

MH

Series

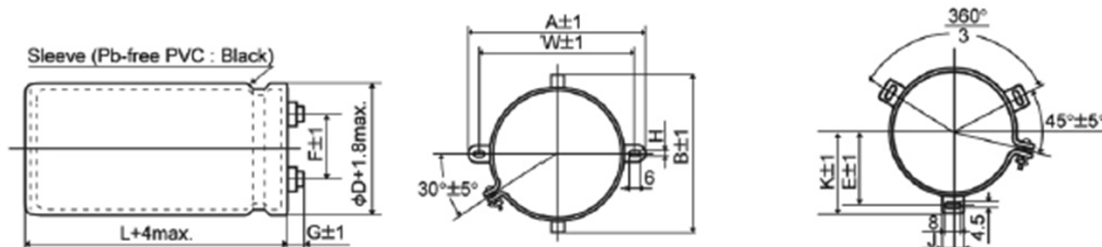
- Endurance with ripple current: 105°C 2000 hours



SPECIFICATIONS

| Item | Characteristics | |
|---|--|---|
| Category Temperature Range | -40 ~ +105°C | -25 ~ +105°C |
| Voltage Range | 10 ~ 100V.DC | 160 ~ 400V.DC |
| Nominal Cap. Range | 180 ~ 680000µF | |
| Capacitance Tolerance | ± 20 % (at 120Hz, 20°C) | |
| Leakage Current | I=0.02CV or 5 µA Whichever is smaller (After 5 minutes). where, I: max leakage current(µA), C:Nominal capacitance (µF) (at 20°C) | |
| Dissipation Factor (MAX) (tanδ) (at 120Hz, 20°C) | Shall not exceed the values shown in the STANDARD RATINGS | |
| Low Temp.Impedance Stability at 120Hz | Capacitance change | 10~100V.DC C(-40°C)/C(+20°C) ≥ 0.6 160~400V.DC C(-25°C)/C(+20°C) ≥ 0.7 |
| | | |
| Endurance | 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 2000 hours at 105°C. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation Factor | ≤ 200% of the initial specified value |
| | Leakage Current | ≤ the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. | |
| | Capacitance change | ≤ ±20% of the initial value |
| | Dissipation Factor | ≤ 200% of the initial specified value |
| | Leakage Current | ≤ the initial specified value |

DIMENSION



Φ35 to Φ63.5:G=6

Φ76 to Φ89 :G=5

| ΦD | A | B | W | H | F |
|------|-------|----|------|-----|------|
| 35 | 58 | 44 | 48 | 3.5 | 12.7 |
| 50 | 78 | 64 | 68 | 4.5 | 22.4 |
| 63.5 | 90 | 76 | 80 | 4.5 | 28 |
| 76 | 104.5 | 90 | 93.5 | 4.5 | 31.5 |

| ΦD | E | K | J | F |
|------|------|------|----|------|
| 50 | 32.5 | 37 | 14 | 22.4 |
| 63.5 | 38.1 | 43.5 | 14 | 28 |
| 76 | 44.5 | 50 | 14 | 31.5 |
| 89 | 50.8 | 56.5 | 16 | 31.5 |

<Screw specifications
>
Plus hexagon-headed screw M5x0.8x10
Maximum screw tightening torque:3.23 Nm

RATED RIPPLE CURRENT MULTIPLIERS

| W.V. (Vdc) | Case Diameter (mm) | Frequency(Hz) | | | | | |
|---------------|-----------------------|---------------|------|------|------|------|------|
| | | 50 | 120 | 300 | 1K | 10K | 50K |
| 10 to 50 | Φ35 to Φ89 | 0.95 | 1.00 | 1.03 | 1.05 | 1.09 | 1.12 |
| | Φ35 | 0.90 | 1.00 | 1.06 | 1.10 | 1.18 | 1.22 |
| 68 & 80 | Φ50 to Φ89 | 0.95 | 1.00 | 1.03 | 1.05 | 1.09 | 1.12 |
| | Φ35 | 0.82 | 1.00 | 1.12 | 1.22 | 1.30 | 1.33 |
| 100 | Φ50 | 0.90 | 1.00 | 1.06 | 1.10 | 1.18 | 1.22 |
| | Φ63.5 to Φ89 | 0.95 | 1.00 | 1.03 | 1.05 | 1.09 | 1.12 |
| 160 to 250 | Φ35 | 0.80 | 1.00 | 1.19 | 1.34 | 1.46 | 1.52 |
| | Φ50 & Φ63.5 | 0.81 | 1.00 | 1.14 | 1.26 | 1.36 | 1.41 |
| | Φ76 & Φ89 | 0.82 | 1.00 | 1.12 | 1.22 | 1.30 | 1.33 |
| 315 to 400 | Φ35 to Φ89 | 0.80 | 1.00 | 1.19 | 1.34 | 1.46 | 1.52 |

■ STANDARD RATINGS

| WV(vdc) Parameter Cap.(μF) | 10 | | | 16 | | | 25 | | | 35 | | | 50 | | | 63 | | | 80 | | | | | | | | | | | | | | | |
|----------------------------------|----------|-----|-----|--|-----|-----|----------|-----|-----|----------|-----|-----|----------|-------|-----|----------|-------|-----|----------|-------|-------|-----|--------|-------|-----|-------|-------|-----|-------|-----|-----|--------|-----|-----|
| 2200 | | | | Case Size(mm) | | | | | | | | | | | | | | | | | 35x50 | 2.4 | 0.2 | | | | | | | | | | | |
| 2700 | | | | Ripple Current(Arms) at 120Hz 105°C | | | | | | | | | | | | | | | | | 35x50 | 2.7 | 0.2 | | | | | | | | | | | |
| 3300 | | | | | | | | | | | | | | | | | | | | | | | | | | 35x50 | 2.5 | 0.2 | 35x50 | 3 | 0.2 | | | |
| 3900 | | | | | | | | | | | | | | | | | | | | | | | | | | 35x50 | 2.8 | 0.2 | 35x60 | 3.4 | 0.2 | | | |
| 4700 | | | | | | | | | | | | | | | | | | | | | | | | | | 35x50 | 3.1 | 0.2 | 35x50 | 3.1 | 0.2 | 35x60 | 3.7 | 0.2 |
| 5600 | | | | | | | | | | | | | | | | | | | | | | | | | | 35x50 | 3.3 | 0.2 | 35x60 | 3.5 | 0.2 | 35x80 | 4.5 | 0.2 |
| 6800 | | | | Max.tanδ (at 20°C 120Hz) | | | | | | | | | | | | | | | | | 35x50 | 3.3 | 0.3 | 35x60 | 3.9 | 0.2 | 35x80 | 4.9 | 0.2 | | | | | |
| 8200 | | | | | | | | | | | | | | | | | | | | | | | | | | 35x60 | 3.8 | 0.3 | 35x80 | 4.7 | 0.2 | 35x100 | 5.1 | 0.2 |
| 10000 | | | | | | | | | | | | | | 35x50 | 3.6 | 0.3 | 35x80 | 4.6 | 0.3 | 35x80 | 4.7 | 0.3 | 35x120 | 6.1 | 0.2 | | | | | | | | | |
| 12000 | | | | | | | 35x50 | 3.7 | 0.4 | 35x60 | 4.2 | 0.3 | 35x80 | 5.1 | 0.3 | 35x100 | 5.5 | 0.3 | 50x80 | 6.7 | 0.2 | | | | | | | | | | | | | |
| 15000 | | | | | | | 35x50 | 4.1 | 0.4 | 35x60 | 4.7 | 0.3 | 35x80 | 5.7 | 0.3 | 35x120 | 6.6 | 0.3 | 50x100 | 8.3 | 0.2 | | | | | | | | | | | | | |
| 18000 | | | | 35x50 | 4.2 | 0.4 | 35x60 | 4.8 | 0.5 | 35x80 | 5.7 | 0.3 | 35x100 | 6.7 | 0.3 | 50x80 | 7.4 | 0.3 | 50x120 | 9.9 | 0.2 | | | | | | | | | | | | | |
| 22000 | | | | 35x50 | 4.7 | 0.4 | 35x60 | 5.3 | 0.4 | 35x80 | 6.3 | 0.3 | 35x120 | 8.1 | 0.3 | 50x100 | 9 | 0.3 | 50x120 | 11 | 0.2 | | | | | | | | | | | | | |
| 27000 | 35x50 | 4.9 | 0.5 | 35x60 | 5.5 | 0.4 | 35x80 | 6.4 | 0.4 | 35x100 | 7.5 | 0.3 | 50x80 | 9.1 | 0.3 | 50x120 | 11 | 0.3 | 63.5x100 | 11 | 0.3 | | | | | | | | | | | | | |
| 33000 | 35x50 | 5.1 | 0.5 | 35x60 | 5.7 | 0.5 | 35x80 | 6.7 | 0.4 | 35x120 | 9 | 0.3 | 50x100 | 11 | 0.3 | 50x120 | 12 | 0.3 | 76x100 | 14 | 0.3 | | | | | | | | | | | | | |
| 39000 | 35x60 | 5.9 | 0.5 | 35x80 | 6.8 | 0.5 | 35x100 | 7.8 | 0.4 | 50x80 | 9.2 | 0.4 | 50x120 | 13 | 0.3 | 63.5x100 | 13 | 0.3 | 76x100 | 14 | 0.3 | | | | | | | | | | | | | |
| 47000 | 35x80 | 7.1 | 0.5 | 35x80 | 7.1 | 0.5 | 35x120 | 9.3 | 0.4 | 50x100 | 11 | 0.4 | 50x120 | 14 | 0.4 | 63.5x120 | 15 | 0.3 | 76x120 | 17 | 0.3 | | | | | | | | | | | | | |
| 56000 | 35x80 | 7.1 | 0.6 | 35x100 | 8.4 | 0.5 | 50x80 | 9.7 | 0.5 | 50x100 | 11 | 0.4 | 63.5x100 | 14 | 0.4 | 63.5x120 | 16 | 0.3 | 76x120 | 18 | 0.3 | | | | | | | | | | | | | |
| 68000 | 35x100 | 8.5 | 0.6 | 35x100 | 8.8 | 0.6 | 50x100 | 11 | 0.5 | 50x120 | 14 | 0.4 | 63.5x120 | 17 | 0.4 | 76x120 | 18 | 0.4 | 76x140 | 20 | 0.4 | | | | | | | | | | | | | |
| 82000 | 35x100 | 8.9 | 0.7 | 50x80 | 11 | 0.6 | 50x100 | 11 | 0.5 | 63.5x100 | 18 | 0.5 | 76x120 | 19 | 0.5 | 76x140 | 20 | 0.4 | 89x140 | 22 | 0.4 | | | | | | | | | | | | | |
| 100000 | 35x120 | 11 | 0.7 | 50x80 | 11 | 0.7 | 50x120 | 15 | 0.5 | 63.5x120 | 18 | 0.5 | 76x120 | 20 | 0.6 | 76x140 | 20 | 0.5 | | | | | | | | | | | | | | | | |
| 120000 | 50x80 | 11 | 0.8 | 50x100 | 13 | 0.7 | 63.5x100 | 15 | 0.7 | 63.5x120 | 20 | 0.6 | 76x120 | 20 | 0.6 | 89x140 | 22 | 0.6 | | | | | | | | | | | | | | | | |
| 150000 | 50x100 | 13 | 0.8 | 50x120 | 15 | 0.7 | 63.5x120 | 18 | 0.7 | 76x120 | 20 | 0.7 | 89x140 | 24 | 0.8 | | | | | | | | | | | | | | | | | | | |
| 180000 | 50x120 | 16 | 0.8 | 50x120 | 16 | 0.8 | 63.5x120 | 18 | 0.8 | 76x120 | 20 | 0.8 | 89x140 | 24 | | | | | | | | | | | | | | | | | | | | |
| 220000 | 50x120 | 17 | 0.9 | 63.5x120 | 19 | 0.9 | 76x120 | 21 | 0.9 | 76x140 | 23 | 0.8 | | | | | | | | | | | | | | | | | | | | | | |
| 270000 | 63.5x120 | 20 | 1 | 63.5x120 | 20 | 1 | 76x120 | 22 | 1 | 89x140 | 26 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 330000 | 63.5x120 | 20 | 1.2 | 76x120 | 21 | 1.3 | 76x140 | 23 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 390000 | 76x120 | 21 | 1.5 | 76x120 | 21 | 1.5 | 89x140 | 25 | 1.5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 470000 | 76x120 | 21 | 1.8 | 76x140 | 24 | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 560000 | 76x140 | 24 | 2 | 89x140 | 28 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 680000 | 76x140 | 26 | 2 | 89x140 | 29 | 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| WV(vdc) Parameter Cap.(μF) | 100 | | | 160 | | | 200 | | | 250 | | | 315 | | | 350 | | | 400 | | |
|----------------------------------|----------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|----------|-----|-----|
| | | | | | | | | | | | | | | | | | | | | | |
| 180 | | | | | | | | | | | | | 35x50 | 0.8 | 0.1 | 35x50 | 0.8 | 0.1 | 35x50 | 0.8 | 0.1 |
| 220 | | | | | | | | | | | | | 35x50 | 0.9 | 0.1 | 35x50 | 0.9 | 0.1 | 35x50 | 0.9 | 0.1 |
| 270 | | | | | | | | | | 35x50 | 0.8 | 0.2 | 35x50 | 1 | 0.1 | 35x50 | 1 | 0.1 | 35x50 | 1 | 0.1 |
| 330 | | | | | | | 35x50 | 0.9 | 0.2 | 35x50 | 0.9 | 0.2 | 35x50 | 1.1 | 0.1 | 35x50 | 1.1 | 0.1 | 35x60 | 1.2 | 0.1 |
| 390 | | | | | | | 35x50 | 1 | 0.2 | 35x50 | 1 | 0.2 | 35x50 | 1.2 | 0.1 | 35x60 | 1.3 | 0.1 | 35x60 | 1.3 | 0.1 |
| 470 | | | | | | | 35x50 | 1.1 | 0.2 | 35x50 | 1.1 | 0.2 | 35x60 | 1.4 | 0.1 | 35x60 | 1.4 | 0.1 | 35x80 | 1.4 | 0.1 |
| 560 | | | | 35x50 | 1.2 | 0.2 | 35x50 | 1.2 | 0.2 | 35x50 | 1.2 | 0.2 | 35x60 | 1.5 | 0.1 | 35x80 | 1.6 | 0.1 | 35x80 | 1.4 | 0.2 |
| 680 | | | | 35x50 | 1.3 | 0.2 | 35x50 | 1.3 | 0.2 | 35x60 | 1.4 | 0.2 | 35x80 | 1.7 | 0.2 | 35x80 | 1.6 | 0.2 | 35x100 | 1.7 | 0.2 |
| 820 | | | | 35x50 | 1.4 | 0.2 | 35x50 | 1.4 | 0.2 | 35x80 | 1.6 | 0.2 | 35x80 | 1.7 | 0.2 | 35x100 | 1.8 | 0.2 | 35x120 | 2 | 0.2 |
| 1000 | | | | 35x50 | 1.6 | 0.2 | 35x60 | 1.7 | 0.2 | 35x80 | 1.6 | 0.2 | 35x100 | 2 | 0.2 | 35x120 | 2.2 | 0.2 | 50x80 | 2.2 | 0.2 |
| 1200 | | | | 35x60 | 1.9 | 0.2 | 35x60 | 1.9 | 0.2 | 35x80 | 1.8 | 0.2 | 35x120 | 2.4 | 0.2 | 50x80 | 2.4 | 0.2 | 50x100 | 2.7 | 0.2 |
| 1500 | | | | 35x60 | 2.1 | 0.2 | 35x80 | 2.3 | 0.2 | 35x100 | 2.1 | 0.2 | 50x80 | 2.7 | 0.2 | 50x100 | 3 | 0.2 | 50x120 | 3.3 | 0.2 |
| 1800 | 35x50 | 2.7 | 0.1 | 35x80 | 2.5 | 0.2 | 35x80 | 2.5 | 0.2 | 35x120 | 2.5 | 0.2 | 50x100 | 3.3 | 0.2 | 50x120 | 3.6 | 0.2 | | | |
| 2200 | 35x50 | 3 | 0.1 | 35x80 | 2.8 | 0.2 | 35x100 | 3 | 0.2 | 50x80 | 2.9 | 0.2 | 50x120 | 4 | 0.2 | 50x120 | 4 | 0.2 | 63.5x100 | 4.2 | 0.2 |
| 2700 | 35x60 | 3.5 | 0.1 | 35x100 | 3.3 | 0.2 | 35x120 | 3.6 | 0.2 | 50x100 | 3.5 | 0.2 | 50x120 | 4.4 | 0.2 | 63.5x100 | 4.6 | 0.2 | | | |
| 3300 | 35x80 | 4.2 | 0.1 | 35x120 | 3.8 | 0.2 | 50x80 | 4.1 | 0.2 | 50x120 | 4.2 | 0.2 | 63.5x100 | 5.1 | 0.2 | | | | 63.5x120 | 5.5 | 0.2 |
| 3900 | 35x80 | 4.2 | 0.1 | 50x80 | 3.8 | 0.2 | 50x100 | 4.9 | 0.2 | 50x120 | 4.6 | 0.2 | 63.5x120 | 6 | 0.2 | 76x120 | 6.7 | 0.2 | | | |
| 4700 | 35x100 | 5 | 0.1 | 50x100 | 4.6 | 0.2 | 63.5x100 | 5.3 | 0.2 | 63.5x120 | 5.7 | 0.2 | 76x100 | 6.8 | 0.2 | | | | 76x130 | 7.6 | 0.2 |
| 5600 | 35x100 | 5.4 | 0.1 | 50x100 | 5.1 | 0.2 | 63.5x100 | 5.8 | 0.2 | 63.5x120 | 6.3 | 0.2 | 76x120 | 8 | 0.2 | 76x130 | 8.3 | 0.2 | 89x140 | 9.4 | 0.2 |
| 6800 | 35x120 | 5.8 | 0.2 | 50x120 | 6.1 | 0.2 | 63.5x120 | 6.9 | 0.2 | 76x120 | 7.7 | 0.2 | 76x130 | 9.2 | 0.2 | 76x140 | 9.5 | 0.2 | 89x140 | 10 | 0.2 |
| 8200 | 50x80 | 6.4 | 0.2 | 63.5x100 | 7 | 0.2 | 63.5x120 | 7.6 | 0.2 | 76x120 | 8.4 | 0.2 | 89x140 | 11 | 0.2 | 89x140 | 11 | 0.2 | | | |
| 10000 | 50x100 | 7.8 | 0.2 | 63.5x120 | 8.4 | 0.2 | 76x120 | 9.3 | 0.2 | 76x140 | 10 | 0.2 | 89x140 | 13 | 0.2 | | | | | | |
| 12000 | 50x120 | 9.3 | 0.2 | 76x100 | 9.4 | 0.2 | 76x120 | 10 | 0.2 | 89x140 | 12 | 0.2 | | | | | | | | | |
| 15000 | 50x120 | 10 | 0.2 | 76x120 | 11 | 0.2 | 76x140 | 12 | 0.2 | | | | | | | | | | | | |
| 18000 | 63.5x100 | 10 | 0.2 | 76x140 | 13 | 0.2 | 89x140 | 13 | 0.3 | | | | | | | | | | | | |
| 22000 | 63.5x120 | 13 | 0.2 | 89x140 | 15 | 0.3 | | | | | | | | | | | | | | | |
| 27000 | 76x120 | 14 | 0.3 | 89x140 | 16 | 0.3 | | | | | | | | | | | | | | | |
| 33000 | 76x120 | 15 | 0.3 | | | | | | | | | | | | | | | | | | |
| 39000 | 76x140 | 16 | 0.3 | | | | | | | | | | | | | | | | | | |
| 47000 | 89x140 | 19 | 0.3 | | | | | | | | | | | | | | | | | | |
| 56000 | 89x140 | 21 | 0.3 | | | | | | | | | | | | | | | | | | |