

# SMH Series

- Endurance with ripple current : 2,000 hours at 85°C
- Non solvent resistant type
- RoHS2 Compliant



## ◆ SPECIFICATIONS

Items	Characteristics										
Category	-40 to +85°C										
Temperature Range											
Rated Voltage Range	6.3 to 100V <sub>dc</sub>										
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)										
Leakage Current	I=0.02CV or 3mA, whichever is smaller. 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> )	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	tan δ (Max.)	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.15	0.15	(at 20°C, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	Z(-25°C)/Z(+20°C)	4	4	4	3	3	2	2	2	2	
	Z(-40°C)/Z(+20°C)	15	15	15	10	8	6	6	5	5	(at 120Hz)
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 2,000 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	≤ ±20% 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)"



◆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.
50	3,300	25.4 × 25	0.20	2.38	ESMH500VSN332MQ25S	80	1,200	22 × 25	0.15	1.69	ESMH800VSN122MP25S
	3,900	22 × 35	0.20	2.65	ESMH500VSN392MP35S		1,500	22 × 25	0.15	1.88	ESMH800VSN152MP25S
	3,900	25.4 × 30	0.20	2.68	ESMH500VSN392MQ30S		1,800	22 × 30	0.15	2.14	ESMH800VSN182MP30S
	3,900	30 × 25	0.20	2.55	ESMH500VSN392MR25S		1,800	25.4 × 25	0.15	2.26	ESMH800VSN182MQ25S
	4,700	22 × 40	0.20	2.99	ESMH500VSN472MP40S		2,200	22 × 35	0.15	2.44	ESMH800VSN222MP35S
	4,700	25.4 × 35	0.20	3.03	ESMH500VSN472MQ35S		2,200	25.4 × 30	0.15	2.46	ESMH800VSN222MQ30S
	4,700	30 × 25	0.20	2.81	ESMH500VSN472MR25S		2,200	30 × 25	0.15	2.49	ESMH800VSN222MR25S
	5,600	22 × 45	0.20	3.36	ESMH500VSN562MP45S		2,700	22 × 40	0.15	2.78	ESMH800VSN272MP40S
	5,600	25.4 × 35	0.20	3.31	ESMH500VSN562MQ35S		2,700	25.4 × 35	0.15	2.81	ESMH800VSN272MQ35S
	5,600	30 × 30	0.20	3.37	ESMH500VSN562MR30S		2,700	30 × 25	0.15	2.75	ESMH800VSN272MR25S
	5,600	35 × 25	0.20	3.42	ESMH500VSN562MA25S		3,300	22 × 45	0.15	3.16	ESMH800VSN332MP45S
	6,800	22 × 50	0.20	3.81	ESMH500VSN682MP50S		3,300	25.4 × 40	0.15	3.21	ESMH800VSN332MQ40S
	6,800	25.4 × 40	0.20	3.81	ESMH500VSN682MQ40S		3,300	30 × 30	0.15	3.17	ESMH800VSN332MR30S
	6,800	30 × 35	0.20	3.85	ESMH500VSN682MR35S		3,300	35 × 25	0.15	3.21	ESMH800VSN332MA25S
	6,800	35 × 30	0.20	3.85	ESMH500VSN682MA30S		3,900	22 × 50	0.15	3.52	ESMH800VSN392MP50S
	8,200	25.4 × 50	0.20	4.37	ESMH500VSN822MQ50S		3,900	25.4 × 45	0.15	3.59	ESMH800VSN392MQ45S
	8,200	30 × 40	0.20	4.36	ESMH500VSN822MR40S		3,900	30 × 35	0.15	3.57	ESMH800VSN392MR35S
	8,200	35 × 30	0.20	4.41	ESMH500VSN822MA30S		3,900	35 × 25	0.15	3.50	ESMH800VSN392MA25S
10,000	30 × 45	0.20	4.97	ESMH500VSN103MR45S	4,700	25.4 × 50	0.15	4.05	ESMH800VSN472MQ50S		
10,000	35 × 35	0.20	4.92	ESMH500VSN103MA35S	4,700	30 × 40	0.15	4.05	ESMH800VSN472MR40S		
12,000	30 × 50	0.20	5.60	ESMH500VSN123MR50S	4,700	35 × 30	0.15	4.09	ESMH800VSN472MA30S		
12,000	35 × 40	0.20	5.58	ESMH500VSN123MA40S	5,600	30 × 45	0.15	4.55	ESMH800VSN562MR45S		
15,000	35 × 45	0.20	6.44	ESMH500VSN153MA45S	5,600	35 × 35	0.15	4.51	ESMH800VSN562MA35S		
18,000	35 × 50	0.20	6.71	ESMH500VSN183MA50S	6,800	30 × 50	0.15	5.16	ESMH800VSN682MR50S		
63	1,800	22 × 25	0.15	1.82	ESMH630VSN182MP25S	6,800	35 × 40	0.15	5.14	ESMH800VSN682MA40S	
	2,200	22 × 30	0.15	2.31	ESMH630VSN222MP30S	8,200	35 × 45	0.15	5.83	ESMH800VSN822MA45S	
	2,200	25.4 × 25	0.15	2.30	ESMH630VSN222MQ25S	10,000	35 × 50	0.15	6.63	ESMH800VSN103MA50S	
	2,700	22 × 35	0.15	2.40	ESMH630VSN272MP35S	100	820	22 × 25	0.15	1.86	ESMH101VSN821MP25S
	2,700	25.4 × 25	0.15	2.40	ESMH630VSN272MQ25S		1,200	22 × 30	0.15	2.09	ESMH101VSN122MP30S
	3,300	22 × 35	0.15	2.62	ESMH630VSN332MP35S		1,200	25.4 × 25	0.15	2.10	ESMH101VSN122MQ25S
	3,300	25.4 × 30	0.15	2.64	ESMH630VSN332MQ30S		1,500	22 × 35	0.15	2.41	ESMH101VSN152MP35S
	3,300	30 × 25	0.15	2.78	ESMH630VSN332MR25S		1,500	25.4 × 30	0.15	2.43	ESMH101VSN152MQ30S
	3,900	22 × 40	0.15	2.93	ESMH630VSN392MP40S		1,500	30 × 25	0.15	2.46	ESMH101VSN152MR25S
	3,900	25.4 × 35	0.15	2.97	ESMH630VSN392MQ35S		1,800	22 × 40	0.15	2.71	ESMH101VSN182MP40S
	3,900	30 × 30	0.15	3.00	ESMH630VSN392MR30S		1,800	25.4 × 35	0.15	2.75	ESMH101VSN182MQ35S
	3,900	35 × 25	0.15	3.00	ESMH630VSN392MA25S		1,800	30 × 25	0.15	2.72	ESMH101VSN182MR25S
	4,700	22 × 50	0.15	3.39	ESMH630VSN472MP50S		2,200	22 × 45	0.15	3.08	ESMH101VSN222MP45S
	4,700	25.4 × 40	0.15	3.36	ESMH630VSN472MQ40S		2,200	25.4 × 40	0.15	3.13	ESMH101VSN222MQ40S
	4,700	30 × 30	0.15	3.32	ESMH630VSN472MR30S		2,200	30 × 30	0.15	3.09	ESMH101VSN222MR30S
	4,700	35 × 25	0.15	3.36	ESMH630VSN472MA25S		2,200	35 × 25	0.15	3.14	ESMH101VSN222MA25S
	5,600	25.4 × 45	0.15	3.77	ESMH630VSN562MQ45S		2,700	22 × 50	0.15	3.53	ESMH101VSN272MP50S
	5,600	30 × 35	0.15	3.75	ESMH630VSN562MR35S		2,700	25.4 × 45	0.15	3.57	ESMH101VSN272MQ45S
	5,600	35 × 30	0.15	3.76	ESMH630VSN562MA30S		2,700	30 × 35	0.15	3.55	ESMH101VSN272MR35S
	6,800	25.4 × 50	0.15	4.27	ESMH630VSN682MQ50S		2,700	35 × 30	0.15	3.71	ESMH101VSN272MA30S
	6,800	30 × 40	0.15	4.27	ESMH630VSN682MR40S		3,300	25.4 × 50	0.15	4.06	ESMH101VSN332MQ50S
	6,800	35 × 30	0.15	4.15	ESMH630VSN682MA30S		3,300	30 × 40	0.15	4.05	ESMH101VSN332MR40S
	8,200	30 × 45	0.15	4.83	ESMH630VSN822MR45S		3,300	35 × 30	0.15	4.05	ESMH101VSN332MA30S
	8,200	35 × 35	0.15	4.79	ESMH630VSN822MA35S		3,900	30 × 45	0.15	4.54	ESMH101VSN392MR45S
10,000	30 × 50	0.15	5.49	ESMH630VSN103MR50S	3,900		35 × 35	0.15	4.49	ESMH101VSN392MA35S	
10,000	35 × 40	0.15	5.47	ESMH630VSN103MA40S	4,700		30 × 50	0.15	5.13	ESMH101VSN472MR50S	
12,000	35 × 45	0.15	6.19	ESMH630VSN123MA45S	4,700		35 × 40	0.15	5.11	ESMH101VSN472MA40S	
					5,600	35 × 45	0.15	5.75	ESMH101VSN562MA45S		
					6,800	35 × 50	0.15	6.50	ESMH101VSN682MA50S		

\*For the rated voltage ≥ 160V<sub>dc</sub>, please use SMQ series

◆RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
6.3 to 50V <sub>dc</sub>	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100V <sub>dc</sub>	0.92	1.00	1.07	1.13	1.19	1.20

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.