

# SMG Series

- Endurance : 2,000 hours at 85°C
- Solvent resistant type except 315 to 450V<sub>dc</sub>  
(see PRECAUTIONS AND GUIDELINES)
- RoHS Compliant

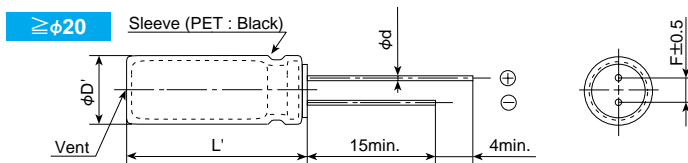
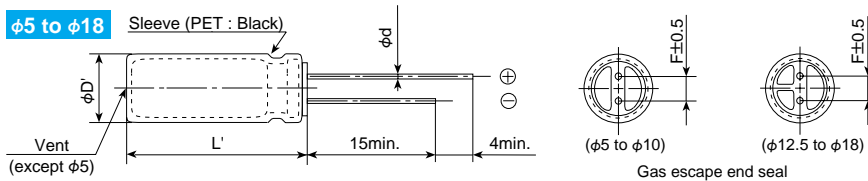


## ◆ SPECIFICATIONS

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>						
	≤φ18	I=0.03CV or 4μA, whichever is greater. (at 20°C after 1 minute)						CV \ Time		After 1 minute		After 5 minutes	
								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.								
≥φ20	I=0.03CV (at 20°C after 3 minutes)												
Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)													
Dissipation Factor (tanδ)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63V	100V	160 to 250V	315 to 400V	450V	
	tanδ (Max.)	≤φ18	0.34	0.24	0.20	0.16	0.14	0.12	0.09	0.08	0.20	0.24	0.24
		≥φ20	0.28	0.24	0.20	0.16	0.14	0.12	0.09	0.08	0.15	0.15	0.20
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	315 to 400V	450V	
	Z(-25°C)/Z(+20°C)	≤φ18	5	4	3	2	2	2	2	2	3	6	6
		≥φ20	5	4	3	2	2	2	2	2	4	6	6
Z(-40°C)/Z(+20°C)	≤φ18	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. (tanδ)	≤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. (tanδ)	≤200% of the initial specified value						≤200% of the initial specified value					
	Leakage current	≤The initial specified value						≤500% of the initial specified value					

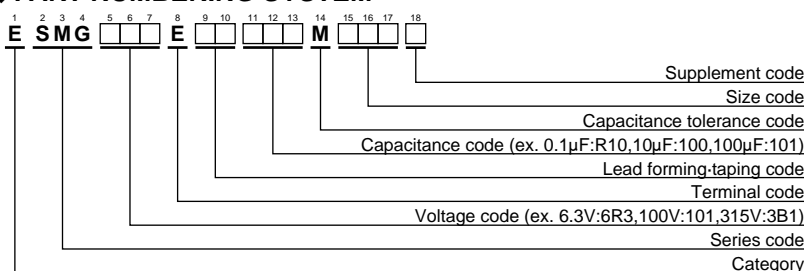
## ◆ DIMENSIONS [mm]

- Terminal Code : E



φD	5	6.3	8	10	12.5	16	18	20	22	25.4
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0	1.0
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5
φD'	φD+0.5max.						φD+0.5max.			
L'	L+1.5max.						L+2.0max.			

## ◆ PART NUMBERING SYSTEM



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

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA <sub>rms</sub> /85°C,120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA <sub>rms</sub> /85°C,120Hz)	Part No.
6.3	33	5X11	0.34	77	ESMG6R3E□□330ME11D	25	4.7	5X11	0.16	36	ESMG250E□□4R7ME11D
	47	5X11	0.34	92	ESMG6R3E□□470ME11D		10	5X11	0.16	53	ESMG250E□□100ME11D
	100	5X11	0.34	134	ESMG6R3E□□101ME11D		22	5X11	0.16	78	ESMG250E□□220ME11D
	220	5X11	0.34	200	ESMG6R3E□□221ME11D		33	5X11	0.16	96	ESMG250E□□330ME11D
	330	6.3X11	0.34	270	ESMG6R3E□□331MF11D		47	5X11	0.16	115	ESMG250E□□470ME11D
	470	6.3X11	0.34	320	ESMG6R3E□□471MF11D		100	6.3X11	0.16	190	ESMG250E□□101MF11D
	1,000	8X11.5	0.34	540	ESMG6R3E□□102MHB5D		220	8X11.5	0.16	330	ESMG250E□□221MHB5D
	2,200	10X20	0.36	1,000	ESMG6R3E□□222MJ20S		330	8X11.5	0.16	440	ESMG250E□□331MHB5D
	3,300	10X20	0.38	1,185	ESMG6R3E□□332MJ20S		470	10X12.5	0.16	545	ESMG250E□□471MJ20S
	4,700	12.5X20	0.40	1,545	ESMG6R3E□□472ML20S		1,000	10X20	0.16	955	ESMG250E□□102MJ20S
	6,800	12.5X25	0.44	1,915	ESMG6R3E□□682MK25S		2,200	12.5X25	0.18	1,540	ESMG250E□□222MK25S
	10,000	16X25	0.52	2,330	ESMG6R3E□□103ML25S		3,300	16X25	0.20	1,975	ESMG250E□□332ML25S
	10,000	20X25	0.46	2,310	ESMG6R3E□□103MN25S		3,300	20X20	0.20	1,850	ESMG250E□□332MN20S
	15,000	16X35.5	0.62	2,845	ESMG6R3E□□153MLP1S		4,700	16X31.5	0.22	2,420	ESMG250E□□472MLN3S
	15,000	20X30	0.56	2,660	ESMG6R3E□□153MN30S		4,700	20X25	0.22	2,420	ESMG250E□□472MN25S
	18,000	20X35	0.62	2,890	ESMG6R3E□□183MN35S		5,600	20X30	0.24	2,430	ESMG250E□□562MN30S
	18,000	22X30	0.62	2,860	ESMG6R3E□□183MP30S		6,800	18X35.5	0.26	2,880	ESMG250E□□682MMP1S
	22,000	18X40	0.76	3,320	ESMG6R3E□□223MM40S		6,800	20X35	0.26	2,680	ESMG250E□□682MN35S
	22,000	20X40	0.70	3,130	ESMG6R3E□□223MN40S		6,800	22X30	0.26	2,510	ESMG250E□□682MP30S
	22,000	22X35	0.70	3,130	ESMG6R3E□□223MP35S		8,200	20X40	0.30	2,810	ESMG250E□□822MN40S
27,000	22X40	0.80	3,280	ESMG6R3E□□273MP40S	8,200	22X35	0.30	2,810	ESMG250E□□822MP35S		
39,000	25.4X40	1.04	3,560	ESMG6R3E□□393MQ40S	10,000	22X40	0.34	3,240	ESMG250E□□103MP40S		
10	22	5X11	0.24	66	ESMG100E□□220ME11D	12,000	22X40	0.38	3,240	ESMG250E□□123MP40S	
	33	5X11	0.24	83	ESMG100E□□330ME11D	15,000	25.4X40	0.44	3,610	ESMG250E□□153MQ40S	
	47	5X11	0.24	100	ESMG100E□□470ME11D	35	4.7	5X11	0.14	41	ESMG350E□□4R7ME11D
	100	5X11	0.24	146	ESMG100E□□101ME11D		10	5X11	0.14	59	ESMG350E□□100ME11D
	220	5X11	0.24	240	ESMG100E□□221ME11D		22	5X11	0.14	88	ESMG350E□□220ME11D
	330	6.3X11	0.24	290	ESMG100E□□331MF11D		33	5X11	0.14	108	ESMG350E□□330ME11D
	470	6.3X11	0.24	350	ESMG100E□□471MF11D		47	5X11	0.14	130	ESMG350E□□470ME11D
	1,000	10X12.5	0.24	650	ESMG100E□□102MJC5S		100	6.3X11	0.14	210	ESMG350E□□101MF11D
	2,200	10X20	0.26	1,070	ESMG100E□□222MJ20S		220	8X11.5	0.14	385	ESMG350E□□221MHB5D
	3,300	12.5X20	0.28	1,420	ESMG100E□□332MK20S		330	10X12.5	0.14	490	ESMG350E□□331MJC5S
	4,700	12.5X25	0.30	1,780	ESMG100E□□472MK25S		470	10X16	0.14	645	ESMG350E□□471MJ16S
	6,800	16X25	0.34	2,220	ESMG100E□□682ML25S		1,000	12.5X20	0.14	1,145	ESMG350E□□102MK20S
	6,800	20X20	0.34	2,080	ESMG100E□□682MN20S		2,200	16X25	0.16	1,785	ESMG350E□□222ML25S
	10,000	16X35.5	0.42	2,670	ESMG100E□□103MLP1S		2,200	20X20	0.16	1,670	ESMG350E□□222MN20S
	10,000	20X25	0.42	2,410	ESMG100E□□103MN25S		3,300	16X35.5	0.18	2,275	ESMG350E□□332MLP1S
	12,000	20X30	0.46	2,620	ESMG100E□□123MN30S		3,300	20X25	0.18	2,050	ESMG350E□□332MN25S
	15,000	18X35.5	0.52	3,080	ESMG100E□□153MMP1S		3,900	20X30	0.18	2,310	ESMG350E□□392MN30S
	15,000	20X35	0.52	2,870	ESMG100E□□153MN35S		4,700	18X35.5	0.20	2,700	ESMG350E□□472MMP1S
	15,000	22X30	0.52	2,660	ESMG100E□□153MP30S		4,700	20X35	0.20	2,510	ESMG350E□□472MN35S
	18,000	22X35	0.58	3,050	ESMG100E□□183MP35S		4,700	22X30	0.20	2,380	ESMG350E□□472MP30S
22,000	22X40	0.66	3,480	ESMG100E□□223MP40S	5,600		20X40	0.22	2,690	ESMG350E□□562MN40S	
33,000	25.4X40	0.88	3,560	ESMG100E□□333MQ40S	5,600		22X35	0.22	2,690	ESMG350E□□562MP35S	
16	10	5X11	0.20	50	ESMG160E□□100ME11D	6,800	22X40	0.24	3,090	ESMG350E□□682MP40S	
	22	5X11	0.20	75	ESMG160E□□220ME11D	10,000	25.4X40	0.32	3,480	ESMG350E□□103MQ40S	
	33	5X11	0.20	91	ESMG160E□□330ME11D	50	0.10	5X11	0.12	1.3	ESMG500E□□R10ME11D
	47	5X11	0.20	109	ESMG160E□□470ME11D		0.22	5X11	0.12	2.9	ESMG500E□□R22ME11D
	100	5X11	0.20	160	ESMG160E□□101ME11D		0.33	5X11	0.12	4.3	ESMG500E□□R33ME11D
	220	6.3X11	0.20	260	ESMG160E□□221MF11D		0.47	5X11	0.12	6.2	ESMG500E□□R47ME11D
	330	8X11.5	0.20	370	ESMG160E□□331MHB5D		1.0	5X11	0.12	17	ESMG500E□□R10ME11D
	470	8X11.5	0.20	440	ESMG160E□□471MHB5D		2.2	5X11	0.12	28	ESMG500E□□R22ME11D
	1,000	10X16	0.20	785	ESMG160E□□102MJ16S		3.3	5X11	0.12	35	ESMG500E□□R33ME11D
	2,200	12.5X20	0.22	1,295	ESMG160E□□222MK20S		4.7	5X11	0.12	41	ESMG500E□□R47ME11D
	3,300	12.5X25	0.24	1,655	ESMG160E□□332MK25S		10	5X11	0.12	60	ESMG500E□□100ME11D
	4,700	16X25	0.26	2,090	ESMG160E□□472ML25S		22	5X11	0.12	95	ESMG500E□□220ME11D
	4,700	20X20	0.26	1,960	ESMG160E□□472MN20S		33	5X11	0.12	125	ESMG500E□□330ME11D
	6,800	16X31.5	0.30	2,520	ESMG160E□□682MLN3S		47	6.3X11	0.12	155	ESMG500E□□470MF11D
	6,800	20X25	0.30	2,330	ESMG160E□□682MN25S		100	8X11.5	0.12	260	ESMG500E□□101MHB5D
	8,200	20X30	0.34	2,500	ESMG160E□□822MN30S		220	10X12.5	0.12	430	ESMG500E□□221MJ20S
	10,000	18X35.5	0.38	2,920	ESMG160E□□103MMP1S		330	10X16	0.12	585	ESMG500E□□331MJ16S
	10,000	20X35	0.38	2,720	ESMG160E□□103MN35S		470	10X20	0.12	755	ESMG500E□□471MJ20S
	10,000	22X30	0.38	2,660	ESMG160E□□103MP30S		1,000	12.5X25	0.12	1,340	ESMG500E□□102MK25S
	12,000	20X40	0.42	2,900	ESMG160E□□123MN40S		1,500	20X20	0.12	1,570	ESMG500E□□152MN20S
12,000	22X35	0.42	2,900	ESMG160E□□123MP35S	2,200		16X35.5	0.14	2,075	ESMG500E□□222MLP1S	
15,000	22X40	0.48	3,380	ESMG160E□□153MP40S	2,200		20X25	0.14	1,880	ESMG500E□□222MN25S	
22,000	25.4X40	0.62	3,720	ESMG160E□□223MQ40S	2,700	20X30	0.14	2,150	ESMG500E□□272MN30S		

□ : Enter the appropriate lead forming or taping code.

◆STANDARD RATINGS

□ is not solvent resistant.

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA rms/85°C, 120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA rms/85°C, 120Hz)	Part No.	
50	3,300	18X35.5	0.16	2,500	ESMG500E□□332MMP1S	200	22	10X20	0.20	170	ESMG201E□□220MJ20S	
	3,300	20X35	0.16	2,420	ESMG500E□□332MN35S		33	10X20	0.20	205	ESMG201E□□330MJ20S	
	3,300	22X30	0.16	2,420	ESMG500E□□332MP30S		47	12.5X20	0.20	270	ESMG201E□□470MK20S	
	3,900	20X40	0.16	2,590	ESMG500E□□392MN40S		100	16X25	0.20	475	ESMG201E□□101ML25S	
	3,900	22X35	0.16	2,590	ESMG500E□□392MP35S		100	20X20	0.15	460	ESMG201E□□101MN20S	
	4,700	22X40	0.18	2,960	ESMG500E□□472MP40S		180	20X25	0.15	660	ESMG201E□□181MN25S	
	6,800	25.4X40	0.22	3,360	ESMG500E□□682MQ40S		220	18X35.5	0.20	810	ESMG201E□□221MMP1S	
63	10	5X11	0.09	65	ESMG630E□□100ME11D		220	20X30	0.15	750	ESMG201E□□221MN30S	
	22	5X11	0.09	100	ESMG630E□□220ME11D		270	20X30	0.15	830	ESMG201E□□271MN30S	
	33	6.3X11	0.09	140	ESMG630E□□330MF11D		330	20X35	0.15	1,070	ESMG201E□□331MN35S	
	47	6.3X11	0.09	170	ESMG630E□□470MF11D		330	22X30	0.15	1,070	ESMG201E□□331MP30S	
	100	10X12.5	0.09	300	ESMG630E□□101MJC5S		390	20X40	0.15	1,190	ESMG201E□□391MN40S	
	220	10X16	0.09	490	ESMG630E□□221MJ16S		390	22X30	0.15	1,160	ESMG201E□□391MP30S	
	330	10X20	0.09	710	ESMG630E□□331MJ20S		470	22X40	0.15	1,350	ESMG201E□□471MP40S	
	470	12.5X20	0.09	900	ESMG630E□□471MK20S		560	22X40	0.15	1,430	ESMG201E□□561MP40S	
	820	20X20	0.09	1,370	ESMG630E□□821MN20S		680	25.4X40	0.15	1,620	ESMG201E□□681MQ40S	
	1,000	16X25	0.09	1,300	ESMG630E□□102ML25S		250	2.2	6.3X11	0.20	32	ESMG251E□□2R2MF11D
	1,000	20X25	0.09	1,600	ESMG630E□□102MN25S			3.3	8X11.5	0.20	46	ESMG251E□□3R3MHB5D
	1,500	20X30	0.09	1,850	ESMG630E□□152MN30S			4.7	8X11.5	0.20	55	ESMG251E□□4R7MHB5D
	2,200	20X35	0.11	2,330	ESMG630E□□222MN35S			10	10X16	0.20	105	ESMG251E□□100MJ16S
	2,200	22X30	0.11	2,190	ESMG630E□□222MP30S	22		10X20	0.20	170	ESMG251E□□220MJ20S	
2,700	20X40	0.11	2,640	ESMG630E□□272MN40S	33	12.5X20		0.20	230	ESMG251E□□330MK20S		
3,300	22X40	0.13	2,810	ESMG630E□□332MP40S	47	12.5X25		0.20	295	ESMG251E□□470MK25S		
3,900	25.4X40	0.13	3,100	ESMG630E□□392MQ40S	82	20X20		0.15	420	ESMG251E□□820MN20S		
100	0.10	5X11	0.08	2.1	ESMG101E□□R10ME11D	100		16X31.5	0.20	515	ESMG251E□□101MLN3S	
	0.22	5X11	0.08	4.7	ESMG101E□□R22ME11D	100		20X25	0.15	490	ESMG251E□□101MN25S	
	0.33	5X11	0.08	7.0	ESMG101E□□R33ME11D	120		20X25	0.15	530	ESMG251E□□121MN25S	
	0.47	5X11	0.08	10	ESMG101E□□R47ME11D	180		20X30	0.15	680	ESMG251E□□181MN30S	
	1.0	5X11	0.08	21	ESMG101E□□R10ME11D	220		18X40	0.20	825	ESMG251E□□221MM40S	
	2.2	5X11	0.08	30	ESMG101E□□R22ME11D	220		20X35	0.15	780	ESMG251E□□221MN35S	
	3.3	5X11	0.08	40	ESMG101E□□R33ME11D	220		22X30	0.15	820	ESMG251E□□221MP30S	
	4.7	5X11	0.08	45	ESMG101E□□R47ME11D	270		20X40	0.15	880	ESMG251E□□271MN40S	
	10	6.3X11	0.08	75	ESMG101E□□100MF11D	270	22X35	0.15	880	ESMG251E□□271MP35S		
	22	8X11.5	0.08	130	ESMG101E□□220MHB5D	330	22X40	0.15	1,060	ESMG251E□□331MP40S		
	33	8X11.5	0.08	180	ESMG101E□□330MHB5D	390	25.4X40	0.15	1,200	ESMG251E□□391MQ40S		
	47	10X12.5	0.08	230	ESMG101E□□470MJC5S	315	47	20X20	0.15	310	ESMG3B1E□□470MN20S	
	100	10X20	0.08	370	ESMG101E□□101MJ20S		68	20X25	0.15	400	ESMG3B1E□□680MN25S	
	220	12.5X25	0.08	620	ESMG101E□□221MK25S		82	20X25	0.15	440	ESMG3B1E□□820MN25S	
	330	12.5X25	0.08	760	ESMG101E□□331MK25S		100	20X30	0.15	500	ESMG3B1E□□101MN30S	
	330	20X20	0.08	870	ESMG101E□□331MN20S		120	20X30	0.15	550	ESMG3B1E□□121MN30S	
	470	16X25	0.08	1,000	ESMG101E□□471ML25S		180	20X40	0.15	720	ESMG3B1E□□181MN40S	
	680	20X30	0.08	1,360	ESMG101E□□681MN30S		180	22X35	0.15	720	ESMG3B1E□□181MP35S	
820	22X30	0.08	1,540	ESMG101E□□821MP30S	220		22X40	0.15	810	ESMG3B1E□□221MP40S		
1,000	18X40	0.08	1,380	ESMG101E□□102MM40S	270	25.4X40	0.15	920	ESMG3B1E□□271MQ40S			
1,000	20X35	0.08	1,720	ESMG101E□□102MN35S	350	0.47	6.3X11	0.24	15	ESMG351E□□R47MF11D		
1,200	22X40	0.08	1,980	ESMG101E□□122MP40S		1.0	6.3X11	0.24	22	ESMG351E□□1R0MF11D		
1,800	25.4X40	0.08	2,490	ESMG101E□□182MQ40S		2.2	8X11.5	0.24	38	ESMG351E□□2R2MHB5D		
160	3.3	6.3X11	0.20	40		ESMG161E□□3R3MF11D	3.3	8X11.5	0.24	46	ESMG351E□□3R3MHB5D	
	4.7	6.3X11	0.20	48		ESMG161E□□4R7MF11D	4.7	10X12.5	0.24	65	ESMG351E□□4R7MJC5S	
	10	10X12.5	0.20	94		ESMG161E□□100MJC5S	10	10X20	0.24	115	ESMG351E□□100MJ20S	
	22	10X20	0.20	170		ESMG161E□□220MJ20S	22	12.5X20	0.24	185	ESMG351E□□220MK20S	
	33	10X20	0.20	205		ESMG161E□□330MJ20S	33	16X25	0.24	275	ESMG351E□□330ML25S	
	47	12.5X20	0.20	270		ESMG161E□□470MK20S	47	16X25	0.24	325	ESMG351E□□470ML25S	
	100	12.5X25	0.20	430		ESMG161E□□101MK25S	47	20X20	0.15	310	ESMG351E□□470MN20S	
	220	16X31.5	0.20	760	ESMG161E□□221MLN3S	68	20X25	0.15	400	ESMG351E□□680MN25S		
	220	20X25	0.15	730	ESMG161E□□221MN25S	100	18X31.5	0.24	530	ESMG351E□□101MMN3S		
	330	18X35.5	0.20	995	ESMG161E□□331MMP1S	100	20X30	0.15	500	ESMG351E□□101MN30S		
	330	20X30	0.15	920	ESMG161E□□331MN30S	120	20X35	0.15	560	ESMG351E□□121MN35S		
	390	20X35	0.15	1,160	ESMG161E□□391MN35S	220	25.4X40	0.15	890	ESMG351E□□221MQ40S		
	390	22X30	0.15	1,160	ESMG161E□□391MP30S	400	1.0	6.3X11	0.24	22	ESMG401E□□1R0MF11D	
	470	20X40	0.15	1,340	ESMG161E□□471MN40S		2.2	8X11.5	0.24	38	ESMG401E□□2R2MHB5D	
470	22X35	0.15	1,340	ESMG161E□□471MP35S	3.3		10X12.5	0.24	54	ESMG401E□□3R3MJC5S		
560	22X40	0.15	1,470	ESMG161E□□561MP40S	4.7		10X16	0.24	71	ESMG401E□□4R7MJ16S		
680	25.4X40	0.15	1,570	ESMG161E□□681MQ40S	10		10X20	0.24	115	ESMG401E□□100MJ20S		
200	3.3	6.3X11	0.20	40	ESMG201E□□3R3MF11D		22	12.5X25	0.24	205	ESMG401E□□220MK25S	
	4.7	8X11.5	0.20	55	ESMG201E□□4R7MHB5D		33	16X25	0.24	275	ESMG401E□□330ML25S	
	10	10X12.5	0.20	94	ESMG201E□□100MJC5S		33	20X20	0.15	260	ESMG401E□□330MN20S	

□ : Enter the appropriate lead forming or taping code.

◆STANDARD RATINGS

□ is not solvent resistant.

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA <sub>rms</sub> /85°C, 120Hz)	Part No.
400	47	16×31.5	0.24	350	ESMG401E□□470MLN3S
	56	20×25	0.15	350	ESMG401E□□560MN25S
	68	20×30	0.15	420	ESMG401E□□680MN30S
	100	20×35	0.15	520	ESMG401E□□101MN35S
	100	22×30	0.15	520	ESMG401E□□101MP30S
	120	20×40	0.15	580	ESMG401E□□121MN40S
	120	22×35	0.15	580	ESMG401E□□121MP35S
450	180	25.4×40	0.15	790	ESMG401E□□181MQ40S
	2.2	10×12.5	0.24	32	ESMG451E□□2R2MJC5S
	3.3	10×16	0.24	44	ESMG451E□□3R3MJ16S
	4.7	10×20	0.24	56	ESMG451E□□4R7MJ20S
	10	12.5×20	0.24	91	ESMG451E□□100MK20S

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (mA <sub>rms</sub> /85°C, 120Hz)	Part No.
450	22	16×25	0.24	165	ESMG451E□□220ML25S
	22	20×20	0.20	180	ESMG451E□□220MN20S
	33	16×31.5	0.24	215	ESMG451E□□330MLN3S
	33	20×25	0.20	240	ESMG451E□□330MN25S
	47	16×35.5	0.24	265	ESMG451E□□470MLP1S
	47	20×25	0.20	290	ESMG451E□□470MN25S
	56	20×30	0.20	320	ESMG451E□□560MN30S
	68	20×35	0.20	370	ESMG451E□□680MN35S
	68	22×30	0.20	370	ESMG451E□□680MP30S
	82	20×40	0.20	420	ESMG451E□□820MN40S
	82	22×35	0.20	420	ESMG451E□□820MP35S
	100	22×40	0.20	470	ESMG451E□□101MP40S
	120	25.4×40	0.20	520	ESMG451E□□121MQ40S

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

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

(φ5 to φ18)

Capacitance (μF)	Frequency (Hz)					
	50	120	300	1k	10k	100k
0.1 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

(φ20 to φ25.4)

Rated Voltage (V <sub>dc</sub> )	Frequency (Hz)					
	50	120	300	1k	10k	100k
6.3 to 50	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100	0.92	1.00	1.07	1.13	1.19	1.20
160 to 250	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450	0.77	1.00	1.16	1.30	1.41	1.43

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.