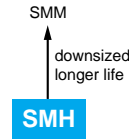


# SMH Series

- Endurance with ripple current : 85°C 2000 hours
- Non solvent-proof type
- Pb-free design

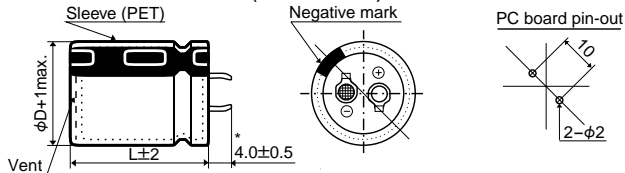


## ◆SPECIFICATIONS

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 (tanδ)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	(at 20°C, 120Hz)
	tanδ (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 for 2000 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	≤±20% of the initial value									
	D.F. (tanδ)	≤150% of the initial specified value									
	Leakage current	≤The initial specified value									

## ◆DIMENSIONS [mm]

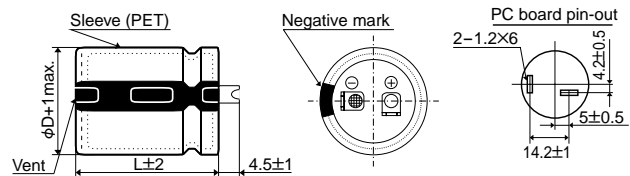
● Terminal Code : VS (φ22 to φ35) : Standard



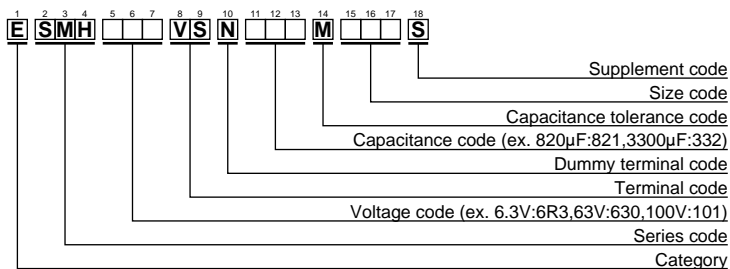
\*φD=35mm : 3.5±0.5mm

No plastic disk is the standard design

● Terminal Code : LI (φ35)



## ◆PART NUMBERING SYSTEM



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



◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.	WV (Vdc)	Cap (μF)	Case size φDXL(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.	
6.3	15000	22 × 25	0.60	2.44	ESMH6R3VSN153MP25S	16	27000	25.4 × 45	0.40	4.72	ESMH160VSN273MQ45S	
	18000	22 × 30	0.60	2.67	ESMH6R3VSN183MP30S		27000	30 × 35	0.40	4.82	ESMH160VSN273MR35S	
	18000	25.4 × 25	0.60	2.70	ESMH6R3VSN183MQ25S		27000	35 × 30	0.40	4.65	ESMH160VSN273MA30S	
	22000	22 × 30	0.60	3.06	ESMH6R3VSN223MP30S		33000	25.4 × 50	0.40	5.33	ESMH160VSN333MQ50S	
	22000	25.4 × 25	0.60	3.07	ESMH6R3VSN223MQ25S		33000	30 × 40	0.40	5.36	ESMH160VSN333MR40S	
	27000	22 × 35	0.60	3.49	ESMH6R3VSN273MP35S		33000	35 × 30	0.40	5.15	ESMH160VSN333MA30S	
	27000	25.4 × 30	0.60	3.52	ESMH6R3VSN273MQ30S		39000	30 × 45	0.40	6.01	ESMH160VSN393MR45S	
	27000	30 × 25	0.60	3.57	ESMH6R3VSN273MR25S		39000	35 × 35	0.40	5.95	ESMH160VSN393MA35S	
	33000	22 × 40	0.60	3.97	ESMH6R3VSN333MP40S		47000	30 × 50	0.40	6.79	ESMH160VSN473MR50S	
	33000	25.4 × 35	0.60	4.02	ESMH6R3VSN333MQ35S		47000	35 × 40	0.40	6.76	ESMH160VSN473MA40S	
	33000	30 × 25	0.60	3.95	ESMH6R3VSN333MR25S		56000	35 × 45	0.40	7.62	ESMH160VSN563MA45S	
	39000	22 × 50	0.60	4.55	ESMH6R3VSN393MP50S		68000	35 × 50	0.40	8.63	ESMH160VSN683MA50S	
	39000	25.4 × 40	0.60	4.50	ESMH6R3VSN393MQ40S		25	5600	22 × 25	0.30	2.21	ESMH250VSN562MP25S
	39000	30 × 30	0.60	4.45	ESMH6R3VSN393MR30S			6800	22 × 30	0.30	2.40	ESMH250VSN682MP30S
	39000	35 × 25	0.60	4.51	ESMH6R3VSN393MA25S			6800	25.4 × 25	0.30	2.56	ESMH250VSN682MQ25S
	47000	25.4 × 45	0.60	5.09	ESMH6R3VSN473MQ45S			8200	22 × 35	0.30	2.72	ESMH250VSN822MP35S
	47000	30 × 35	0.60	5.06	ESMH6R3VSN473MR35S			8200	25.4 × 25	0.30	2.80	ESMH250VSN822MQ25S
	47000	35 × 30	0.60	5.01	ESMH6R3VSN473MA30S			10000	22 × 40	0.30	3.09	ESMH250VSN103MP40S
	56000	25.4 × 50	0.60	5.71	ESMH6R3VSN563MQ50S			10000	25.4 × 30	0.30	3.12	ESMH250VSN103MQ30S
	56000	30 × 40	0.60	5.70	ESMH6R3VSN563MR40S			10000	30 × 25	0.30	3.21	ESMH250VSN103MR25S
56000	35 × 30	0.60	5.77	ESMH6R3VSN563MA30S	12000	22 × 45		0.30	3.48	ESMH250VSN123MP45S		
68000	30 × 45	0.60	6.48	ESMH6R3VSN683MR45S	12000	25.4 × 35		0.30	3.43	ESMH250VSN123MQ35S		
68000	35 × 35	0.60	6.42	ESMH6R3VSN683MA35S	12000	30 × 30		0.30	3.86	ESMH250VSN123MR30S		
82000	30 × 50	0.60	7.32	ESMH6R3VSN823MR50S	12000	35 × 25		0.30	3.54	ESMH250VSN123MA25S		
82000	35 × 40	0.60	7.29	ESMH6R3VSN823MA40S	15000	22 × 50		0.30	4.00	ESMH250VSN153MP50S		
100000	35 × 45	0.60	8.31	ESMH6R3VSN104MA45S	15000	25.4 × 40		0.30	3.95	ESMH250VSN153MQ40S		
10	12000	22 × 25	0.50	2.39	ESMH100VSN123MP25S	15000		30 × 30	0.30	4.00	ESMH250VSN153MR30S	
	15000	22 × 30	0.50	2.76	ESMH100VSN153MP30S	15000		35 × 25	0.30	3.95	ESMH250VSN153MA25S	
	15000	25.4 × 25	0.50	2.77	ESMH100VSN153MQ25S	18000		25.4 × 45	0.30	4.45	ESMH250VSN183MQ45S	
	18000	22 × 35	0.50	3.12	ESMH100VSN183MP35S	18000		30 × 35	0.30	4.46	ESMH250VSN183MR35S	
	18000	25.4 × 25	0.50	3.04	ESMH100VSN183MQ25S	18000		35 × 30	0.30	4.63	ESMH250VSN183MA30S	
	22000	22 × 40	0.50	3.55	ESMH100VSN223MP40S	22000		25.4 × 50	0.30	5.02	ESMH250VSN223MQ50S	
	22000	25.4 × 30	0.50	3.48	ESMH100VSN223MQ30S	22000	30 × 45	0.30	5.21	ESMH250VSN223MR45S		
	22000	30 × 25	0.50	3.53	ESMH100VSN223MR25S	22000	35 × 35	0.30	5.16	ESMH250VSN223MA35S		
	27000	22 × 45	0.50	4.04	ESMH100VSN273MP45S	27000	30 × 50	0.30	5.94	ESMH250VSN273MR50S		
	27000	25.4 × 35	0.50	3.98	ESMH100VSN273MQ35S	27000	35 × 40	0.30	5.92	ESMH250VSN273MA40S		
	27000	30 × 30	0.50	3.73	ESMH100VSN273MR30S	33000	35 × 45	0.30	6.75	ESMH250VSN333MA45S		
	27000	35 × 25	0.50	3.73	ESMH100VSN273MA25S	39000	35 × 50	0.30	7.56	ESMH250VSN393MA50S		
	33000	22 × 50	0.50	4.58	ESMH100VSN333MP50S	35	3900	22 × 25	0.25	2.22	ESMH350VSN392MP25S	
	33000	25.4 × 40	0.50	4.54	ESMH100VSN333MQ40S		4700	22 × 30	0.25	2.41	ESMH350VSN472MP30S	
	33000	30 × 30	0.50	4.13	ESMH100VSN333MR30S		4700	25.4 × 25	0.25	2.42	ESMH350VSN472MQ25S	
	33000	35 × 25	0.50	4.13	ESMH100VSN333MA25S		5600	22 × 35	0.25	2.75	ESMH350VSN562MP35S	
	39000	25.4 × 45	0.50	5.08	ESMH100VSN393MQ45S		5600	25.4 × 25	0.25	2.64	ESMH350VSN562MQ25S	
	39000	30 × 35	0.50	5.05	ESMH100VSN393MR35S		6800	22 × 40	0.25	2.80	ESMH350VSN682MP40S	
	39000	35 × 30	0.50	4.80	ESMH100VSN393MA35S		6800	25.4 × 30	0.25	2.74	ESMH350VSN682MQ30S	
	47000	25.4 × 50	0.50	5.73	ESMH100VSN473MQ50S		6800	30 × 25	0.25	2.97	ESMH350VSN682MR25S	
47000	30 × 40	0.50	5.72	ESMH100VSN473MR40S	8200		22 × 45	0.25	3.47	ESMH350VSN822MP45S		
47000	35 × 30	0.50	5.27	ESMH100VSN473MA30S	8200		25.4 × 35	0.25	3.10	ESMH350VSN822MQ35S		
56000	30 × 45	0.50	6.44	ESMH100VSN563MR45S	8200		30 × 30	0.25	3.13	ESMH350VSN822MR30S		
56000	35 × 35	0.50	6.38	ESMH100VSN563MA35S	8200		35 × 25	0.25	2.73	ESMH350VSN822MA25S		
68000	30 × 50	0.50	7.27	ESMH100VSN683MR50S	10000		22 × 50	0.25	3.57	ESMH350VSN103MP50S		
68000	35 × 40	0.50	7.27	ESMH100VSN683MA40S	10000		25.4 × 40	0.25	3.53	ESMH350VSN103MQ40S		
82000	35 × 50	0.50	8.49	ESMH100VSN823MA50S	10000		30 × 30	0.25	3.46	ESMH350VSN103MR30S		
16	8200	22 × 25	0.40	2.51	ESMH160VSN822MP25S		10000	35 × 25	0.25	3.02	ESMH350VSN103MA25S	
	10000	22 × 25	0.40	2.77	ESMH160VSN103MP25S		12000	25.4 × 45	0.25	3.98	ESMH350VSN123MQ45S	
	12000	22 × 30	0.40	2.86	ESMH160VSN123MP30S		12000	30 × 35	0.25	4.01	ESMH350VSN123MR35S	
	12000	25.4 × 25	0.40	2.95	ESMH160VSN123MQ25S		12000	35 × 30	0.25	4.42	ESMH350VSN123MA30S	
	15000	22 × 35	0.40	3.29	ESMH160VSN153MP35S		15000	25.4 × 50	0.25	4.54	ESMH350VSN153MQ50S	
	15000	25.4 × 30	0.40	3.46	ESMH160VSN153MQ30S	15000	30 × 40	0.25	4.52	ESMH350VSN153MR40S		
	15000	30 × 25	0.40	3.66	ESMH160VSN153MR25S	15000	35 × 35	0.25	5.01	ESMH350VSN153MA35S		
	18000	22 × 40	0.40	3.72	ESMH160VSN183MP40S	18000	30 × 45	0.25	4.71	ESMH350VSN183MR45S		
	18000	25.4 × 35	0.40	3.98	ESMH160VSN183MQ35S	18000	35 × 40	0.25	5.54	ESMH350VSN183MA40S		
	18000	30 × 25	0.40	4.00	ESMH160VSN183MR25S	22000	30 × 50	0.25	5.33	ESMH350VSN223MR50S		
	22000	22 × 50	0.40	4.37	ESMH160VSN223MP50S	22000	35 × 45	0.25	6.04	ESMH350VSN223MA45S		
	22000	25.4 × 40	0.40	4.26	ESMH160VSN223MQ40S	27000	35 × 50	0.25	6.89	ESMH350VSN273MA50S		
	22000	30 × 30	0.40	4.21	ESMH160VSN223MR30S	50	2200	22 × 25	0.20	1.91	ESMH500VSN222MP25S	
	22000	35 × 25	0.40	4.15	ESMH160VSN223MA25S		3300	22 × 30	0.20	2.37	ESMH500VSN332MP30S	

## ◆STANDARD RATINGS

VV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.	VV (V <sub>dc</sub> )	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/85°C,120Hz)	Part No.
50	3300	25.4×25	0.20	2.38	ESMH500VSN332MQ25S	80	1200	22×25	0.15	1.69	ESMH800VSN122MP25S
	3900	22×35	0.20	2.65	ESMH500VSN392MP35S		1500	22×25	0.15	1.88	ESMH800VSN152MP25S
	3900	25.4×30	0.20	2.68	ESMH500VSN392MQ30S		1800	22×30	0.15	2.14	ESMH800VSN182MP30S
	3900	30×25	0.20	2.55	ESMH500VSN392MR25S		1800	25.4×25	0.15	2.26	ESMH800VSN182MQ25S
	4700	22×40	0.20	2.99	ESMH500VSN472MP40S		2200	22×35	0.15	2.44	ESMH800VSN222MP35S
	4700	25.4×35	0.20	3.03	ESMH500VSN472MQ35S		2200	25.4×30	0.15	2.46	ESMH800VSN222MQ30S
	4700	30×25	0.20	2.81	ESMH500VSN472MR25S		2200	30×25	0.15	2.49	ESMH800VSN222MR25S
	5600	22×45	0.20	3.36	ESMH500VSN562MP45S		2700	22×40	0.15	2.78	ESMH800VSN272MP40S
	5600	25.4×35	0.20	3.31	ESMH500VSN562MQ35S		2700	25.4×35	0.15	2.81	ESMH800VSN272MQ35S
	5600	30×30	0.20	3.37	ESMH500VSN562MR30S		2700	30×25	0.15	2.75	ESMH800VSN272MR25S
	5600	35×25	0.20	3.42	ESMH500VSN562MA25S		3300	22×45	0.15	3.16	ESMH800VSN332MP45S
	6800	22×50	0.20	3.81	ESMH500VSN682MP50S		3300	25.4×40	0.15	3.21	ESMH800VSN332MQ40S
	6800	25.4×40	0.20	3.81	ESMH500VSN682MQ40S		3300	30×30	0.15	3.17	ESMH800VSN332MR30S
	6800	30×35	0.20	3.85	ESMH500VSN682MR35S		3300	35×25	0.15	3.21	ESMH800VSN332MA25S
	6800	35×30	0.20	3.85	ESMH500VSN682MA30S		3900	22×50	0.15	3.52	ESMH800VSN392MP50S
	8200	25.4×50	0.20	4.37	ESMH500VSN822MQ50S		3900	25.4×45	0.15	3.59	ESMH800VSN392MQ45S
	8200	30×40	0.20	4.36	ESMH500VSN822MR40S		3900	30×35	0.15	3.57	ESMH800VSN392MR35S
	8200	35×30	0.20	4.41	ESMH500VSN822MA30S		3900	35×25	0.15	3.50	ESMH800VSN392MA25S
	10000	30×45	0.20	4.97	ESMH500VSN103MR45S		4700	25.4×50	0.15	4.05	ESMH800VSN472MQ50S
	10000	35×35	0.20	4.92	ESMH500VSN103MA35S		4700	30×40	0.15	4.05	ESMH800VSN472MR40S
12000	30×50	0.20	5.60	ESMH500VSN123MR50S	4700	35×30	0.15	4.09	ESMH800VSN472MA30S		
12000	35×40	0.20	5.58	ESMH500VSN123MA40S	5600	30×45	0.15	4.55	ESMH800VSN562MR45S		
15000	35×45	0.20	6.44	ESMH500VSN153MA45S	5600	35×35	0.15	4.51	ESMH800VSN562MA35S		
18000	35×50	0.20	6.71	ESMH500VSN183MA50S	6800	30×50	0.15	5.16	ESMH800VSN682MR50S		
63	1800	22×25	0.15	1.82	ESMH630VSN182MP25S	6800	35×40	0.15	5.14	ESMH800VSN682MA40S	
	2200	22×30	0.15	2.31	ESMH630VSN222MP30S	8200	35×45	0.15	5.83	ESMH800VSN822MA45S	
	2200	25.4×25	0.15	2.30	ESMH630VSN222MQ25S	10000	35×50	0.15	6.63	ESMH800VSN103MA50S	
	2700	22×35	0.15	2.40	ESMH630VSN272MP35S	820	22×25	0.15	1.86	ESMH101VSN821MP25S	
	2700	25.4×25	0.15	2.40	ESMH630VSN272MQ25S	1200	22×30	0.15	2.09	ESMH101VSN122MP30S	
	3300	22×35	0.15	2.62	ESMH630VSN332MP35S	1200	25.4×25	0.15	2.10	ESMH101VSN122MQ25S	
	3300	25.4×30	0.15	2.64	ESMH630VSN332MQ30S	1500	22×35	0.15	2.41	ESMH101VSN152MP35S	
	3300	30×25	0.15	2.78	ESMH630VSN332MR25S	1500	25.4×30	0.15	2.43	ESMH101VSN152MQ30S	
	3900	22×40	0.15	2.93	ESMH630VSN392MP40S	1500	30×25	0.15	2.46	ESMH101VSN152MR25S	
	3900	25.4×35	0.15	2.97	ESMH630VSN392MQ35S	1800	22×40	0.15	2.71	ESMH101VSN182MP40S	
	3900	30×30	0.15	3.00	ESMH630VSN392MR30S	1800	25.4×35	0.15	2.75	ESMH101VSN182MQ35S	
	3900	35×25	0.15	3.00	ESMH630VSN392MA25S	1800	30×25	0.15	2.72	ESMH101VSN182MR25S	
	4700	22×50	0.15	3.39	ESMH630VSN472MP50S	2200	22×45	0.15	3.08	ESMH101VSN222MP45S	
	4700	25.4×40	0.15	3.36	ESMH630VSN472MQ40S	2200	25.4×40	0.15	3.13	ESMH101VSN222MQ40S	
	4700	30×30	0.15	3.32	ESMH630VSN472MR30S	2200	30×30	0.15	3.09	ESMH101VSN222MR30S	
	4700	35×25	0.15	3.36	ESMH630VSN472MA25S	2200	35×25	0.15	3.14	ESMH101VSN222MA25S	
	5600	25.4×45	0.15	3.77	ESMH630VSN562MQ45S	2700	22×50	0.15	3.53	ESMH101VSN272MP50S	
	5600	30×35	0.15	3.75	ESMH630VSN562MR35S	2700	25.4×45	0.15	3.57	ESMH101VSN272MQ45S	
	5600	35×30	0.15	3.76	ESMH630VSN562MA30S	2700	30×35	0.15	3.55	ESMH101VSN272MR35S	
	6800	25.4×50	0.15	4.27	ESMH630VSN682MQ50S	2700	35×30	0.15	3.71	ESMH101VSN272MA30S	
6800	30×40	0.15	4.27	ESMH630VSN682MR40S	3300	25.4×50	0.15	4.06	ESMH101VSN332MQ50S		
6800	35×30	0.15	4.15	ESMH630VSN682MA30S	3300	30×40	0.15	4.05	ESMH101VSN332MR40S		
8200	30×45	0.15	4.83	ESMH630VSN822MR45S	3300	35×30	0.15	4.05	ESMH101VSN332MA30S		
8200	35×35	0.15	4.79	ESMH630VSN822MA35S	3900	30×45	0.15	4.54	ESMH101VSN392MR45S		
10000	30×50	0.15	5.49	ESMH630VSN103MR50S	3900	35×35	0.15	4.49	ESMH101VSN392MA35S		
10000	35×40	0.15	5.47	ESMH630VSN103MA40S	4700	30×50	0.15	5.13	ESMH101VSN472MR50S		
12000	35×45	0.15	6.19	ESMH630VSN123MA45S	4700	35×40	0.15	5.11	ESMH101VSN472MA40S		
100	8200	35×45	0.15	5.47	ESMH630VSN103MA40S	5600	35×45	0.15	5.75	ESMH101VSN562MA45S	
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S	6800	35×50	0.15	6.50	ESMH101VSN682MA50S	
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						
	8200	35×45	0.15	5.47	ESMH630VSN103MA40S						

## ◆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