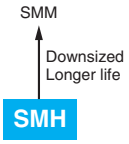
SMH Series

●Endurance with ripple current : 2,000 hours at 85℃
●Non solvent resistant type
●**RoHS Compliant**

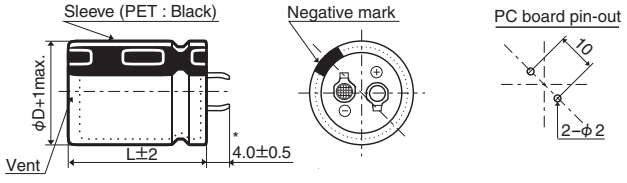


◆SPACIFICATIONS

Items	Characteristics										
Category Temperature Range	−40 to +85℃										
Rated Voltage Range	6.3 to 100Vdc										
Capacitance Tolerance	±20% (M)										(at 20℃, 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℃ after 5 minutes)
Dissipation Factor (tanδ)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	tanδ (Max.)	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.15	0.15	(at 20℃, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V	
	Z(−25℃)/Z(+20℃)	4	4	4	3	3	2	2	2	2	
	Z(−40℃)/Z(+20℃)	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℃ 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℃.										
	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℃ after exposing them for 1,000 hours at 85℃ 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]

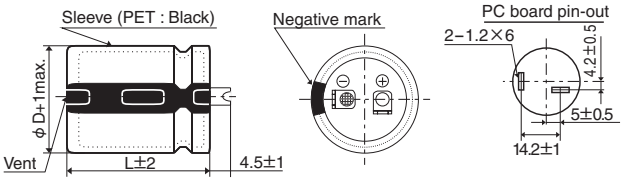
●Terminal Code : VS (φ22 to φ35) : Standard



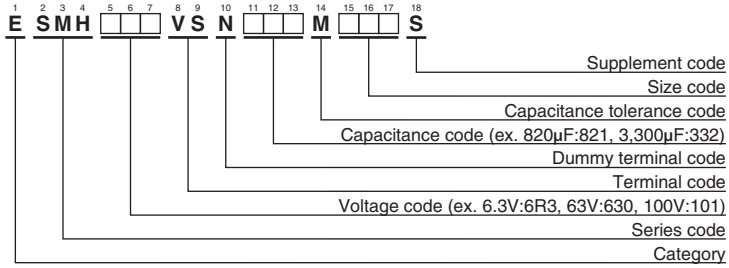
*φD=35mm : 3.5±0.5mm

The standard design has no plastic disc.

●Terminal Code : LI (φ35)



◆PART NUMBERING SYSTEM



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

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SMH Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
6.3	15,000	22×25	0.60	2.44	ESMH6R3VSN153MP25S
	18,000	22×30	0.60	2.67	ESMH6R3VSN183MP30S
	18,000	25.4×25	0.60	2.70	ESMH6R3VSN183MQ25S
	22,000	22×30	0.60	3.06	ESMH6R3VSN223MP30S
	22,000	25.4×25	0.60	3.07	ESMH6R3VSN223MQ25S
	27,000	22×35	0.60	3.49	ESMH6R3VSN273MP35S
	27,000	25.4×30	0.60	3.52	ESMH6R3VSN273MQ30S
	27,000	30×25	0.60	3.57	ESMH6R3VSN273MR25S
	33,000	22×40	0.60	3.97	ESMH6R3VSN333MP40S
	33,000	25.4×35	0.60	4.02	ESMH6R3VSN333MQ35S
	33,000	30×25	0.60	3.95	ESMH6R3VSN333MR25S
	39,000	22×50	0.60	4.55	ESMH6R3VSN393MP50S
	39,000	25.4×40	0.60	4.50	ESMH6R3VSN393MQ40S
	39,000	30×30	0.60	4.45	ESMH6R3VSN393MR30S
	39,000	35×25	0.60	4.51	ESMH6R3VSN393MA25S
	47,000	25.4×45	0.60	5.09	ESMH6R3VSN473MQ45S
	47,000	30×35	0.60	5.06	ESMH6R3VSN473MR35S
	47,000	35×30	0.60	5.01	ESMH6R3VSN473MA30S
	56,000	25.4×50	0.60	5.71	ESMH6R3VSN563MQ50S
	56,000	30×40	0.60	5.70	ESMH6R3VSN563MR40S
	56,000	35×30	0.60	5.77	ESMH6R3VSN563MA30S
	68,000	30×45	0.60	6.48	ESMH6R3VSN683MR45S
	68,000	35×35	0.60	6.42	ESMH6R3VSN683MA35S
	82,000	30×50	0.60	7.32	ESMH6R3VSN823MR50S
	82,000	35×40	0.60	7.29	ESMH6R3VSN823MA40S
	100,000	35×45	0.60	8.31	ESMH6R3VSN104MA45S
10	12,000	22×25	0.50	2.39	ESMH100VSN123MP25S
	15,000	22×30	0.50	2.76	ESMH100VSN153MP30S
	15,000	25.4×25	0.50	2.77	ESMH100VSN153MQ25S
	18,000	22×35	0.50	3.12	ESMH100VSN183MP35S
	18,000	25.4×25	0.50	3.04	ESMH100VSN183MQ25S
	22,000	22×40	0.50	3.55	ESMH100VSN223MP40S
	22,000	25.4×30	0.50	3.48	ESMH100VSN223MQ30S
	22,000	30×25	0.50	3.53	ESMH100VSN223MR25S
	27,000	22×45	0.50	4.04	ESMH100VSN273MP45S
	27,000	25.4×35	0.50	3.98	ESMH100VSN273MQ35S
	27,000	30×30	0.50	3.73	ESMH100VSN273MR30S
	27,000	35×25	0.50	3.73	ESMH100VSN273MA25S
	33,000	22×50	0.50	4.58	ESMH100VSN333MP50S
	33,000	25.4×40	0.50	4.54	ESMH100VSN333MQ40S
	33,000	30×30	0.50	4.13	ESMH100VSN333MR30S
	33,000	35×25	0.50	4.13	ESMH100VSN333MA25S
	39,000	25.4×45	0.50	5.08	ESMH100VSN393MQ45S
	39,000	30×35	0.50	5.05	ESMH100VSN393MR35S
	39,000	35×30	0.50	4.80	ESMH100VSN393MA30S
	47,000	25.4×50	0.50	5.73	ESMH100VSN473MQ50S
	47,000	30×40	0.50	5.72	ESMH100VSN473MR40S
	47,000	35×30	0.50	5.27	ESMH100VSN473MA30S
	56,000	30×45	0.50	6.44	ESMH100VSN563MR45S
	56,000	35×35	0.50	6.38	ESMH100VSN563MA35S
	68,000	30×50	0.50	7.27	ESMH100VSN683MR50S
	68,000	35×40	0.50	7.27	ESMH100VSN683MA40S
	82,000	35×50	0.50	8.49	ESMH100VSN823MA50S
16	8,200	22×25	0.40	2.51	ESMH160VSN822MP25S
	10,000	22×25	0.40	2.77	ESMH160VSN103MP25S
	12,000	22×30	0.40	2.86	ESMH160VSN123MP30S
	12,000	25.4×25	0.40	2.95	ESMH160VSN123MQ25S
	15,000	22×35	0.40	3.29	ESMH160VSN153MP35S
	15,000	25.4×30	0.40	3.46	ESMH160VSN153MQ30S
	15,000	30×25	0.40	3.66	ESMH160VSN153MR25S
	18,000	22×40	0.40	3.72	ESMH160VSN183MP40S
	18,000	25.4×35	0.40	3.98	ESMH160VSN183MQ35S
	18,000	30×25	0.40	4.00	ESMH160VSN183MR25S
	22,000	22×50	0.40	4.37	ESMH160VSN223MP50S
	22,000	25.4×40	0.40	4.26	ESMH160VSN223MQ40S
	22,000	30×30	0.40	4.21	ESMH160VSN223MR30S
	22,000	35×25	0.40	4.15	ESMH160VSN223MA25S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
16	27,000	25.4×45	0.40	4.72	ESMH160VSN273MQ45S
	27,000	30×35	0.40	4.82	ESMH160VSN273MR35S
	27,000	35×30	0.40	4.65	ESMH160VSN273MA30S
	33,000	25.4×50	0.40	5.33	ESMH160VSN333MQ50S
	33,000	30×40	0.40	5.36	ESMH160VSN333MR40S
	33,000	35×30	0.40	5.15	ESMH160VSN333MA30S
	39,000	30×45	0.40	6.01	ESMH160VSN393MR45S
	39,000	35×35	0.40	5.95	ESMH160VSN393MA35S
	47,000	30×50	0.40	6.79	ESMH160VSN473MR50S
	47,000	35×40	0.40	6.76	ESMH160VSN473MA40S
	56,000	35×45	0.40	7.62	ESMH160VSN563MA45S
	68,000	35×50	0.40	8.63	ESMH160VSN683MA50S
25	5,600	22×25	0.30	2.21	ESMH250VSN562MP25S
	6,800	22×30	0.30	2.40	ESMH250VSN682MP30S
	6,800	25.4×25	0.30	2.56	ESMH250VSN682MQ25S
	8,200	22×35	0.30	2.72	ESMH250VSN822MP35S
	8,200	25.4×25	0.30	2.80	ESMH250VSN822MQ25S
	10,000	22×40	0.30	3.09	ESMH250VSN103MP40S
	10,000	25.4×30	0.30	3.12	ESMH250VSN103MQ30S
	10,000	30×25	0.30	3.21	ESMH250VSN103MR25S
	12,000	22×45	0.30	3.48	ESMH250VSN123MP45S
	12,000	25.4×35	0.30	3.43	ESMH250VSN123MQ35S
	12,000	30×30	0.30	3.86	ESMH250VSN123MR30S
	12,000	35×25	0.30	3.54	ESMH250VSN123MA25S
	15,000	22×50	0.30	4.00	ESMH250VSN153MP50S
	15,000	25.4×40	0.30	3.95	ESMH250VSN153MQ40S
	15,000	30×30	0.30	4.00	ESMH250VSN153MR30S
	15,000	35×25	0.30	3.95	ESMH250VSN153MA25S
	18,000	25.4×45	0.30	4.45	ESMH250VSN183MQ45S
	18,000	30×35	0.30	4.46	ESMH250VSN183MR35S
	18,000	35×30	0.30	4.63	ESMH250VSN183MA30S
	22,000	25.4×50	0.30	5.02	ESMH250VSN223MQ50S
	22,000	30×45	0.30	5.21	ESMH250VSN223MR45S
	22,000	35×35	0.30	5.16	ESMH250VSN223MA35S
	27,000	30×50	0.30	5.94	ESMH250VSN273MR50S
	27,000	35×40	0.30	5.92	ESMH250VSN273MA40S
	33,000	35×45	0.30	6.75	ESMH250VSN333MA45S
	39,000	35×50	0.30	7.56	ESMH250VSN393MA50S
35	3,900	22×25	0.25	2.22	ESMH350VSN392MP25S
	4,700	22×30	0.25	2.41	ESMH350VSN472MP30S
	4,700	25.4×25	0.25	2.42	ESMH350VSN472MQ25S
	5,600	22×35	0.25	2.75	ESMH350VSN562MP35S
	5,600	25.4×25	0.25	2.64	ESMH350VSN562MQ25S
	6,800	22×40	0.25	2.80	ESMH350VSN682MP40S
	6,800	25.4×30	0.25	2.74	ESMH350VSN682MQ30S
	6,800	30×25	0.25	2.97	ESMH350VSN682MR25S
	8,200	22×45	0.25	3.47	ESMH350VSN822MP45S
	8,200	25.4×35	0.25	3.10	ESMH350VSN822MQ35S
	8,200	30×30	0.25	3.13	ESMH350VSN822MR30S
	8,200	35×25	0.25	2.73	ESMH350VSN822MA25S
	10,000	22×50	0.25	3.57	ESMH350VSN103MP50S
	10,000	25.4×40	0.25	3.53	ESMH350VSN103MQ40S
	10,000	30×30	0.25	3.46	ESMH350VSN103MR30S
	10,000	35×25	0.25	3.02	ESMH350VSN103MA25S
	12,000	25.4×45	0.25	3.98	ESMH350VSN123MQ45S
	12,000	30×35	0.25	4.01	ESMH350VSN123MR35S
	12,000	35×30	0.25	4.42	ESMH350VSN123MA30S
	15,000	25.4×50	0.25	4.54	ESMH350VSN153MQ50S
	15,000	30×40	0.25	4.52	ESMH350VSN153MR40S
	15,000	35×35	0.25	5.01	ESMH350VSN153MA35S
	18,000	30×45	0.25	4.71	ESMH350VSN183MR45S
	18,000	35×40	0.25	5.54	ESMH350VSN183MA40S
	22,000	30×50	0.25	5.33	ESMH350VSN223MR50S
	22,000	35×45	0.25	6.04	ESMH350VSN223MA45S
	27,000	35×50	0.25	6.89	ESMH350VSN273MA50S
50	2,200	22×25	0.20	1.91	ESMH500VSN222MP25S
	3,300	22×30	0.20	2.37	ESMH500VSN332MP30S

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SMH Series

◆STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
50	3,300	25.4×25	0.20	2.38	ESMH500VSN332MQ25S
	3,900	22×35	0.20	2.65	ESMH500VSN392MP35S
	3,900	25.4×30	0.20	2.68	ESMH500VSN392MQ30S
	3,900	30×25	0.20	2.55	ESMH500VSN392MR25S
	4,700	22×40	0.20	2.99	ESMH500VSN472MP40S
	4,700	25.4×35	0.20	3.03	ESMH500VSN472MQ35S
	4,700	30×25	0.20	2.81	ESMH500VSN472MR25S
	5,600	22×45	0.20	3.36	ESMH500VSN562MP45S
	5,600	25.4×35	0.20	3.31	ESMH500VSN562MQ35S
	5,600	30×30	0.20	3.37	ESMH500VSN562MR30S
	5,600	35×25	0.20	3.42	ESMH500VSN562MA25S
	6,800	22×50	0.20	3.81	ESMH500VSN682MP50S
	6,800	25.4×40	0.20	3.81	ESMH500VSN682MQ40S
	6,800	30×35	0.20	3.85	ESMH500VSN682MR35S
	6,800	35×30	0.20	3.85	ESMH500VSN682MA30S
	8,200	25.4×50	0.20	4.37	ESMH500VSN822MQ50S
	8,200	30×40	0.20	4.36	ESMH500VSN822MR40S
	8,200	35×30	0.20	4.41	ESMH500VSN822MA30S
	10,000	30×45	0.20	4.97	ESMH500VSN103MR45S
	10,000	35×35	0.20	4.92	ESMH500VSN103MA35S
	12,000	30×50	0.20	5.60	ESMH500VSN123MR50S
	12,000	35×40	0.20	5.58	ESMH500VSN123MA40S
	15,000	35×45	0.20	6.44	ESMH500VSN153MA45S
	18,000	35×50	0.20	6.71	ESMH500VSN183MA50S
63	1,800	22×25	0.15	1.82	ESMH630VSN182MP25S
	2,200	22×30	0.15	2.31	ESMH630VSN222MP30S
	2,200	25.4×25	0.15	2.30	ESMH630VSN222MQ25S
	2,700	22×35	0.15	2.40	ESMH630VSN272MP35S
	2,700	25.4×25	0.15	2.40	ESMH630VSN272MQ25S
	3,300	22×35	0.15	2.62	ESMH630VSN332MP35S
	3,300	25.4×30	0.15	2.64	ESMH630VSN332MQ30S
	3,300	30×25	0.15	2.78	ESMH630VSN332MR25S
	3,900	22×40	0.15	2.93	ESMH630VSN392MP40S
	3,900	25.4×35	0.15	2.97	ESMH630VSN392MQ35S
	3,900	30×30	0.15	3.00	ESMH630VSN392MR30S
	3,900	35×25	0.15	3.00	ESMH630VSN392MA25S
	4,700	22×50	0.15	3.39	ESMH630VSN472MP50S
	4,700	25.4×40	0.15	3.36	ESMH630VSN472MQ40S
	4,700	30×30	0.15	3.32	ESMH630VSN472MR30S
	4,700	35×25	0.15	3.36	ESMH630VSN472MA25S
	5,600	25.4×45	0.15	3.77	ESMH630VSN562MQ45S
	5,600	30×35	0.15	3.75	ESMH630VSN562MR35S
	5,600	35×30	0.15	3.76	ESMH630VSN562MA30S
	6,800	25.4×50	0.15	4.27	ESMH630VSN682MQ50S
	6,800	30×40	0.15	4.27	ESMH630VSN682MR40S
	6,800	35×30	0.15	4.15	ESMH630VSN682MA30S
	8,200	30×45	0.15	4.83	ESMH630VSN822MR45S
	8,200	35×35	0.15	4.79	ESMH630VSN822MA35S
	10,000	30×50	0.15	5.49	ESMH630VSN103MR50S
	10,000	35×40	0.15	5.47	ESMH630VSN103MA40S
	12,000	35×45	0.15	6.19	ESMH630VSN123MA45S

WV (Vdc)	Cap (μF)	Case size φD×L(mm)	tanδ	Rated ripple current (Arms/ 85℃,120Hz)	Part No.
80	1,200	22×25	0.15	1.69	ESMH800VSN122MP25S
	1,500	22×25	0.15	1.88	ESMH800VSN152MP25S
	1,800	22×30	0.15	2.14	ESMH800VSN182MP30S
	1,800	25.4×25	0.15	2.26	ESMH800VSN182MQ25S
	2,200	22×35	0.15	2.44	ESMH800VSN222MP35S
	2,200	25.4×30	0.15	2.46	ESMH800VSN222MQ30S
	2,200	30×25	0.15	2.49	ESMH800VSN222MR25S
	2,700	22×40	0.15	2.78	ESMH800VSN272MP40S
	2,700	25.4×35	0.15	2.81	ESMH800VSN272MQ35S
	2,700	30×25	0.15	2.75	ESMH800VSN272MR25S
	3,300	22×45	0.15	3.16	ESMH800VSN332MP45S
	3,300	25.4×40	0.15	3.21	ESMH800VSN332MQ40S
	3,300	30×30	0.15	3.17	ESMH800VSN332MR30S
	3,300	35×25	0.15	3.21	ESMH800VSN332MA25S
	3,900	22×50	0.15	3.52	ESMH800VSN392MP50S
	3,900	25.4×45	0.15	3.59	ESMH800VSN392MQ45S
	3,900	30×35	0.15	3.57	ESMH800VSN392MR35S
	3,900	35×25	0.15	3.50	ESMH800VSN392MA25S
	4,700	25.4×50	0.15	4.05	ESMH800VSN472MQ50S
	4,700	30×40	0.15	4.05	ESMH800VSN472MR40S
	4,700	35×30	0.15	4.09	ESMH800VSN472MA30S
	5,600	30×45	0.15	4.55	ESMH800VSN562MR45S
	5,600	35×35	0.15	4.51	ESMH800VSN562MA35S
	6,800	30×50	0.15	5.16	ESMH800VSN682MR50S
	6,800	35×40	0.15	5.14	ESMH800VSN682MA40S
	8,200	35×45	0.15	5.83	ESMH800VSN822MA45S
	10,000	35×50	0.15	6.63	ESMH800VSN103MA50S
100	820	22×25	0.15	1.86	ESMH101VSN821MP25S
	1,200	22×30	0.15	2.09	ESMH101VSN122MP30S
	1,200	25.4×25	0.15	2.10	ESMH101VSN122MQ25S
	1,500	22×35	0.15	2.41	ESMH101VSN152MP35S
	1,500	25.4×30	0.15	2.43	ESMH101VSN152MQ30S
	1,500	30×25	0.15	2.46	ESMH101VSN152MR25S
	1,800	22×40	0.15	2.71	ESMH101VSN182MP40S
	1,800	25.4×35	0.15	2.75	ESMH101VSN182MQ35S
	1,800	30×25	0.15	2.72	ESMH101VSN182MR25S
	2,200	22×45	0.15	3.08	ESMH101VSN222MP45S
	2,200	25.4×40	0.15	3.13	ESMH101VSN222MQ40S
	2,200	30×30	0.15	3.09	ESMH101VSN222MR30S
	2,200	35×25	0.15	3.14	ESMH101VSN222MA25S
	2,700	22×50	0.15	3.53	ESMH101VSN272MP50S
	2,700	25.4×45	0.15	3.57	ESMH101VSN272MQ45S
	2,700	30×35	0.15	3.55	ESMH101VSN272MR35S
	2,700	35×30	0.15	3.71	ESMH101VSN272MA30S
	3,300	25.4×50	0.15	4.06	ESMH101VSN332MQ50S
	3,300	30×40	0.15	4.05	ESMH101VSN332MR40S
	3,300	35×30	0.15	4.05	ESMH101VSN332MA30S
	3,900	30×45	0.15	4.54	ESMH101VSN392MR45S
	3,900	35×35	0.15	4.49	ESMH101VSN392MA35S
	4,700	30×50	0.15	5.13	ESMH101VSN472MR50S
	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℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.