TD2S56R6MNN1016
	6.8	10×20	155	TD2S68R6MNN1020
	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
450 (2W)	3.3	8×20	135	TD2W33R3MNN0820
	4.7	10×12.5	150	TD2W47R7MNN10C5
	5.6	10×16	160	TD2W56R6MNN1016
	6.8	10×20	170	TD2W68R6MNN1020
	10	12.5×20	260	TD2W100MNN1220
	15	12.5×25	300	TD2W150MNN1225
	22	16×20	345	TD2W220MNN1620

TD Series

◆ RIPPLE CURRENT MULTIPLIERS Frequency Multipliers

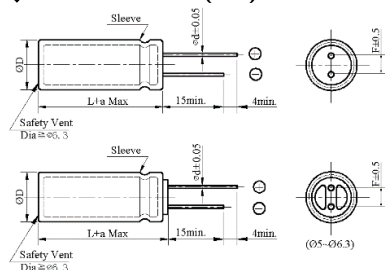
Vdc	Cap(μF)	Frequency (Hz)			
		120	1K	10K	≥100K
10 ~ 100	<100	0.40	0.75	0.90	1.00
	100 ~ 470	0.50	0.85	0.94	1.00
	>470	0.60	0.87	0.95	1.00

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

Three electrolytic capacitors are shown, each labeled with "470µF" and "16V". They are black cylindrical components with two leads extending from the bottom.

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



ΦD	6.3	8	10	12.5	16
ΦD	$\Phi D + 0.5 \text{ Max}$				
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			$\leq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$	L + 1.5 Max

◆ **PART NUMBER SYSTEM**(Example : 16V 470 μ F)

T	X	1	C	4	7	1	M	N	N	1	0	1	6						
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Series code(TX)

TX Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 135°C, 100kHz)	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, 100kHz)	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
	1000	16×25	1450	TX1V102MNN1625
50 (1H)	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

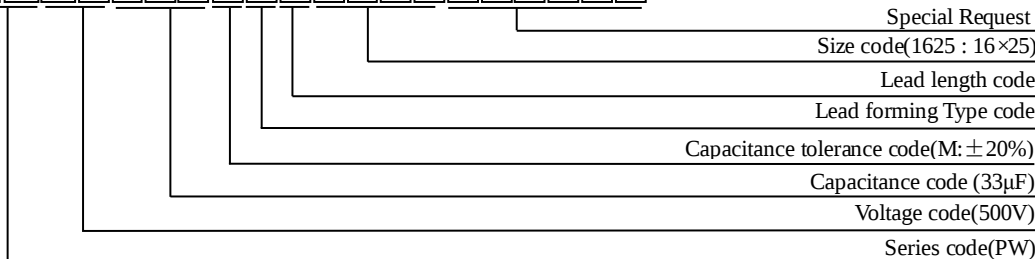
Vdc	Cap(μF)	Frequency (Hz)			
		120	1K	10K	100K
10 ~ 50	< 100	0.40	0.75	0.90	1.00
	100 ~ 470	0.50	0.85	0.94	1.00
	> 470	0.60	0.87	0.95	1.00

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

[illegible]

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				$\leq 35 \text{ L}+1.5\text{Max}$ $\geq 40 \text{ L}+2.0 \text{ Max}$		L+1.5 Max

P	W	2	H	3	3	0	M	N	N	1	6	2	5						
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ALUMINUM ELECTROLYTIC CAPACITORS



PW Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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℃, 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	PW1V100MNN0511
	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	PW1HR47MNN0511
	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
63 (1J)	1000	16×25	1020	PW1H102MNN1625
	1500	16×31.5	1350	PW1H152MNN16N3
	2200	18×35.5	1690	PW1H222MNN18P1
	3300	18×40	2060	PW1H332MNN1840
	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
100 (2A)	1000	16×31.5	1130	PW1J102MNN16N3
	1500	16×35.5	1450	PW1J152MNN16P1
	2200	18×40	1780	PW1J222MNN1840
	0.47	5×11	12	PW2A047MNN0511
	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
160 (2C)	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
	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
200 (2D)	390	18×31.5	1050	PW2C391MNN18N3
	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
250 (2E)	33	10×20	280	PW2E330MNN1020
	47	10×25	350	PW2E470MNN1025
	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
	470	18×45	1250	PW2E471MNN1845
	56	12.5×30	350	PW2G560MNN1230
	68	16×25	380	PW2G680MNN1625
	82	16×31.5	420	PW2G820MNN16N3
400 (2G)	100	16×35.5	450	PW2G101MNN16P1
	120	18×31.5	520	PW2G121MNN18N3
	150	18×35.5	700	PW2G151MNN18P1
	180	18×40	850	PW2G181MNN1840
420 (2S)	47	16×20	250	PW2S470MNN1620
	56	16×25	300	PW2S560MNN1625
	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
	180	16×25	300	PW2W181MNN1625
475 (2B)	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	PW2H330MNN1625
	39	16×31.5	360	PW2H390MNN16N3
	47	18×25	420	PW2H470MNN1825
	56	18×31.5	470	PW2H560MNN18N3
	68	18×35.5	555	PW2H680MNN18P1

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

PV Series

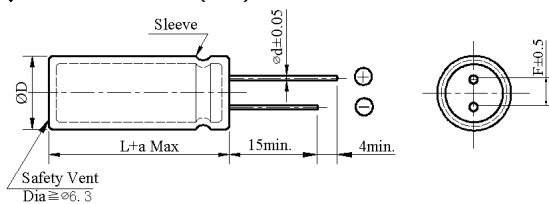
- Downsize and high ripple current
- Load life 2,000 ~ 5,000 hours at 105°C



◆ 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
	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 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)	

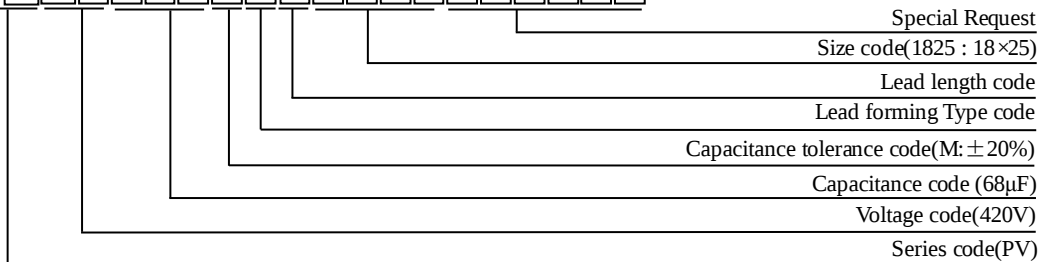
◆ DIMENSIONS (mm)



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 8 2 5



PV Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
200 (2D)	470	18×40	1190	PV2C471MNN1840
	560	18×45	1250	PV2C561MNN1845
	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
250 (2E)	330	18×35.5	1100	PV2D331MNN18P1
	390	18×40	1190	PV2D391MNN1840
	470	18×45	1250	PV2D471MNN1845
	560	18×50	1320	PV2D561MNN1850
	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℃, 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

- **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**

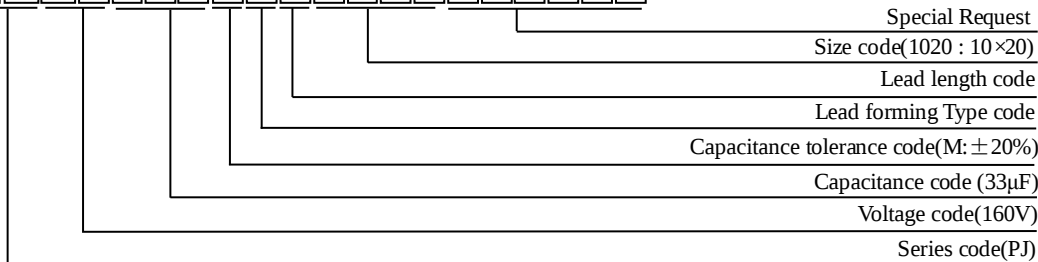


Item	Performance Characteristics							
Category Temperature Range	-40~ +105℃						-25~ +105℃	
Working Voltage Range	160~ 450dc						500Vdc	
Capacitance Range	10 ~560 μF						33~82 μF	
Capacitance Tolerance	±20% (at 25℃ and 120Hz)							
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	160	200	250	400	420	450	500
	tand(Max)	0.20	0.20	0.24	0.24	0.24	0.24	0.24
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	500			
	Z(-40℃)/Z(+20℃)	10	8	6	---			
	Z(-25℃)/Z(+20℃)	---	---	---	6	(at 120Hz)		
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25 ℃ after subjected to DC voltage with the rated ripple current is applied for 10,000~ 12,000 hours at 105 ℃.							
	Capacitance change	≤ ±20% of the initial value				Size	Life time (hours)	
	Dissipation factor(tanδ)	≤ 200% of the specified value				Φ10~12.5	10,000	
	Leakage current	≤ specified value				≥ Φ16	12,000	
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25 ℃ after exposing them for 1,000 hours at 105 ℃ 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)							

Technical drawing of a sleeve assembly. The side view shows a cylindrical sleeve with an outer diameter ϕD and a length $L+a$ (maximum). A safety vent is located at the bottom left. The sleeve is secured with a pin of diameter $\phi 14 \pm 0.05$. The pin has a length of 15 mm and a 4 mm section at the end. The end view shows a circular cross-section with a diameter of $F \pm 0.5$.

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	

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

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	10	10×12.5	130	PJ2E100MNN10C5
	15	10×16	170	PJ2E150MNN1016
250 (2E)	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℃, 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
	470	18×50	1320	PJ2E391MNN1850
400 (2G)	39	12.5×30	280	PJ2G390MNN1230
	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
	39	16×25	300	PJ2S390MNN1625
420 (2S)	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
	39	18×20	320	PJ2W390MNN1820
450 (2W)	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
	120	18×50	700	PJ2W121MNN1850
500 (2H)	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

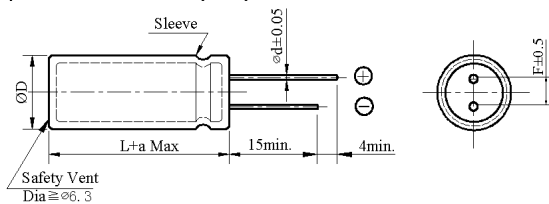
- Downsize and high ripple current
- Load life 12,000 to 15,000 hours at 105°C
- For electronic ballast circuits and other long life applications
- Applied to lighting products



SPECIFICATIONS

Item	Performance Characteristics								
Category Temperature Range	-40~ +105℃								
Working Voltage Range	160~ 450dc								
Capacitance Range	6.8~680μF								
Capacitance Tolerance	±20% (at 25℃ and 120Hz)								
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	160	200	220	250	350	400	420	450
	tanδ(Max)	0.20	0.20	0.20	0.20	0.24	0.24	0.24	0.24
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	350~400	420 ~ 450	(at 120Hz)				
	Z(-40℃)/Z(+20℃)	10	8	6					
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 12,000~ 15,000 hours at 105℃.								
	Capacitance change	≦ ±20% of the initial value				Size		Life time (hours)	
	Dissipation factor(tanδ)	≦ 200% of the specified value				Φ10-14.5		12,000	
	Leakage current	≦ specified value				≧ Φ16		15,000	
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 1,000 hours at 105℃ 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)								

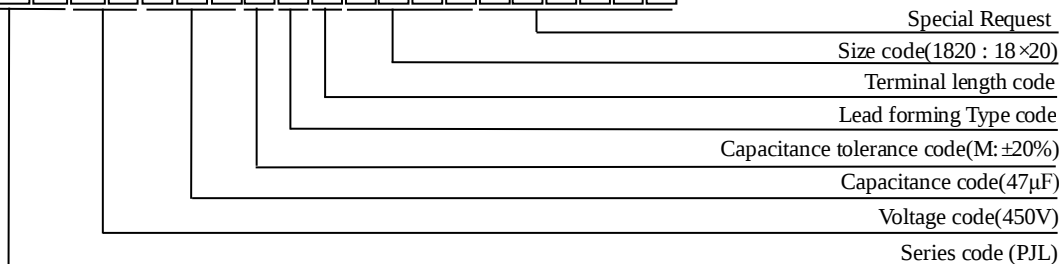
DIMENSIONS (mm)



ΦD	10	12.5	14.5	16	18
ΦD	ΦD +0.5 Max				
Φd	0.6	0.6	0.8	0.8	0.8
F	5.0	5.0	7.5	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 2 0



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
250 (2E)	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
	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℃, 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℃, 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
	220	18×50	1220	PJL2V221MNN1850
400 (2G)	6.8	10×16	150	PJL2G68MNN1016
	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	PJL2S68MNN1016
	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

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
450 (2W)	150	18×50	1060	PJL2S151MNN1850
	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

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
450 (2W)	27	10×40	290	PJL2W270MNN1040
	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
	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

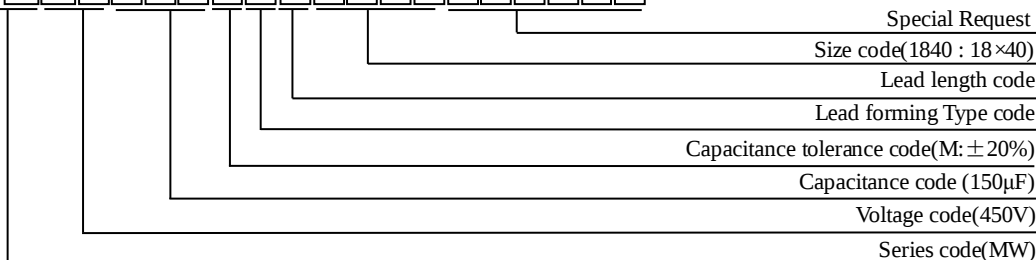
- **Low ESR**
- **Load life 2,000 hours at 105°C**



Item	Performance Characteristics				
Category Temperature Range	-40~ +105℃				
Working Voltage Range	160~ 450dc				
Capacitance Range	33 ~560 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)		10	8	6
	(at 120Hz)				
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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)				

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	

M	W	2	W	1	5	1	M	N	N	1	8	4	0						
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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
	560	18×40	1440	MW2C561MNN1840
	560	18×45	1460	MW2C561MNN1845
200 (2D)	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
	390	18×35.5	1350	MW2D391MNN18P1
	470	18×40	1400	MW2D471MNN1840
	560	18×45	1460	MW2D561MNN1845
250 (2E)	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
	560	18×45	1460	MW2E561MNN1845
400 (2G)	56	12.5×30	410	MW2G560MNN1230
	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
	180	18×35.5	1000	MW2G181MNN18P1
420 (2S)	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
	47	16×23	400	MW2W470MNN1623
	56	16×25	480	MW2W560MNN1625
450 (2W)	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

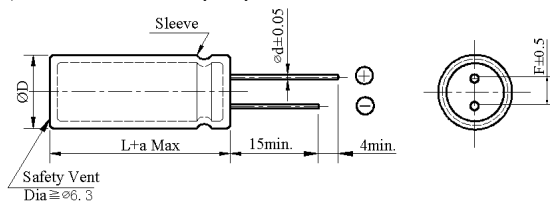
- Low ESR
- High ripple current
- Load life 5,000 hours at 105°C



SPECIFICATIONS

Item	Performance Characteristics				
Category Temperature Range	-40~ +105℃				
Working Voltage Range	160~ 450dc				
Capacitance Range	33 ~560 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)		10	8	6
	(at 120Hz)				
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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	$\leq 35 L+1.5 \text{ Max}$ $\geq 40 L+2.0 \text{ Max}$	L+1.5 Max	

PART NUMBER SYSTEM(Example : 160V 33 μ F)

M	V	2	C	3	3	0	M	N	N	1	0	1	6						
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																			Special Request
																			Size code(1016 : 10×16)
																			Lead length code
																			Lead forming Type code
																			Capacitance tolerance code(M: $\pm 20\%$)
																			Capacitance code (33 μ F)
																			Voltage code(160V)
																			Series code(MV)

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

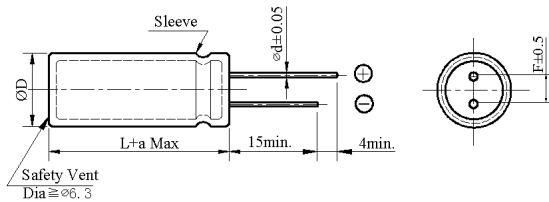
- For electronic ballast circuits and long life
- Low ESR
- High ripple current
- Load life 8,000 to 10,000 hours at 105°C



SPECIFICATIONS

Item	Performance Characteristics				
Category Temperature Range	-40~ +105℃				
Working Voltage Range	160~ 450dc				
Capacitance Range	10 ~560 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)	10	8	6	
	(at 120Hz)				
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 10,000 (8,000 hours for Φ 10) hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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)				

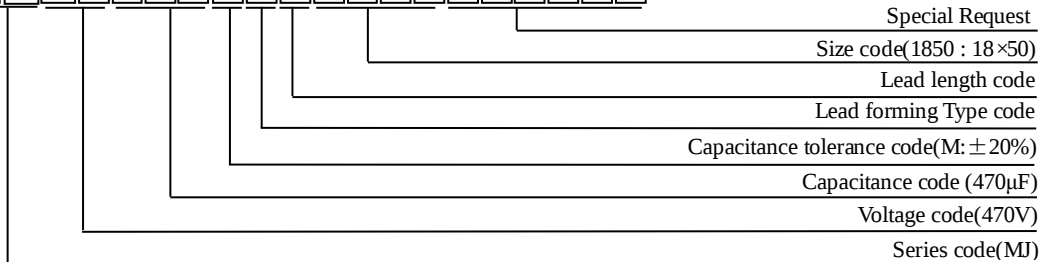
DIMENSIONS (mm)



ΦD	10	12.5	16	18
ΦD	$\Phi D + 0.5$ Max			
Φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
a	L+1.5 Max	$\leq 35 L+1.5$ Max $\geq 40 L+2.0$ Max	L+1.5 Max	

PART NUMBER SYSTEM(Example : 200V 470 μ F)

M J 2 D 4 7 1 M N N 1 8 5 0



MJ Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	47	12.5×16	460	MJ2D470MNN1216
200 (2D)	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
	10	10×12.5	185	MJ2E100MNN10C5
250 (2E)	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

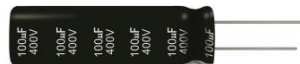
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 120Hz)	Part Number
250 (2E)	82	16×25	700	MJ2E820MNN1625
	100	18×20	830	MJ2E101MNN1820
	120	18×25	900	MJ2E121MNN1825
	150	18×31.5	1000	MJ2E151MNN18N3
	180	18×35.5	1190	MJ2E181MNN18P1
	220	18×40	1280	MJ2E221MNN1840
	330	18×45	1385	MJ2E331MNN1845
	390	18×50	1460	MJ2E391MNN1850
	39	12.5×25	360	MJ2G390MNN1225
400 (2G)	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
	39	16×23	390	MJ2S390MNN1623
420 (2S)	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
	39	18×20	420	MJ2W390MNN1820
	47	18×23	450	MJ2W470MNN1823
450 (2W)	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 ~ 560	1.00	1.67	1.75	2.25

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

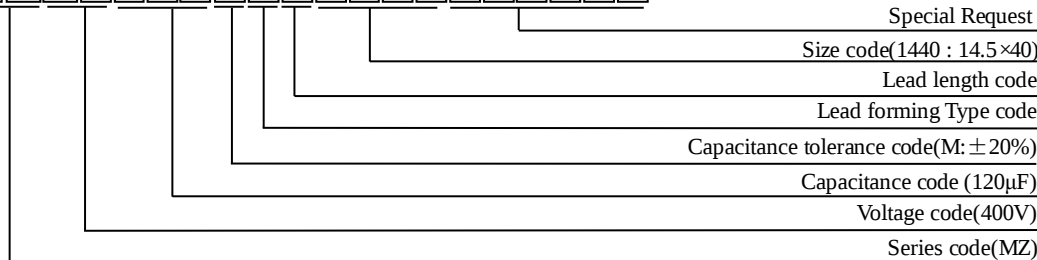


Item	Performance Characteristics									
Category Temperature Range	-40~ +105℃									
Working Voltage Range	200~ 450dc									
Capacitance Range	18 ~270 μF									
Capacitance Tolerance	±20% (at 25℃ and 120Hz)									
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	200~450								
	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℃)/Z(+20℃)	10	8	6						
	(at 120Hz)									
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃. <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℃ after exposing them for 1,000 hours at 105℃ 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)									

Technical drawing of a sleeve assembly. The side view shows a sleeve with a diameter of ϕD and a length of $L+a$ Max. The sleeve is secured with a pin of diameter $\phi 4 \pm 0.05$. The pin is inserted through a hole in the sleeve, with a distance of 15 min. from the end of the sleeve to the pin. The pin is also secured with a nut of diameter $\phi 4 \pm 0.05$. The end view shows the sleeve with a diameter of ϕD and a thickness of $F \pm 0.5$. The sleeve is secured with a pin of diameter $\phi 4 \pm 0.05$ and a nut of diameter $\phi 4 \pm 0.05$. The sleeve is also secured with a Safety Vent of diameter $\phi 6.3$.

ΦD	8	10	12.5	14.5
ΦD	$\Phi D + 0.5 \text{ Max}$			
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	$\begin{matrix} \leq 35 \text{ L+1.5Max} \\ \geq 40 \text{ L+2.0 Max} \end{matrix}$	L+ 2.0 Max

M	Z	2	G	1	2	1	M	N	N	1	4	4	0						
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MZ Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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℃, 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

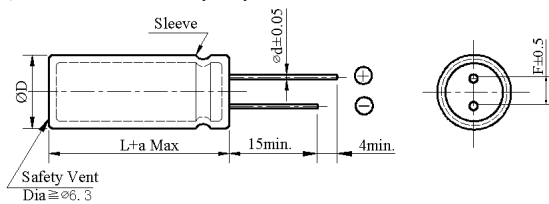
- Low ESR
- 105°C long life 5,000 hours, ultra miniature size
body diameter of $\Phi 10\text{mm}$ to $\Phi 14.5\text{mm}$ with high ripple current capability



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)	400~450
	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 (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	$\leq \pm 20\%$ 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)	

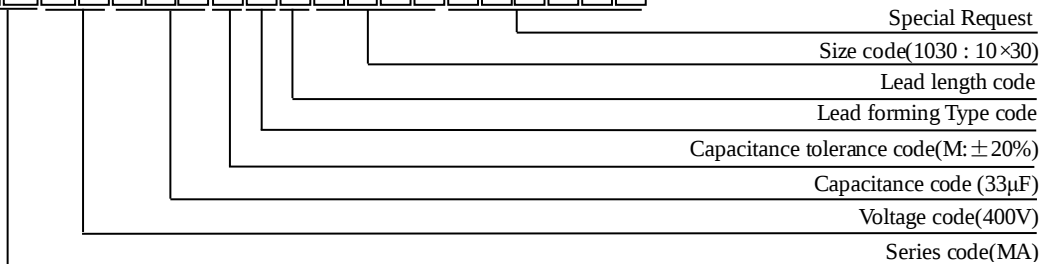
DIMENSIONS (mm)



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	$\leq 35 \text{ L}+1.5 \text{ Max}$ $\geq 40 \text{ L}+2.0 \text{ Max}$	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



MA Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	14.5×40	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℃, 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	MA2W270MNN1030
	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

**33 μ F
450V**

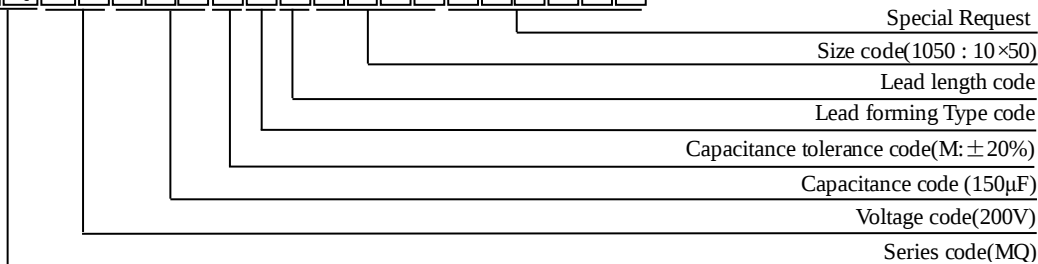
- Low ESR
 - 105°C long life 10,000 hours, miniature size
- body diameter of $\Phi 10\text{mm}$ to $\Phi 14.5\text{mm}$ with high ripple current capability

Item	Performance Characteristics										
Category Temperature Range	-40~ +105℃										
Working Voltage Range	160~ 450dc										
Capacitance Range	27~390 μF										
Capacitance Tolerance	±20% (at 25℃ and 120Hz)										
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	160~250	350~450								
	tanδ(Max)	0.15	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	350	400	420~450						
	Z(-40℃)/Z(+20℃)	10	8	8	6						
	(at 120Hz)										
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105℃. <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℃ after exposing them for 1,000 hours at 105℃ 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)										

Technical drawing of a sleeve and pin assembly. The side view shows a sleeve with an outer diameter (OD) and a length of $L+a \text{ Max}$. A safety vent is located at the front with a diameter of $\text{Dia} \geq \phi 6.3$. A pin is inserted into the sleeve, with a gap of 0.05 between them. The pin has a length of 15min. and a diameter of $\phi 4 \pm 0.05$. The end view shows a pin with a diameter of $\phi 4 \pm 0.05$ and a length of 4min. The sleeve has a thickness of $F=0.5$.

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

M	Q	2	D	1	5	1	M	N	N	1	0	5	0						
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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
200 (2D)	390	14.5×45	1210	MQ2C391MNN1445
	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
220 (2P)	270	12.5×50	1050	MQ2D271MNN1250W
	270	14.5×40	1150	MQ2D271MNN1440
	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
250 (2E)	180	12.5×45	1002	MQ2P181MNN1245W
	220	12.5×50	1145	MQ2P221MNN1250W
	270	14.5×50	1315	MQ2P271MNN1450
	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
350 (2V)	180	12.5×50	1015	MQ2E181MNN1250W
	180	14.5×40	1015	MQ2E181MNN1440
	220	14.5×45	1150	MQ2E221MNN1445
	220	14.5×50	1150	MQ2E221MNN1450
	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
	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
	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
	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

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



Item	Performance Characteristics			
Category Temperature Range	-40~ +105℃			
Working Voltage Range	160~ 450dc			
Capacitance Range	22 ~680 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)	10	8	6
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃.			
	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℃ after exposing them for 1,000 hours at 105℃ 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)			

Technical drawing of a sleeve for a safety vent. The drawing includes a side view and a top view.

Side View Dimensions:

- Overall diameter: $\varnothing D$
- Length: $L+a \text{ Max}$
- Flange thickness: 15 min.
- Hole diameter: 4 min.
- Sleeve diameter: $\varnothing d \pm 0.05$

Top View Dimensions:

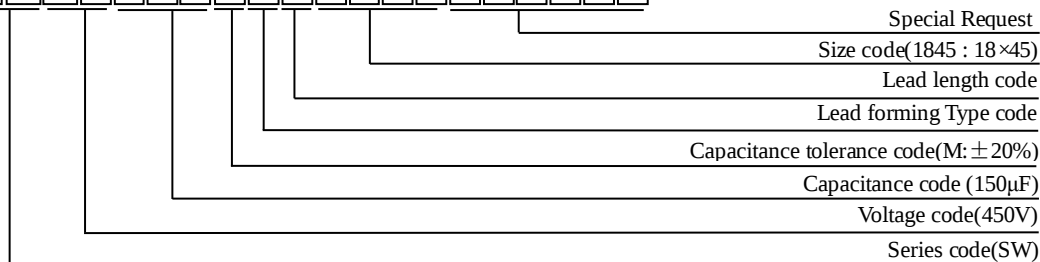
- Overall diameter: $\varnothing D$
- Hole diameter: 4 min.
- Minimum hole diameter: $\text{Dia} \geq \varnothing 6.3$

Labels:

- Sleeve
- Safety Vent

ΦD	10	12.5	16	18
ΦD	$\Phi D + 0.5 \text{ Max}$			
Φd	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5
a	L+1.5 Max	$\leq 35 \text{ L}+1.5\text{Max}$ $\geq 40 \text{ L}+2.0 \text{ Max}$	L+1.5 Max	

S	W	2	W	1	5	1	M	N	N	1	8	4	5						
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ALUMINUM ELECTROLYTIC CAPACITORS



SW Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	SW2D820MNN1035
	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
220 (2P)	560	18×50	1500	SW2D561MNN1850
	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
250 (2E)	330	18×35.5	1245	SW2P331MNN18P1
	470	18×45	1400	SW2P471MNN1845
	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℃, 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	SW2G270MNN1030
	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

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



Item	Performance Characteristics			
Category Temperature Range	-40~ +105℃			
Working Voltage Range	160~ 450dc			
Capacitance Range	22 ~680 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)	10	8	6
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105℃.			
	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℃ after exposing them for 1,000 hours at 105℃ 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)			

Technical drawing of a sleeve for a safety vent. The drawing includes a side view and a top view.

Side View Dimensions:

- Overall diameter: $\varnothing D$
- Length: $L+a \text{ Max}$
- Flange thickness: 15 min.
- Hole diameter: 4 min.
- Sleeve diameter: $\varnothing d \pm 0.05$

Top View Dimensions:

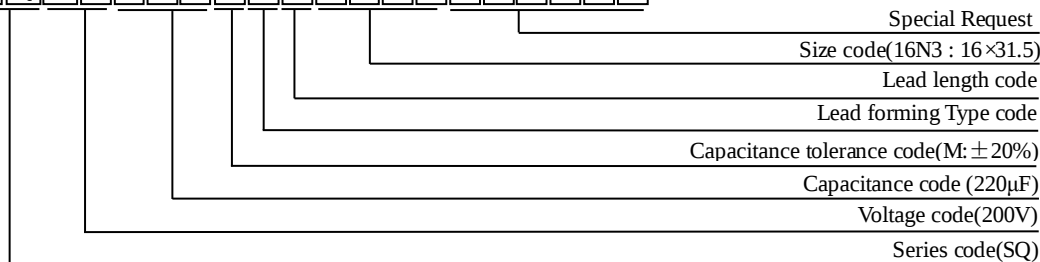
- Overall diameter: $\varnothing D$
- Hole diameter: 4 min.
- Minimum hole diameter: $\text{Dia} \geq \varnothing 6.3$

Labels:

- Sleeve
- Safety Vent

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	

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

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	68	10×35	410	SQ2P680MNN1035
	82	10×40	465	SQ2P820MNN1040
	100	10×45	520	SQ2P101MNN1045
220 (2P)	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
	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℃, 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
	330	18×45	1350	SQ2E331MNN1845
400 (2G)	27	10×30	265	SQ2G270MNN1030
	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
	150	18×40	870	SQ2G151MNN1840
	180	18×45	980	SQ2G181MNN1845
	22	10×30	220	SQ2S220MNN1030
	27	10×35	270	SQ2S270MNN1035
420 (2S)	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
	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
450 (2W)	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

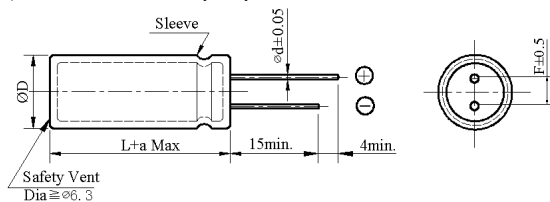
- Counter plan product for safety
- Load life 10,000 hours at 105°C



SPECIFICATIONS

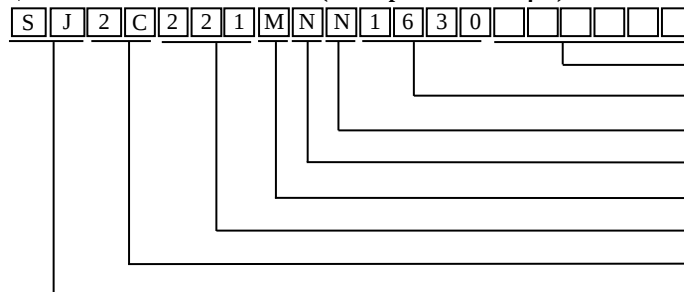
Item	Performance Characteristics			
Category Temperature Range	-40~ +105℃			
Working Voltage Range	160~ 450dc			
Capacitance Range	22 ~680 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	160~250	400~450	
	tanδ(Max)	0.12	0.15	
Leakage 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℃)/Z(+20℃)	10	8	6
(at 120Hz)				
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25 ℃ after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105 ℃.			
	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 ℃ after exposing them for 1,000 hours at 105℃ 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 : 160V 220 µF)



Special Request

Size code(1630 : 16×30)

Lead length code

Lead forming Type code

Capacitance tolerance code(M: ± 20%)

Capacitance code (220µF)

Voltage code(160V)

Series code(SJ)

ALUMINUM ELECTROLYTIC CAPACITORS



SJ Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	68	10×40	425	SJ2P680MNN1040
220 (2P)	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
	68	10×45	440	SJ2E680MNN1045
250 (2E)	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℃, 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
	27	10×35	280	SJ2G270MNN1035
400 (2G)	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
	22	10×35	240	SJ2S220MNN1035
420 (2S)	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
	22	10×40	260	SJ2W220MNN1040
	27	10×45	310	SJ2W270MNN1045
450 (2W)	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

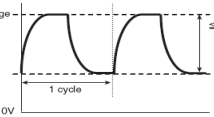


VW Series

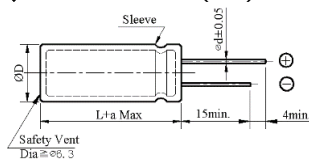
- Capacitor for over voltage application
- Load life 2,000 hours at 105°C



SPECIFICATIONS

Item	Performance Characteristics			
Category Temperature Range	-40~ +105℃			
Working Voltage Range	160~ 450dc			
Capacitance Range	22 ~680 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)	10	8	6
	(at 120Hz)			
Charge and Discharge	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35℃.			
	Frequency	Number of cycles	Voltage waveform	Capacitance change
	5Hz	200million times		Dissipation factor(tanδ)
				Leakage current
			±20% of the initial value	
			≤ 200% of the specified value	
			≤ specified value	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃.			
	Capacitance change		≤ ±20% of the initial value	
	Dissipation factor(tanδ)		≤ 200% of the specified value	
	Leakage current		≤ specified value	
Shelf Li fe	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 1,000 hours at 105℃ 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)



Φ D	10	12.5	16	18
Φ D	Φ D + 0.5 Max			
Φ d	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 120 μ F)

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

Special Request

Size code(1035 : 10×35)

Lead length code

Lead forming Type code

Capacitance tolerance code(M: $\pm 20\%$)

Capacitance code (120 μ F)

Voltage code(160V)

Series code(VW)

ALUMINUM ELECTROLYTIC CAPACITORS



VW Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
220 (2P)	560	18×50	1440	VW2D561MNN1850
	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
250 (2E)	330	18×35.5	1195	VW2P331MNN18P1
	470	18×45	1350	VW2P471MNN1845
	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℃, 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

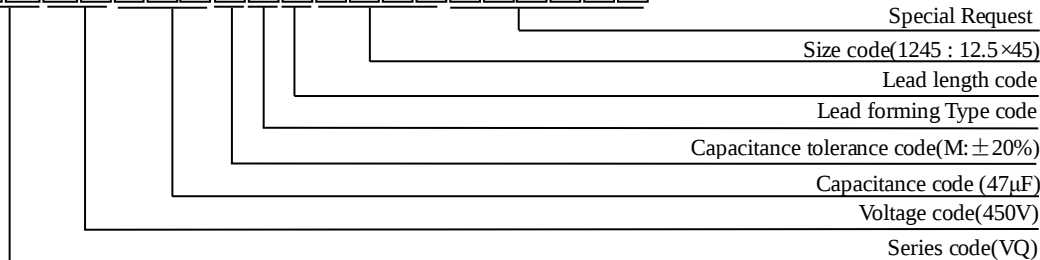
- Capacitor for over voltage application
- Load life 5,000 hours at 105°C



Item	Performance Characteristics				
Category Temperature Range	-40~ +105℃				
Working Voltage Range	160~ 450dc				
Capacitance Range	22 ~680 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 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℃)/Z(+20℃)	10	8	6	
Charge and Discharge	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35℃.				
	Frequency	Number of cycles	Voltage waveform	Capacitance change	
	5Hz	200million times		Dissipation factor(tanδ)	
				Leakage current	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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)				

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	$\leq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$	L + 1.5 Max	

V	Q	2	W	4	7	0	M	N	N	1	2	4	5						
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ALUMINUM ELECTROLYTIC CAPACITORS



VQ Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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
	68	10×35	395	VQ2P680MNN1035
	82	10×40	445	VQ2P820MNN1040
	100	10×45	500	VQ2P101MNN1045
220 (2P)	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℃, 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
	330	18×45	1300	VQ2E331MNN1845
400 (2G)	27	10×30	255	VQ2G270MNN1030
	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
	150	18×40	835	VQ2G151MNN1840
	180	18×45	940	VQ2G181MNN1845
	22	10×30	210	VQ2S220MNN1030
	27	10×35	260	VQ2S270MNN1035
420 (2S)	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
	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
450 (2W)	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

- Capacitor for over voltage application
- Load life 10.000 hours at 105°C

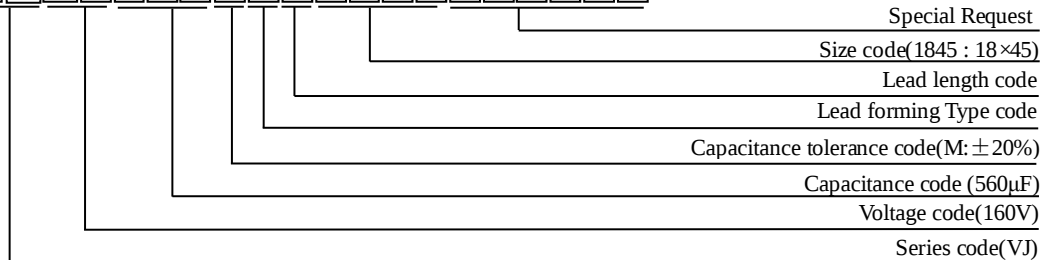


Item	Performance Characteristics				
Category Temperature Range	-40~ +105℃				
Working Voltage Range	160~ 450dc				
Capacitance Range	22 ~680 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	160~250	400~450		
	tanδ(Max)	0.12	0.15		
Leakage 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℃)/Z(+20℃)	10	8	6	
Charge and Discharge	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to charge and discharge test with the voltage waveform shown below at room temperature 15 to 35℃.				
	Frequency	Number of cycles	Voltage waveform	Capacitance change	
	5Hz	200million times		Dissipation factor(tanδ)	
				Leakage current	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 10,000 hours at 105℃.				
	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℃ after exposing them for 1,000 hours at 105℃ 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)				

Technical drawing of a sleeve and pin assembly. The sleeve has an outer diameter $\varnothing D$ and a length $L + \Delta \text{ Max}$. It features a safety vent with a diameter of at least $\varnothing 0.3$. The pin has a diameter of 0.05 and a length of 15 min. . The assembly is shown with a 4 min. dimension.

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	$\leq 35 \text{ L} + 1.5 \text{ Max}$ $\geq 40 \text{ L} + 2.0 \text{ Max}$	L + 1.5 Max	

V	J	2	C	5	6	1	M	N	N	1	8	4	5						
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VJ Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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℃, 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	VJ2G270MNN1035
	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	VJ2W220MNN1040
	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	Lead Type	Lead Length	Case Dimension	Special Request
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
□ □ (□)	□ □	□ □ □	□	□	□	□ □ □ □	□ □ □ □ □ □

(1) Series

Series	GM	GV	PL	PK	PG	PO	PI	PIM	TWH	TG	GD	PX
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(2) Rated Voltage

Code	0J	1A	1C	1E	1F	1V	1H	1J	1K	2A	3A	2C	2Z	2D	2P	2E	2V	2G	2S	2W
WV	6.3	10	16	25	30	35	50	63	80	100	120	160	180	200	220	250	350	400	420	450
Code	2B	2H	2L	2J																
WV	475	500	550	600																

(3) Capacitance

Code	470	101	471	102	472	473	683	A12	B22	C32	D42
μF	47	100	470	1000	4700	47000	68000	1010	1120	1230	1340
Code	E52	F62	G72	J82	K92	L12					
μF	1450	1560	1772	1880	1990	2010					

(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



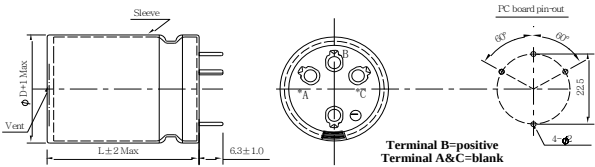
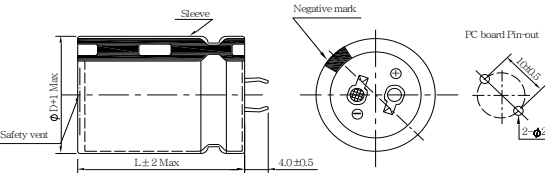
SPECIFICATIONS

Item	Performance Characteristics										
Category Temperature Range	-40 ~ +85℃							-25 ~ +85℃			
Working Voltage Range	16 ~ 100Vdc							160 ~ 550Vdc			
Capacitance Range	820 ~ 68,000μF							47 ~ 3,300 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)										
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	16	25	35	50	63	80~100	160~250	400~450	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	400	420~550
	Z(-40℃)/Z(+20℃)	15	10	8	6	6	5	5	—	—	—
	Z(-25℃)/Z(+20℃)	—	—	—	—	—	—	—	4	4	8
	(at 120Hz)										
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85℃.										
	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℃ after exposing them for 1,000 hours at 85℃ 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 : 400V 470µF)

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

Special Request
 Size code(3045 : 30×45)
 Terminal length code
 Terminal type code
 Capacitance tolerance code(M: ±20%)
 Capacitance code(470µF)
 Voltage code(400V)
 Series code (GM)

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	GM1C123MND2525JY
	15000	22×35	3390	GM1C153MND2235Y
	15000	25.4×30	3390	GM1C153MND2530JY
	15000	30×25	3660	GM1C153MND3025Y
	18000	22×40	3900	GM1C183MND2240Y
	18000	25.4×35	3900	GM1C183MND2535JY
	18000	30×25	4000	GM1C183MND3025Y
	22000	22×50	4370	GM1C223MND2250Y
	22000	25.4×40	4260	GM1C223MND2540JY
	22000	30×30	4210	GM1C223MND3030Y
	22000	35×25	4170	GM1C223MND3525Y
	27000	25.4×45	4625	GM1C273MND2545JY
	27000	30×35	4820	GM1C273MND3035Y
	27000	35×30	4650	GM1C273MND3530Y
	33000	25.4×50	5250	GM1C333MND2550JY
	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	GM1E682MND2525JY
	8200	22×35	2740	GM1E822MND2235Y
	8200	25.4×25	2760	GM1E822MND2525JY
	10000	22×40	3090	GM1E103MND2240Y
	10000	25.4×30	3100	GM1E103MND2530JY
	10000	30×25	3210	GM1E103MND3025Y
	12000	22×45	3480	GM1E123MND2245Y
	12000	25.4×35	3410	GM1E123MND2535JY
	12000	30×30	3860	GM1E123MND3030Y
	12000	35×25	3540	GM1E123MND3525Y
	15000	22×50	4000	GM1E153MND2250Y
	15000	25.4×40	3920	GM1E153MND2540JY
	15000	30×30	4000	GM1E153MND3030Y
	15000	35×25	3950	GM1E153MND3525Y
	18000	25.4×45	4450	GM1E183MND2545JY
	18000	30×35	4460	GM1E183MND3035Y
	18000	35×30	4630	GM1E183MND3530Y
	22000	25.4×50	5050	GM1E223MND2550JY
	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	GM1V472MND2525JY
	5600	22×35	2750	GM1V562MND2235Y
	5600	25.4×25	2695	GM1V562MND2525JY
	6800	22×40	2800	GM1V682MND2240Y

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	GM1V682MND2530JY
	6800	30×25	2970	GM1V682MND3025Y
	8200	22×45	3470	GM1V822MND2245Y
	8200	25.4×35	3100	GM1V822MND2535JY
	8200	30×30	3130	GM1V822MND3030Y
	8200	35×25	3065	GM1V822MND3525Y
	10000	22×50	3570	GM1V103MND2250Y
	10000	25.4×40	3500	GM1V103MND2540JY
	10000	30×30	3495	GM1V103MND3030Y
	10000	35×25	3495	GM1V103MND3525Y
	12000	25.4×45	3950	GM1V123MND2545JY
	12000	30×35	4010	GM1V123MND3035Y
	12000	35×30	4420	GM1V123MND3530Y
	15000	25.4×50	4500	GM1V153MND2550JY
	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	GM1H332MND2525JY
	3900	22×35	2650	GM1H392MND2235Y
	3900	25.4×30	2650	GM1H392MND2530JY
	3900	30×25	2595	GM1H392MND3025Y
	4700	22×40	2990	GM1H472MND2240Y
	4700	25.4×35	2950	GM1H472MND2535JY
	4700	30×25	2810	GM1H472MND3025Y
	5600	22×45	3360	GM1H562MND2245Y
	5600	25.4×35	3300	GM1H562MND2535JY
	5600	30×30	3370	GM1H562MND3030Y
	5600	35×25	3420	GM1H562MND3525Y
	6800	22×50	3810	GM1H682MND2250Y
	6800	25.4×40	3750	GM1H682MND2540JY
	6800	30×35	3850	GM1H682MND3035Y
	6800	35×30	3850	GM1H682MND3530Y
	8200	25.4×50	4370	GM1H822MND2550JY
	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
63 (1J)	1800	22×25	1820	GM1J182MND2225Y
	2200	22×30	2310	GM1J222MND2230Y
	2200	25.4×25	2280	GM1J222MND2525JY
	2700	22×35	2400	GM1J272MND2235Y
	2700	25.4×25	2350	GM1J272MND2525JY
	3300	22×35	2620	GM1J332MND2235Y
	3300	25.4×30	2600	GM1J332MND2530JY
	3300	30×25	2780	GM1J332MND3025Y
	3900	22×40	2940	GM1J392MND2240Y
	3900	25.4×35	2950	GM1J392MND2535JY
	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	GM1J472MND2540JY
	4700	30×30	3320	GM1J472MND3030Y
	4700	35×25	3360	GM1J472MND3525Y
	5600	25.4×45	3720	GM1J562MND2545JY
	5600	30×35	3750	GM1J562MND3035Y
	5600	35×30	3760	GM1J562MND3530Y
	6800	25.4×50	4220	GM1J682MND2550JY
	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	GM1K182MND2525Y
	2200	22×35	2440	GM1K222MND2235Y
	2200	25.4×30	2450	GM1K222MND2530Y
	2200	30×25	2490	GM1K222MND3025Y
	2700	22×40	2780	GM1K272MND2240Y
	2700	25.4×35	2800	GM1K272MND2535Y
	2700	30×25	2750	GM1K272MND3025Y
	3300	22×45	3160	GM1K332MND2245Y
	3300	25.4×40	3180	GM1K332MND2540Y
	3300	30×30	3170	GM1K332MND3030Y
	3300	35×25	3210	GM1K332MND3525Y
	3900	22×50	3520	GM1K392MND2250Y
	3900	25.4×45	3550	GM1K392MND2545Y
	3900	30×35	3570	GM1K392MND3035Y
	3900	35×25	3500	GM1K392MND3525Y
	4700	25.4×50	4000	GM1K472MND2550Y
	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	GM2A122MND2525Y
	1500	22×35	2410	GM2A152MND2235Y
	1500	25.4×30	2420	GM2A152MND2530Y
	1500	30×25	2460	GM2A152MND3025Y
	1800	22×40	2710	GM2A182MND2240Y
	1800	25.4×35	2730	GM2A182MND2535Y
	1800	30×25	2720	GM2A182MND3025Y
	2200	22×45	3080	GM2A222MND2245Y
	2200	25.4×40	3100	GM2A222MND2540Y
	2200	30×30	3090	GM2A222MND3030Y
	2200	35×25	3140	GM2A222MND3525Y
	2700	22×50	3530	GM2A272MND2250Y
	2700	25.4×45	3560	GM2A272MND2545Y

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	GM2A332MND2550Y
	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
	390	22×25	1630	GM2C391MND2225Y
160 (2C)	470	22×30	1860	GM2C471MND2230Y
	560	22×35	2250	GM2C561MND2235Y
	560	25.4×25	2150	GM2C561MND2525Y
	680	22×40	2350	GM2C681MND2240Y
	680	25.4×30	2330	GM2C681MND2530Y
	820	22×45	2680	GM2C821MND2245Y
	820	25.4×35	2650	GM2C821MND2535Y
	820	30×25	2640	GM2C821MND3025Y
	1000	22×50	3020	GM2C102MND2250Y
	1000	25.4×40	3000	GM2C102MND2540Y
	1000	30×30	2960	GM2C102MND3030Y
	1200	25.4×45	3430	GM2C122MND2545Y
	1200	30×35	3410	GM2C122MND3035Y
	1200	35×25	3400	GM2C122MND3525Y
	1500	25.4×50	3960	GM2C152MND2550Y
	1500	30×40	3960	GM2C152MND3040Y
	1500	35×30	3940	GM2C152MND3530Y
	1800	30×45	4320	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	GM2D561MND2525Y
	680	22×40	2480	GM2D681MND2240Y
	680	25.4×30	2480	GM2D681MND2530Y
	820	22×45	2700	GM2D821MND2245Y
	820	25.4×35	2790	GM2D821MND2535Y
	820	30×25	2780	GM2D821MND3025Y
	1000	22×50	3280	GM2D102MND2250Y
	1000	25.4×40	3280	GM2D102MND2540Y
	1000	30×30	3000	GM2D102MND3030Y
	1000	35×25	3250	GM2D102MND3525Y
	1200	25.4×45	3610	GM2D122MND2545Y
	1200	30×35	3610	GM2D122MND3035Y
	1200	35×30	3570	GM2D122MND3530Y
	1500	25.4×50	4130	GM2D152MND2550Y
	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
200 (2D)	2200	35×45	5250	GM2D222MND3545Y
	2700	35×50	5320	GM2D272MND3550Y
220 (2P)	330	22×25	1410	GM2P331MND2225Y
	390	22×30	1580	GM2P391MND2230Y
	390	25.4×25	1580	GM2P391MND2525Y
	470	22×35	1800	GM2P471MND2235Y
	470	25.4×30	1800	GM2P471MND2530Y
	560	22×40	2030	GM2P561MND2240Y
	560	25.4×35	2030	GM2P561MND2535Y
	560	30×25	2030	GM2P561MND3025Y
	680	22×45	2330	GM2P681MND2245Y
	680	25.4×40	2330	GM2P681MND2540Y
	680	30×30	2330	GM2P681MND3030Y
	820	22×50	2560	GM2P821MND2250Y
	820	25.4×45	2560	GM2P821MND2545Y
	820	30×35	2560	GM2P821MND3035Y
	820	35×25	2560	GM2P821MND3525Y
	1000	25.4×50	2850	GM2P102MND2550Y
	1000	30×40	2850	GM2P102MND3040Y
	1000	35×30	2850	GM2P102MND3530Y
	1200	30×45	3130	GM2P122MND3045Y
	1200	35×35	3130	GM2P122MND3535Y
	1500	30×50	3750	GM2P152MND3050Y
	1500	35×40	3750	GM2P152MND3540Y
250 (2E)	1800	35×45	3900	GM2P182MND3545Y
	2200	35×50	4050	GM2P222MND3550Y
	270	22×25	1310	GM2E271MND2225Y
	330	22×30	1750	GM2E331MND2230Y
	330	25.4×25	1610	GM2E331MND2525Y
	390	22×35	1910	GM2E391MND2235Y
	390	25.4×30	1880	GM2E391MND2530Y
	470	22×40	2110	GM2E471MND2240Y
	470	25.4×35	2110	GM2E471MND2535Y
	470	30×25	2040	GM2E471MND3025Y
	560	22×45	2250	GM2E561MND2245Y
	560	25.4×40	2090	GM2E561MND2540Y
	560	30×30	2250	GM2E561MND3030Y
	680	22×50	2500	GM2E681MND2250Y
	680	25.4×45	2500	GM2E681MND2545Y
	680	30×35	2500	GM2E681MND3035Y
	680	35×25	2750	GM2E681MND3525Y
	820	25.4×50	2800	GM2E821MND2550Y
	820	30×40	2850	GM2E821MND3040Y
	820	35×30	2900	GM2E821MND3530Y
	1000	30×45	3290	GM2E102MND3045Y
	1000	35×35	3320	GM2E102MND3535Y
400 (2G)	1200	30×50	3580	GM2E122MND3050Y
	1200	35×40	3530	GM2E122MND3540Y
	1500	35×45	4040	GM2E152MND3545Y
	1800	35×50	4150	GM2E182MND3550Y
	100	22×25	900	GM2G101MND2225Y
	120	22×30	1020	GM2G121MND2230Y
	120	25.4×25	1130	GM2G121MND2525Y
	150	22×35	1160	GM2G151MND2235Y
	150	25.4×30	1270	GM2G151MND2530Y
	180	22×40	1440	GM2G181MND2240Y
	180	25.4×35	1440	GM2G181MND2535Y
	220	22×45	1500	GM2G221MND2245Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 85°C, 120Hz)	Part Number
400 (2G)	220	25.4×40	1500	GM2G221MND2540Y
	220	30×25	1520	GM2G221MND3025Y
	270	22×50	1670	GM2G271MND2250Y
	270	25.4×45	1650	GM2G271MND2545Y
	270	30×30	1700	GM2G271MND3030Y
	270	35×25	1650	GM2G271MND3525Y
	330	25.4×50	1900	GM2G331MND2550Y
	330	30×35	1950	GM2G331MND3035Y
	330	35×30	1900	GM2G331MND3530Y
	390	30×40	2130	GM2G391MND3040Y
	390	35×35	2130	GM2G391MND3535Y
	470	30×45	2390	GM2G471MND3045Y
	470	35×40	2420	GM2G471MND3540Y
	560	30×50	2700	GM2G561MND3050Y
	560	35×45	2710	GM2G561MND3545Y
	680	35×50	2970	GM2G681MND3550Y
	100	22×25	970	GM2S101MND2225Y
	120	22×30	1070	GM2S121MND2230Y
	150	22×35	1300	GM2S151MND2235Y
	150	25.4×25	1290	GM2S151MND2525Y
	180	22×40	1480	GM2S181MND2240Y
	180	25.4×30	1480	GM2S181MND2530Y
420 (2S)	180	30×25	1480	GM2S181MND3025Y
	220	22×45	1500	GM2S221MND2245Y
	220	25.4×35	1500	GM2S221MND2535Y
	220	30×30	1500	GM2S221MND3030Y
	270	22×50	1940	GM2S271MND2250Y
	270	25.4×40	1940	GM2S271MND2540Y
	270	30×35	1940	GM2S271MND3035Y
	270	35×25	1940	GM2S271MND3525Y
	330	25.4×45	2170	GM2S331MND2545Y
	330	30×40	2170	GM2S331MND3040Y
	330	35×30	2170	GM2S331MND3530Y
	390	25.4×50	2270	GM2S391MND2550Y
	390	30×45	2220	GM2S391MND3045Y
	390	35×35	2270	GM2S391MND3535Y
	470	30×50	2500	GM2S471MND3050Y
	470	35×40	2610	GM2S471MND3540Y
	560	35×45	2820	GM2S561MND3545Y
	680	35×50	2900	GM2S681MND3550Y
	82	22×25	830	GM2W820MND2225Y
	100	22×30	930	GM2W101MND2230Y
	120	22×35	1040	GM2W121MND2235Y
	120	25.4×25	1070	GM2W121MND2525Y
450 (2W)	150	22×40	1190	GM2W151MND2240Y
	150	25.4×30	1190	GM2W151MND2530Y
	180	22×45	1350	GM2W181MND2245Y
	180	25.4×35	1350	GM2W181MND2535Y
	180	30×25	1380	GM2W181MND3025Y
	220	22×50	1550	GM2W221MND2250Y
	220	25.4×40	1500	GM2W221MND2540Y
	220	30×30	1550	GM2W221MND3030Y
	270	25.4×45	1780	GM2W271MND2545Y
	270	30×35	1780	GM2W271MND3035Y
	270	35×25	1780	GM2W271MND3525Y
	330	25.4×50	2010	GM2W331MND2550Y
	330	30×40	2010	GM2W331MND3040Y
	330	35×30	2010	GM2W331MND3530Y

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	GM2H101MND2525Y
	120	22×35	920	GM2H121MND2235Y
	120	25.4×30	890	GM2H121MND2530Y
	150	22×40	1070	GM2H151MND2240Y
	150	25.4×35	1070	GM2H151MND2535Y
	150	30×25	1100	GM2H151MND3025Y
	180	22×45	1380	GM2H181MND2245Y
	180	25.4×40	1380	GM2H181MND2540Y
	180	30×30	1380	GM2H181MND3030Y
	180	35×25	1380	GM2H181MND3525Y
	220	22×50	1610	GM2H221MND2250Y
	220	25.4×45	1600	GM2H221MND2545Y
	220	30×35	1610	GM2H221MND3035Y
	220	35×30	1610	GM2H221MND3530Y
	270	25.4×50	1750	GM2H271MND2550Y
	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	GM2L560MND2525Y
	68	22×35	465	GM2L680MND2235Y
	68	25.4×25	465	GM2L680MND2525Y
	82	22×40	600	GM2L820MND2240Y
	82	25.4×30	600	GM2L820MND2530Y
	82	30×25	600	GM2L820MND3025Y
	100	22×45	785	GM2L101MND2245Y
	100	25.4×35	785	GM2L101MND2535Y
	100	30×25	785	GM2L101MND3025Y
	100	35×25	785	GM2L101MND3525Y
	120	22×50	840	GM2L121MND2250Y
	120	25.4×40	840	GM2L121MND2540Y
	120	30×30	840	GM2L121MND3030Y
	120	35×25	840	GM2L121MND3525Y
	150	25.4×45	920	GM2L151MND2545Y
	150	30×35	920	GM2L151MND3035Y
	150	35×25	920	GM2L151MND3525Y
	180	25.4×50	1245	GM2L181MND2550Y
	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



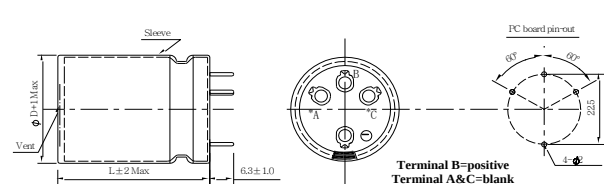
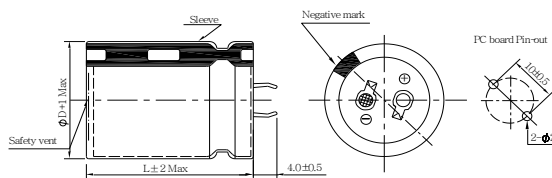
SPECIFICATIONS

Item	Performance Characteristics				
Category Temperature Range	-25 ~ +85℃				
Working Voltage Range	200 ~ 500Vdc				
Capacitance Range	56 ~ 2200 μF				
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 120Hz)	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 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)		200~250	400	420~450 500
	Z(-25℃)/Z(+20℃)		4	4	8 8
Endurance	(at 120Hz)				
	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85℃.				
	Capacitance change		≦ ±20% of the initial value		
	Dissipation factor(tanδ)		≦ 200% of the specified value		
Shelf Life	Leakage current		≦ specified value		
	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 1,000 hours at 85℃ without voltage applied.				
	Capacitance change		≦ ±20% of the initial value		
Others	Dissipation factor(tanδ)		≦ 200% of the specified value		
	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 : 220V 680µF)

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

Special Request

Size code(3035 : 30×35)

Terminal length code

Terminal type code

Capacitance tolerance code(M: ±20%)

Capacitance code(680µF)

Voltage code(220V)

Series code (GV)

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	GV2D391MND2525JY
	470	22×35	1760	GV2D471MND2235Y
	470	25.4×30	1760	GV2D471MND2530JY
	560	22×40	2050	GV2D561MND2240Y
	560	25.4×35	2050	GV2D561MND2535JY
	560	30×25	2050	GV2D561MND3025Y
	680	22×45	2500	GV2D681MND2245Y
	680	25.4×40	2500	GV2D681MND2540JY
	680	30×30	2500	GV2D681MND3030Y
	820	22×50	2740	GV2D821MND2250Y
	820	25.4×45	2740	GV2D821MND2545JY
	820	30×35	2740	GV2D821MND3035Y
	820	35×25	2740	GV2D821MND3525Y
	1000	25.4×50	2985	GV2D102MND2550JY
	1000	30×40	2985	GV2D102MND3040Y
	1000	35×30	2985	GV2D102MND3530Y
	1200	30×45	3300	GV2D122MND3045Y
	1200	35×35	3300	GV2D122MND3535Y
220 (2P)	1500	30×50	3770	GV2D152MND3050Y
	1500	35×40	3770	GV2D152MND3540Y
	1800	35×45	3870	GV2D182MND3545Y
	2200	35×50	4150	GV2D222MND3550Y
	270	22×25	1390	GV2P271MND2225Y
	330	22×30	1530	GV2P331MND2230Y
	330	25.4×25	1530	GV2P331MND2525JY
	390	22×35	1800	GV2P391MND2235Y
	390	25.4×30	1800	GV2P391MND2530JY
	470	22×40	1910	GV2P471MND2240Y
	470	25.4×35	1910	GV2P471MND2535JY
	470	30×25	1910	GV2P471MND3025Y
	560	22×45	2200	GV2P561MND2245Y
	560	25.4×40	2200	GV2P561MND2540JY
	560	30×30	2200	GV2P561MND3030Y
	680	22×50	2530	GV2P681MND2250Y
	680	25.4×45	2530	GV2P681MND2545JY
	680	30×35	2530	GV2P681MND3035Y
	680	35×25	2530	GV2P681MND3525Y
	820	25.4×50	2810	GV2P821MND2550JY
250 (2E)	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
	220	22×25	1300	GV2E221MND2225Y
	270	22×30	1450	GV2E271MND2230Y
	270	25.4×25	1450	GV2E271MND2525JY
	330	22×35	1610	GV2E331MND2235Y
	330	25.4×30	1610	GV2E331MND2530JY
	390	22×40	1890	GV2E391MND2240Y
	390	25.4×35	1890	GV2E391MND2535JY
	390	30×25	1890	GV2E391MND3025Y
	470	22×45	2050	GV2E471MND2245Y
	470	25.4×35	2050	GV2E471MND2535JY

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	GV2E561MND2540JY
	560	30×35	2270	GV2E561MND3035Y
	560	35×25	2270	GV2E561MND3525Y
	680	25.4×50	2545	GV2E681MND2550JY
	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	GV2G121MND2525JY
	150	22×40	1210	GV2G151MND2240Y
	150	25.4×30	1210	GV2G151MND2530JY
	180	22×45	1430	GV2G181MND2245Y
	180	25.4×35	1430	GV2G181MND2535JY
	180	30×25	1430	GV2G181MND3025Y
	220	22×50	1650	GV2G221MND2250Y
	220	25.4×40	1650	GV2G221MND2540JY
	220	30×30	1650	GV2G221MND3030Y
	270	25.4×45	1745	GV2G271MND2545JY
	270	30×35	1745	GV2G271MND3035Y
	270	35×25	1745	GV2G271MND3525Y
	330	25.4×50	1940	GV2G331MND2550JY
	330	30×40	1940	GV2G331MND3040Y
	330	35×30	1940	GV2G331MND3530Y
	390	30×45	2180	GV2G391MND3045Y
420 (2S)	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
	82	22×25	775	GV2S820MND2225Y
	100	22×30	965	GV2S101MND2230Y
	120	22×35	1095	GV2S121MND2235Y
	120	25.4×25	1095	GV2S121MND2525JY
	150	22×40	1260	GV2S151MND2240Y
	150	25.4×30	1260	GV2S151MND2530JY
	150	30×25	1260	GV2S151MND3025Y
	180	22×45	1430	GV2S181MND2245Y
	180	25.4×35	1430	GV2S181MND2535JY
	180	30×30	1430	GV2S181MND3030Y
	220	22×50	1680	GV2S221MND2250Y
	220	25.4×40	1680	GV2S221MND2540JY
	220	30×35	1680	GV2S221MND3035Y
	220	35×25	1680	GV2S221MND3525Y
	270	25.4×45	1810	GV2S271MND2545JY
	270	30×40	1810	GV2S271MND3040Y
	270	35×30	1810	GV2S271MND3530Y
	330	25.4×50	1950	GV2S331MND2550JY
	330	30×45	1950	GV2S331MND3045Y
	330	35×35	1950	GV2S331MND3535Y

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	GV2W820MND2525JY
	100	22×40	980	GV2W101MND2240Y
	100	25.4×30	980	GV2W101MND2530JY
	120	22×45	1120	GV2W121MND2245Y
	120	25.4×35	1120	GV2W121MND2535JY
	120	30×25	1120	GV2W121MND3025Y
	150	22×50	1330	GV2W151MND2250Y
	150	25.4×40	1330	GV2W151MND2540JY
	150	30×30	1330	GV2W151MND3030Y
	150	35×25	1330	GV2W151MND3525Y
	180	25.4×45	1500	GV2W181MND2545JY
	180	30×35	1500	GV2W181MND3035Y
	180	35×30	1500	GV2W181MND3530Y
	220	25.4×50	1740	GV2W221MND2550JY
	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
	56	22×25	595	GV2H560MND2225Y
	68	22×30	630	GV2H680MND2230Y
500 (2H)	82	22×35	805	GV2H820MND2235Y
	82	25.4×25	805	GV2H820MND2525JY
	100	22×40	900	GV2H101MND2240Y
	100	25.4×30	900	GV2H101MND2530JY
	120	22×45	985	GV2H121MND2245Y
	120	25.4×35	985	GV2H121MND2535JY
	120	30×25	985	GV2H121MND3025Y
	150	22×50	1350	GV2H151MND2250Y
	150	25.4×40	1350	GV2H151MND2540JY
	150	30×30	1350	GV2H151MND3030Y
	150	35×25	1350	GV2H151MND3525Y
	180	25.4×45	1400	GV2H181MND2545JY
	180	30×35	1400	GV2H181MND3035Y
	180	35×30	1400	GV2H181MND3530Y
	220	25.4×50	1720	GV2H221MND2550JY
	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



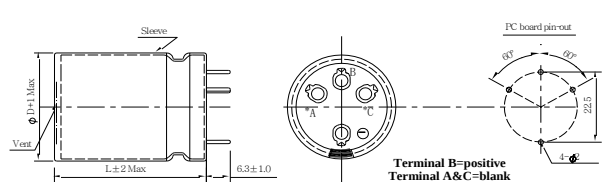
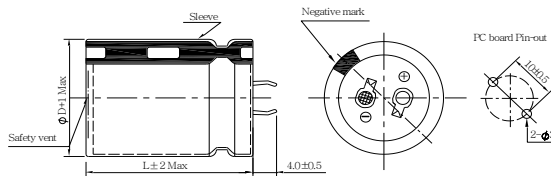
SPECIFICATIONS

Item	Performance Characteristics										
Category Temperature Range	-40 ~ +105℃							-25 ~ +105℃			
Working Voltage Range	16 ~ 100Vdc							160 ~ 600Vdc			
Capacitance Range	560 ~ 47,000μF							39 ~ 2,700μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)										
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	16	25	35	50	63	80	100~250	400~450	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	400	420~600
	Z(-40℃)/Z(+20℃)	15	10	8	6	6	5	5	—	—	—
	Z(-25℃)/Z(+20℃)	—	—	—	—	—	—	—	4	4	8
(at 120Hz)											
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃.										
	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℃ after exposing them for 500 hours at 105℃ 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)

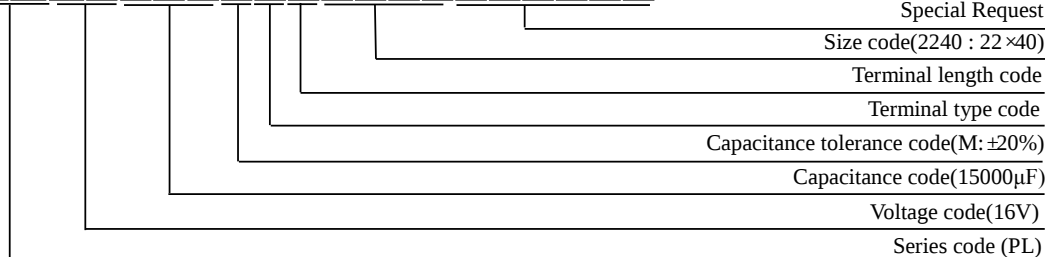
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



PART NUMBER SYSTEM (Example : 250V 680µF)

P L 1 C 1 5 3 M N D 2 2 4 0 Y



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	PL1C103MND2525Y
	12000	22×35	2220	PL1C123MND2235Y
	12000	25.4×30	2240	PL1C123MND2530Y
	12000	30×25	2450	PL1C123MND3025Y
	15000	22×40	2550	PL1C153MND2240Y
	15000	25.4×35	2580	PL1C153MND2535Y
	15000	30×25	2520	PL1C153MND3025Y
	18000	22×45	2870	PL1C183MND2245Y
	18000	25.4×40	2920	PL1C183MND2540Y
	18000	30×30	2880	PL1C183MND3030Y
	18000	35×25	2920	PL1C183MND3525Y
	22000	25.4×45	3320	PL1C223MND2545Y
	22000	30×35	3290	PL1C223MND3035Y
	22000	35×25	3230	PL1C223MND3525Y
	27000	25.4×50	3780	PL1C273MND2550Y
	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	PL1E682MND2525Y
	8200	22×35	2110	PL1E822MND2235Y
	8200	25.4×30	2120	PL1E822MND2530Y
	8200	30×25	2150	PL1E822MND3025Y
	10000	22×40	2390	PL1E103MND2240Y
	10000	25.4×35	2420	PL1E103MND2535Y
	10000	30×25	2370	PL1E103MND3025Y
	12000	22×45	2690	PL1E123MND2245Y
	12000	25.4×40	2740	PL1E123MND2540Y
	12000	30×30	2700	PL1E123MND3030Y
	12000	35×25	2740	PL1E123MND3525Y
	15000	25.4×45	3150	PL1E153MND2545Y
	15000	30×35	3130	PL1E153MND3035Y
	15000	35×30	3270	PL1E153MND3530Y
	18000	25.4×50	3540	PL1E183MND2550Y
	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	PL1V472MND2525Y
	5600	25.4×30	1960	PL1V562MND2530Y
	6800	25.4×35	2230	PL1V682MND2535Y
	8200	25.4×40	2610	PL1V822MND2540Y
	10000	25.4×45	2850	PL1V103MND2545Y

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	PL1V123MND2550Y
	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
	1800	22×25	1330	PL1H182MND2225Y
	2200	22×30	1700	PL1H222MND2230Y
	2200	25.4×25	1700	PL1H222MND2525Y
	3300	22×35	1930	PL1H332MND2235Y
	3300	25.4×30	1850	PL1H332MND2530Y
	3900	22×40	2160	PL1H392MND2240Y
	3900	25.4×35	2180	PL1H392MND2535Y
	3900	30×25	2070	PL1H392MND3025Y
	4700	22×45	2460	PL1H472MND2245Y
	4700	25.4×35	2390	PL1H472MND2535Y
	4700	30×30	2355	PL1H472MND3030Y
	4700	35×25	2480	PL1H472MND3525Y
50 (1H)	5600	22×50	2750	PL1H562MND2250Y
	5600	25.4×40	2700	PL1H562MND2540Y
	5600	30×35	2760	PL1H562MND3035Y
	5600	35×25	2700	PL1H562MND3525Y
	6800	25.4×50	3300	PL1H682MND2550Y
	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	PL1J182MND2525Y
	2200	22×35	1730	PL1J222MND2235Y
	2200	25.4×30	1740	PL1J222MND2530Y
	2700	22×40	1970	PL1J272MND2240Y
	2700	25.4×35	1990	PL1J272MND2535Y
	2700	30×25	1890	PL1J272MND3025Y
	3300	22×50	2290	PL1J332MND2250Y
	3300	25.4×40	2290	PL1J332MND2540Y
	3300	30×30	2240	PL1J332MND3030Y
	3300	35×25	2155	PL1J332MND3525Y
	3900	25.4×45	2540	PL1J392MND2545Y
	3900	30×35	2550	PL1J392MND3035Y
	3900	35×25	2420	PL1J392MND3525Y
63 (1J)	4700	25.4×50	2860	PL1J472MND2550Y
	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℃, 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	PL1K122MND2525Y
	1500	22×35	1590	PL1K152MND2235Y
	1500	25.4×30	1610	PL1K152MND2530Y
	1800	22×40	1800	PL1K182MND2240Y
	1800	25.4×30	1760	PL1K182MND2530Y
	1800	30×25	1710	PL1K182MND3025Y
	2200	22×45	2040	PL1K222MND2245Y
	2200	25.4×35	2010	PL1K222MND2535Y
	2200	30×30	2050	PL1K222MND3030Y
	2200	35×25	2070	PL1K222MND3525Y
	2700	25.4×45	2360	PL1K272MND2545Y
	2700	30×35	2350	PL1K272MND3035Y
	2700	35×25	2290	PL1K272MND3525Y
	3300	25.4×50	2680	PL1K332MND2550Y
	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	PL2A821MND2525Y
	1000	22×35	1500	PL2A102MND2235Y
	1000	25.4×30	1510	PL2A102MND2530Y
	1200	22×40	1690	PL2A122MND2240Y
	1200	25.4×35	1710	PL2A122MND2535Y
	1200	30×25	1680	PL2A122MND3025Y
	1500	22×45	1940	PL2A152MND2245Y
	1500	25.4×40	1980	PL2A152MND2540Y
	1500	30×30	1950	PL2A152MND3030Y
	1500	35×25	1980	PL2A152MND3525Y
	1800	25.4×45	2230	PL2A182MND2545Y
	1800	30×35	2200	PL2A182MND3035Y
	1800	35×25	2170	PL2A182MND3525Y
	2200	25.4×50	2565	PL2A222MND2550Y
	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	PL2C561MND2525Y
	680	22×40	1750	PL2C681MND2240Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 120Hz)	Part Number
160 (2C)	680	25.4×30	1730	PL2C681MND2530Y
	820	22×45	2000	PL2C821MND2245Y
	820	25.4×35	2000	PL2C821MND2535Y
	820	30×25	2000	PL2C821MND3025Y
	1000	22×50	2110	PL2C102MND2250Y
	1000	25.4×40	2150	PL2C102MND2540Y
	1000	30×30	2110	PL2C102MND3030Y
	1000	35×25	2130	PL2C102MND3525Y
	1200	25.4×45	2315	PL2C122MND2545Y
	1200	30×35	2490	PL2C122MND3035Y
	1200	35×30	2315	PL2C122MND3530Y
	1500	25.4×50	2675	PL2C152MND2550Y
	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
200 (2D)	2700	35×50	3600	PL2C272MND3550Y
	270	22×25	1100	PL2D271MND2225Y
	330	22×30	1250	PL2D331MND2230Y
	390	22×35	1310	PL2D391MND2235Y
	390	25.4×25	1310	PL2D391MND2525Y
	470	22×40	1335	PL2D471MND2240Y
	470	25.4×30	1400	PL2D471MND2530Y
	560	22×45	1600	PL2D561MND2245Y
	560	25.4×35	1560	PL2D561MND2535Y
	560	30×25	1600	PL2D561MND3025Y
	680	22×50	1650	PL2D681MND2250Y
	680	25.4×40	1700	PL2D681MND2540Y
	680	30×30	1720	PL2D681MND3030Y
	820	25.4×45	1935	PL2D821MND2545Y
	820	30×35	1935	PL2D821MND3035Y
	820	35×25	1935	PL2D821MND3525Y
	1000	25.4×50	2040	PL2D102MND2550Y
	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	PL2P391MND2525Y
	470	22×40	1400	PL2P471MND2240Y
	470	25.4×30	1400	PL2P471MND2530Y
	560	22×45	1550	PL2P561MND2245Y
	560	25.4×35	1550	PL2P561MND2535Y
	560	30×25	1550	PL2P561MND3025Y
	680	22×50	1750	PL2P681MND2250Y
	680	25.4×40	1750	PL2P681MND2540Y
	680	30×30	1700	PL2P681MND3030Y
	820	25.4×45	1930	PL2P821MND2545Y
	820	30×35	1900	PL2P821MND3035Y
	820	35×25	1930	PL2P821MND3525Y

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
250 (2E)	1800	35×45	2600	PL2P182MND3545Y
	270	22×25	950	PL2E271MND2225Y
	330	22×30	1200	PL2E331MND2230Y
	330	25.4×25	1260	PL2E331MND2525YJ
	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
400 (2G)	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
	100	22×25	700	PL2G101MND2225Y
	120	22×30	730	PL2G121MND2230Y
	150	22×35	800	PL2G151MND2235Y
	150	25.4×25	795	PL2G151MND2525YJ
	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
420 (2S)	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
	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	PL2S181MND2535JY
	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
450 (2W)	680	35×50	2210	PL2S681MND3550Y
	200	25.4×25	890	PL2W201MND2525JY
	260	25.4×30	1070	PL2W261MND2530JY
	310	30×25	1240	PL2W311MND3025Y
	320	25.4×35	1240	PL2W321MND2535JY
	390	25.4×40	1420	PL2W391MND2540JY
	390	35×25	1410	PL2W391MND3525Y
	400	30×30	1420	PL2W401MND3030Y
	450	25.4×45	1510	PL2W451MND2545JY
	490	30×35	1570	PL2W491MND3035Y
	510	25.4×50	1640	PL2W511MND2550JY
	520	35×30	1660	PL2W521MND3530Y
	570	25.4×55	1750	PL2W571MND2555JY
	590	30×40	1790	PL2W591MND3040Y
	620	25.4×60	1840	PL2W621MND2560JY
	640	35×35	1830	PL2W641MND3535Y
	650	25.4×65	1920	PL2W651MND2565JY
	680	30×45	1840	PL2W681MND3045Y
	760	25.4×70	2090	PL2W761MND2570JY
	770	30×50	2030	PL2W771MND3050Y
	820	25.4×75	2160	PL2W821MND2575JY
	890	35×45	2070	PL2W891MND3545Y
	900	25.4×80	2230	PL2W901MND2580JY
	940	30×60	2360	PL2W941MND3060Y
	1010	30×65	2410	PL2WA12MND3065Y
	1020	35×50	2140	PL2WA22MND3550Y
	1080	30×70	2520	PL2WA82MND3070Y
	1140	30×75	2610	PL2WB42MND3075Y
	1140	35×55	2250	PL2WB42MND3555Y
	1230	30×80	2720	PL2WC32MND3080Y
	1260	35×60	2370	PL2WC62MND3560Y
	1300	30×85	2800	PL2W132MND3085Y
	1300	35×35	2410	PL2W132MND3535Y
	1370	30×90	2870	PL2WD72MND3090Y
	1410	35×70	2500	PL2WD12MND3570Y
	1430	30×95	2920	PL2WE32MND3095Y
	1500	30×100	3010	PL2W152MND30A0Y

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
450 (2W)	1530	35×75	2590	PL2WF32MND3575Y
	1650	35×80	2670	PL2WG52MND3580Y
	1700	35×85	2710	PL2W172MND3585Y
	1800	35×90	2790	PL2W182MND3590Y
	1900	35×95	2850	PL2W192MND3595Y
	2000	35×100	2920	PL2W202MND35A0Y
475 (2B)	160	25.4×25	960	PL2B161MND2525Y
	200	25.4×30	1100	PL2B201MND2530Y
	240	30×25	1260	PL2B241MND3025Y
	250	25.4×35	1280	PL2B251MND2535Y
	280	35×25	1480	PL2B281MND3525Y
	300	25.4×40	1350	PL2B301MND2540Y
	310	30×30	1340	PL2B311MND3030Y
	350	25.4×45	1420	PL2B351MND2545Y
	380	30×35	1410	PL2B381MND3035Y
	380	35×30	1520	PL2B381MND3530Y
	390	25.4×50	1560	PL2B391MND2550Y
	440	25.4×55	1640	PL2B441MND2555Y
	450	30×40	1520	PL2B451MND3040Y
	480	35×35	1670	PL2B481MND3535Y
	490	25.4×60	1740	PL2B491MND2560Y
	520	30×45	1630	PL2B521MND3045Y
	560	25.4×65	1880	PL2B561MND2565Y
	570	35×40	1790	PL2B571MND3540Y
	590	30×50	1760	PL2B591MND3050Y
	620	25.4×70	1960	PL2B621MND2570Y
	660	30×55	1890	PL2B661MND3055Y
	660	35×45	1820	PL2B661MND3545Y
	680	25.4×75	2050	PL2B681MND2575Y
	720	25.4×80	2140	PL2B721MND2580Y
	730	30×60	1990	PL2B731MND3060Y
	750	30×65	2050	PL2B751MND3065Y
	760	35×50	1910	PL2B761MND3550Y
	820	30×70	2100	PL2B821MND3070Y
	860	35×55	2150	PL2B861MND3555Y
	890	30×75	2240	PL2B891MND3075Y
	950	35×60	2280	PL2B951MND3560Y
	960	30×80	2350	PL2B961MND3080Y
	1010	35×65	2360	PL2BA12MND3565Y
	1100	30×85	2490	PL2B112MND3085Y
	1110	35×70	2490	PL2BB12MND3570Y
	1180	30×90	2580	PL2BB82MND3090Y
	1200	35×75	2660	PL2B122MND3575Y
	1250	30×95	2710	PL2BC52MND3095Y
	1290	35×80	2820	PL2BC92MND3580Y
	1310	30×100	2820	PL2BD12MND30A0Y
	1410	35×85	2900	PL2BD12MND3585Y
	1520	35×90	3130	PL2BF22MND3590Y
	1640	35×95	3270	PL2BG42MND3595Y
	1730	35×100	3350	PL2BH32MND35A0Y
500 (2H)	120	25.4×25	930	PL2H121MND2525Y
	170	25.4×30	1120	PL2H171MND2530Y
	190	30×25	1200	PL2H191MND3025Y
	210	25.4×35	1250	PL2H211MND2535Y
	250	25.4×40	1330	PL2H251MND2540Y
	250	30×30	1340	PL2H251MND3030Y
	260	35×25	1430	PL2H261MND3525Y
	300	25.4×45	1420	PL2H301MND2545Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
500 (2H)	320	30×35	1420	PL2H321MND3035Y
	340	25.4×50	1510	PL2H341MND2550Y
	340	35×30	1540	PL2H341MND3530Y
	380	25.4×55	1620	PL2H381MND2555Y
	380	30×40	1560	PL2H381MND3040Y
	430	25.4×60	1700	PL2H431MND2560Y
	430	35×35	1620	PL2H431MND3535Y
	450	30×45	1610	PL2H451MND3045Y
	490	25.4×65	1750	PL2H491MND2565Y
	510	30×50	1700	PL2H511MND3050Y
	520	35×40	1730	PL2H521MND3540Y
	530	25.4×70	1790	PL2H531MND2570Y
	580	25.4×75	1870	PL2H581MND2575Y
	580	30×55	1840	PL2H581MND3055Y
	600	35×45	1850	PL2H601MND3545Y
	620	25.4×80	1950	PL2H621MND2580Y
	640	30×60	1920	PL2H641MND3060Y
	680	30×65	2040	PL2H681MND3065Y
	690	35×50	1920	PL2H691MND3550Y
	750	30×70	2130	PL2H751MND3070Y
	780	35×55	2110	PL2H781MND3555Y
	810	30×75	2210	PL2H811MND3075Y
	860	35×60	2230	PL2H861MND3560Y
	870	30×80	2320	PL2H871MND3080Y
	920	35×65	2310	PL2H921MND3565Y
	930	30×85	2440	PL2H931MND3085Y
	1000	30×90	2500	PL2H102MND3090Y
	1010	35×70	2390	PL2HA12MND3570Y
	1070	30×95	2590	PL2HA72MND3095Y
	1090	35×75	2420	PL2HA92MND3575Y
	1120	30×100	2670	PL2HB22MND30A0Y
	1170	35×80	2540	PL2HB72MND3580Y
	1220	35×85	2650	PL2HC22MND3585Y
	1300	35×90	2780	PL2H132MND3590Y
	1390	35×95	2860	PL2HD92MND3595Y
	1450	35×100	3040	PL2HE52MND35A0Y
550 (2L)	39	22×25	330	PL2L390MND2225Y
	47	22×30	400	PL2L470MND2230Y
	47	25.4×25	400	PL2L470MND2525Y
	56	22×35	450	PL2L560MND2235Y
	56	25.4×30	450	PL2L560MND2530Y
	68	22×40	520	PL2L680MND2240Y
	68	25.4×35	520	PL2L680MND2535Y
	82	22×45	600	PL2L820MND2245Y
	82	25.4×40	600	PL2L820MND2540Y
	82	30×25	600	PL2L820MND3025Y
	100	22×50	720	PL2L101MND2250Y
	100	25.4×45	720	PL2L101MND2545Y
	100	30×30	720	PL2L101MND3030Y
	120	25.4×50	830	PL2L121MND2550Y
	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

PL Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
550 (2L)	270	35×45	1300	PL2L271MND3545Y
	330	35×50	1420	PL2L331MND3550Y
600 (2J)	100	22×50	770	PL2J101MND2250Y
	100	25.4×45	770	PL2J101MND2545Y
	100	30×30	830	PL2J101MND3030Y
	100	35×25	850	PL2J101MND3525Y
	120	22×55	880	PL2J121MND2255Y
	120	25.4×50	880	PL2J121MND2550Y
	120	30×35	930	PL2J121MND3035Y
	120	35×25	960	PL2J121MND3525Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
600 (2J)	150	25.4×55	1030	PL2J151MND2555Y
	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

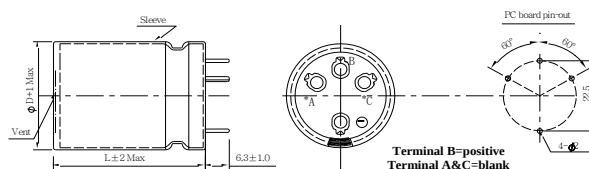
Frequency Multipliers

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

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**

Terminal Code :K6 (Φ 35)



P	K	2	E	6	8	1	M	N	D	3	5	3	5	Y					
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Series code (PK)

ALUMINUM ELECTROLYTIC CAPACITORS



PK Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	PK2D391MND2525JY
	470	22×40	1540	PK2D471MND2240Y
	470	25.4×30	1500	PK2D471MND2530JY
	560	22×45	1670	PK2D561MND2245Y
	560	25.4×35	1670	PK2D561MND2535JY
	560	30×25	1670	PK2D561MND3025Y
	680	22×50	1780	PK2D681MND2250Y
	680	25.4×40	1780	PK2D681MND2540JY
	680	30×30	1750	PK2D681MND3030Y
	820	25.4×45	2040	PK2D821MND2545JY
	820	30×35	2040	PK2D821MND3035Y
	820	35×25	2040	PK2D821MND3525Y
	1000	25.4×50	2450	PK2D102MND2550JY
	1000	30×40	2300	PK2D102MND3040Y
	1000	35×30	2300	PK2D102MND3530Y
	1200	30×45	2650	PK2D122MND3045Y
	1200	35×35	2650	PK2D122MND3535Y
220 (2P)	1500	30×50	2800	PK2D152MND3050Y
	1500	35×40	3080	PK2D152MND3540Y
	1800	35×45	3480	PK2D182MND3545Y
	2200	35×50	3520	PK2D222MND3550Y
	220	22×25	1000	PK2P221MND2225Y
	270	22×30	1150	PK2P271MND2230Y
	330	22×35	1250	PK2P331MND2235Y
	330	25.4×25	1250	PK2P331MND2525JY
	390	22×40	1400	PK2P391MND2240Y
	390	25.4×30	1400	PK2P391MND2530JY
	470	22×45	1520	PK2P471MND2245Y
	470	25.4×35	1450	PK2P471MND2535JY
	470	30×25	1450	PK2P471MND3025Y
	560	22×50	1700	PK2P561MND2250Y
	560	25.4×40	1700	PK2P561MND2540JY
	560	30×30	1700	PK2P561MND3030Y
	680	25.4×45	1780	PK2P681MND2545JY
	680	30×35	1780	PK2P681MND3035Y
	680	35×25	1780	PK2P681MND3525Y
	820	25.4×50	2100	PK2P821MND2550JY
250 (2E)	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
	220	22×25	1000	PK2E221MND2225Y
	270	22×30	1110	PK2E271MND2230Y
	270	25.4×25	1180	PK2E271MND2525JY
	330	22×35	1250	PK2E331MND2235Y
	330	25.4×30	1300	PK2E331MND2530JY
	390	22×40	1420	PK2E391MND2240Y
	390	25.4×35	1400	PK2E391MND2535JY
	390	30×25	1450	PK2E391MND3025Y
	470	22×45	1610	PK2E471MND2245Y
	470	25.4×40	1650	PK2E471MND2540JY

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	PK2E561MND2545JY
	560	30×35	1800	PK2E561MND3035Y
	560	35×30	1800	PK2E561MND3530Y
	680	25.4×50	2000	PK2E681MND2550JY
	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	PK2G121MND2525JY
	150	22×40	900	PK2G151MND2240Y
	150	25.4×30	880	PK2G151MND2530JY
400 (2G)	180	22×45	1020	PK2G181MND2245Y
	180	25.4×35	1020	PK2G181MND2535JY
	180	30×25	1020	PK2G181MND3025Y
	220	22×50	1150	PK2G221MND2250Y
	220	25.4×40	1100	PK2G221MND2540JY
	220	30×30	1100	PK2G221MND3030Y
	270	25.4×45	1220	PK2G271MND2545JY
	270	30×35	1290	PK2G271MND3035Y
	270	35×25	1220	PK2G271MND3525Y
	330	25.4×50	1470	PK2G331MND2550JY
	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
420 (2S)	100	22×30	700	PK2S101MND2230Y
	120	22×35	810	PK2S121MND2235Y
	120	25.4×25	810	PK2S121MND2525JY
	150	22×40	930	PK2S151MND2240Y
	150	25.4×30	950	PK2S151MND2530JY
	180	22×45	1040	PK2S181MND2245Y
	180	25.4×35	1020	PK2S181MND2535JY
	180	30×25	1060	PK2S181MND3025Y
	220	22×50	1200	PK2S221MND2250Y
	220	25.4×40	1180	PK2S221MND2540JY
	220	30×30	1180	PK2S221MND3030Y
	220	35×25	1180	PK2S221MND3525Y
	270	25.4×45	1360	PK2S271MND2545JY
	270	30×35	1360	PK2S271MND3035Y
	270	35×30	1300	PK2S271MND3530Y
	330	25.4×50	1500	PK2S331MND2550JY
	330	30×40	1480	PK2S331MND3040Y
	330	35×35	1550	PK2S331MND3535Y
	390	30×45	1700	PK2S391MND3045Y

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
	470	35×45	1950	PK2W471MND3545Y
	560	35×50	2010	PK2W561MND3550Y
500 (2H)	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

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
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
550 (2L)	82	22×35	720	PK2L820MND2235Y
	82	25.4×30	740	PK2L820MND2530Y
	100	22×45	830	PK2L101MND2245Y
	100	25.4×35	850	PK2L101MND2535Y
	100	30×25	820	PK2L101MND3025Y
	120	22×50	930	PK2L121MND2250Y
	120	25.4×40	950	PK2L121MND2540Y
	120	30×30	910	PK2L121MND3030Y
	120	35×25	880	PK2L121MND3525Y
	150	25.4×45	1080	PK2L151MND2545Y
	150	30×35	1040	PK2L151MND3035Y
	180	25.4×50	1200	PK2L181MND2550Y
	180	30×40	1170	PK2L181MND3040Y
	180	35×30	1100	PK2L181MND3530Y
	220	30×45	1330	PK2L221MND3045Y
	220	35×35	1230	PK2L221MND3535Y
	270	30×50	1500	PK2L271MND3050Y
	270	35×40	1420	PK2L271MND3540Y
	330	35×45	1600	PK2L331MND3545Y
	330	35×50	1640	PK2L331MND3550Y
	470	35×60	2030	PK2L471MND3560Y

◆ 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 ~ 450	0.77	1.00	1.30	1.41	1.43
500~550	0.70	1.00	1.30	1.41	1.43

PG Series

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



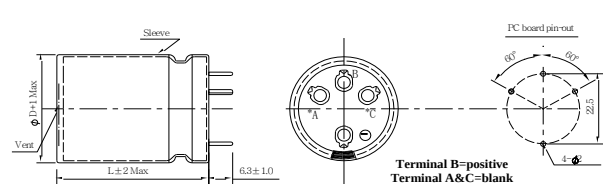
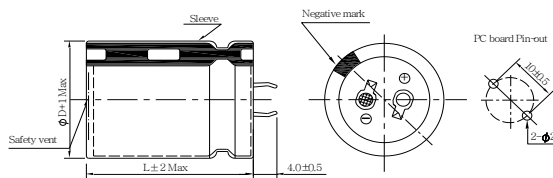
◆ SPECIFICATIONS

Item	Performance Characteristics																										
Category Temperature Range	-25 ~ +105℃																										
Working Voltage Range	200 ~ 550Vdc																										
Capacitance Range	56 ~ 1,800μF																										
Capacitance Tolerance	±20% (at 25℃ and 120Hz)																										
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><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><td>550</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><td>0.20</td></tr></table>									Rated Voltage (V)	200	220	250	400	420	450	500	550	tanδ(Max)	0.20	0.20	0.20	0.25	0.25	0.25	0.25	0.20
	Rated Voltage (V)	200	220	250	400	420	450	500	550																		
	tanδ(Max)	0.20	0.20	0.20	0.25	0.25	0.25	0.25	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)	<table><tr><td>Rated voltage (V)</td><td>200~250</td><td>400</td><td>420~450</td><td>500~550</td></tr><tr><td>Z(-25℃)/Z(+20℃)</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	500~550	Z(-25℃)/Z(+20℃)	4	4	8	8								
Rated voltage (V)	200~250	400	420~450	500~550																							
Z(-25℃)/Z(+20℃)	4	4	8	8																							
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105℃. <table><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℃ after exposing them for 1,000 hours at 105℃ without voltage applied. <table><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)

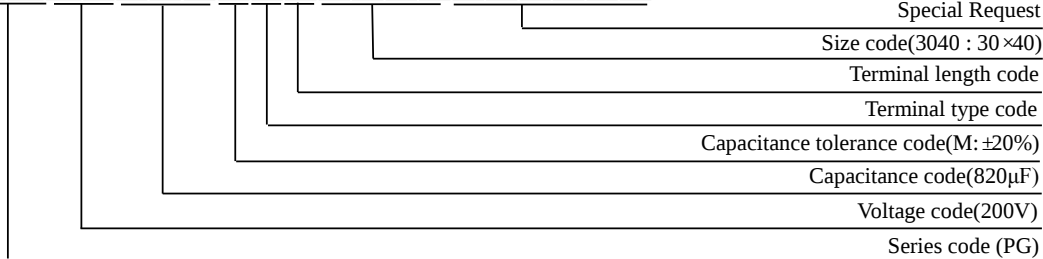
Terminal Code : ND : Standard

Terminal Code :K6 (Φ35)



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

P G 2 D 8 2 1 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℃, 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
220 (2P)	1200	30×50	2530	PG2D122MND3050Y
	1200	35×40	2650	PG2D122MND3540Y
	1500	35×45	3080	PG2D152MND3545Y
	1800	35×50	3120	PG2D182MND3550Y
	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
250 (2E)	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
	180	22×25	950	PG2E221MND2225Y
	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℃, 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
400 (2G)	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
420 (2S)	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℃, 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	PG2W820MND2525JY
	100	22×35	690	PG2W101MND2235Y
	100	25.4×30	700	PG2W101MND2530JY
	120	22×40	770	PG2W121MND2240Y
	120	25.4×35	830	PG2W121MND2535JY
	120	30×25	810	PG2W121MND3025Y
	150	22×45	880	PG2W151MND2245Y
	150	25.4×40	880	PG2W151MND2540JY
	150	30×30	880	PG2W151MND3030Y
	180	22×50	900	PG2W181MND2250Y
	180	25.4×45	920	PG2W181MND2545JY
	180	30×35	1030	PG2W181MND3035Y
	180	35×25	1050	PG2W181MND3525Y
	220	25.4×50	1200	PG2W221MND2550JY
	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
	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	PG2H680MND2525JY

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 120Hz)	Part Number
500 (2H)	82	22×35	720	PG2H820MND2235Y
	82	25.4×30	740	PG2H820MND2530JY
	82	30×25	740	PG2H820MND3025Y
	100	22×40	770	PG2H101MND2240Y
	100	25.4×35	780	PG2H101MND2535JY
	100	30×25	820	PG2H101MND3025Y
	120	22×45	930	PG2H121MND2245Y
	120	25.4×40	930	PG2H121MND2540JY
	120	30×30	910	PG2H121MND3030Y
	120	35×25	880	PG2H121MND3525Y
	150	22×50	1080	PG2H151MND2250Y
	150	25.4×45	1080	PG2H151MND2545JY
	150	30×35	1040	PG2H151MND3035Y
	150	35×25	1080	PG2H151MND3525Y
	180	25.4×50	1100	PG2H181MND2550JY
	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
550 (2L)	120	30×30	910	PG2L121MND3030Y
	150	30×35	1040	PG2L151MND3035Y
	180	30×40	1170	PG2L181MND3040Y
	180	35×30	1100	PG2L181MND3530Y
	220	30×50	1350	PG2L221MND3050Y
	220	35×40	1280	PG2L221MND3540Y
	270	35×45	1450	PG2L271MND3545Y
	330	35×50	1640	PG2L331MND3550Y
	390	35×60	1850	PG2L391MND3560Y

◆ RIPPLE CURRENT MULTIPLIERS

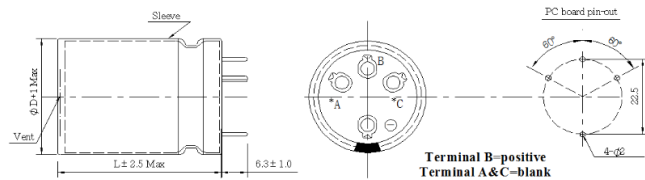
Frequency Multipliers

Vdc	Frequency (Hz)				
	50/60	120	1K	10K	100K
200 ~ 250	0.80	1.00	1.20	1.30	1.40
400 ~ 550	0.80	1.00	1.10	1.12	1.15

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**

Terminal Code :K6 (Φ 35)



◆ **PART NUMBER SYSTEM (Example : 400V 220 μ F)**

Special Request

Size code(2230 : 22×30)

Terminal length code

Terminal type codeCapacitance tolerance code(M: $\pm 20\%$)

Capacitance code(120μF)

Voltage code(400V)

Series code (PO)

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
		25.4×30	840	PO2G151MND2530JY
	180	22×40	900	PO2G181MND2240Y
		25.4×30	900	PO2G181MND2530JY
	220	22×45	1050	PO2G221MND2245Y
		25.4×35	1050	PO2G221MND2535JY
		30×30	1050	PO2G221MND3030Y
	270	22×50	1160	PO2G271MND2250Y
		25.4×40	1160	PO2G271MND2540JY
		30×30	1160	PO2G271MND3030Y
		35×30	1160	PO2G271MND3530Y
	330	25.4×50	1360	PO2G331MND2550JY
		30×35	1360	PO2G331MND3035Y
		35×30	1360	PO2G331MND3530Y
	390	25.4×55	1470	PO2G391MND2555JY
		30×40	1470	PO2G391MND3040Y
		35×35	1470	PO2G391MND3535Y
	470	30×45	1500	PO2G471MND3045Y
		35×40	1500	PO2G471MND3540Y
	560	30.5×55	1800	PO2G561MND3155Y
		35×40	1800	PO2G561MND3540Y
	680	35×50	2010	PO2G681MND3550Y
420 (2S)	82	22×25	600	PO2S820MND2225Y
	100	22×30	630	PO2S101MND2230Y
		25.4×25	630	PO2S101MND2525Y
	120	22×35	770	PO2S121MND2235Y
		25.4×25	770	PO2S121MND2525Y
	150	22×40	800	PO2S151MND2240Y
		25.4×30	800	PO2S151MND2530JY
		30×25	800	PO2S151MND3025Y
	180	22×40	860	PO2S181MND2240Y
		25.4×35	860	PO2S181MND2535Y
		30×30	860	PO2S181MND3030Y
	220	22×50	990	PO2S221MND2250Y
		25.4×40	990	PO2S221MND2540JY
		30×30	990	PO2S221MND3030Y
		35×25	990	PO2S221MND3525Y
	270	25.4×45	1180	PO2S271MND2545JY
		30×40	1180	PO2S271MND3040Y
		35×30	1180	PO2S271MND3530Y
	330	25.4×55	1350	PO2S331MND2555JY
		30×40	1350	PO2S331MND3040Y
		35×35	1350	PO2S331MND3535Y
	390	30×45	1530	PO2S391MND3045Y
		35×40	1530	PO2S391MND3540Y
	470	30×50	1760	PO2S471MND3050Y
		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
		25.4×25	600	PO2W101MND2525JY
	120	22×35	680	PO2W121MND2235Y
		25.4×30	680	PO2W121MND2530JY
	150	22×40	750	PO2W151MND2240Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
450 (2W)	150	25.4×35	750	PO2W151MND2535JY
		30×25	750	PO2W151MND3025Y
	180	22×50	820	PO2W181MND2250Y
		25.4×40	820	PO2W181MND2540JY
		30×30	820	PO2W181MND3030Y
	220	25.4×45	950	PO2W221MND2545JY
		30×35	950	PO2W221MND3035Y
		35×30	950	PO2W221MND3530Y
	270	25.4×50	1130	PO2W271MND2550JY
		30×40	1130	PO2W271MND3040Y
		35×30	1130	PO2W271MND3530Y
	330	30×45	1380	PO2W331MND3045Y
		35×35	1380	PO2W331MND3535Y
	390	30×50	1470	PO2W391MND3050Y
		35×40	1470	PO2W391MND3540Y
	470	25.4×55	1420	PO2W471MND2555JY
		35×45	1650	PO2W471MND3545Y
	560	25.4×60	1560	PO2W561MND2560JY
		35×50	1800	PO2W561MND3550Y
	680	25.4×75	1910	PO2W681MND2575JY
		30.5×55	1860	PO2W681MND3155Y
	820	30.5×60	2020	PO2W821MND3160Y
	900	30.5×65	2210	PO2W901MND3165Y
	1000	30.5×75	2550	PO2W102MND3175Y
		35×55	2340	PO2W102MND3555Y
	1100	30.5×80	2730	PO2W112MND3180Y
		35×60	2540	PO2W112MND3560Y
	1200	30.5×85	2900	PO2W122MND3185Y
		35×65	2770	PO2W122MND3565Y
	1300	30.5×90	3080	PO2W132MND3190Y
		35×70	2960	PO2W132MND3570Y
	1400	30.5×100	3480	PO2W142MND31A0Y
		35×75	3200	PO2W142MND3575Y
	1500	35×80	3400	PO2W152MND3580Y
	1700	35×85	3640	PO2W172MND3585Y
	1800	35×90	3860	PO2W182MND3590Y
	1900	35×95	4050	PO2W192MND3595Y
	2000	35×100	4300	PO2W202MND35A0Y
475 (2B)	390	25.4×55	1050	PO2B391MND2555JY
	470	25.4×65	1240	PO2B471MND2565JY
	560	25.4×75	1450	PO2B561MND2575JY
		30.5×55	1360	PO2B561MND3155Y
	680	30.5×65	1630	PO2B681MND3165Y
	820	30.5×75	1880	PO2B821MND3175Y
	1000	30.5×90	2270	PO2B102MND3190Y
		35×75	2370	PO2B102MND3575Y
	1200	35×85	2680	PO2B122MND3585Y
	1500	35×100	3170	PO2B152MND35A0Y
500 (2H)	390	25.4×60	1120	PO2H391MND2560JY
	470	25.4×70	1280	PO2H471MND2570JY
	560	30.5×60	1460	PO2H561MND3160Y
	680	30.5×70	1700	PO2H681MND3170Y
		30.5×80	1950	PO2H821MND3180Y
	820	35×60	1830	PO2H821MND3560Y
		35×70	2140	PO2H102MND3570Y
	1000	30.5×95	2330	PO2H102MND3195Y
		35×85	2610	PO2H122MND3585Y
	1300	35×90	2760	PO2H132MND3590Y

PO Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μ F)	Case Size (mm) Φ D×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
500(2H)	1500	35×100	3080	PO2H152MND35A0Y

◆ RIPPLE CURRENT MULTIPLIERS

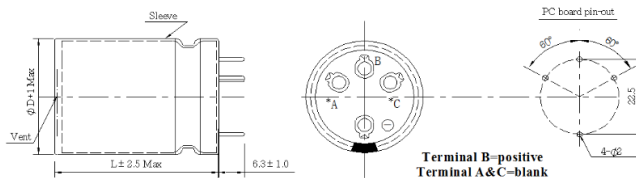
Frequency Multipliers

Vdc	Frequency (Hz)					
	50	120	300	1K	10K	50K
400 ~ 500	0.77	1.00	1.16	1.30	1.41	1.43

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**

Terminal Code :K6 (Φ 35)



◆ **PART NUMBER SYSTEM (Example : 400V 330 μ F)**

Special Request

Size code(2230 : 22×30)

Terminal length code

Terminal type code

Capacitance tolerance code(M: $\pm 20\%$)

Capacitance code(100μF)

Voltage code(400V)

Series code (PI)

PI Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 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	30.5×60	2000	PI2G561MND3160Y
	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
	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

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105℃, 120Hz)	Part Number
420 (2S)	560	35×50	2050	PI2S561MND3550Y
	680	35×60	2150	PI2S681MND3560Y
450 (2W)	510	25.4×50	1640	PI2W511MND2550Y
	570	25.4×55	1750	PI2W571MND2555Y
	620	25.4×60	1840	PI2W621MND2560Y
	650	25.4×65	1920	PI2W651MND2565Y
	760	25.4×70	2090	PI2W761MND2570Y
	770	30×50	2030	PI2W771MND3050Y
	820	25.4×75	2160	PI2W821MND2575Y
	900	25.4×80	2230	PI2W901MND2580Y
	940	30×60	2360	PI2W941MND3060Y
	1010	30×65	2410	PI2WA12MND3065Y
	1020	35×50	2140	PI2WA22MND3550Y
	1080	30×70	2520	PI2WA82MND3070Y
	1140	30×75	2610	PI2WB42MND3075Y
	1140	35×55	2250	PI2WB42MND3555Y
	1230	30×80	2720	PI2WC32MND3080Y
	1260	35×60	2370	PI2WC62MND3560Y
	1300	30×85	2800	PI2W132MND3085Y
	1300	35×65	2410	PI2W132MND3565Y
	1370	30×90	2870	PI2WD72MND3090Y
	1410	35×70	2500	PI2WE12MND3570Y
	1430	30×95	2920	PI2WE32MND3095Y
	1500	30×100	3010	PI2W152MND30A0Y
	1530	35×75	2590	PI2WF32MND3575Y
	1650	35×80	2670	PI2WG52MND3580Y
	1700	35×85	2710	PI2W172MND3585Y
	1800	35×90	2790	PI2W182MND3590Y
	1900	35×95	2850	PI2W192MND3595Y
	2000	35×100	2920	PI2W202MND35A0Y
475 (2B)	390	25.4×50	1560	PI2B391MND2550Y
	440	25.4×55	1640	PI2B441MND2555Y
	490	25.4×60	1740	PI2B491MND2560Y
	560	25.4×65	1880	PI2B561MND2565Y
	590	30×50	1760	PI2B591MND3050Y
	620	25.4×70	1960	PI2B621MND2570Y
	660	30×55	1890	PI2B661MND3055Y
	680	25.4×75	2050	PI2B681MND2575Y
	720	25.4×80	2140	PI2B721MND2580Y
	730	30×60	1990	PI2B731MND3060Y
	750	30×65	2050	PI2B751MND3065Y
	760	35×50	1910	PI2B761MND3550Y
	820	30×70	2100	PI2B821MND3070Y
	860	35×55	2150	PI2B861MND3555Y
	890	30×75	2240	PI2B891MND3075Y
	950	35×60	2280	PI2B951MND3560Y
	960	30×80	2350	PI2B961MND3080Y
	1010	35×65	2360	PI2BA12MND3565Y
	1100	30×85	2490	PI2B112MND3085Y
	1110	35×70	2490	PI2BB12MND3570Y
	1180	30×90	2580	PI2BB82MND3090Y
	1200	35×75	2660	PI2B122MND3575Y
	1250	30×95	2710	PI2BC52MND3095Y
	1290	35×80	2820	PI2BC92MND3580Y
	1310	30×100	2820	PI2BD12MND30A0Y
	1410	35×85	2900	PI2BE12MND3585Y
	1520	35×90	3130	PI2BF22MND3590Y

PI Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
475 (2B)	1640	35×95	3270	PI2BG42MND3595Y
	1730	35×100	3350	PI2BH32MND35A0Y
500 (2H)	340	25.4×50	1510	PI2H341MND2550JY
	380	25.4×55	1620	PI2H381MND2555JY
	430	25.4×60	1700	PI2H431MND2560JY
	490	25.4×65	1750	PI2H491MND2565JY
	510	30×50	1700	PI2H511MND3050Y
	530	25.4×70	1790	PI2H531MND2570JY
	580	25.4×75	1870	PI2H581MND2575JY
	580	30×30	1840	PI2H581MND3030Y
	620	25.4×80	1950	PI2H621MND2580JY
	640	30×60	1920	PI2H641MND3060Y
	680	30×65	2040	PI2H681MND3065Y
	690	35×50	1920	PI2H691MND3550Y
	750	30×70	2130	PI2H751MND3070Y
	780	35×55	2110	PI2H781MND3555Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
500 (2H)	810	30×75	2210	PI2H811MND3075Y
	860	35×60	2230	PI2H861MND3560Y
	870	30×80	2320	PI2H871MND3080Y
	920	35×65	2310	PI2H921MND3565Y
	930	30×85	2440	PI2H931MND3085Y
	1000	30×90	2500	PI2H102MND3090Y
	1010	35×70	2390	PI2HA12MND3570Y
	1070	30×95	2590	PI2HA72MND3095Y
	1090	35×75	2420	PI2HA92MND3575Y
	1120	30×100	2670	PI2HB22MND30A0Y
	1170	35×80	2540	PI2HB72MND3580Y
	1220	35×85	2650	PI2HC22MND3585Y
	1300	35×90	2780	PI2H132MND3590Y
	1390	35×95	2860	PI2HD92MND3595Y
	1450	35×100	3040	PI2HE52MND35A0Y

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Frequency (Hz)					
	50	120	300	1K	10K	50K
400 ~ 500	0.77	1.00	1.16	1.30	1.41	1.43

ALUMINUM ELECTROLYTIC CAPACITORS



PIM Series NEW

- Load life 3,000 hours at 105°C
- For server product
- Smaller size with higher ripple current



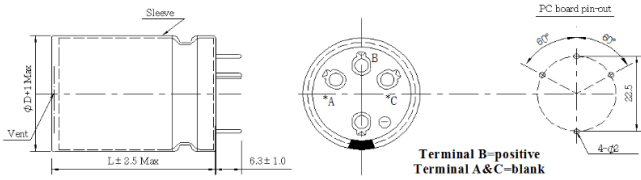
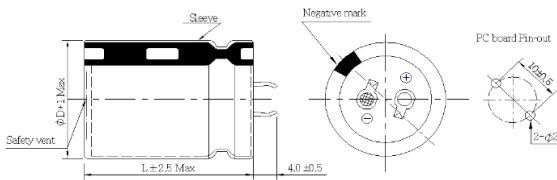
◆ SPECIFICATIONS

Item	Performance Characteristics		
Category Temperature Range	-25 ~ +105℃		
Working Voltage Range	450~500Vdc		
Capacitance Range	370~2300μF		
Capacitance Tolerance	±20% (at 25℃ and 120Hz)		
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)	450~475	500
	tanδ(Max)	0.20	0.24
Leakage Current	$I \leq \sqrt{CV}$ 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)	450~500	(at 120Hz)
	Z(-25℃)/Z(+20℃)	8	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25 ℃ after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 105 ℃.		
	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 ℃ after exposing them for 1,000 hours at 105℃ 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)

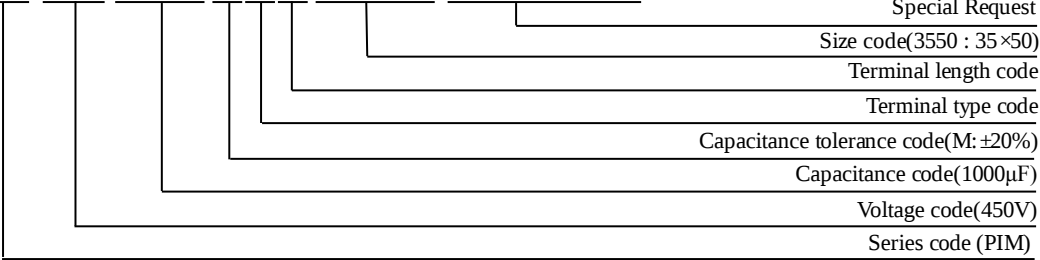
Terminal Code : ND : Standard

Terminal Code :K6 (Φ 35)



◆ PART NUMBER SYSTEM (Example : 450V 650µF)

P I M 2 W 1 0 2 M N D 3 5 5 0 Y



PIM Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
450 (2W)	510	25.4×50	1843	PIM2W511MNN2550JY
	560	25.4×55	1976	PIM2W561MNN2555JY
	640	25.4×60	2050	PIM2W641MNN2560JY
	710	25.4×65	2150	PIM2W711MNN2565JY
	770	30.5×50	2280	PIM2W771MNN3150Y
	780	25.4×70	2200	PIM2W781MNN2570JY
	840	25.4×75	2250	PIM2W841MNN2575JY
	870	30.5×55	2460	PIM2W871MNN3155Y
	900	25.4×80	2310	PIM2W901MNN2580JY
	960	30.5×60	2622	PIM2W961MNN3160Y
	1000	35×50	2560	PIM2W102MNN3550Y
	1050	30.5×65	2765	PIM2WA52MNN3165Y
	1130	35×55	2720	PIM2WB32MNN3555Y
	1150	30.5×70	2907	PIM2WB52MNN3170Y
	1230	30.5×75	3040	PIM2WC32MNN3175Y
	1250	35×60	2880	PIM2WC52MNN3560Y
	1330	30.5×80	3150	PIM2WD32MNN3180Y
	1380	35×65	2980	PIM2WD82MNN3565Y
	1430	30.5×85	3220	PIM2WE32MNN3185Y
	1510	35×70	3160	PIM2WF12MNN3570Y
	1530	30.5×90	3339	PIM2WF32MNN3190Y
	1620	30.5×95	3429	PIM2WG22MNN3195Y
	1640	35×75	3210	PIM2WG42MNN3575Y
	1720	30.5×100	3582	PIM2WH22MNN31A0Y
	1750	35×80	3350	PIM2WH52MNN3580Y
	1890	35×85	3440	PIM2WJ92MNN3585Y
	1970	35×90	3519	PIM2WK72MNN3590Y
	2200	35×95	3636	PIM2W222MNN3595Y
	2300	35×100	3798	PIM2W232MNN35A0Y
475 (2B)	460	25.4×50	1750	PIM2B461MNN2550JY
	520	25.4×55	1820	PIM2B521MNN2555JY
	570	25.4×60	1900	PIM2B571MNN2560JY
	630	25.4×65	1960	PIM2B631MNN2565JY
	690	25.4×70	2050	PIM2B691MNN2570JY
	690	30.5×50	2100	PIM2B691MNN3150Y
	750	25.4×75	2180	PIM2B751MNN2575JY
	780	30.5×55	2200	PIM2B781MNN3155Y
	810	25.4×80	2250	PIM2B811MNN2580JY
	860	30.5×60	2250	PIM2B861MNN3160Y
	940	35×50	2420	PIM2B941MNN3550Y
	950	30.5×65	2410	PIM2B951MNN3165Y
	1030	30.5×70	2600	PIM2BA32MNN3170Y
	1050	30.5×75	2650	PIM2BA52MNN3175Y
	1050	35×55	2650	PIM2BA52MNN3555Y

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 105°C, 120Hz)	Part Number
475 (2B)	1150	30.5×80	2700	PIM2BB52MNN3180Y
	1170	35×60	2710	PIM2BB72MNN3560Y
	1220	35×65	2860	PIM2BC22MNN3565Y
	1230	30.5×85	2850	PIM2BC32MNN3185Y
	1310	30.5×90	2960	PIM2BD12MNN3190Y
	1350	35×70	3050	PIM2BD52MNN3570Y
	1390	30.5×95	3150	PIM2BD92MNN3195Y
	1440	35×75	3150	PIM2BE42MNN3575Y
	1470	30.5×100	3250	PIM2BE72MNN31A0Y
	1550	35×80	3300	PIM2BF52MNN3580Y
	1660	35×85	3420	PIM2BG62MNN3585Y
	1800	35×90	3600	PIM2B182MNN3590Y
	1870	35×95	3680	PIM2BJ72MNN3595Y
	2000	35×100	3720	PIM2B202MNN35A0Y
500 (2H)	370	25.4×50	1670	PIM2H371MNN2550JY
	410	25.4×55	1780	PIM2H411MNN2555JY
	460	25.4×60	1810	PIM2H461MNN2560JY
	500	25.4×65	1880	PIM2H501MNN2565JY
	540	30.5×50	1910	PIM2H541MNN3150Y
	550	25.4×70	1930	PIM2H551MNN2570JY
	600	25.4×75	2050	PIM2H601MNN2575JY
	610	30.5×55	2030	PIM2H611MNN3155Y
	640	25.4×80	2160	PIM2H641MNN2580JY
	670	30.5×60	2150	PIM2H671MNN3160Y
	710	35×50	2130	PIM2H711MNN3550Y
	730	30.5×65	2280	PIM2H731MNN3165Y
	770	30.5×70	2340	PIM2H771MNN3170Y
	800	35×55	2260	PIM2H801MNN3555Y
	830	30.5×75	2450	PIM2H831MNN3175Y
	880	35×60	2430	PIM2H881MNN3560Y
	900	30.5×80	2560	PIM2H901MNN3180Y
	940	35×65	2490	PIM2H941MNN3565Y
	960	30.5×85	2640	PIM2H961MNN3185Y
	1020	30.5×90	2710	PIM2HA22MNN3190Y
	1030	35×70	2510	PIM2HA32MNN3570Y
	1090	30.5×95	2780	PIM2HA92MNN3195Y
	1120	35×75	2620	PIM2HB22MNN3575Y
	1150	30.5×100	2890	PIM2HB52MNN31A0Y
	1200	35×80	2710	PIM2H122MNN3580Y
	1260	35×85	2890	PIM2HC62MNN3585Y
	1330	35×90	2910	PIM2HD32MNN3590Y
	1430	35×95	3150	PIM2HE32MNN3595Y
	1520	35×100	3320	PIM2HF22MNN35A0Y

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Frequency (Hz)					
	50	120	300	1K	10K	50K
450 ~ 500	0.77	1.00	1.16	1.30	1.41	1.43

ALUMINUM ELECTROLYTIC CAPACITORS



TWH Series

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



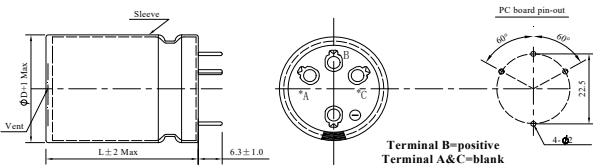
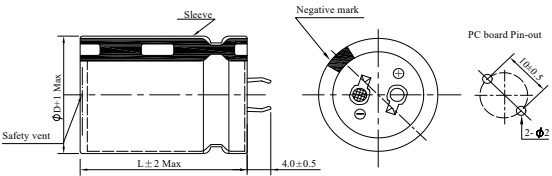
◆ SPECIFICATIONS

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)	<table border="1"> <tr> <td>Rated Voltage (V)</td><td>400~450</td></tr> <tr> <td>tanδ(Max)</td><td>0.20</td></tr> </table> When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase.	Rated Voltage (V)	400~450	tanδ(Max)	0.20		
Rated Voltage (V)	400~450						
tanδ(Max)	0.20						
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>400~450</td></tr> <tr> <td>$Z(-25^{\circ}C)/Z(+20^{\circ}C)$</td><td>8</td></tr> </table> (at 120Hz)	Rated voltage (V)	400~450	$Z(-25^{\circ}C)/Z(+20^{\circ}C)$	8		
Rated voltage (V)	400~450						
$Z(-25^{\circ}C)/Z(+20^{\circ}C)$	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 2,000 hours at 125°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 125°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 : 420V 270μF)

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

Special Request

Size code(2545 : 25×45)

Terminal length code

Terminal type code

Capacitance tolerance code(M:±20%)

Capacitance code(270μF)

Voltage code(420V)

Series code (TWH)

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
	82	22×25	770	TWH2W820MNN2225Y
	100	22×30	890	TWH2W101MNN2230Y
450 (2W)	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

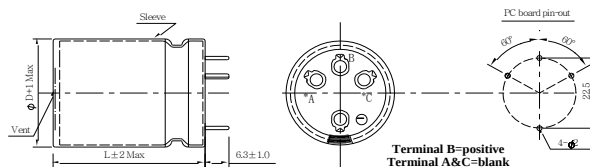
Frequency Multipliers

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

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**

Terminal Code :K6 (Φ 35)



◆ **PART NUMBER SYSTEM (Example : 10V 12000 μ F)**

Special Request

Size code(2240 : 22×40)

Terminal length code

Terminal type code

Capacitance tolerance code(M: $\pm 20\%$)

Capacitance code(12000μF)

Voltage code(10V)

Series code (TG)

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	TG1A822MND2525Y
	10000	22×35	1445	TG1A103MND2235Y
	10000	25.4×30	1445	TG1A103MND2530Y
	12000	22×40	1660	TG1A123MND2240Y
	12000	25.4×35	1660	TG1A123MND2535Y
	12000	30×25	1660	TG1A123MND3025Y
	15000	22×45	1910	TG1A153MND2245Y
	15000	25.4×40	1910	TG1A153MND2540Y
	15000	30×30	1910	TG1A153MND3030Y
	18000	22×50	2140	TG1A183MND2250Y
	18000	25.4×45	2140	TG1A183MND2545Y
	18000	30×35	2140	TG1A183MND3035Y
	18000	35×25	2140	TG1A183MND3525Y
	22000	25.4×50	2510	TG1A223MND2550Y
	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	TG1C682MND2525Y
	8200	22×35	1470	TG1C822MND2235Y
	8200	25.4×30	1470	TG1C822MND2530Y
	8200	30×25	1470	TG1C822MND3025Y
	10000	22×40	1700	TG1C103MND2240Y
	10000	25.4×35	1700	TG1C103MND2535Y
	10000	30×30	1700	TG1C103MND3030Y
	12000	22×45	1930	TG1C123MND2245Y
	12000	25.4×40	1930	TG1C123MND2540Y
	12000	30×35	1930	TG1C123MND3035Y
	15000	22×50	2250	TG1C153MND2250Y
	15000	25.4×45	2250	TG1C153MND2545Y
	15000	30×40	2250	TG1C153MND3040Y
	15000	35×25	2250	TG1C153MND3525Y
	18000	25.4×50	2580	TG1C183MND2550Y
	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	TG1E472MND2525Y
	5600	22×35	1390	TG1E562MND2235Y
	5600	25.4×30	1390	TG1E562MND2530Y
	6800	22×40	1590	TG1E682MND2240Y
	6800	25.4×35	1590	TG1E682MND2535Y
	8200	22×45	1800	TG1E822MND2245Y
	8200	25.4×40	1800	TG1E822MND2540Y
	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	TG1E103MND2545Y
	10000	30×30	2045	TG1E103MND3030Y
	10000	35×25	2045	TG1E103MND3525Y
	12000	25.4×50	2340	TG1E123MND2550Y
	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
	3900	25.4×25	1365	TG1V392MND2525Y
	4700	22×40	1470	TG1V472MND2240Y
	4700	25.4×30	1470	TG1V472MND2530Y
	4700	30×25	1470	TG1V472MND3025Y
	5600	22×45	1700	TG1V562MND2245Y
	5600	25.4×35	1700	TG1V562MND2535Y
	5600	30×30	1700	TG1V562MND3030Y
	6800	22×50	1880	TG1V682MND2250Y
35 (1V)	6800	25.4×40	1880	TG1V682MND2540Y
	6800	30×35	1880	TG1V682MND3035Y
	6800	35×25	1880	TG1V682MND3525Y
	8200	25.4×45	2350	TG1V822MND2545Y
	8200	30×40	2350	TG1V822MND3040Y
	8200	35×30	2350	TG1V822MND3530Y
	10000	25.4×50	2510	TG1V103MND2550Y
	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
	1500	22×25	1030	TG1H152MND2225Y
	1800	22×30	1170	TG1H182MND2230Y
	1800	25.4×25	1170	TG1H182MND2525Y
	2200	22×35	1440	TG1H222MND2235Y
	2200	25.4×30	1440	TG1H222MND2530Y
	3300	22×40	1665	TG1H332MND2240Y
	3300	25.4×35	1665	TG1H332MND2535Y
	3300	30×25	1665	TG1H332MND3025Y
	3900	22×45	1860	TG1H392MND2245Y
	3900	25.4×35	1860	TG1H392MND2535Y
	3900	30×30	1860	TG1H392MND3030Y
50 (1H)	4700	22×50	2150	TG1H472MND2250Y
	4700	25.4×40	2150	TG1H472MND2540Y
	4700	30×35	2150	TG1H472MND3035Y
	4700	35×25	2150	TG1H472MND3525Y
	5600	25.4×50	2330	TG1H562MND2550Y
	5600	30×40	2330	TG1H562MND3040Y
	5600	35×30	2330	TG1H562MND3530Y
	6800	30×45	2820	TG1H682MND3045Y
	6800	35×35	2820	TG1H682MND3535Y

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

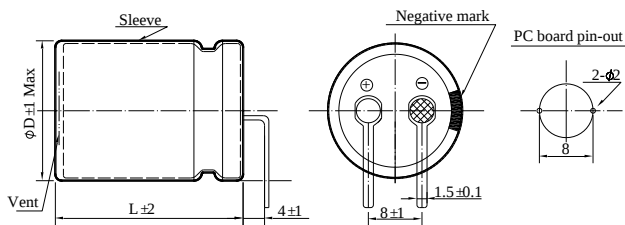
- For $\Phi 22$, $\Phi 25$, suitable for horizontal mounting to assure flat and low profile design



SPECIFICATIONS

Item	Performance Characteristics			
Category Temperature Range	-25 ~ +85℃			
Working Voltage Range	160 ~ 450Vdc			
Capacitance Range	82 ~ 1,200 μF			
Capacitance Tolerance	±20% (at 25℃ and 120Hz)			
Dissipation Factor (tanδ) (at 25℃, 120Hz)	Rated Voltage (V)		160~450	
	tanδ(Max)		0.15	
	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)		160~250	400
	Z(-25℃)/Z(+20℃)		4	4
	8			
	(at 120Hz)			
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85℃.			
	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℃ after exposing them for 1,000 hours at 85℃ 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)



PART NUMBER SYSTEM (Example : 160V 390 μ F)

G D 2 C 3 9 1 M R N 2 2 3 0 Y

Special Request
 Size code(2230 : 22 $\times$ 30)
 Terminal length code
 Terminal type code
 Capacitance tolerance code(M: $\pm 20\%$)
 Capacitance code(390 μ F)
 Voltage code(160V)
 Series code (GD)

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	GD2C561MRN2530Y
	680	20×45	2085	GD2C681MRN2045Y
	680	22×40	2100	GD2C681MRN2240Y
	680	25.4×35	2185	GD2C681MRN2535Y
	820	20×50	2300	GD2C821MRN2050Y
	820	22×45	2455	GD2C821MRN2245Y
	820	25.4×40	2530	GD2C821MRN2540Y
	1000	20×60	2560	GD2C102MRN2060Y
	1000	22×50	2615	GD2C102MRN2250Y
	1000	25.4×45	2900	GD2C102MRN2545Y
	1200	22×55	3100	GD2C122MRN2255Y
	1200	25.4×50	3125	GD2C122MRN2550Y
200 (2D)	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
	680	20×50	2300	GD2D681MRN2050Y
	680	22×45	2430	GD2D681MRN2245Y
	680	25.4×35	2680	GD2D681MRN2535Y
	820	22×50	2800	GD2D821MRN2250Y
	820	25.4×40	2800	GD2D821MRN2540Y
	1000	22×60	3000	GD2D102MRN2260Y
	1000	25.4×45	3120	GD2D102MRN2545Y
	1200	25.4×60	3440	GD2D122MRN2560Y
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

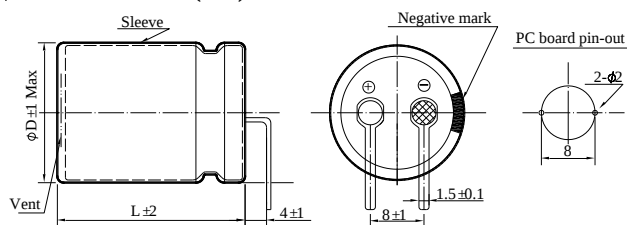
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 85°C, 120Hz)	Part Number
250 (2E)	390	22×35	1700	GD2E391MRN2235Y
	470	20×50	1800	GD2E471MRN2050Y
	470	22×40	1955	GD2E471MRN2240Y
	470	25.4×30	2000	GD2E471MRN2530Y
	560	20×55	2100	GD2E561MRN2055Y
	560	22×45	2150	GD2E561MRN2245Y
	560	25.4×35	2185	GD2E561MRN2535Y
	680	20×60	2200	GD2E681MRN2060Y
	680	22×50	2290	GD2E681MRN2250Y
	680	25.4×40	2310	GD2E681MRN2540Y
	820	22×60	2655	GD2E821MRN2260Y
	820	25.4×45	2760	GD2E821MRN2545Y
	82	20×30	780	GD2G820MRN2030Y
	100	20×30	900	GD2G101MRN2030Y
400 (2G)	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	GD2G181MRN2535Y
	220	22×45	1550	GD2G221MRN2245Y
	220	25.4×40	1560	GD2G221MRN2540Y
	270	22×60	1700	GD2G271MRN2260Y
	270	25.4×45	1700	GD2G271MRN2545Y
	330	25.4×50	1900	GD2G331MRN2550Y
	390	25.4×60	2150	GD2G391MRN2560Y
	82	20×30	800	GD2W820MRN2030Y
	82	22×25	815	GD2W820MRN2225Y
450 (2W)	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	GD2W151MRN2530Y
	180	20×45	1325	GD2W181MRN2045Y
	180	22×40	1350	GD2W181MRN2240Y
	180	25.4×35	1385	GD2W181MRN2535Y
	220	20×50	1600	GD2W221MRN2050Y
	220	22×50	1625	GD2W221MRN2250Y
	220	25.4×40	1650	GD2W221MRN2540Y
	270	20×60	1750	GD2W271MRN2060Y
	270	22×60	1750	GD2W271MRN2260Y
	270	25.4×50	1750	GD2W271MRN2550Y
	330	25.4×55	1950	GD2W331MRN2555Y

◆ 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

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



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

P	X	2	D	5	6	1	M	R	N	2	2	4	5	Y					
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Series code (PX)

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	PX2C681MRN2535Y
	820	20×55	1810	PX2C821MRN2055Y
	820	22×45	1850	PX2C821MRN2245Y
	820	25.4×40	1920	PX2C821MRN2540Y
	1000	22×55	2100	PX2C102MRN2255Y
	1000	25.4×45	2170	PX2C102MRN2545Y
	1200	25.4×50	2430	PX2C122MRN2550Y
	1500	25.4×60	2620	PX2C152MRN2560Y
200 (2D)	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	PX2D561MRN2535Y
	680	20×60	1710	PX2D681MRN2060Y
	680	22×50	1750	PX2D681MRN2250Y
	680	25.4×40	1760	PX2D681MRN2540Y
	820	22×60	2100	PX2D821MRN2260Y
	820	25.4×45	2100	PX2D821MRN2545Y
	1000	25.4×50	2360	PX2D102MRN2550Y
250 (2E)	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
	390	20×50	1380	PX2E391MRN2050Y
	390	22×45	1410	PX2E391MRN2245Y
	390	25.4×35	1420	PX2E391MRN2535Y

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	PX2E471MRN2540Y
	560	22×55	1800	PX2E561MRN2255Y
	560	25.4×45	1800	PX2E561MRN2545Y
	680	25.4×50	2030	PX2E681MRN2550Y
	820	25.4×60	2260	PX2E821MRN2560Y
400 (2G)	68	20×30	480	PX2G680MRN2030Y
	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	PX2G151MRN2535Y
	180	20×55	930	PX2G181MRN2055Y
	180	22×45	950	PX2G181MRN2245Y
	180	25.4×35	920	PX2G181MRN2535Y
	220	22×50	1080	PX2G221MRN2250Y
	220	25.4×40	1050	PX2G221MRN2540Y
	270	22×60	1200	PX2G271MRN2260Y
	270	25.4×50	1290	PX2G271MRN2550Y
	330	25.4×60	1410	PX2G331MRN2560Y
450 (2W)	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	PX2W121MRN2530Y
	150	20×45	870	PX2W151MRN2045Y
	150	22×40	895	PX2W151MRN2240Y
	150	25.4×35	900	PX2W151MRN2535Y
	180	20×50	1015	PX2W181MRN2050Y
	180	22×50	1030	PX2W181MRN2250Y
	180	25.4×40	1050	PX2W181MRN2540Y
	220	20×60	1150	PX2W221MRN2060Y
	220	22×55	1175	PX2W221MRN2255Y
	220	25.4×45	1190	PX2W221MRN2545Y
	270	25.4×55	1300	PX2W271MRN2555Y

◆ 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)
☐ ☐	☐ ☐	☐ ☐ ☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐ ☐

(1) Series

Series	AQ	AN	SC	SA	SL	SK	SX
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(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

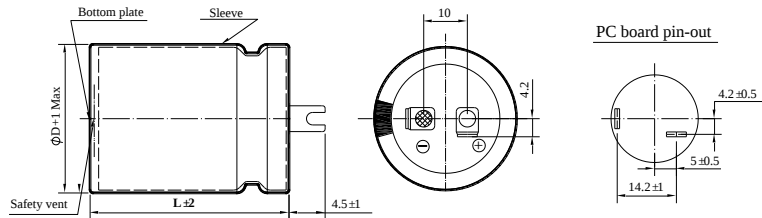
- High ripple current capability
- High stability, suitable for LCD and PDP



SPECIFICATIONS

Item	Performance Characteristics											
Category Temperature Range	-25 ~ +85℃											
Working Voltage Range	400 ~ 450Vdc											
Capacitance Range	330 ~820μF											
Capacitance Tolerance	±20% (at 25℃ and 120Hz)											
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><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>0.15</td><td>0.15</td></tr></table>				Rated Voltage (V)	400	420	450	tanδ(Max)	0.15	0.15	0.15
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><tr><td>Rated voltage (V)</td><td>400</td><td>420~450</td></tr><tr><td>Z(-25℃)/Z(+20℃)</td><td>4</td><td>8</td></tr></table> (at 120Hz)				Rated voltage (V)	400	420~450	Z(-25℃)/Z(+20℃)	4	8		
Rated voltage (V)	400	420~450										
Z(-25℃)/Z(+20℃)	4	8										
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85℃. <table><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℃ after exposing them for 1,000 hours at 85℃ without voltage applied. <table><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)

A	Q	2	G	3	3	1	M	H	U	3	5	3	5	Y					
														Special Request					
														Size code (3535 : 35×35)					
														Terminal code					
														Capacitance tolerance code (M: ±20%)					
														Capacitance code (330μF)					
														Voltage code (400V)					
														Series code (AQ)					

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
420 (2S)	680	35×50	2600	AQ2G681MHU3550Y
	820	35×58	2850	AQ2G821MHU3558Y
	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
	330	30×45	1250	AQ2W331MHU3045Y
450 (2W)	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

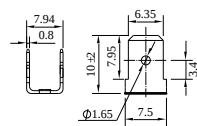
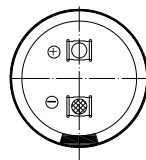
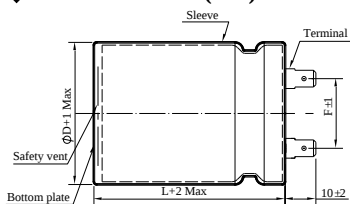
- Load life 3,000 hours 85°C



SPECIFICATIONS

Item	Performance Characteristics											
Category Temperature Range	-25 ~ +85℃											
Working Voltage Range	400 ~ 450Vdc											
Capacitance Range	800 ~3,300μF											
Capacitance Tolerance	±20% (at 25℃ and 120Hz)											
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><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>0.15</td><td>0.15</td></tr></table>				Rated Voltage (V)	400	420	450	tanδ(Max)	0.15	0.15	0.15
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><tr><td>Rated voltage (V)</td><td>400~450</td></tr><tr><td>Z(-25℃)/Z(+20℃)</td><td>8</td></tr></table> (at 120Hz)				Rated voltage (V)	400~450	Z(-25℃)/Z(+20℃)	8				
Rated voltage (V)	400~450											
Z(-25℃)/Z(+20℃)	8											
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25℃ after subjected to DC voltage with the rated ripple current is applied for 3,000 hours at 85℃. <table><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℃ after exposing them for 1,000 hours at 85℃ without voltage applied. <table><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)											

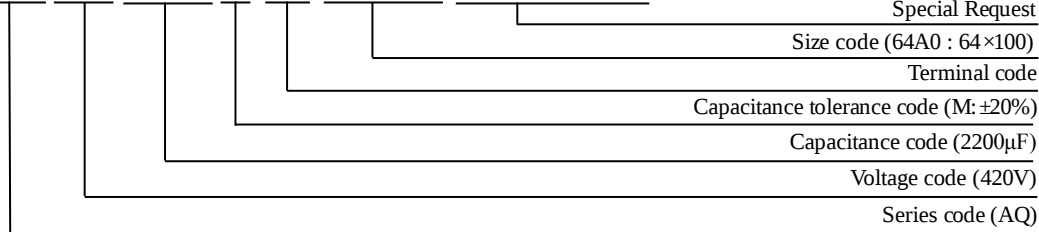
DIMENSIONS (mm)



ΦD	35	40	51	64
F±1	14	14	20	25

PART NUMBER SYSTEM (Example : 420V 2200 μF)

A N 2 S 2 2 2 M A C 6 4 A 0 Y



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
	800	35×90	3000	AN2W801MAC3590Y
450 (2W)	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

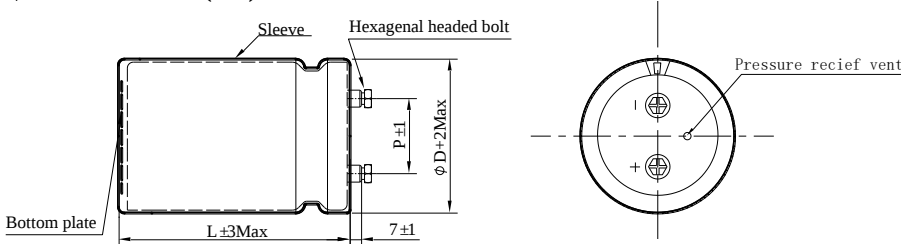
- High ripple, suitable to use in industrial power supplies for inverter circuitry, etc



SPECIFICATIONS

Item	Performance Characteristics											
Category Temperature Range	-25 ~ +85℃											
Working Voltage Range	200 ~ 600Vdc											
Capacitance Range	820 ~ 33,000μF											
Capacitance Tolerance	±20% (at 25℃ and 120Hz)											
Dissipation Factor (tanδ) (at 25℃, 120Hz)	<table><tr><td>Rated Voltage (V)</td><td>200~250</td><td>350~450</td><td>500~600</td></tr><tr><td>tanδ(Max)</td><td>0.20</td><td>0.20</td><td>0.25</td></tr></table>				Rated Voltage (V)	200~250	350~450	500~600	tanδ(Max)	0.20	0.20	0.25
Rated Voltage (V)	200~250	350~450	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℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 85℃. <table><tr><td>Capacitance change</td><td>≦ ± 15% of the initial value</td></tr><tr><td>Dissipation factor(tanδ)</td><td>≦ 175% of the specified value</td></tr><tr><td>Leakage current</td><td>≦ Specified value</td></tr></table>				Capacitance change	≦ ± 15% of the initial value	Dissipation factor(tanδ)	≦ 175% of the specified value	Leakage current	≦ Specified value		
Capacitance change	≦ ± 15% of the initial value											
Dissipation factor(tanδ)	≦ 175% of the specified value											
Leakage current	≦ Specified value											
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25℃ after exposing them for 500 hours at 85℃ without voltage applied. <table><tr><td>Capacitance change</td><td>≦ ± 15% of the initial value</td></tr><tr><td>Dissipation factor(tanδ)</td><td>≦ 175% of the specified value</td></tr><tr><td>Leakage current</td><td>≦ Specified value</td></tr></table>				Capacitance change	≦ ± 15% of the initial value	Dissipation factor(tanδ)	≦ 175% of the specified value	Leakage current	≦ Specified value		
Capacitance change	≦ ± 15% of the initial value											
Dissipation factor(tanδ)	≦ 175% of the specified value											
Leakage current	≦ 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 4700µF)

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

Special Request	
Size code (51A0 : 51×100)	
Terminal code	
Capacitance tolerance code (M: ±20%)	
Capacitance code (4700µF)	
Voltage code (200V)	
Series code (SC)	

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 (2G)	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
	820	51×80	3.6	SC2W821MLS5180H1
450 (2W)	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

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
600 (2J)	6800	90×200	16.3	SC2L682MLS90K0H1
	1200	64×100	5.4	SC2J122MLS64A0H1
	1500	64×120	6.6	SC2J152MLS64C0H1

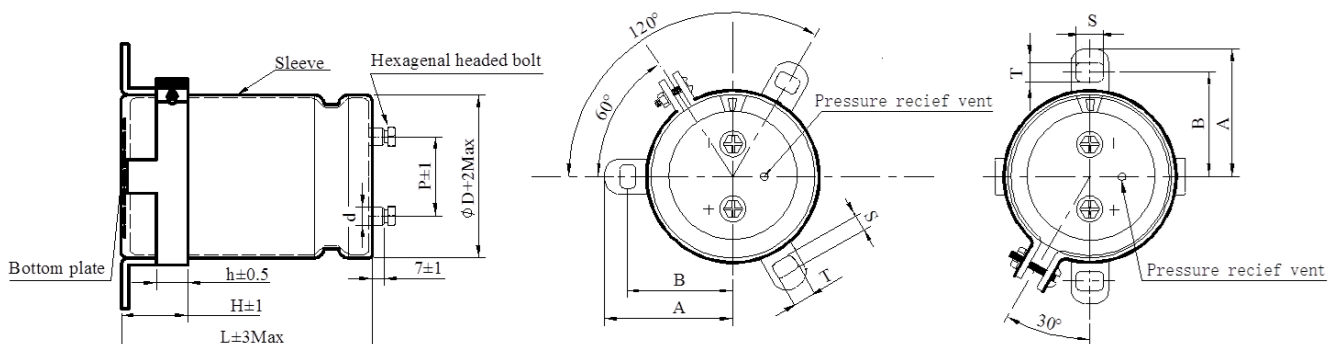
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (Arms/ 85°C, 120Hz)	Part Number
600 (2J)	1800	64×135	7.5	SC2J182MLS64D5H1
	1800	76×100	7.2	SC2J182MLS76A0H1
	2200	64×155	8.3	SC2J222MLS64F5H1
	2200	76×120	8	SC2J222MLS76C0H1
	2700	64×185	9.7	SC2J272MLS64I5H1
	2700	76×135	9.4	SC2J272MLS76D5H1
	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
3 – Leg (Code:K2)	51	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



SA Series

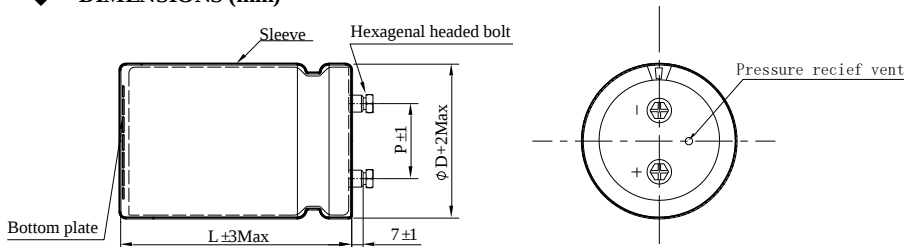
- High ripple, suitable to use in industrial power supplies for inverter circuitry, etc



SPECIFICATIONS

Item	Performance Characteristics						
Category Temperature Range	-40 ~ +85℃				-25 ~ +85℃		
Working Voltage Range	160 ~ 250Vdc				350 ~ 450Vdc		
Capacitance Range	2,700 ~ 68,000μF				1,000 ~ 18,000μF		
Capacitance Tolerance	±20% (at 25℃ and 120Hz)						
Dissipation Factor (tanδ) (at 25℃, 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℃ after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 85℃.						
	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℃ after exposing them for 500 hours at 85℃ without voltage applied.						
	Capacitance change	≦ ± 20% of the initial value					
	Dissipation factor(tanδ)	≦ 200% of the specified value					
	Leakage current	≦ Specified value					
Others	Conforms to JIS-C-5101-4 (1998)						

DIMENSIONS (mm)



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

PART NUMBER SYSTEM (Example : 200V 27000 μF)

S	A	2	D	2	7	3	M	L	S	7	1	J	0	H	1				
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Special Request	
Size code (71J0 : 71×190)	
Terminal code	
Capacitance tolerance code (M: ±20%)	
Capacitance code (27000μF)	
Voltage code (200V)	
Series code (SA)	

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
	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
400 (2G)	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

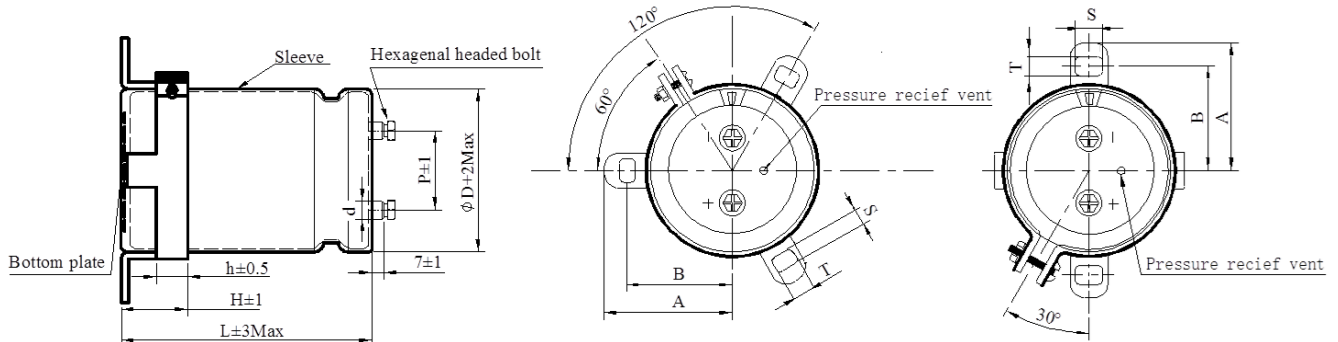
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (A rms/ 85°C, 120Hz)	Part Number
450 (2W)	3300	76×100	11.2	SA2W332MLS76A0H1
	3900	64×150	13.4	SA2W392MLS64F0H1
	3900	76×120	13	SA2W392MLS76C0H1
	3900	90×100	12.5	SA2W392MLS90A0H1
	4700	76×130	15	SA2W472MLS76D0H1
	4700	90×100	14.5	SA2W472MLS90A0H1
	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)	51	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

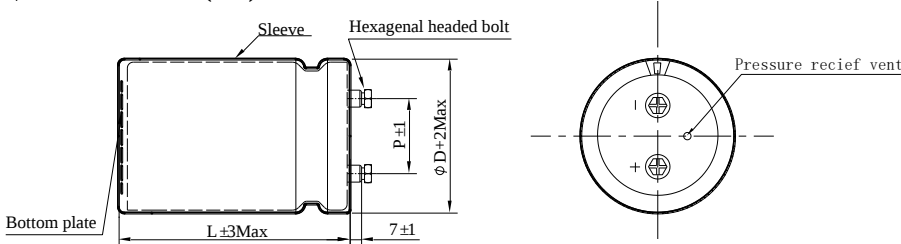


- High ripple current, suitable to use in industrial power supplies for inverter circuitry, etc
- Load life 20,000 hours at 85°C

SPECIFICATIONS

Item	Performance Characteristics					
Category Temperature Range	-40 ~ +85℃			-25 ~ +85℃		
Working Voltage Range	200 ~ 250Vdc			350 ~ 450Vdc		
Capacitance Range	1,500 ~ 39,000μF			1,000 ~ 15,000μF		
Capacitance Tolerance	±20% (at 25℃ and 120Hz)					
Dissipation Factor (tanδ) (at 25℃, 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℃ after subjected to DC voltage with the rated ripple current is applied for 20,000 hours at 85℃.					
	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℃ after exposing them for 500 hours at 85℃ without voltage applied.					
	Capacitance change		≦ ± 20% of the initial value			
	Dissipation factor(tanδ)		≦ 200% of the specified value			
	Leakage current		≦ Specified value			
Others	Conforms to JIS-C-5101-4 (1998)					

DIMENSIONS (mm)



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

PART NUMBER SYSTEM (Example : 450V 3900μF)

S L 2 W 3 9 2 M L S 6 4 H 0 H 1

Special Request	
Size code (64H0 : 64×170)	
Terminal code	
Capacitance tolerance code (M: ±20%)	
Capacitance code (3900μF)	
Voltage code (450V)	
Series code (SL)	

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

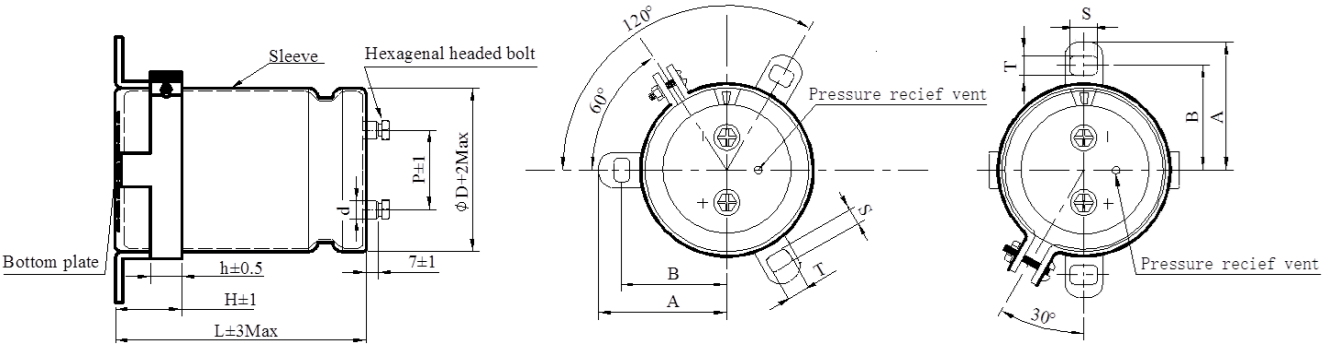
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (A rms/ 85°C, 120Hz)	Part Number
350 (2V)	1800	51×100	5.7	SL2V182MND51A0H1
	1800	64×80	5.4	SL2V182MND6480H1
	2200	51×120	7.1	SL2V222MND51C0H1
	2200	64×100	6.7	SL2V222MND64A0H1
	2700	64×100	7.7	SL2V272MND64A0H1
	3300	64×120	9.1	SL2V332MND64C0H1
	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
	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
400 (2G)	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
	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
450 (2W)	6800	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)	51	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

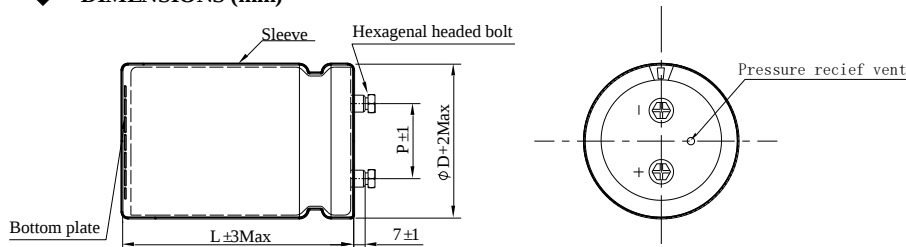


- High ripple current, suitable to use in industrial power supplies for inverter circuitry, etc
- Load life 2,000 hours at 105°C

SPECIFICATIONS

Item	Performance Characteristics				
Category Temperature Range	-40 ~ +105℃			-25 ~ +105℃	
Working Voltage Range	200 ~ 250Vdc			350 ~ 400Vdc	
Capacitance Range	1,500 ~ 39,000μF			1,000 ~ 15,000μF	
Capacitance Tolerance	±20% (at 25℃ and 120Hz)				
Dissipation Factor (tanδ) (at 25℃, 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℃ after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105℃.				
	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℃ after exposing them for 500 hours at 105℃ without voltage applied.				
	Capacitance change	≤ ± 20% of the initial value			
	Dissipation factor(tanδ)	≤ 200% of the specified value			
	Leakage current	≤ Specified value			
Others	Conforms to JIS-C-5101-4 (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

Special Request
 Size code (90F0 : 90×150)
 Terminal code
 Capacitance tolerance code (M: ±20%)
 Capacitance code (8200μF)
 Voltage code (350V)
 Series code (SK)

ALUMINUM ELECTROLYTIC CAPACITORS



SK Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (A rms/ 105℃, 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
250 (2E)	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
	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℃, 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
400 (2G)	12000	90×190	23.8	SK2V123MLS90J0H1
	15000	90×230	28.8	SK2V153MLS90N0H1
	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

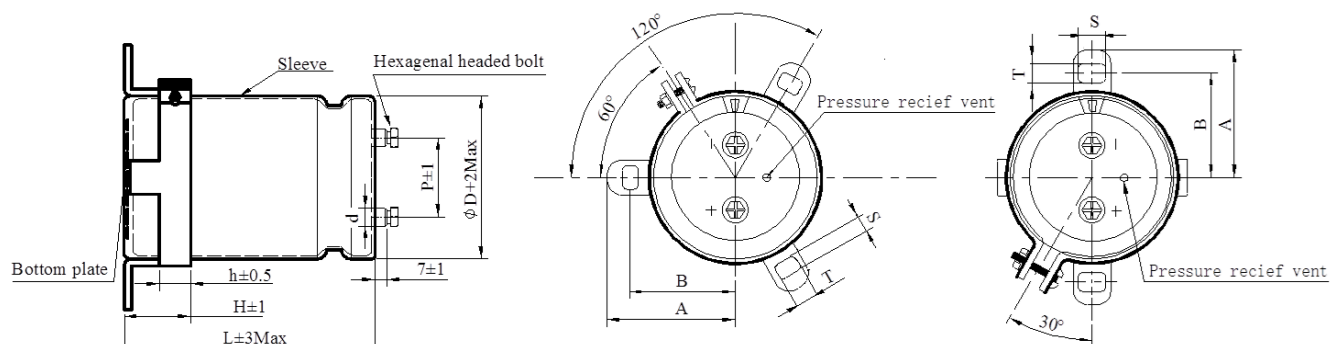
◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

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

SK Series

◆ DIMENSIONS (Screw-Mount) [mm]



◆ Terminal pitch and Nominal dia. of bolt

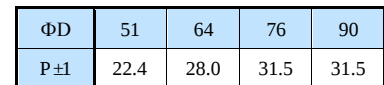
Terminal Code	ϕD	$P \pm 1$	Nominal dia. of bolt	$d \pm 0.5$
LS	51	22.4	M5	10
	64	28.0	M5	10
	76	31.5	M5	10
	90	31.5	M5	10
LA	64	28.0	M5	13
	76	31.5	M5	13
	90	31.5	M5	13
LB	76	31.5	M6	17
	90	31.5	M6	17

◆ Dimensions of mounting bracket

Leg shape	ϕD	$A \pm 2$	$B \pm 1$	$T \pm 0.5$	$S \pm 0.5$	$H \pm 1$	$h \pm 0.5$
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)	51	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

- ## ◆ SPECIFICATIONS

◆ **DIMENSIONS (mm)**



◆ **PART NUMBER SYSTEM (Example : 400V 1800 μ F)**

	Special Request
	Size code (51C0 : 50×120)
	Terminal code
	Capacitance tolerance code (M: ±20%)
	Capacitance code (1800μF)
	Voltage code (400V)
	Series code (SX)

ALUMINUM ELECTROLYTIC CAPACITORS



SX Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (A rms/ 105℃, 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

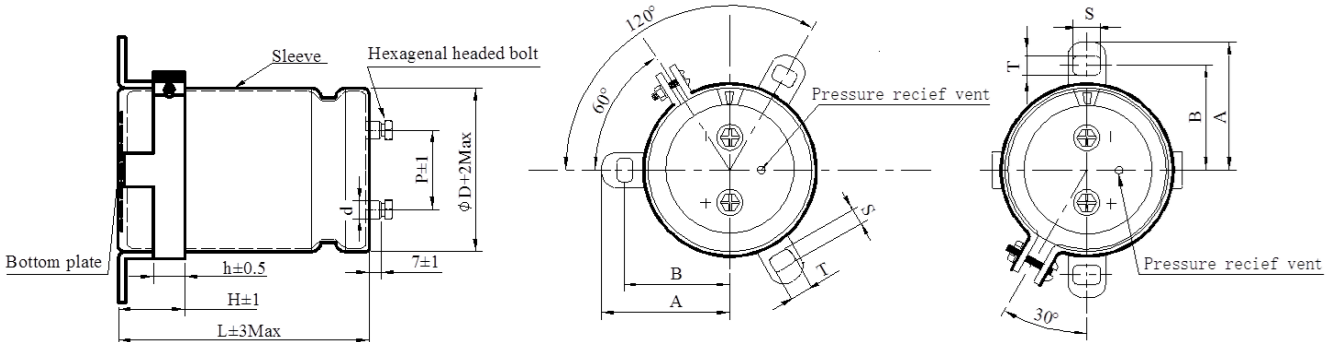
WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (A rms/ 105℃, 120Hz)	Part Number
350 (2V)	1800	51×100	5.7	SX2V182MLS51A0H1
	1800	64×80	5.4	SX2V182MLS6480H1
	2200	51×120	7.1	SX2V222MLS51C0H1
	2200	64×100	6.7	SX2V222MLS64A0H1
	2700	64×100	7.7	SX2V272MLS64A0H1
	3300	64×120	9.1	SX2V332MLS64C0H1
	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

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)	51	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