

SMM Series

- Downsize, longer life, and high ripple version of SMH series
- Endurance with ripple current : 85°C 3000 hours
- Non solvent-proof type

SMM

↑ downsized
longer life
higher ripple
SMH

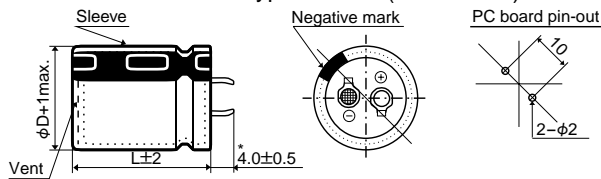


◆ SPECIFICATIONS

Items	Characteristics		
Category	-25 to +85°C		
Temperature Range			
Rated Voltage Range	160 to 450V _{dc}		
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)		
Leakage Current	$I \leq 3\sqrt{CV}$ Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes)		
Dissipation Factor (tanδ)	Rated voltage (V _{dc})	160 to 400V	420 & 450V
	tanδ (Max.)	0.15	0.20
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V _{dc})	160 to 400V	420 & 450V
	Z(-25°C)/Z(+20°C)	4	8
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 3000 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 1000 hours at 85°C without voltage applied.		
	Capacitance change	≤±15% of the initial value	
	D.F. (tanδ)	≤150% of the initial specified value	
	Leakage current	≤The initial specified value	

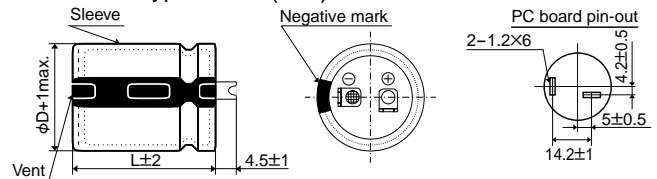
◆ DIMENSIONS [mm]

● Standard Terminal Type : VSSN (φ20 to φ35)

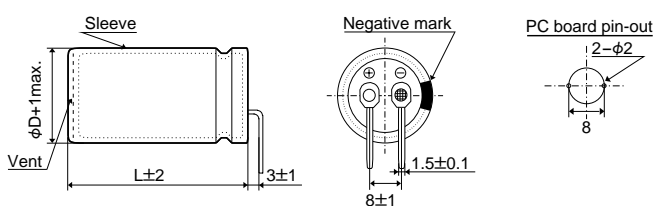


*φD=35mm : 3.5±0.5mm

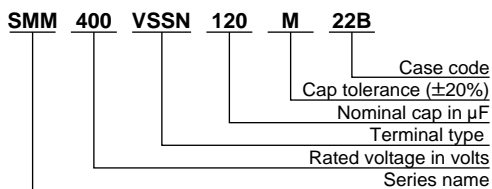
● Terminal Type : LISN (φ35)



● Terminal type : LCSN (φ20×30 to 50L & φ22×30 to 50L)



◆ PART NUMBERING SYSTEM



◆ CASE CODE [mm]

Case code	Case size φDXL	Case code	Case size φDXL	Case code	Case size φDXL	Case code	Case size φDXL	Case code	Case size φDXL
—	—	22S	22×20	25S	25.4×20	30S	30×20	35S	35×20
20A	20×25	22A	22×25	25A	25.4×25	30A	30×25	35A	35×25
20B	20×30	22B	22×30	25B	25.4×30	30B	30×30	35B	35×30
20C	20×35	22C	22×35	25C	25.4×35	30C	30×35	35C	35×35
20D	20×40	22D	22×40	25D	25.4×40	30D	30×40	35D	35×40
20E	20×45	22E	22×45	25E	25.4×45	30E	30×45	35E	35×45
20F	20×50	22F	22×50	25F	25.4×50	30F	30×50	35F	35×50

◆STANDARD RATINGS

μF	V _{dc}		160					180				
	φD		20	22	25.4	30	35	20	22	25.4	30	35
220									22×20 1.18			
270	20×25 1.28	22×20 1.30						20×25 1.29				
330	20×25 1.55							20×30 1.77	22×25 1.77	25.4×20 1.49		
390	20×30 1.63	22×25 1.63	25.4×20 1.62					20×30 1.84	22×25 1.84			
470	20×30 1.90	22×30 1.86	25.4×25 1.86					20×35 1.91	22×30 1.91	25.4×25 2.08	30×20 1.88	
560	20×35 2.14	22×30 2.15	25.4×25 2.15	30×20 2.05				20×40 2.15	22×35 2.25	25.4×25 2.25		
680	20×40 2.35	22×35 2.35	25.4×30 2.33	30×25 2.33	35×20 2.26			20×45 2.41	22×35 2.48	25.4×30 2.50	30×25 2.46	35×20 2.26
820	20×45 2.64	22×40 2.68	25.4×30 2.65	30×25 2.64	35×20 2.49			20×50 2.72	22×40 2.86	25.4×35 2.75	30×25 2.69	
1,000		22×45 3.02	25.4×35 3.00	30×30 2.96	35×25 3.13				22×50 3.10	25.4×40 3.06	30×30 3.10	35×25 2.98
1,200		22×50 3.47	25.4×40 3.43	30×30 3.41	35×25 3.40					25.4×45 3.63	30×35 3.55	35×30 3.49
1,500			25.4×50 3.96	30×35 3.96	35×30 3.94						30×40 4.10	35×35 4.02
1,800				30×40 4.31	35×35 4.28						30×45 4.55	35×35 4.54
2,200				30×50 4.96	35×40 4.96							35×40 4.83
2,700					35×45 5.57							35×50 5.30
3,300					35×50 6.21							

35×45 ← Upper : Case size φD×L (mm)
 5.57 ← Lower : Rated ripple current (Arms) at 85°C, 120Hz

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V _{dc}	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V _{dc}	0.77	1.00	1.16	1.30	1.41	1.43

◆STANDARD RATINGS

μF	V _{dc}		200					220				
	φD		20	22	25.4	30	35	20	22	25.4	30	35
180									22×20 1.06			
220			20×25 1.19	22×20 1.18				20×25 1.25				
270			20×25 1.39	22×25 1.37	25.4×20 1.35			20×30 1.46	22×25 1.47	25.4×20 1.35		
330			20×30 1.56	22×25 1.51	25.4×20 1.49			20×35 1.64	22×30 1.70	25.4×25 1.69	30×20 1.58	
390			20×35 1.74	22×30 1.73	25.4×25 1.71	30×20 1.71		20×35 1.84	22×30 1.89	25.4×25 1.84	30×20 1.71	
470			20×35 2.03	22×30 1.97	25.4×25 1.95	30×20 1.88		20×40 2.12	22×35 2.08	25.4×30 2.08	30×25 2.12	35×20 1.88
560			20×40 2.18	22×35 2.18	25.4×30 2.15	30×25 2.15	35×20 2.05	20×50 2.33	22×40 2.33	25.4×35 2.38	30×25 2.31	35×20 2.14
680			20×50 2.48	22×40 2.48	25.4×30 2.48	30×25 2.48	35×20 2.36		22×45 2.63	25.4×35 2.68	30×30 2.62	35×25 2.58
820				22×45 2.81	25.4×35 2.79	30×30 2.80	35×25 2.83			25.4×45 3.01	30×35 2.99	35×30 2.79
1,000				22×50 3.28	25.4×40 3.28	30×35 3.15	35×30 3.26			25.4×50 3.40	30×35 3.42	35×30 3.29
1,200					25.4×45 3.61	30×35 3.61	35×30 3.57				30×40 3.88	35×35 3.68
1,500						30×45 4.13	35×35 4.06				30×50 4.44	35×40 4.10
1,800						30×50 4.60	35×40 4.59	← Upper : Case size φD×L (mm) ← Lower : Rated ripple current (Arms) at 85°C, 120Hz				35×45 4.52
2,200							35×45 5.25					

μF	V _{dc}		250					315				
	φD		20	22	25.4	30	35	20	22	25.4	30	35
100									22×20 0.79			
120								20×25 0.89		25.4×20 0.90		
150				22×20 0.97				20×30 1.05	22×25 1.06	25.4×20 1.00		
180			20×25 1.20	22×20 1.06				20×35 1.18	22×30 1.29	25.4×25 1.38	30×20 1.16	
220			20×25 1.26	22×25 1.24	25.4×20 1.22			20×35 1.30	22×30 1.41	25.4×25 1.47	30×20 1.28	
270			20×30 1.42	22×25 1.50				20×45 1.52	22×35 1.68	25.4×30 1.70	30×25 1.55	35×20 1.43
330			20×35 1.68	22×30 1.66	25.4×25 1.61	30×20 1.58		20×50 1.73	22×40 1.91	25.4×35 1.94	30×25 1.98	
390			20×40 1.92	22×35 1.88	25.4×30 1.88	30×25 1.86	35×20 1.71		22×45 2.07	25.4×40 2.11	30×30 2.15	35×25 1.95
470			20×50 2.06	22×35 2.15	25.4×35 2.15	30×25 2.05	35×20 1.88			25.4×45 2.31	30×35 2.38	35×30 2.46
560				22×40 2.48	25.4×35 2.35	30×25 2.35				25.4×50 2.46	30×35 2.63	35×30 2.69
680				22×50 2.61	25.4×40 2.67	30×30 2.71	35×25 2.58				30×45 2.82	35×35 3.05
820					25.4×45 3.01	30×35 2.98	35×30 2.96				30×50 3.28	35×40 3.45
1,000						30×40 3.56	35×35 3.48					35×45 3.59
1,200						30×45 3.99	35×35 3.84					
1,500							35×40 4.33	← Upper : Case size φD×L (mm) ← Lower : Rated ripple current (Arms) at 85°C, 120Hz				
1,800							35×50 4.54					

◆STANDARD RATINGS

μF	V _{dc} φD	350					400				
		20	22	25.4	30	35	20	22	25.4	30	35
68							20×25 0.75	22×20 0.65			
82			22×20 0.72				20×25 0.82	22×25 0.84	25.4×20 0.74		
100		20×25 0.81					20×30 0.95	22×25 0.99	25.4×20 0.82		
120		20×30 0.96	22×25 1.04	25.4×20 0.90			20×35 1.07	22×30 1.09	25.4×25 1.13	30×20 0.95	
150		20×30 1.10	22×30 1.20	25.4×25 1.22	30×20 1.06		20×40 1.22	22×35 1.24	25.4×30 1.27	30×25 1.20	
180		20×35 1.24	22×30 1.34	25.4×25 1.37	30×20 1.16		20×45 1.28	22×40 1.41	25.4×30 1.44	30×25 1.52	35×20 1.16
220		20×45 1.37	22×35 1.47	25.4×30 1.53	30×25 1.54	35×20 1.29	20×50 1.41	22×45 1.58	25.4×35 1.64	30×30 1.66	35×25 1.47
270		20×50 1.56	22×40 1.70	25.4×35 1.73	30×25 1.80	35×20 1.49		22×50 1.65	25.4×40 1.79	30×30 1.82	35×25 1.63
330			22×45 1.87	25.4×35 1.97	30×30 2.03	35×25 1.80			25.4×45 2.00	30×35 2.05	35×30 2.05
390				25.4×40 2.14	30×35 2.23	35×30 2.30			25.4×50 2.12	30×40 2.26	35×35 2.28
470				25.4×50 2.55	30×35 2.53	35×30 2.55				30×45 2.51	35×35 2.54
560					30×40 2.73	35×35 2.75				30×50 2.85	35×40 2.85
680					30×50 3.15	35×40 3.15					35×50 3.10
820						35×45 3.47	← Upper : Case size φD×L (mm) ← Lower : Rated ripple current (Arms) at 85°C, 120Hz				
1,000						35×50 3.60					

μF	V _{dc} φD	420					450				
		20	22	25.4	30	35	20	22	25.4	30	35
47			22×20 0.54					22×20 0.54			
56		20×25 0.58	22×20 0.59				20×25 0.61	22×20 0.59			
68		20×25 0.70		25.4×20 0.68			20×30 0.71	22×25 0.71	25.4×20 0.68		
82		20×30 0.80	22×25 0.85	25.4×20 0.74			20×35 0.80	22×25 0.86	25.4×20 0.74	30×20 0.79	
100		20×35 0.90	22×30 0.97	25.4×25 0.98	30×20 0.87		20×35 0.88	22×30 0.95	25.4×25 0.97	30×20 0.87	
120		20×35 1.04	22×30 1.07	25.4×25 1.08	30×20 0.95		20×40 0.99	22×35 1.07	25.4×30 1.09	30×25 1.12	35×20 0.99
150		20×40 1.17	22×35 1.21	25.4×30 1.26	30×25 1.30	35×20 1.11	20×45 1.13	22×40 1.18	25.4×30 1.25	30×25 1.29	35×20 1.06
180		20×50 1.27	22×40 1.33	25.4×35 1.42	30×25 1.48	35×20 1.16		22×45 1.32	25.4×35 1.40	30×30 1.45	35×25 1.33
220			22×45 1.55	25.4×35 1.58	30×30 1.65	35×25 1.47		22×50 1.48	25.4×40 1.59	30×30 1.64	35×25 1.66
270				25.4×40 1.74	30×35 1.90	35×30 1.94			25.4×45 1.73	30×35 1.89	35×30 1.90
330				25.4×50 2.20	30×35 1.98	35×35 2.17			25.4×50 2.12	30×40 2.12	35×35 2.15
390					30×40 2.22	35×35 2.27				30×45 2.35	35×40 2.38
470					30×45 2.50	35×40 2.61				30×50 2.65	35×45 2.68
560						35×45 2.95	← Upper : Case size φD×L (mm) ← Lower : Rated ripple current (Arms) at 85°C, 120Hz				35×50 2.88
680						35×50 3.15					