

# SMM Series

- Longer life from SMQ series
- Endurance with ripple current : 3,000 hours at 85°C
- Non solvent resistant type
- RoHS2 Compliant



## 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 (tan δ)	Rated voltage (V <sub>dc</sub> )	160 to 400V	420 & 450V
	tan δ (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. (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.		
	Capacitance change	≤ ±15% of the initial value	
	D.F. (tan δ)	≤ 150% of the initial specified value	
	Leakage current	≤ The initial specified value	

## DIMENSIONS [mm]

● Terminal Code : VS (φ22 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.





SMM Series

◆STANDARD RATINGS

WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C, 120Hz)	Part No.	WV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/85°C, 120Hz)	Part No.
420	120	22 × 30	0.20	1.07	ESMM421VSN121MP30S	450	82	25.4 × 20	0.20	0.74	ESMM451VSN820MQ20S
	120	25.4 × 25	0.20	1.08	ESMM421VSN121MQ25S		82	30 × 20	0.20	0.79	ESMM451VSN820MR20S
	120	30 × 20	0.20	0.95	ESMM421VSN121MR20S		100	22 × 30	0.20	0.95	ESMM451VSN101MP30S
	150	22 × 35	0.20	1.21	ESMM421VSN151MP35S		100	25.4 × 25	0.20	0.97	ESMM451VSN101MQ25S
	150	25.4 × 30	0.20	1.26	ESMM421VSN151MQ30S		100	30 × 20	0.20	0.87	ESMM451VSN101MR20S
	150	30 × 25	0.20	1.30	ESMM421VSN151MR25S		120	22 × 35	0.20	1.07	ESMM451VSN121MP35S
	150	35 × 20	0.20	1.11	ESMM421VSN151MA20S		120	25.4 × 30	0.20	1.09	ESMM451VSN121MQ30S
	180	22 × 40	0.20	1.33	ESMM421VSN181MP40S		120	30 × 25	0.20	1.12	ESMM451VSN121MR25S
	180	25.4 × 35	0.20	1.42	ESMM421VSN181MQ35S		120	35 × 20	0.20	0.99	ESMM451VSN121MA20S
	180	30 × 25	0.20	1.48	ESMM421VSN181MR25S		150	22 × 40	0.20	1.18	ESMM451VSN151MP40S
	180	35 × 20	0.20	1.16	ESMM421VSN181MA20S		150	25.4 × 30	0.20	1.25	ESMM451VSN151MQ30S
	220	22 × 45	0.20	1.55	ESMM421VSN221MP45S		150	30 × 25	0.20	1.29	ESMM451VSN151MR25S
	220	25.4 × 35	0.20	1.58	ESMM421VSN221MQ35S		150	35 × 20	0.20	1.06	ESMM451VSN151MA20S
	220	30 × 30	0.20	1.65	ESMM421VSN221MR30S		180	22 × 45	0.20	1.32	ESMM451VSN181MP45S
	220	35 × 25	0.20	1.47	ESMM421VSN221MA25S		180	25.4 × 35	0.20	1.40	ESMM451VSN181MQ35S
	270	25.4 × 40	0.20	1.74	ESMM421VSN271MQ40S		180	30 × 30	0.20	1.45	ESMM451VSN181MR30S
	270	30 × 35	0.20	1.90	ESMM421VSN271MR35S		180	35 × 25	0.20	1.33	ESMM451VSN181MA25S
	270	35 × 30	0.20	1.94	ESMM421VSN271MA30S		220	22 × 50	0.20	1.48	ESMM451VSN221MP50S
	330	25.4 × 50	0.20	2.20	ESMM421VSN331MQ50S		220	25.4 × 40	0.20	1.59	ESMM451VSN221MQ40S
	330	30 × 35	0.20	1.98	ESMM421VSN331MR35S		220	30 × 30	0.20	1.64	ESMM451VSN221MR30S
	330	35 × 35	0.20	2.17	ESMM421VSN331MA35S		220	35 × 25	0.20	1.66	ESMM451VSN221MA25S
	390	30 × 40	0.20	2.22	ESMM421VSN391MR40S		270	25.4 × 45	0.20	1.73	ESMM451VSN271MQ45S
	390	35 × 35	0.20	2.27	ESMM421VSN391MA35S		270	30 × 35	0.20	1.89	ESMM451VSN271MR35S
	470	30 × 45	0.20	2.50	ESMM421VSN471MR45S		270	35 × 30	0.20	1.90	ESMM451VSN271MA30S
470	35 × 40	0.20	2.61	ESMM421VSN471MA40S	330		25.4 × 50	0.20	2.12	ESMM451VSN331MQ50S	
560	35 × 45	0.20	2.95	ESMM421VSN561MA45S	330		30 × 40	0.20	2.12	ESMM451VSN331MR40S	
680	35 × 50	0.20	3.15	ESMM421VSN681MA50S	330		35 × 35	0.20	2.15	ESMM451VSN331MA35S	
450	47	22 × 20	0.20	0.54	ESMM451VSN470MP20S		390	30 × 45	0.20	2.35	ESMM451VSN391MR45S
	56	22 × 20	0.20	0.59	ESMM451VSN560MP20S		390	35 × 40	0.20	2.38	ESMM451VSN391MA40S
	68	22 × 25	0.20	0.71	ESMM451VSN680MP25S		470	30 × 50	0.20	2.65	ESMM451VSN471MR50S
	68	25.4 × 20	0.20	0.68	ESMM451VSN680MQ20S		470	35 × 45	0.20	2.68	ESMM451VSN471MA45S
	82	22 × 25	0.20	0.86	ESMM451VSN820MP25S		560	35 × 50	0.20	2.88	ESMM451VSN561MA50S

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