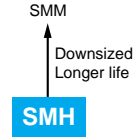


SMH Series

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

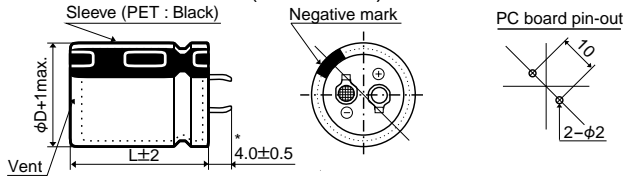


◆SPECIFICATIONS

Items	Characteristics										
Category	-40 to +85°C										
Temperature Range	-40 to +85°C										
Rated Voltage Range	6.3 to 100V _{dc}										
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 _{dc})	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 _{dc})	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 2,000 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	≤±20% of the initial value									
	D.F. (tanδ)	≤150% of the initial specified value									
	Leakage current	≤The initial specified value									

◆DIMENSIONS [mm]

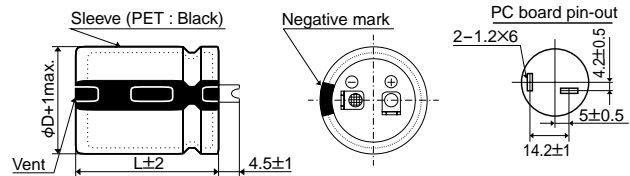
● Terminal Code : VS (φ22 to φ35) : Standard



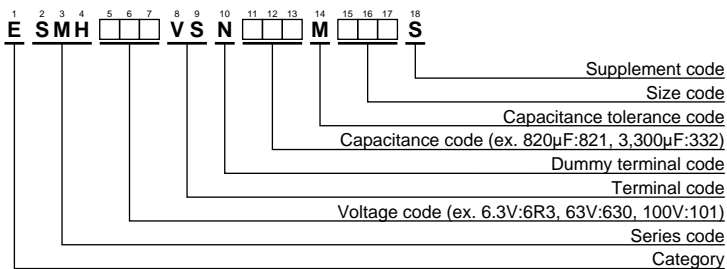
*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

● Terminal Code : LI (φ35)



◆PART NUMBERING SYSTEM



Please refer to "Product code guide (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	15,000	22 × 25	0.60	2.44	ESMH6R3VSN153MP25S	16	27,000	25.4 × 45	0.40	4.72	ESMH160VSN273MQ45S	
	18,000	22 × 30	0.60	2.67	ESMH6R3VSN183MP30S		27,000	30 × 35	0.40	4.82	ESMH160VSN273MR35S	
	18,000	25.4 × 25	0.60	2.70	ESMH6R3VSN183MQ25S		27,000	35 × 30	0.40	4.65	ESMH160VSN273MA30S	
	22,000	22 × 30	0.60	3.06	ESMH6R3VSN223MP30S		33,000	25.4 × 50	0.40	5.33	ESMH160VSN333MQ50S	
	22,000	25.4 × 25	0.60	3.07	ESMH6R3VSN223MQ25S		33,000	30 × 40	0.40	5.36	ESMH160VSN333MR40S	
	27,000	22 × 35	0.60	3.49	ESMH6R3VSN273MP35S		33,000	35 × 30	0.40	5.15	ESMH160VSN333MA30S	
	27,000	25.4 × 30	0.60	3.52	ESMH6R3VSN273MQ30S		39,000	30 × 45	0.40	6.01	ESMH160VSN393MR45S	
	27,000	30 × 25	0.60	3.57	ESMH6R3VSN273MR25S		39,000	35 × 35	0.40	5.95	ESMH160VSN393MA35S	
	33,000	22 × 40	0.60	3.97	ESMH6R3VSN333MP40S		47,000	30 × 50	0.40	6.79	ESMH160VSN473MR50S	
	33,000	25.4 × 35	0.60	4.02	ESMH6R3VSN333MQ35S		47,000	35 × 40	0.40	6.76	ESMH160VSN473MA40S	
	33,000	30 × 25	0.60	3.95	ESMH6R3VSN333MR25S		56,000	35 × 45	0.40	7.62	ESMH160VSN563MA45S	
	39,000	22 × 50	0.60	4.55	ESMH6R3VSN393MP50S		68,000	35 × 50	0.40	8.63	ESMH160VSN683MA50S	
	39,000	25.4 × 40	0.60	4.50	ESMH6R3VSN393MQ40S		25	5,600	22 × 25	0.30	2.21	ESMH250VSN562MP25S
	39,000	30 × 30	0.60	4.45	ESMH6R3VSN393MR30S			6,800	22 × 30	0.30	2.40	ESMH250VSN682MP30S
	39,000	35 × 25	0.60	4.51	ESMH6R3VSN393MA25S			6,800	25.4 × 25	0.30	2.56	ESMH250VSN682MQ25S
	47,000	25.4 × 45	0.60	5.09	ESMH6R3VSN473MQ45S			8,200	22 × 35	0.30	2.72	ESMH250VSN822MP35S
	47,000	30 × 35	0.60	5.06	ESMH6R3VSN473MR35S			8,200	25.4 × 25	0.30	2.80	ESMH250VSN822MQ25S
	47,000	35 × 30	0.60	5.01	ESMH6R3VSN473MA30S			10,000	22 × 40	0.30	3.09	ESMH250VSN103MP40S
	56,000	25.4 × 50	0.60	5.71	ESMH6R3VSN563MQ50S			10,000	25.4 × 30	0.30	3.12	ESMH250VSN103MQ30S
	56,000	30 × 40	0.60	5.70	ESMH6R3VSN563MR40S			10,000	30 × 25	0.30	3.21	ESMH250VSN103MR25S
56,000	35 × 30	0.60	5.77	ESMH6R3VSN563MA30S	12,000	22 × 45		0.30	3.48	ESMH250VSN123MP45S		
68,000	30 × 45	0.60	6.48	ESMH6R3VSN683MR45S	12,000	25.4 × 35		0.30	3.43	ESMH250VSN123MQ35S		
68,000	35 × 35	0.60	6.42	ESMH6R3VSN683MA35S	12,000	30 × 30		0.30	3.86	ESMH250VSN123MR30S		
82,000	30 × 50	0.60	7.32	ESMH6R3VSN823MR50S	12,000	35 × 25		0.30	3.54	ESMH250VSN123MA25S		
82,000	35 × 40	0.60	7.29	ESMH6R3VSN823MA40S	15,000	22 × 50		0.30	4.00	ESMH250VSN153MP50S		
100,000	35 × 45	0.60	8.31	ESMH6R3VSN104MA45S	15,000	25.4 × 40		0.30	3.95	ESMH250VSN153MQ40S		
10	12,000	22 × 25	0.50	2.39	ESMH100VSN123MP25S	15,000		30 × 30	0.30	4.00	ESMH250VSN153MR30S	
	15,000	22 × 30	0.50	2.76	ESMH100VSN153MP30S	15,000		35 × 25	0.30	3.95	ESMH250VSN153MA25S	
	15,000	25.4 × 25	0.50	2.77	ESMH100VSN153MQ25S	18,000		25.4 × 45	0.30	4.45	ESMH250VSN183MQ45S	
	18,000	22 × 35	0.50	3.12	ESMH100VSN183MP35S	18,000		30 × 35	0.30	4.46	ESMH250VSN183MR35S	
	18,000	25.4 × 25	0.50	3.04	ESMH100VSN183MQ25S	18,000		35 × 30	0.30	4.63	ESMH250VSN183MA30S	
	22,000	22 × 40	0.50	3.55	ESMH100VSN223MP40S	22,000		25.4 × 50	0.30	5.02	ESMH250VSN223MQ50S	
	22,000	25.4 × 30	0.50	3.48	ESMH100VSN223MQ30S	22,000	30 × 45	0.30	5.21	ESMH250VSN223MR45S		
	22,000	30 × 25	0.50	3.53	ESMH100VSN223MR25S	22,000	35 × 35	0.30	5.16	ESMH250VSN223MA35S		
	27,000	22 × 45	0.50	4.04	ESMH100VSN273MP45S	27,000	30 × 50	0.30	5.94	ESMH250VSN273MR50S		
	27,000	25.4 × 35	0.50	3.98	ESMH100VSN273MQ35S	27,000	35 × 40	0.30	5.92	ESMH250VSN273MA40S		
	27,000	30 × 30	0.50	3.73	ESMH100VSN273MR30S	33,000	35 × 45	0.30	6.75	ESMH250VSN333MA45S		
	27,000	35 × 25	0.50	3.73	ESMH100VSN273MA25S	39,000	35 × 50	0.30	7.56	ESMH250VSN393MA50S		
	33,000	22 × 50	0.50	4.58	ESMH100VSN333MP50S	35	3,900	22 × 25	0.25	2.22	ESMH350VSN392MP25S	
	33,000	25.4 × 40	0.50	4.54	ESMH100VSN333MQ40S		4,700	22 × 30	0.25	2.41	ESMH350VSN472MP30S	
	33,000	30 × 30	0.50	4.13	ESMH100VSN333MR30S		4,700	25.4 × 25	0.25	2.42	ESMH350VSN472MQ25S	
	33,000	35 × 25	0.50	4.13	ESMH100VSN333MA25S		5,600	22 × 35	0.25	2.75	ESMH350VSN562MP35S	
	39,000	25.4 × 45	0.50	5.08	ESMH100VSN393MQ45S		5,600	25.4 × 25	0.25	2.64	ESMH350VSN562MQ25S	
	39,000	30 × 35	0.50	5.05	ESMH100VSN393MR35S		6,800	22 × 40	0.25	2.80	ESMH350VSN682MP40S	
	39,000	35 × 30	0.50	4.80	ESMH100VSN393MA30S		6,800	25.4 × 30	0.25	2.74	ESMH350VSN682MQ30S	
	47,000	25.4 × 50	0.50	5.73	ESMH100VSN473MQ50S		6,800	30 × 25	0.25	2.97	ESMH350VSN682MR25S	
47,000	30 × 40	0.50	5.72	ESMH100VSN473MR40S	8,200		22 × 45	0.25	3.47	ESMH350VSN822MP45S		
47,000	35 × 30	0.50	5.27	ESMH100VSN473MA30S	8,200		25.4 × 35	0.25	3.10	ESMH350VSN822MQ35S		
56,000	30 × 45	0.50	6.44	ESMH100VSN563MR45S	8,200		30 × 30	0.25	3.13	ESMH350VSN822MR30S		
56,000	35 × 35	0.50	6.38	ESMH100VSN563MA35S	8,200		35 × 25	0.25	2.73	ESMH350VSN822MA25S		
68,000	30 × 50	0.50	7.27	ESMH100VSN683MR50S	10,000		22 × 50	0.25	3.57	ESMH350VSN103MP50S		
68,000	35 × 40	0.50	7.27	ESMH100VSN683MA40S	10,000		25.4 × 40	0.25	3.53	ESMH350VSN103MQ40S		
82,000	35 × 50	0.50	8.49	ESMH100VSN823MA50S	10,000		30 × 30	0.25	3.46	ESMH350VSN103MR30S		
16	8,200	22 × 25	0.40	2.51	ESMH160VSN822MP25S		10,000	35 × 25	0.25	3.02	ESMH350VSN103MA25S	
	10,000	22 × 25	0.40	2.77	ESMH160VSN103MP25S		12,000	25.4 × 45	0.25	3.98	ESMH350VSN123MQ45S	
	12,000	22 × 30	0.40	2.86	ESMH160VSN123MP30S		12,000	30 × 35	0.25	4.01	ESMH350VSN123MR35S	
	12,000	25.4 × 25	0.40	2.95	ESMH160VSN123MQ25S		12,000	35 × 30	0.25	4.42	ESMH350VSN123MA30S	
	15,000	22 × 35	0.40	3.29	ESMH160VSN153MP35S		15,000	25.4 × 50	0.25	4.54	ESMH350VSN123MQ50S	
	15,000	25.4 × 30	0.40	3.46	ESMH160VSN153MQ30S	15,000	30 × 40	0.25	4.52	ESMH350VSN153MR40S		
	15,000	30 × 25	0.40	3.66	ESMH160VSN153MR25S	15,000	35 × 35	0.25	5.01	ESMH350VSN153MA35S		
	18,000	22 × 40	0.40	3.72	ESMH160VSN183MP40S	18,000	30 × 45	0.25	4.71	ESMH350VSN183MR45S		
	18,000	25.4 × 35	0.40	3.98	ESMH160VSN183MQ35S	18,000	35 × 40	0.25	5.54	ESMH350VSN183MA40S		
	18,000	30 × 25	0.40	4.00	ESMH160VSN183MR25S	22,000	30 × 50	0.25	5.33	ESMH350VSN223MR50S		
	22,000	22 × 50	0.40	4.37	ESMH160VSN223MP50S	22,000	35 × 45	0.25	6.04	ESMH350VSN223MA45S		
	22,000	25.4 × 40	0.40	4.26	ESMH160VSN223MQ40S	27,000	35 × 50	0.25	6.89	ESMH350VSN273MA50S		
	22,000	30 × 30	0.40	4.21	ESMH160VSN223MR30S	50	2,200	22 × 25	0.20	1.91	ESMH500VSN222MP25S	
	22,000	35 × 25	0.40	4.15	ESMH160VSN223MA25S		3,300	22 × 30	0.20	2.37	ESMH500VSN332MP30S	



◆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.
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	ESMH800VSN562MA45S		
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	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 ≥ 160Vdc, please use SMQ series

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Frequency (Hz)	50	120	300	1k	10k	50k
6.3 to 50Vdc	0.95	1.00	1.03	1.05	1.08	1.08
63 to 100Vdc	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.