



MA Series

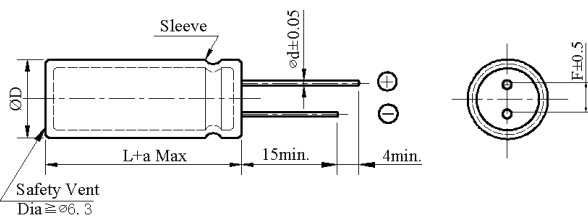


- Low ESR
- 105°C Long life (5,000 hours), Ultra Miniature size
Body diameter of $\Phi 10\text{mm}$ to $\Phi 14.5\text{mm}$ with high ripple current capability

SPECIFICATIONS

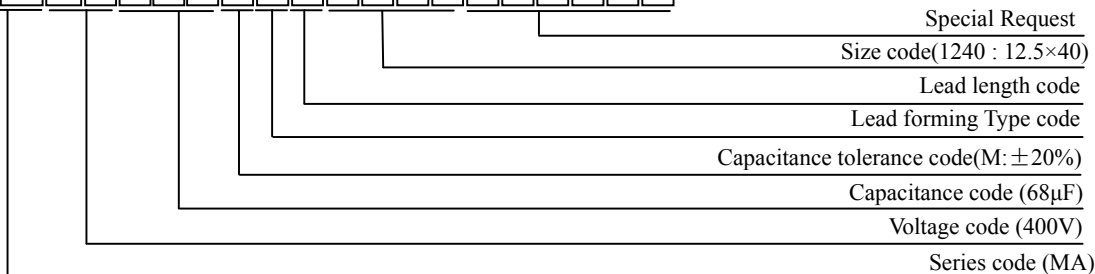
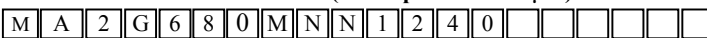
| Item | Performance Characteristics | | | | | | |
|--|--|--------------------|---------------------------------------|-----------------------------------|--------------------------------------|-----------------|--------------------------------------|
| Category Temperature Range | -25 ~ +105°C | | | | | | |
| Working Voltage Range | 400 ~ 450Vdc | | | | | | |
| Capacitance Range | 33 ~ 120 μF | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ (at 25°C and 120Hz) | | | | | | |
| Dissipation Factor (tan δ) (at 25°C, 120Hz) | <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>400 ~ 450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> </tr> </table> | Rated Voltage (V) | 400 ~ 450 | tan δ (Max) | 0.15 | | |
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| 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) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>400</td> <td>420 ~ 450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>5</td> <td>6</td> </tr> </table> (at 120Hz) | Rated voltage (V) | 400 | 420 ~ 450 | Z(-25°C)/Z(+20°C) | 5 | 6 |
| Rated voltage (V) | 400 | 420 ~ 450 | | | | | |
| Z(-25°C)/Z(+20°C) | 5 | 6 | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>$\cong \pm 20\%$ of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>$\cong 200\%$ of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>\cong specified value</td> </tr> </table> | Capacitance change | $\cong \pm 20\%$ of the initial value | Dissipation factor(tan δ) | $\cong 200\%$ of the specified value | Leakage current | \cong specified value |
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| Dissipation factor(tan δ) | $\cong 200\%$ of the specified value | | | | | | |
| Leakage current | \cong specified value | | | | | | |
| Shelf Life | The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 1,000 hours at 105°C without voltage applied. <table border="1"> <tr> <td>Capacitance change</td> <td>$\cong \pm 20\%$ of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>$\cong 200\%$ of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>$\cong 200\%$ of the specified value</td> </tr> </table> | Capacitance change | $\cong \pm 20\%$ of the initial value | Dissipation factor(tan δ) | $\cong 200\%$ of the specified value | Leakage current | $\cong 200\%$ of the specified value |
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| Dissipation factor(tan δ) | $\cong 200\%$ of the specified value | | | | | | |
| Leakage current | $\cong 200\%$ of the specified value | | | | | | |
| Others | Conforms to JIS-C-5101-4 (1998), characteristic W | | | | | | |

DIMENSIONS (mm)



| ΦD | 10 | 12.5 L < 35 | 12.5 L \geq 35 | 14.5 |
|----------------|----------------------------------|--|------------------|-------------|
| ΦD | $\Phi\text{D} + 0.5 \text{ Max}$ | | | |
| Φd | 0.6 | 0.6 | 0.8 | 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 68 μF)





MA Series

◆ Case size & Permissible rated ripple current: (mA rms) at 105°C / 120Hz

| uF \ Vdc | 400 | | 420 | | 450 | |
|----------|----------|-----|---------|-----|---------|-----|
| | ΦD × L | RC | ΦD × L | RC | ΦD × L | RC |
| 33 | | | | | 10×45 | 304 |
| 39 | 10×40 | 330 | 10×45 | 340 | 10×50 | 358 |
| 47 | 10×45 | 393 | 10×50 | 405 | 12.5×35 | 405 |
| 56 | 10×50 | 435 | 12.5×40 | 497 | 12.5×45 | 505 |
| 68 | 12.5 ×40 | 555 | 14.5×40 | 570 | 12.5×50 | 563 |
| | | | | | 14.5×40 | 547 |
| 82 | 12.5×50 | 628 | 12.5×50 | 635 | 14.5×45 | 650 |
| | 14.5×40 | 585 | 14.5×45 | 590 | | |
| 100 | 14.5×45 | 710 | 14.5×50 | 728 | 14.5×50 | 708 |
| 120 | 14.5×55 | 813 | | | | |

◆ 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 |