

# SMH Series

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

SMM P241  
↓  
Downsized  
Longer life  
**SMH**

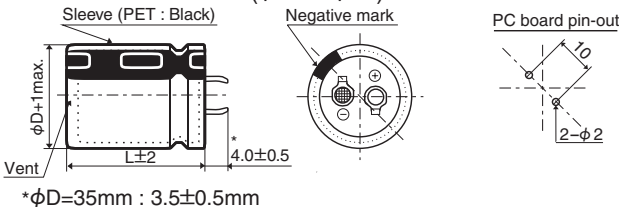


## ◆ SPECIFICATIONS

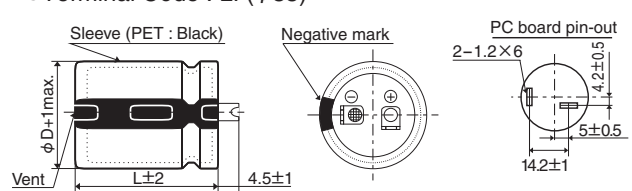
Items	Characteristics										
Category	-40 to +85°C										
Temperature Range	-40 to +85°C										
Rated Voltage Range	6.3 to 100V <sub>dc</sub>										
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)										
Leakage Current	I=0.02CV or 3mA, whichever is smaller. Where, I : Max. leakage current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

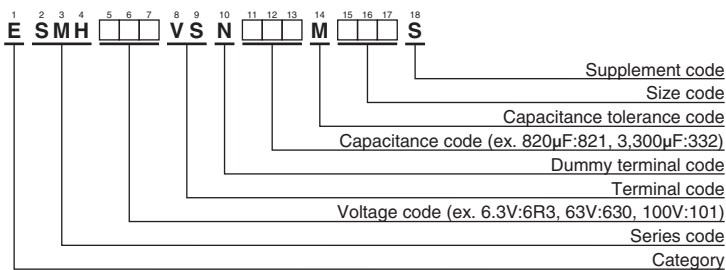


● Terminal Code : LI (φ35)



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	ESMH800VSN392MP35S
	8,200	35 × 30	0.20	4.41	ESMH500VSN822MA30S		3,900	35 × 25	0.15	3.50	ESMH800VSN392MA25S
63	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	
	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	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.

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<a href="#">ESMH451VRT391MB35T</a>	<a href="#">ESMH500VSN153MA45T</a>	<a href="#">ESMH3B1VNN102MA50S</a>	<a href="#">ESMH630VSN103MR50S</a>
<a href="#">ESMH101VND103MA63T</a>	<a href="#">ESMH160VSN153MR25T</a>	<a href="#">ESMH500VSN103MA35C</a>	<a href="#">ESMH160VNN153MP35T</a>
<a href="#">ESMH201VNN331MP30T</a>	<a href="#">ESMH201VNN471MP35T</a>	<a href="#">ESMH201VSN122MQ50T</a>	<a href="#">ESMH250VSN682MP30S</a>
<a href="#">ESMH350VNN682MP40T</a>	<a href="#">ESMH350VSN153MQ50T</a>	<a href="#">ESMH401VNN221MA25T</a>	<a href="#">ESMH401VNN221MP50T</a>
<a href="#">ESMH401VNN331MA30T</a>	<a href="#">ESMH451VNN560MP25T</a>	<a href="#">ESMH500VNN103MR45T</a>	<a href="#">ESMH500VNN153MA45T</a>
<a href="#">ESMH500VNN222MP25S</a>	<a href="#">ESMH500VNN682MP50T</a>	<a href="#">ESMH500VNN822MQ50T</a>	<a href="#">ESMH800VNN392MR35T</a>
<a href="#">ESMH800VNN472MQ50T</a>	<a href="#">ESMH800VNN682MA40T</a>	<a href="#">ESMH800VNN822MA45T</a>	<a href="#">ESMH800VSN182MP30S</a>
<a href="#">ESMH630VNN682MR40T</a>	<a href="#">ESMH401VNN101MP30T</a>	<a href="#">ESMH350VNN153MA35T</a>	<a href="#">ESMH451VNN181MA25T</a>
<a href="#">ESMH201VNN222MA50T</a>	<a href="#">ESMH401VNN151MP35T</a>	<a href="#">ESMH201VNN152MA40T</a>	<a href="#">ESMH500VNN822MR40T</a>
<a href="#">ESMH500VNN183MA50T</a>	<a href="#">ESMH451VNN471MA50T</a>	<a href="#">ESMH160VNN123MP30T</a>	<a href="#">ESMH160VNN123MQ25T</a>
<a href="#">ESMH201VNN182MA45T</a>	<a href="#">ESMH451VNN391MA45T</a>	<a href="#">ESMH500VNN332MQ25T</a>	<a href="#">ESMH250VNN153MQ40T</a>
<a href="#">ESMH800VNN332MQ40T</a>	<a href="#">ESMH101VNN562MA45T</a>	<a href="#">ESMH630VNN123MA45T</a>	<a href="#">ESMH630VNN332MP35T</a>
<a href="#">ESMH500VNN472MP40T</a>	<a href="#">ESMH250VNN223MR45T</a>	<a href="#">ESMH401VNN681MA50T</a>	<a href="#">ESMH350VNN472MQ25T</a>
<a href="#">ESMH201VNN102MA30T</a>	<a href="#">ESMH451VNN271MR40T</a>	<a href="#">ESMH251VNN102MA40T</a>	<a href="#">ESMH500VNN222MP25T</a>
<a href="#">ESMH201VNN102MR40T</a>	<a href="#">ESMH251VNN561MQ40T</a>	<a href="#">ESMH401VNN561MA45T</a>	<a href="#">ESMH401VNN471MA40T</a>
<a href="#">ESMH800VNN472MA30T</a>	<a href="#">ESMH161VNN391MP25T</a>	<a href="#">ESMH250VNN822MP35T</a>	<a href="#">ESMH401VNN561MR50T</a>
<a href="#">ESMH100VRD823MA50T</a>	<a href="#">ESMH101VNN332MR40T</a>	<a href="#">ESMH101VNN472MA40T</a>	<a href="#">ESMH101VNN472MR50T</a>
<a href="#">ESMH101VSN102MN35S</a>	<a href="#">ESMH160VNN223MR30T</a>	<a href="#">ESMH161VNN222MA45T</a>	<a href="#">ESMH161VNN681MP40T</a>
<a href="#">ESMH181VNN182MA45T</a>	<a href="#">ESMH201VNN102MQ50T</a>	<a href="#">ESMH250VNN473MA63T</a>	<a href="#">ESMH251VNN102MR50T</a>
<a href="#">ESMH251VNN331MP35T</a>	<a href="#">ESMH251VNN331MQ30T</a>	<a href="#">ESMH251VNN471MQ35T</a>	<a href="#">ESMH251VRD152MA50T</a>
<a href="#">ESMH350VNN153MQ50T</a>	<a href="#">ESMH350VNN153MR40T</a>	<a href="#">ESMH350VNN223MA45T</a>	<a href="#">ESMH350VNN273MA50T</a>
<a href="#">ESMH350VNN333MA63T</a>	<a href="#">ESMH350VNN472MP30T</a>	<a href="#">ESMH350VSN472MN35S</a>	<a href="#">ESMH351VNN681MA45T</a>
<a href="#">ESMH401VNN101MQ25T</a>	<a href="#">ESMH401VNN122MA80T</a>	<a href="#">ESMH401VNN181MQ35T</a>	<a href="#">ESMH401VNN181MR30T</a>
<a href="#">ESMH401VNN221MQ40T</a>	<a href="#">ESMH401VNN271MQ45T</a>	<a href="#">ESMH401VNN821MA63T</a>	<a href="#">ESMH401VRD102MA80T</a>