

SMG Series

- Endurance : 2,000 hours at 85°C
- Solvent resistant type except 350 to 450V_{dc}
(see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant



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 | Time | After 1 minute | After 5 minute | |
| | | | | | | | | | | CV ≤ 1,000 | | I=0.1CV+40 max. | I=0.03CV+15 max. | |
| | | | | | | | | | | | CV > 1,000 | | I=0.04CV+100 max. | I=0.02CV+25 max. |
| Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C) | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated voltage (V _{dc}) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 250V | 350 to 400V | 450V | | |
| | tan δ (Max.) | 0.34 | 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 250V | 350 to 400V | 450V | | |
| | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 6 | | |
| | Z(-40°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 4 | 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 | | | | | | |
| | | | | | | | | | | | | | | |

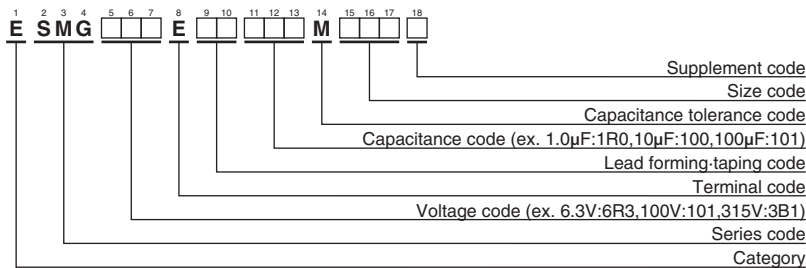
DIMENSIONS [mm]

- 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)"

SMG Series

◆STANDARD RATINGS

is not solvent resistant.

| 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. |
|-----------------------|----------|--------------------|-------|---|--------------------|-----------------------|----------|--------------------|-------|---|--------------------|
| 450 | 4.7 | 10 × 20 | 0.24 | 56 | ESMG451E□□4R7MJ20S | 450 | 33 | 16 × 31.5 | 0.24 | 215 | ESMG451E□□330MLN3S |
| | 10 | 12.5 × 20 | 0.24 | 91 | ESMG451E□□100MK20S | | 47 | 16 × 35.5 | 0.24 | 265 | ESMG451E□□470MLP1S |
| | 22 | 16 × 25 | 0.24 | 165 | ESMG451E□□220ML25S | | | | | | |

□□ : 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 47 | 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.