

# SMG Series

- Endurance : 2,000 hours at 85°C
- Solvent resistant type except 350 to 450V<sub>dc</sub>  
(see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant



## SPECIFICATIONS

Items	Characteristics													
Category	-40 to +85°C (6.3 to 400V <sub>dc</sub> ) -25 to +85°C (450V <sub>dc</sub> )													
Temperature Range														
Rated Voltage Range	6.3 to 450V <sub>dc</sub>													
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)													
Leakage Current	6.3 to 100V <sub>dc</sub>									160 to 450V <sub>dc</sub>				
	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.
(after 1 minute)														
Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C)														
Dissipation Factor (tan δ)	Rated voltage (V <sub>dc</sub> )	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 <sub>dc</sub> )	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 <sub>dc</sub>						160 to 450V <sub>dc</sub>						
	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						

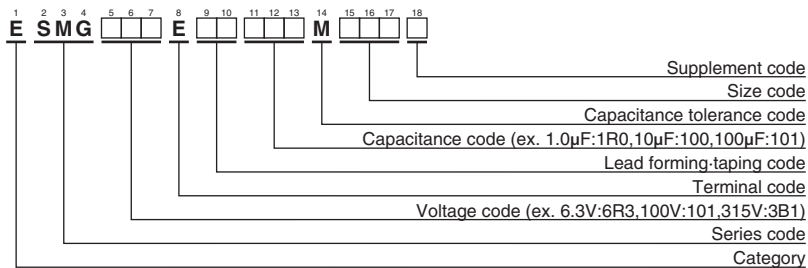
## DIMENSIONS [mm]

- 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

□ is not solvent resistant.

Table with columns: WV (Vdc), Cap (μF), Case size φD×L(mm), tan δ, Rated ripple current (mAmps/85°C, 120Hz), Part No. (repeated). Rows are organized by WV values: 6.3, 10, 16, 25, 35, 50, 63, 100, 160, 200, 250, 350, 400, 450.

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

Product specifications in this catalog are subject to change without notice. Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

**SMG** Series

◆ **STANDARD RATINGS**

is not solvent resistant.

WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA <sub>rms</sub> /85°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mA <sub>rms</sub> /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.