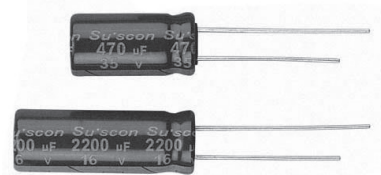


MC series

- Low Impedance, high ripple current resistance, 2000~3000 hours load life.
- Suitable for output return circuit of switching power supply for IT products.
- RoHS Compliance.
- 低阻抗、耐高紋波，2000~3000小時壽命。
- 適於電腦之開關電源供應器的輸出迴路。



SPECIFICATIONS

| Items 項目 | Characteristics 特性 | | | | | | | | | | | |
|--|---|---|------|------|------|------|--------------|--------|------|---------|------|---------|
| Capacitance Tolerance 靜電容量誤差 | ± 20%(120Hz,20°C) | | | | | | | | | | | |
| Operating Temperature Range 適用溫度範圍 | -40 ~ +105°C | | | | | | -25 ~ +105°C | | | | | |
| Rated Voltage Range 額定電壓範圍 | 6.3 ~ 400VDC | | | | | | 450VDC | | | | | |
| Leakage Current 洩漏電流 | V ≤ 100V I ≤ 0.01CV or 3 (μA) (After 2 minutes application of DC rated voltage, at 20°C) V > 100V I ≤ 0.03CV + 20 (μA) (After 5 minutes application of DC rated voltage, at 20°C) | | | | | | | | | | | |
| Dissipation Factor 散逸因素(tan δ) | Measurement Frequency: 120Hz. Temperature: 20°C | | | | | | | | | | | |
| | Rated Voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350 | 400~450 |
| | tan δ(Max) | 0.20 | 0.17 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 | 0.15 | 0.20 | 0.25 |
| Low Temperature Stability 低溫特性 Impedance Ratio(Max) 阻抗比率(最大值) | Measurement Frequency: 120Hz. | | | | | | | | | | | |
| | Rated Voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63~100 | | 160~350 | | 400~450 |
| | Z(-25°C)/Z(20°C) | 4 | 3 | 2 | 2 | 2 | 2 | 2 | | 3 | | 6 |
| | Z(-40°C)/Z(20°C) | 8 | 6 | 4 | 3 | 3 | 3 | 3 | | 6 | | 12 |
| Load Life 負荷壽命 | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3,000 hours(ϕ D≤8:2,000 hours) at 105°C. | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of Initial Value | | | | | | | | | | |
| | tan δ | 200% or less of Initial Specified Value | | | | | | | | | | |
| | Leakage Current | Initial Specified Value or less | | | | | | | | | | |
| Shelf Life 放置壽命 | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4. | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of Initial Value | | | | | | | | | | |
| | tan δ | 200% or less of Initial Specified Value | | | | | | | | | | |
| | Leakage Current | Initial Specified Value or less | | | | | | | | | | |
| Standards 參照標準 | JIS C 5101-4 (IEC 60384) | | | | | | | | | | | |

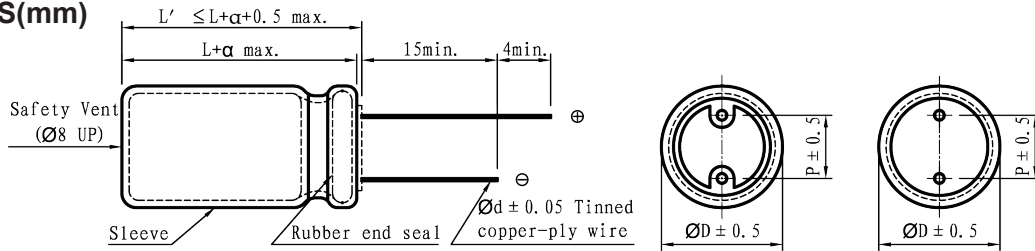
Frequency Coefficient of Permissible Ripple Current

| Rated Voltage (V) | Capacitance (μF) | Frequency (Hz) | | | | |
|-------------------|------------------|----------------|------|------|------|------|
| | | 50 | 120 | 1K | 10K | 100K |
| 6.3 ~ 100 | 0.47 ~ 100 | 0.45 | 0.55 | 0.75 | 0.90 | 1.00 |
| | 220 ~ 1000 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| | 1500 ~ 15000 | 0.70 | 0.80 | 0.95 | 0.98 | 1.00 |
| 160 ~ 450 | 2.2 ~ 330 | 0.55 | 0.65 | 0.80 | 0.90 | 1.00 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use , the rms ripple current has to be reduced.

MC series

DIMENSIONS(mm)



| | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|
| ϕD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ϕd | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |

| | |
|----------|--------------|
| α | (L < 16) 1.0 |
| | (L ≥ 16) 2.0 |

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz ; IMP (Ω max)at 20°C 100KHz.

| Cap (μF) | V | 6.3 | | | 10 | | | 16 | | | 25 | | |
|----------|---|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| | | Item | D x L | R.C. | IMP | D x L | R.C. | IMP | D x L | R.C. | IMP | D x L | R.C. |
| 33 | | | | | | | | | | | 5x11 | 155 | 0.800 |
| 39 | | | | | | | | | | | 5x11 | 175 | 0.650 |
| 47 | | | | | | | | 5x11 | 155 | 0.800 | 6.3x11 | 210 | 0.550 |
| 56 | | | | | | | | 5x11 | 175 | 0.650 | 6.3x11 | 235 | 0.440 |
| 68 | | | | | 5x11 | 155 | 0.800 | 6.3x11 | 220 | 0.500 | 6.3x11 | 260 | 0.336 |
| 82 | | | | | 5x11 | 175 | 0.650 | 6.3x11 | 240 | 0.420 | 6.3x11 | 285 | 0.330 |
| 100 | | 5x11 | 200 | 0.620 | 6.3x11 | 200 | 0.420 | 6.3x11 | 255 | 0.370 | 8x12 | 360 | 0.220 |
| 220 | | 6.3x11 | 275 | 0.320 | 8x12 | 360 | 0.220 | 8x12 | 550 | 0.140 | 8x14 | 600 | 0.100 |
| 270 | | 6.3x11 | 320 | 0.250 | 8x12 | 420 | 0.185 | 8x16 | 650 | 0.140 | 8x20 | 750 | 0.095 |
| 330 | | 8x12 | 420 | 0.180 | 8x12 | 550 | 0.140 | 10x13 | 750 | 0.100 | 10x16 | 800 | 0.069 |
| 470 | | 10x13 | 580 | 0.140 | 10x13 | 750 | 0.100 | 10x16 | 800 | 0.085 | 10x20 | 1050 | 0.064 |
| 680 | | 10x16 | 700 | 0.100 | 10x16 | 800 | 0.085 | 10x20 | 1050 | 0.064 | 13x21 | 1370 | 0.049 |
| 1000 | | 10x16 | 950 | 0.069 | 10x20 | 1080 | 0.065 | 13x21 | 1360 | 0.039 | 13x25 | 1600 | 0.038 |
| 2200 | | 10x25 | 1450 | 0.043 | 13x25 | 1650 | 0.038 | 13x30 | 2050 | 0.028 | 13x40 | 2300 | 0.024 |
| 3300 | | 13x25 | 1750 | 0.035 | 13x35 | 2100 | 0.028 | 13x40 | 2360 | 0.024 | 16x36 | 2600 | 0.019 |
| 3900 | | 13x30 | 1910 | 0.034 | 13x40 | 2360 | 0.024 | 16x32 | 2470 | 0.022 | 16x40 | 2820 | 0.019 |
| 4700 | | 13x35 | 2050 | 0.028 | 16x32 | 2370 | 0.024 | 16x36 | 2600 | 0.019 | 18x40 | 2900 | 0.019 |
| 6800 | | 16x32 | 2300 | 0.024 | 16x36 | 2600 | 0.019 | 18x35 | 2850 | 0.019 | | | |
| 8200 | | 16x36 | 2420 | 0.021 | 18x35 | 2800 | 0.019 | 18x40 | 3040 | 0.017 | | | |
| 10000 | | 18x32 | 2550 | 0.019 | 18x40 | 3000 | 0.018 | | | | | | |
| 15000 | | 18x40 | 2900 | 0.019 | | | | | | | | | |

※ 13mm may be replaced by 12.5mm upon customer's request.

MC series

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz ; IMP (Ω max)at 20°C 100KHz.

| Cap (μF) | V | 35 | | | 50 | | | 63 | | | 100 | | |
|----------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | Item | D x L | R.C. | IMP | D x L | R.C. | IMP | D x L | R.C. | IMP | D x L | R.C. |
| 47 | | | | | 8x12 | 320 | 0.350 | 8x12 | 450 | 0.300 | 10x25 | 550 | 0.350 |
| 68 | | 8x12 | 360 | 0.220 | 8x12 | 450 | 0.250 | 8x16 | 550 | 0.220 | 13x21 | 650 | 0.240 |
| 100 | | 8x12 | 450 | 0.140 | 10x16 | 550 | 0.200 | 10x20 | 700 | 0.170 | 13x25 | 800 | 0.180 |
| 220 | | 10x16 | 810 | 0.069 | 10x20 | 1100 | 0.100 | 13x21 | 1300 | 0.150 | 16x32 | 1400 | 0.071 |
| 330 | | 10x20 | 1100 | 0.044 | 13x21 | 1300 | 0.095 | 13x25 | 1400 | 0.070 | 18x40 | 1650 | 0.049 |
| 470 | | 13x21 | 1370 | 0.039 | 13x25 | 1450 | 0.070 | 13x35 | 1650 | 0.047 | | | |
| 680 | | 13x25 | 1600 | 0.038 | 13x35 | 1800 | 0.040 | 16x32 | 2000 | 0.037 | | | |
| 1000 | | 13x30 | 1930 | 0.029 | 16x32 | 2100 | 0.034 | 18x35 | 2200 | 0.034 | | | |
| 2200 | | 16x36 | 2500 | 0.019 | 18x40 | 2600 | 0.025 | | | | | | |
| 3300 | | 18x40 | 3000 | 0.019 | | | | | | | | | |

| Cap (μF) | V | 160 | | | 200 | | | 250 | | |
|----------|---|-------|-------|------|-------|-------|------|-------|-------|------|
| | | Item | D x L | R.C. | IMP | D x L | R.C. | IMP | D x L | R.C. |
| 2.2 | | | | | | | | 8x12 | 85 | 13.0 |
| 3.3 | | 8x12 | 85 | 11.0 | 8x12 | 90 | 11.0 | 8x12 | 97 | 11.0 |
| 4.7 | | 8x12 | 90 | 6.50 | 8x12 | 100 | 6.10 | 10x13 | 112 | 4.30 |
| 10 | | 10x13 | 144 | 4.30 | 10x13 | 168 | 3.80 | 10x16 | 240 | 3.50 |
| 22 | | 10x16 | 200 | 3.00 | 10x20 | 372 | 2.70 | 13x21 | 388 | 2.80 |
| 33 | | 10x20 | 450 | 2.50 | 10x25 | 480 | 2.30 | 13x21 | 495 | 2.20 |
| 47 | | 13x21 | 580 | 2.00 | 13x21 | 584 | 2.00 | 13x25 | 650 | 1.80 |
| 68 | | 13x21 | 680 | 1.05 | 13x25 | 788 | 0.98 | 16x26 | 810 | 0.90 |
| 100 | | 16x26 | 1028 | 0.90 | 16x26 | 1030 | 0.90 | 16x32 | 1124 | 0.85 |
| 220 | | 16x36 | 1160 | 0.80 | 18x32 | 1208 | 0.75 | 18x40 | 1200 | 0.70 |
| 330 | | 18x35 | 1480 | 0.70 | | | | | | |

| Cap (μF) | V | 400 | | | 450 | | |
|----------|---|-------|-------|------|-------|-------|------|
| | | Item | D x L | R.C. | IMP | D x L | R.C. |
| 2.2 | | 8x12 | 65 | 7.60 | 10x13 | 75 | 9.50 |
| 3.3 | | 10x13 | 88 | 5.20 | 10x16 | 100 | 7.90 |
| 4.7 | | 10x16 | 128 | 3.85 | 10x20 | 115 | 6.20 |
| 10 | | 10x20 | 156 | 3.10 | 13x21 | 224 | 3.70 |
| 22 | | 13x25 | 280 | 2.10 | 16x26 | 460 | 1.00 |
| 33 | | 13x25 | 460 | 1.78 | 16x26 | 488 | 0.95 |
| 47 | | 16x26 | 580 | 1.36 | 16x32 | 680 | 0.85 |
| 68 | | 16x32 | 960 | 0.96 | 18x32 | 750 | 0.71 |
| 100 | | 18x35 | 1000 | 0.78 | 18x40 | 880 | 0.43 |

※ 13mm may be replaced by 12.5mm upon customer's request.

MC