

# SMM Series

- Longer life from SMQ series
- Endurance with ripple current : 3,000 hours at 85°C
- Non solvent resistant type
- RoHS Compliant

SMM

↑ Longer life  
SMQ

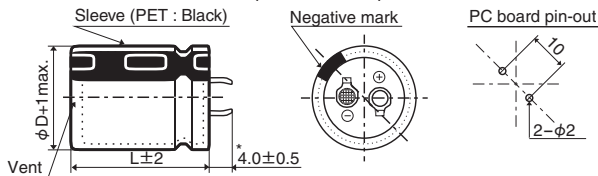


## ◆ SPECIFICATIONS

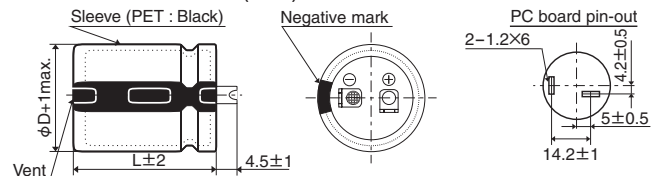
Items	Characteristics		
Category	-25 to +85°C		
Temperature Range	-25 to +85°C		
Rated Voltage Range	160 to 450V <sub>dc</sub>		
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)		
Leakage Current	I ≤ 3√CV Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes)		
Dissipation Factor (tanδ)	Rated voltage (V <sub>dc</sub> )	160 to 400V	420 & 450V
	tanδ (Max.)	0.15	0.20
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V <sub>dc</sub> )	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 (the peak voltage shall not exceed the rated voltage) for 3,000 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.		
	Capacitance change	≤ ±15% of the initial value	
	D.F. (tanδ)	≤ 150% of the initial specified value	
	Leakage current	≤ The initial specified value	

## ◆ DIMENSIONS [mm]

- Terminal Code : VS (φ20 to φ35) : Standard



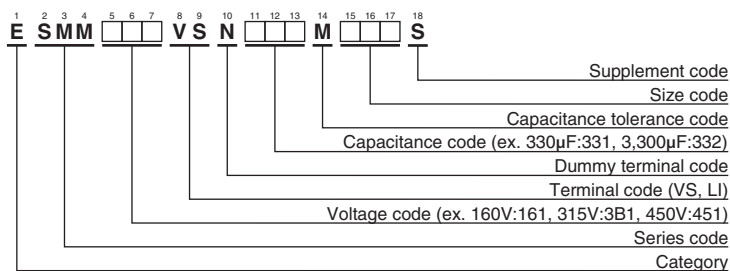
- Terminal Code : LI (φ35)



\* φD=35mm : 3.5 ± 0.5mm

The standard design has no plastic disc.

## ◆ PART NUMBERING SYSTEM



Please refer to "Product code guide (snap-in type)"

## ◆ RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
160 to 250V <sub>dc</sub>	0.81	1.00	1.17	1.32	1.45	1.50
315 to 450V <sub>dc</sub>	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.



### ◆STANDARD RATINGS

VV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C,120Hz)	Part No.	VV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C,120Hz)	Part No.	
160	270	20×25	0.15	1.28	ESMM161VSN271MN25S	180	1,200	25.4×45	0.15	3.63	ESMM181VSN122MQ45S	
	270	22×20	0.15	1.30	ESMM161VSN271MP20S		1,200	30×35	0.15	3.55	ESMM181VSN122MR35S	
	330	20×25	0.15	1.55	ESMM161VSN331MN25S		1,200	35×30	0.15	3.49	ESMM181VSN122MA30S	
	390	20×30	0.15	1.63	ESMM161VSN391MN30S		1,500	30×40	0.15	4.10	ESMM181VSN152MR40S	
	390	22×25	0.15	1.63	ESMM161VSN391MP25S		1,500	35×35	0.15	4.02	ESMM181VSN152MA35S	
	390	25.4×20	0.15	1.62	ESMM161VSN391MQ20S		1,800	30×45	0.15	4.55	ESMM181VSN182MR45S	
	470	20×30	0.15	1.90	ESMM161VSN471MN30S		1,800	35×35	0.15	4.54	ESMM181VSN182MA35S	
	470	22×30	0.15	1.86	ESMM161VSN471MP30S		2,200	35×40	0.15	4.83	ESMM181VSN222MA40S	
	470	25.4×25	0.15	1.86	ESMM161VSN471MQ25S		2,700	35×50	0.15	5.30	ESMM181VSN272MA50S	
	560	20×35	0.15	2.14	ESMM161VSN561MN35S		200	220	20×25	0.15	1.19	ESMM201VSN221MN25S
	560	22×30	0.15	2.15	ESMM161VSN561MP30S			220	22×20	0.15	1.18	ESMM201VSN221MP20S
	560	25.4×25	0.15	2.15	ESMM161VSN561MQ25S			270	20×25	0.15	1.39	ESMM201VSN271MN25S
	560	30×20	0.15	2.05	ESMM161VSN561MP20S			270	22×25	0.15	1.37	ESMM201VSN271MP25S
	680	20×40	0.15	2.35	ESMM161VSN681MN40S			270	25.4×20	0.15	1.35	ESMM201VSN271MQ20S
	680	22×35	0.15	2.35	ESMM161VSN681MP35S			330	20×30	0.15	1.56	ESMM201VSN331MN30S
	680	25.4×30	0.15	2.33	ESMM161VSN681MQ30S	330		22×25	0.15	1.51	ESMM201VSN331MP25S	
	680	30×25	0.15	2.33	ESMM161VSN681MR25S	330		25.4×20	0.15	1.49	ESMM201VSN331MQ20S	
	680	35×20	0.15	2.26	ESMM161VSN681MA20S	390		20×35	0.15	1.74	ESMM201VSN391MN35S	
	820	20×45	0.15	2.64	ESMM161VSN821MN45S	390		22×30	0.15	1.73	ESMM201VSN391MP30S	
	820	22×40	0.15	2.68	ESMM161VSN821MP40S	390		25.4×25	0.15	1.71	ESMM201VSN391MQ25S	
	820	25.4×30	0.15	2.65	ESMM161VSN821MQ30S	390		30×20	0.15	1.71	ESMM201VSN391MR20S	
	820	30×25	0.15	2.64	ESMM161VSN821MR25S	470		20×35	0.15	2.03	ESMM201VSN471MN35S	
	820	35×20	0.15	2.49	ESMM161VSN821MA20S	470		22×30	0.15	1.97	ESMM201VSN471MP30S	
	1,000	22×45	0.15	3.02	ESMM161VSN102MP45S	470		25.4×25	0.15	1.95	ESMM201VSN471MQ25S	
	1,000	25.4×35	0.15	3.00	ESMM161VSN102MQ35S	470	30×20	0.15	1.88	ESMM201VSN471MR20S		
	1,000	30×30	0.15	2.96	ESMM161VSN102MP30S	560	20×40	0.15	2.18	ESMM201VSN561MN40S		
	1,000	35×25	0.15	3.13	ESMM161VSN102MA25S	560	22×35	0.15	2.18	ESMM201VSN561MP35S		
	1,200	22×50	0.15	3.47	ESMM161VSN122MP50S	560	25.4×30	0.15	2.15	ESMM201VSN561MQ30S		
	1,200	25.4×40	0.15	3.43	ESMM161VSN122MQ40S	560	30×25	0.15	2.15	ESMM201VSN561MR25S		
	1,200	30×30	0.15	3.41	ESMM161VSN122MP30S	560	35×20	0.15	2.05	ESMM201VSN561MA20S		
	1,200	35×25	0.15	3.40	ESMM161VSN122MA25S	680	20×50	0.15	2.48	ESMM201VSN681MN50S		
	1,500	25.4×50	0.15	3.96	ESMM161VSN152MQ50S	680	22×40	0.15	2.48	ESMM201VSN681MP40S		
	1,500	30×35	0.15	3.96	ESMM161VSN152MR35S	680	25.4×30	0.15	2.48	ESMM201VSN681MQ30S		
1,500	35×30	0.15	3.94	ESMM161VSN152MA30S	680	30×25	0.15	2.48	ESMM201VSN681MR25S			
1,800	30×40	0.15	4.31	ESMM161VSN182MR40S	680	35×20	0.15	2.36	ESMM201VSN681MA20S			
1,800	35×35	0.15	4.28	ESMM161VSN182MA35S	820	22×45	0.15	2.81	ESMM201VSN821MP45S			
2,200	30×50	0.15	4.96	ESMM161VSN222MR50S	820	25.4×35	0.15	2.79	ESMM201VSN821MQ35S			
2,200	35×40	0.15	4.96	ESMM161VSN222MA40S	820	30×30	0.15	2.80	ESMM201VSN821MR30S			
2,700	35×45	0.15	5.57	ESMM161VSN272MA45S	820	35×25	0.15	2.83	ESMM201VSN821MA25S			
3,300	35×50	0.15	6.21	ESMM161VSN332MA50S	1,000	22×50	0.15	3.28	ESMM201VSN102MP50S			
180	220	22×20	0.15	1.18	ESMM181VSN221MP20S	1,000	25.4×40	0.15	3.28	ESMM201VSN102MQ40S		
	270	20×25	0.15	1.29	ESMM181VSN271MN25S	1,000	30×35	0.15	3.15	ESMM201VSN102MR35S		
	330	20×30	0.15	1.77	ESMM181VSN331MN30S	1,000	35×30	0.15	3.26	ESMM201VSN102MA30S		
	330	22×25	0.15	1.77	ESMM181VSN331MP25S	1,200	25.4×45	0.15	3.61	ESMM201VSN122MQ45S		
	330	25.4×20	0.15	1.49	ESMM181VSN331MQ20S	1,200	30×35	0.15	3.61	ESMM201VSN122MR35S		
	390	20×30	0.15	1.84	ESMM181VSN391MN30S	1,200	35×30	0.15	3.57	ESMM201VSN122MA30S		
	390	22×25	0.15	1.84	ESMM181VSN391MP25S	1,500	30×45	0.15	4.13	ESMM201VSN152MR45S		
	470	20×35	0.15	1.91	ESMM181VSN471MN35S	1,500	35×35	0.15	4.06	ESMM201VSN152MA35S		
	470	22×30	0.15	1.91	ESMM181VSN471MP30S	1,800	30×50	0.15	4.60	ESMM201VSN182MR50S		
	470	25.4×25	0.15	2.08	ESMM181VSN471MQ25S	1,800	35×40	0.15	4.59	ESMM201VSN182MA40S		
	470	30×20	0.15	1.88	ESMM181VSN471MR20S	2,200	35×45	0.15	5.25	ESMM201VSN222MA45S		
	560	20×40	0.15	2.15	ESMM181VSN561MN40S	220	180	22×20	0.15	1.06	ESMM221VSN181MP20S	
	560	22×35	0.15	2.25	ESMM181VSN561MP35S		220	20×25	0.15	1.25	ESMM221VSN221MN25S	
	560	25.4×25	0.15	2.25	ESMM181VSN561MQ25S		270	20×30	0.15	1.46	ESMM221VSN271MN30S	
	680	20×45	0.15	2.41	ESMM181VSN681MN45S		270	22×25	0.15	1.47	ESMM221VSN271MP25S	
	680	22×35	0.15	2.48	ESMM181VSN681MP35S		270	25.4×20	0.15	1.35	ESMM221VSN271MQ20S	
	680	25.4×30	0.15	2.50	ESMM181VSN681MQ30S		330	20×35	0.15	1.64	ESMM221VSN331MN35S	
	680	30×25	0.15	2.46	ESMM181VSN681MR25S		330	22×30	0.15	1.70	ESMM221VSN331MP30S	
	680	35×20	0.15	2.26	ESMM181VSN681MA20S		330	25.4×25	0.15	1.69	ESMM221VSN331MQ25S	
	820	20×50	0.15	2.72	ESMM181VSN821MN50S		330	30×20	0.15	1.58	ESMM221VSN331MR20S	
	820	22×40	0.15	2.86	ESMM181VSN821MP40S		390	20×35	0.15	1.84	ESMM221VSN391MN35S	
	820	25.4×35	0.15	2.75	ESMM181VSN821MQ35S		390	22×30	0.15	1.89	ESMM221VSN391MP30S	
	820	30×25	0.15	2.69	ESMM181VSN821MR25S		390	25.4×25	0.15	1.84	ESMM221VSN391MQ25S	
	1,000	22×50	0.15	3.10	ESMM181VSN102MP50S		390	30×20	0.15	1.71	ESMM221VSN391MR20S	
	1,000	25.4×40	0.15	3.06	ESMM181VSN102MQ40S		470	20×40	0.15	2.12	ESMM221VSN471MN40S	
	1,000	30×30	0.15	3.10	ESMM181VSN102MR30S		470	22×35	0.15	2.08	ESMM221VSN471MP35S	
	1,000	35×25	0.15	2.98	ESMM181VSN102MA25S	470	25.4×30	0.15	2.08	ESMM221VSN471MQ30S		

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.

### ◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.
220	470	30×25	0.15	2.12	ESMM221VSN471MR25S	315	180	22×30	0.15	1.29	ESMM3B1VSN181MP30S
	470	35×20	0.15	1.88	ESMM221VSN471MA20S		180	25.4×25	0.15	1.38	ESMM3B1VSN181MQ25S
	560	20×50	0.15	2.33	ESMM221VSN561MN50S		180	30×20	0.15	1.16	ESMM3B1VSN181MR20S
	560	22×40	0.15	2.33	ESMM221VSN561MP40S		220	20×35	0.15	1.30	ESMM3B1VSN221MN35S
	560	25.4×35	0.15	2.38	ESMM221VSN561MQ35S		220	22×30	0.15	1.41	ESMM3B1VSN221MP30S
	560	30×25	0.15	2.31	ESMM221VSN561MR25S		220	25.4×25	0.15	1.47	ESMM3B1VSN221MQ25S
	560	35×20	0.15	2.14	ESMM221VSN561MA20S		220	30×20	0.15	1.28	ESMM3B1VSN221MR20S
	680	22×45	0.15	2.63	ESMM221VSN681MP45S		270	20×45	0.15	1.52	ESMM3B1VSN271MN45S
	680	25.4×35	0.15	2.68	ESMM221VSN681MQ35S		270	22×35	0.15	1.68	ESMM3B1VSN271MP35S
	680	30×30	0.15	2.62	ESMM221VSN681MR30S		270	25.4×30	0.15	1.70	ESMM3B1VSN271MQ30S
	680	35×25	0.15	2.58	ESMM221VSN681MA25S		270	30×25	0.15	1.55	ESMM3B1VSN271MR25S
	820	25.4×45	0.15	3.01	ESMM221VSN821MQ45S		270	35×20	0.15	1.43	ESMM3B1VSN271MA20S
	820	30×35	0.15	2.99	ESMM221VSN821MP35S		330	20×50	0.15	1.73	ESMM3B1VSN331MP30S
	820	35×30	0.15	2.79	ESMM221VSN821MA30S		330	22×40	0.15	1.91	ESMM3B1VSN331MP40S
	1,000	25.4×50	0.15	3.40	ESMM221VSN102MQ50S		330	25.4×35	0.15	1.94	ESMM3B1VSN331MQ35S
	1,000	30×35	0.15	3.42	ESMM221VSN102MR35S		330	30×25	0.15	1.98	ESMM3B1VSN331MR25S
	1,000	35×30	0.15	3.29	ESMM221VSN102MA30S		390	22×45	0.15	2.07	ESMM3B1VSN391MP45S
	1,200	30×40	0.15	3.88	ESMM221VSN122MR40S		390	25.4×40	0.15	2.11	ESMM3B1VSN391MQ40S
	1,200	35×35	0.15	3.68	ESMM221VSN122MA35S		390	30×30	0.15	2.15	ESMM3B1VSN391MR30S
	1,500	30×50	0.15	4.44	ESMM221VSN152MR50S		390	35×25	0.15	1.95	ESMM3B1VSN391MA25S
1,500	35×40	0.15	4.10	ESMM221VSN152MA40S	470	25.4×45	0.15	2.31	ESMM3B1VSN471MQ45S		
1,800	35×45	0.15	4.52	ESMM221VSN182MA45S	470	30×35	0.15	2.38	ESMM3B1VSN471MR35S		
250	150	22×20	0.15	0.97	ESMM251VSN151MP20S	470	35×30	0.15	2.46	ESMM3B1VSN471MA30S	
	180	20×25	0.15	1.20	ESMM251VSN181MN25S	560	25.4×50	0.15	2.46	ESMM3B1VSN561MQ50S	
	180	22×20	0.15	1.06	ESMM251VSN181MP20S	560	30×35	0.15	2.63	ESMM3B1VSN561MR35S	
	220	20×25	0.15	1.26	ESMM251VSN221MN25S	560	35×30	0.15	2.69	ESMM3B1VSN561MA30S	
	220	22×25	0.15	1.24	ESMM251VSN221MP25S	680	30×45	0.15	2.82	ESMM3B1VSN681MR45S	
	220	25.4×20	0.15	1.22	ESMM251VSN221MQ20S	680	35×35	0.15	3.05	ESMM3B1VSN681MA35S	
	270	20×30	0.15	1.42	ESMM251VSN271MN30S	820	30×50	0.15	3.28	ESMM3B1VSN821MR50S	
	270	22×25	0.15	1.50	ESMM251VSN271MP25S	820	35×40	0.15	3.45	ESMM3B1VSN821MA40S	
	330	20×35	0.15	1.68	ESMM251VSN331MN35S	1,000	35×45	0.15	3.59	ESMM3B1VSN102MA45S	
	330	22×30	0.15	1.66	ESMM251VSN331MP30S	350	82	22×20	0.15	0.72	ESMM351VSN820MP20S
	330	25.4×25	0.15	1.61	ESMM251VSN331MQ25S		100	20×25	0.15	0.81	ESMM351VSN101MN25S
	330	30×20	0.15	1.58	ESMM251VSN331MR20S		120	20×30	0.15	0.96	ESMM351VSN121MN30S
	390	20×40	0.15	1.92	ESMM251VSN391MN40S		120	22×25	0.15	1.04	ESMM351VSN121MP25S
	390	22×35	0.15	1.88	ESMM251VSN391MP35S		120	25.4×20	0.15	0.90	ESMM351VSN121MQ20S
	390	25.4×30	0.15	1.88	ESMM251VSN391MQ30S		150	20×30	0.15	1.10	ESMM351VSN151MN30S
	390	30×25	0.15	1.86	ESMM251VSN391MR25S		150	22×30	0.15	1.20	ESMM351VSN151MP30S
	390	35×20	0.15	1.71	ESMM251VSN391MA20S		150	25.4×25	0.15	1.22	ESMM351VSN151MQ25S
	470	20×50	0.15	2.06	ESMM251VSN471MN50S		150	30×20	0.15	1.06	ESMM351VSN151MR20S
	470	22×35	0.15	2.15	ESMM251VSN471MP35S		180	20×35	0.15	1.24	ESMM351VSN181MN35S
	470	25.4×35	0.15	2.15	ESMM251VSN471MQ35S		180	22×30	0.15	1.34	ESMM351VSN181MP30S
470	30×25	0.15	2.05	ESMM251VSN471MR25S	180		25.4×25	0.15	1.37	ESMM351VSN181MQ25S	
470	35×20	0.15	1.88	ESMM251VSN471MA20S	180		30×20	0.15	1.16	ESMM351VSN181MR20S	
560	22×40	0.15	2.48	ESMM251VSN561MP40S	220		20×45	0.15	1.37	ESMM351VSN221MN45S	
560	25.4×35	0.15	2.35	ESMM251VSN561MQ35S	220		22×35	0.15	1.47	ESMM351VSN221MP35S	
560	30×25	0.15	2.35	ESMM251VSN561MR25S	220		25.4×30	0.15	1.53	ESMM351VSN221MQ30S	
680	22×50	0.15	2.61	ESMM251VSN681MP50S	220		30×25	0.15	1.54	ESMM351VSN221MR25S	
680	25.4×40	0.15	2.67	ESMM251VSN681MQ40S	220		35×20	0.15	1.29	ESMM351VSN221MA20S	
680	30×30	0.15	2.71	ESMM251VSN681MR30S	270		20×50	0.15	1.56	ESMM351VSN271MN50S	
680	35×25	0.15	2.58	ESMM251VSN681MA25S	270		22×40	0.15	1.70	ESMM351VSN271MP40S	
820	25.4×45	0.15	3.01	ESMM251VSN821MQ45S	270	25.4×35	0.15	1.73	ESMM351VSN271MQ35S		
820	30×35	0.15	2.98	ESMM251VSN821MR35S	270	30×25	0.15	1.80	ESMM351VSN271MR25S		
820	35×30	0.15	2.96	ESMM251VSN821MA30S	270	35×20	0.15	1.49	ESMM351VSN271MA20S		
1,000	30×40	0.15	3.56	ESMM251VSN102MR40S	330	22×45	0.15	1.87	ESMM351VSN331MP45S		
1,000	35×35	0.15	3.48	ESMM251VSN102MA35S	330	25.4×35	0.15	1.97	ESMM351VSN331MQ35S		
1,200	30×45	0.15	3.99	ESMM251VSN122MR45S	330	30×30	0.15	2.03	ESMM351VSN331MR30S		
1,200	35×35	0.15	3.84	ESMM251VSN122MA35S	330	35×25	0.15	1.80	ESMM351VSN331MA25S		
1,500	35×40	0.15	4.33	ESMM251VSN152MA40S	390	25.4×40	0.15	2.14	ESMM351VSN391MQ40S		
1,800	35×50	0.15	4.54	ESMM251VSN182MA50S	390	30×35	0.15	2.23	ESMM351VSN391MR35S		
315	100	22×20	0.15	0.79	ESMM3B1VSN101MP20S	390	35×30	0.15	2.30	ESMM351VSN391MA30S	
	120	20×25	0.15	0.89	ESMM3B1VSN121MN25S	470	25.4×50	0.15	2.55	ESMM351VSN471MQ50S	
	120	25.4×20	0.15	0.90	ESMM3B1VSN121MQ20S	470	30×35	0.15	2.53	ESMM351VSN471MR35S	
	150	20×30	0.15	1.05	ESMM3B1VSN151MN30S	470	35×30	0.15	2.55	ESMM351VSN471MA30S	
	150	22×25	0.15	1.06	ESMM3B1VSN151MP25S	560	30×40	0.15	2.73	ESMM351VSN561MR40S	
	150	25.4×20	0.15	1.00	ESMM3B1VSN151MQ20S	560	35×35	0.15	2.75	ESMM351VSN561MA35S	
	180	20×35	0.15	1.18	ESMM3B1VSN181MN35S	680	30×50	0.15	3.15	ESMM351VSN681MR50S	

## SMM Series

### ◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C,120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C,120Hz)	Part No.	
350	680	35×40	0.15	3.15	ESMM351VSN681MA40S	420	180	20×50	0.20	1.27	ESMM421VSN181MN50S	
	820	35×45	0.15	3.47	ESMM351VSN821MA45S		180	22×40	0.20	1.33	ESMM421VSN181MP40S	
	1,000	35×50	0.15	3.60	ESMM351VSN102MA50S		180	25.4×35	0.20	1.42	ESMM421VSN181MQ35S	
400	68	20×25	0.15	0.75	ESMM401VSN680MN25S		180	30×25	0.20	1.48	ESMM421VSN181MR25S	
	68	22×20	0.15	0.65	ESMM401VSN680MP20S		180	35×20	0.20	1.16	ESMM421VSN181MA20S	
	82	20×25	0.15	0.82	ESMM401VSN820MN25S		220	22×45	0.20	1.55	ESMM421VSN221MP45S	
	82	22×25	0.15	0.84	ESMM401VSN820MP25S		220	25.4×35	0.20	1.58	ESMM421VSN221MQ35S	
	82	25.4×20	0.15	0.74	ESMM401VSN820MQ20S		220	30×30	0.20	1.65	ESMM421VSN221MR30S	
	100	20×30	0.15	0.95	ESMM401VSN101MP30S		220	35×25	0.20	1.47	ESMM421VSN221MA25S	
	100	22×25	0.15	0.99	ESMM401VSN101MP25S		270	25.4×40	0.20	1.74	ESMM421VSN271MQ40S	
	100	25.4×20	0.15	0.82	ESMM401VSN101MQ20S		270	30×35	0.20	1.90	ESMM421VSN271MR35S	
	120	20×35	0.15	1.07	ESMM401VSN121MN35S		270	35×30	0.20	1.94	ESMM421VSN271MA30S	
	120	22×30	0.15	1.09	ESMM401VSN121MP30S		330	25.4×50	0.20	2.20	ESMM421VSN331MQ50S	
	120	25.4×25	0.15	1.13	ESMM401VSN121MQ25S		330	30×35	0.20	1.98	ESMM421VSN331MR35S	
	120	30×20	0.15	0.95	ESMM401VSN121MR20S		330	35×35	0.20	2.17	ESMM421VSN331MA35S	
	150	20×40	0.15	1.22	ESMM401VSN151MN40S		390	30×40	0.20	2.22	ESMM421VSN391MR40S	
	150	22×35	0.15	1.24	ESMM401VSN151MP35S		390	35×35	0.20	2.27	ESMM421VSN391MA35S	
	150	25.4×30	0.15	1.27	ESMM401VSN151MQ30S		470	30×45	0.20	2.50	ESMM421VSN471MR45S	
	150	30×25	0.15	1.20	ESMM401VSN151MR25S		470	35×40	0.20	2.61	ESMM421VSN471MA40S	
	180	20×45	0.15	1.28	ESMM401VSN181MN45S		560	35×45	0.20	2.95	ESMM421VSN561MA45S	
	180	22×40	0.15	1.41	ESMM401VSN181MP40S		680	35×50	0.20	3.15	ESMM421VSN681MA50S	
	180	25.4×30	0.15	1.44	ESMM401VSN181MQ30S		450	47	22×20	0.20	0.54	ESMM451VSN470MP20S
	180	30×25	0.15	1.52	ESMM401VSN181MR25S			56	20×25	0.20	0.61	ESMM451VSN560MN25S
	180	35×20	0.15	1.16	ESMM401VSN181MA20S			56	22×20	0.20	0.59	ESMM451VSN560MP20S
	220	20×50	0.15	1.41	ESMM401VSN221MN50S			68	20×30	0.20	0.71	ESMM451VSN680MN30S
	220	22×45	0.15	1.58	ESMM401VSN221MP45S			68	22×25	0.20	0.71	ESMM451VSN680MP25S
	220	25.4×35	0.15	1.64	ESMM401VSN221MQ35S			68	25.4×20	0.20	0.68	ESMM451VSN680MQ20S
	220	30×30	0.15	1.66	ESMM401VSN221MR30S			82	20×35	0.20	0.80	ESMM451VSN820MN35S
	220	35×25	0.15	1.47	ESMM401VSN221MA25S			82	22×25	0.20	0.86	ESMM451VSN820MP25S
	270	22×50	0.15	1.65	ESMM401VSN271MP50S			82	25.4×20	0.20	0.74	ESMM451VSN820MQ20S
	270	25.4×40	0.15	1.79	ESMM401VSN271MQ40S	82		30×20	0.20	0.79	ESMM451VSN820MR20S	
	270	30×30	0.15	1.82	ESMM401VSN271MR30S	100		20×35	0.20	0.88	ESMM451VSN101MN35S	
	270	35×25	0.15	1.63	ESMM401VSN271MA25S	100		22×30	0.20	0.95	ESMM451VSN101MP30S	
330	25.4×45	0.15	2.00	ESMM401VSN331MQ45S	100	25.4×25		0.20	0.97	ESMM451VSN101MQ25S		
330	30×35	0.15	2.05	ESMM401VSN331MR35S	100	30×20		0.20	0.87	ESMM451VSN101MR20S		
330	35×30	0.15	2.05	ESMM401VSN331MA30S	120	20×40		0.20	0.99	ESMM451VSN121MN40S		
390	25.4×50	0.15	2.12	ESMM401VSN391MQ50S	120	22×35		0.20	1.07	ESMM451VSN121MP35S		
390	30×40	0.15	2.26	ESMM401VSN391MR40S	120	25.4×30		0.20	1.09	ESMM451VSN121MQ30S		
390	35×35	0.15	2.28	ESMM401VSN391MA35S	120	30×25		0.20	1.12	ESMM451VSN121MR25S		
470	30×45	0.15	2.51	ESMM401VSN471MR45S	120	35×20		0.20	0.99	ESMM451VSN121MA20S		
470	35×35	0.15	2.54	ESMM401VSN471MA35S	150	20×45		0.20	1.13	ESMM451VSN151MN45S		
560	30×50	0.15	2.85	ESMM401VSN561MR50S	150	22×40		0.20	1.18	ESMM451VSN151MP40S		
560	35×40	0.15	2.85	ESMM401VSN561MA40S	150	25.4×30		0.20	1.25	ESMM451VSN151MQ30S		
680	35×50	0.15	3.10	ESMM401VSN681MA50S	150	30×25		0.20	1.29	ESMM451VSN151MR25S		
420	47	22×20	0.20	0.54	ESMM421VSN470MP20S	150		35×20	0.20	1.06	ESMM451VSN151MA20S	
	56	20×25	0.20	0.58	ESMM421VSN560MN25S	180		22×45	0.20	1.32	ESMM451VSN181MP45S	
	56	22×20	0.20	0.59	ESMM421VSN560MP20S	180		25.4×35	0.20	1.40	ESMM451VSN181MQ35S	
	68	20×25	0.20	0.70	ESMM421VSN680MN25S	180		30×30	0.20	1.45	ESMM451VSN181MR30S	
	68	25.4×20	0.20	0.68	ESMM421VSN680MQ20S	180		35×25	0.20	1.33	ESMM451VSN181MA25S	
	82	20×30	0.20	0.80	ESMM421VSN820MN30S	220		22×50	0.20	1.48	ESMM451VSN221MP50S	
	82	22×25	0.20	0.85	ESMM421VSN820MP25S	220		25.4×40	0.20	1.59	ESMM451VSN221MQ40S	
	82	25.4×20	0.20	0.74	ESMM421VSN820MQ20S	220	30×30	0.20	1.64	ESMM451VSN221MR30S		
	100	20×35	0.20	0.90	ESMM421VSN101MN35S	220	35×25	0.20	1.66	ESMM451VSN221MA25S		
	100	22×30	0.20	0.97	ESMM421VSN101MP30S	270	25.4×45	0.20	1.73	ESMM451VSN271MQ45S		
	100	25.4×25	0.20	0.98	ESMM421VSN101MQ25S	270	30×35	0.20	1.89	ESMM451VSN271MR35S		
	100	30×20	0.20	0.87	ESMM421VSN101MR20S	270	35×30	0.20	1.90	ESMM451VSN271MA30S		
	120	20×35	0.20	1.04	ESMM421VSN121MN35S	330	25.4×50	0.20	2.12	ESMM451VSN331MQ50S		
	120	22×30	0.20	1.07	ESMM421VSN121MP30S	330	30×40	0.20	2.12	ESMM451VSN331MR40S		
	120	25.4×25	0.20	1.08	ESMM421VSN121MQ25S	330	35×35	0.20	2.15	ESMM451VSN331MA35S		
	120	30×20	0.20	0.95	ESMM421VSN121MR20S	390	30×45	0.20	2.35	ESMM451VSN391MR45S		
	150	20×40	0.20	1.17	ESMM421VSN151MN40S	390	35×40	0.20	2.38	ESMM451VSN391MA40S		
	150	22×35	0.20	1.21	ESMM421VSN151MP35S	470	30×50	0.20	2.65	ESMM451VSN471MR50S		
	150	25.4×30	0.20	1.26	ESMM421VSN151MQ30S	470	35×45	0.20	2.68	ESMM451VSN471MA45S		
	150	30×25	0.20	1.30	ESMM421VSN151MR25S	560	35×50	0.20	2.88	ESMM451VSN561MA50S		
	150	35×20	0.20	1.11	ESMM421VSN151MA20S							