SMG Series

- Endurance : 2,000 hours at 85℃
- Solvent resistant type except 350 to 450Vdc (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

SMQ ↑ Downsized SMG

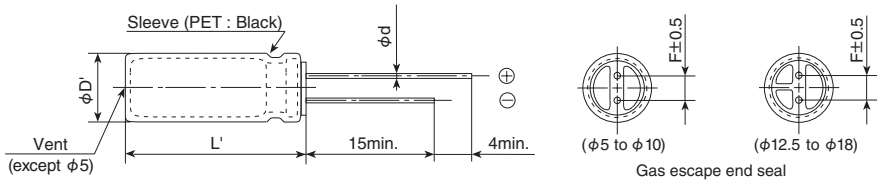


◆SPECIFICATIONS

Items	Characteristics											
Category Temperature Range	-40 to +85℃(6.3 to 400Vdc) -25 to +85℃(450Vdc)											
Rated Voltage Range	6.3 to 450Vdc											
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)											
Leakage Current	6.3 to 100Vdc: I=0.03CV or 4μA, whichever is greater. (after 1 minute)								160 to 450Vdc			
									CV \ Time	After 1minute	After 5minute	
									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℃)											
Dissipation Factor (tan δ)	Rated voltage (Vdc)	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℃, 120Hz)											
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	350 to 400V	450V
	Z(-25℃)/Z(+20℃)	5	4	3	2	2	2	2	2	3	6	6
	Z(-40℃)/Z(+20℃)	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℃ after the rated voltage is applied for 2,000 hours at 85℃.											
	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℃ after exposing them for 1,000 hours at 85℃ 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 100Vdc							160 to 450Vdc			
	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			

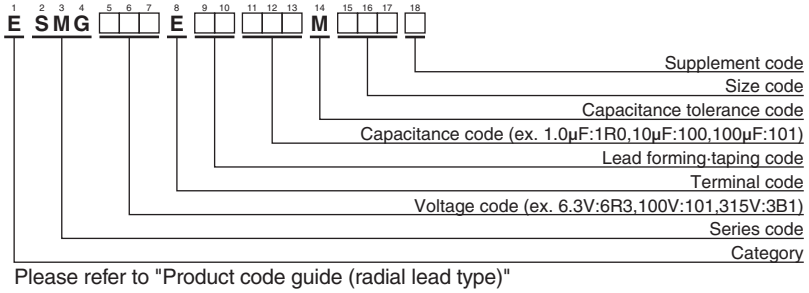
◆DIMENSIONS [mm]

● 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)"

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SMG Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
6.3	220	5×11	0.34	200	ESMG6R3E□□221ME11D
	330	6.3×11	0.34	270	ESMG6R3E□□331MF11D
	470	6.3×11	0.34	320	ESMG6R3E□□471MF11D
	1,000	8×11.5	0.34	540	ESMG6R3E□□102MHB5D
	2,200	10×20	0.36	1,000	ESMG6R3E□□222MJ20S
	3,300	10×20	0.38	1,185	ESMG6R3E□□332MJ20S
	4,700	12.5×20	0.40	1,545	ESMG6R3E□□472MK20S
	6,800	12.5×25	0.44	1,915	ESMG6R3E□□682MK25S
	10,000	16×25	0.52	2,330	ESMG6R3E□□103ML25S
	15,000	16×35.5	0.62	2,845	ESMG6R3E□□153MLP1S
	22,000	18×40	0.76	3,320	ESMG6R3E□□223MM40S
10	220	5×11	0.24	240	ESMG100E□□221ME11D
	330	6.3×11	0.24	290	ESMG100E□□331MF11D
	470	6.3×11	0.24	350	ESMG100E□□471MF11D
	1,000	10×12.5	0.24	650	ESMG100E□□102MJC5S
	2,200	10×20	0.26	1,070	ESMG100E□□222MJ20S
	3,300	12.5×20	0.28	1,420	ESMG100E□□332MK20S
	4,700	12.5×25	0.30	1,780	ESMG100E□□472MK25S
	6,800	16×25	0.34	2,220	ESMG100E□□682ML25S
	10,000	16×35.5	0.42	2,670	ESMG100E□□103MLP1S
	15,000	18×35.5	0.52	3,080	ESMG100E□□153MMP1S
16	100	5×11	0.20	160	ESMG160E□□101ME11D
	220	6.3×11	0.20	260	ESMG160E□□221MF11D
	330	8×11.5	0.20	370	ESMG160E□□331MHB5D
	470	8×11.5	0.20	440	ESMG160E□□471MHB5D
	1,000	10×16	0.20	785	ESMG160E□□102MJ16S
	2,200	12.5×20	0.22	1,295	ESMG160E□□222MK20S
	3,300	12.5×25	0.24	1,655	ESMG160E□□332MK25S
	4,700	16×25	0.26	2,090	ESMG160E□□472ML25S
	6,800	16×31.5	0.30	2,520	ESMG160E□□682MLN3S
	10,000	18×35.5	0.38	2,920	ESMG160E□□103MMP1S
25	47	5×11	0.16	115	ESMG250E□□470ME11D
	100	6.3×11	0.16	190	ESMG250E□□101MF11D
	220	8×11.5	0.16	330	ESMG250E□□221MHB5D
	330	8×11.5	0.16	440	ESMG250E□□331MHB5D
	470	10×12.5	0.16	545	ESMG250E□□471MJC5S
	1,000	10×20	0.16	955	ESMG250E□□102MJ20S
	2,200	12.5×25	0.18	1,540	ESMG250E□□222MK25S
	3,300	16×25	0.20	1,975	ESMG250E□□332ML25S
	4,700	16×31.5	0.22	2,420	ESMG250E□□472MLN3S
	6,800	18×35.5	0.26	2,880	ESMG250E□□682MMP1S
35	47	5×11	0.14	130	ESMG350E□□470ME11D
	100	6.3×11	0.14	210	ESMG350E□□101MF11D
	220	8×11.5	0.14	385	ESMG350E□□221MHB5D
	330	10×12.5	0.14	490	ESMG350E□□331MJC5S
	470	10×16	0.14	645	ESMG350E□□471MJ16S
	1,000	12.5×20	0.14	1,145	ESMG350E□□102MK20S
	2,200	16×25	0.16	1,785	ESMG350E□□222ML25S
	3,300	16×35.5	0.18	2,275	ESMG350E□□332MLP1S
	4,700	18×35.5	0.20	2,700	ESMG350E□□472MMP1S
50	1.0	5×11	0.12	17	ESMG500E□□1R0ME11D
	2.2	5×11	0.12	28	ESMG500E□□2R2ME11D
	3.3	5×11	0.12	35	ESMG500E□□3R3ME11D
	4.7	5×11	0.12	41	ESMG500E□□4R7ME11D
	10	5×11	0.12	60	ESMG500E□□100ME11D
	22	5×11	0.12	95	ESMG500E□□220ME11D
	33	5×11	0.12	125	ESMG500E□□330ME11D
	47	6.3×11	0.12	155	ESMG500E□□470MF11D
	100	8×11.5	0.12	260	ESMG500E□□101MHB5D
	220	10×12.5	0.12	430	ESMG500E□□221MJC5S
	330	10×16	0.12	585	ESMG500E□□331MJ16S
	470	10×20	0.12	755	ESMG500E□□471MJ20S
	1,000	12.5×25	0.12	1,340	ESMG500E□□102MK25S
	2,200	16×35.5	0.14	2,075	ESMG500E□□222MLP1S
	3,300	18×35.5	0.16	2,500	ESMG500E□□332MMP1S
63	10	5×11	0.09	65	ESMG630E□□100ME11D
	22	5×11	0.09	100	ESMG630E□□220ME11D
	33	6.3×11	0.09	140	ESMG630E□□330MF11D
	47	6.3×11	0.09	170	ESMG630E□□470MF11D
	100	10×12.5	0.09	300	ESMG630E□□101MJC5S
	220	10×16	0.09	490	ESMG630E□□221MJ16S
	330	10×20	0.09	710	ESMG630E□□331MJ20S
	470	12.5×20	0.09	900	ESMG630E□□471MK20S
	1,000	16×25	0.09	1,300	ESMG630E□□102ML25S
100	1.0	5×11	0.08	21	ESMG101E□□1R0ME11D
	2.2	5×11	0.08	30	ESMG101E□□2R2ME11D
	3.3	5×11	0.08	40	ESMG101E□□3R3ME11D
	4.7	5×11	0.08	45	ESMG101E□□4R7ME11D
	10	6.3×11	0.08	75	ESMG101E□□100MF11D
	22	8×11.5	0.08	130	ESMG101E□□220MHB5D
	33	8×11.5	0.08	180	ESMG101E□□330MHB5D
	47	10×12.5	0.08	230	ESMG101E□□470MJC5S
	100	10×20	0.08	370	ESMG101E□□101MJ20S
	220	12.5×25	0.08	620	ESMG101E□□221MK25S
	330	12.5×25	0.08	760	ESMG101E□□331MK25S
	470	16×25	0.08	1,000	ESMG101E□□471ML25S
	1,000	18×40	0.08	1,380	ESMG101E□□102MM40S
160	3.3	6.3×11	0.20	40	ESMG161E□□3R3MF11D
	4.7	6.3×11	0.20	48	ESMG161E□□4R7MF11D
	10	10×12.5	0.20	94	ESMG161E□□100MJC5S
	22	10×20	0.20	170	ESMG161E□□220MJ20S
	33	10×20	0.20	205	ESMG161E□□330MJ20S
	47	12.5×20	0.20	270	ESMG161E□□470MK20S
	100	12.5×25	0.20	430	ESMG161E□□101MK25S
	220	16×31.5	0.20	760	ESMG161E□□221MLN3S
	330	18×35.5	0.20	995	ESMG161E□□331MMP1S
200	3.3	6.3×11	0.20	40	ESMG201E□□3R3MF11D
	4.7	8×11.5	0.20	55	ESMG201E□□4R7MHB5D
	10	10×12.5	0.20	94	ESMG201E□□100MJC5S
	22	10×20	0.20	170	ESMG201E□□220MJ20S
	33	10×20	0.20	205	ESMG201E□□330MJ20S
	47	12.5×20	0.20	270	ESMG201E□□470MK20S
	100	16×25	0.20	475	ESMG201E□□101ML25S
	220	18×35.5	0.20	810	ESMG201E□□221MMP1S
250	2.2	6.3×11	0.20	32	ESMG251E□□2R2MF11D
	3.3	8×11.5	0.20	46	ESMG251E□□3R3MHB5D
	4.7	8×11.5	0.20	55	ESMG251E□□4R7MHB5D
	10	10×16	0.20	105	ESMG251E□□100MJ16S
	22	10×20	0.20	170	ESMG251E□□220MJ20S
	33	12.5×20	0.20	230	ESMG251E□□330MK20S
	47	12.5×25	0.20	295	ESMG251E□□470MK25S
	100	16×31.5	0.20	515	ESMG251E□□101MLN3S
	220	18×40	0.20	825	ESMG251E□□221MM40S
350	1.0	6.3×11	0.24	22	ESMG351E□□1R0MF11D
	2.2	8×11.5	0.24	38	ESMG351E□□2R2MHB5D
	3.3	8×11.5	0.24	46	ESMG351E□□3R3MHB5D
	4.7	10×12.5	0.24	65	ESMG351E□□4R7MJC5S
	10	10×20	0.24	115	ESMG351E□□100MJ20S
	22	12.5×20	0.24	185	ESMG351E□□220MK20S
	33	16×25	0.24	275	ESMG351E□□330ML25S
	47	16×25	0.24	325	ESMG351E□□470ML25S
	100	18×31.5	0.24	530	ESMG351E□□101MMN3S
400	1.0	6.3×11	0.24	22	ESMG401E□□1R0MF11D
	2.2	8×11.5	0.24	38	ESMG401E□□2R2MHB5D
	3.3	10×12.5	0.24	54	ESMG401E□□3R3MJC5S
	4.7	10×16	0.24	71	ESMG401E□□4R7MJ16S
	10	10×20	0.24	115	ESMG401E□□100MJ20S
	22	12.5×25	0.24	205	ESMG401E□□220MK25S
	33	16×25	0.24	275	ESMG401E□□330ML25S
	47	16×31.5	0.24	350	ESMG401E□□470MLN3S
450	2.2	10×12.5	0.24	32	ESMG451E□□2R2MJC5S
	3.3	10×16	0.24	44	ESMG451E□□3R3MJ16S

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

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SMG Series

◆STANDARD RATINGS

is not solvent resistant.

WV (V_{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (mArms/ 85℃, 120Hz)	Part No.
450	4.7	10×20	0.24	56	ESMG451E□□4R7MJ20S
	10	12.5×20	0.24	91	ESMG451E□□100MK20S
	22	16×25	0.24	165	ESMG451E□□220ML25S
450	33	16×31.5	0.24	215	ESMG451E□□330MLN3S
	47	16×35.5	0.24	265	ESMG451E□□470MLP1S

□□ : 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℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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