

SMQ Series

- Downsized from current standard SMG series
- Endurance : 2,000 hours at 85°C
- Non solvent resistant type
- RoHS2 Compliant

SMQ

↑ Downsized
SMG

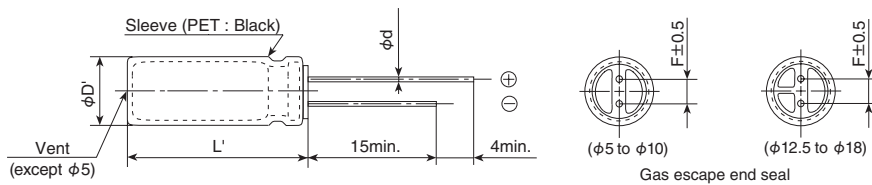


◆ SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | | | | | |
|--|--|--------------------------------------|------|------|------|------|------|------|--------------------------------------|-------------|---------------------------|------|-------------------|------|---|
| Category | -40 to +85°C(6.3 to 400V _{dc}) -25 to +85°C(450V _{dc}) | | | | | | | | | | | | | | |
| Temperature Range | | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3 to 450V _{dc} | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | | | | | | | | | | | | | | |
| Leakage Current | 6.3 to 100V _{dc} | | | | | | | | | | 160 to 450V _{dc} | | | | |
| | I=0.03CV or 4µA, whichever is greater. | | | | | | | | | | CV≤1,000 | | I=0.1CV+40 max. | | |
| | | | | | | | | | | | CV>1,000 | | I=0.04CV+100 max. | | |
| Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 1 minute) | | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated voltage (V _{dc}) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 250V | 315 to 400V | 450V | | | |
| | tan δ (Max.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.09 | 0.08 | 0.20 | 0.24 | 0.24 | | | |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. (at 20°C, 120Hz) | | | | | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (V _{dc}) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 200V | 250V | 350V | 400V | 450V | |
| | Z(-25°C)/Z(+20°C) | ≤φ8 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 6 |
| | | ≥φ10 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 6 |
| | Z(-40°C)/Z(+20°C) | ≤φ8 | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 8 | 10 | 8 | 8 | — |
| ≥φ10 | | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 6 | — | |
| (at 120Hz) | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 85°C. | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±20% of the initial value | | | | | | | | | | | | | |
| | D.F. (tan δ) | ≤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 1,000 hours at 85°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. | | | | | | | | | | | | | | |
| | Rated voltage | 6.3 to 100V _{dc} | | | | | | | 160 to 450V _{dc} | | | | | | |
| | Capacitance change | ≤ ±20% of the initial value | | | | | | | ≤ ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | ≤200% of the initial specified value | | | | | | | ≤200% of the initial specified value | | | | | | |
| | Leakage current | ≤The initial specified value | | | | | | | ≤500% of the initial specified value | | | | | | |

◆ DIMENSIONS [mm]

- Terminal Code : E



| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| 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 |
| φD' | φD+0.5max. | | | | | | |
| L' | L+1.5max. | | | | | | |

◆ PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

◆STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA _{rms} /85°C, 120Hz) | Part No. | WV (V _{dc}) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mA _{rms} /85°C, 120Hz) | Part No. |
|-----------------------|----------|--------------------|-------|---|--------------------|-----------------------|----------|--------------------|-------|---|--------------------|
| 400 | 22 | 12.5 × 25 | 0.24 | 205 | ESMQ401E□□220MK25S | 450 | 4.7 | 10 × 12.5 | 0.24 | 46 | ESMQ451E□□4R7MJC5S |
| | 33 | 16 × 25 | 0.24 | 275 | ESMQ401E□□330ML25S | | 10 | 10 × 20 | 0.24 | 80 | ESMQ451E□□100MJ20S |
| | 47 | 16 × 25 | 0.24 | 280 | ESMQ401E□□470ML25S | | 22 | 12.5 × 25 | 0.24 | 140 | ESMQ451E□□220MK25S |
| | 68 | 16 × 31.5 | 0.24 | 340 | ESMQ401E□□680MLN3S | | 33 | 16 × 25 | 0.24 | 180 | ESMQ451E□□330ML25S |
| | 100 | 18 × 35.5 | 0.24 | 440 | ESMQ401E□□101MMP1S | | 47 | 16 × 31.5 | 0.24 | 220 | ESMQ451E□□470MLN3S |
| 450 | 2.2 | 8 × 11.5 | 0.24 | 28 | ESMQ451E□□2R2MHB5D | | 68 | 18 × 35.5 | 0.24 | 260 | ESMQ451E□□680MMP1S |
| | 3.3 | 10 × 12.5 | 0.24 | 40 | ESMQ451E□□3R3MJC5S | | 100 | 18 × 40 | 0.24 | 280 | ESMQ451E□□101MM40S |

□□ : Enter the appropriate lead forming or taping code.

◆RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

| Capacitance(μF) | Frequency(Hz) | 50 | 120 | 300 | 1k | 10k | 100k |
|-----------------|---------------|------|------|------|------|------|------|
| 1.0 to 4.7 | | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |
| 10 to 68 | | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 1.80 |
| 100 to 1,000 | | 0.80 | 1.00 | 1.15 | 1.30 | 1.40 | 1.50 |
| 2,200 to | | 0.85 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |

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.