

MH series

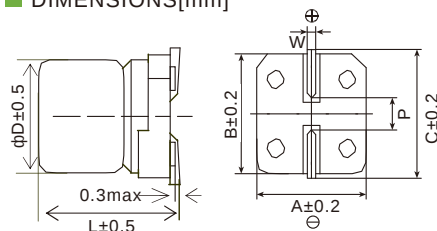
- Endurance: +130°C 1,000~5,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

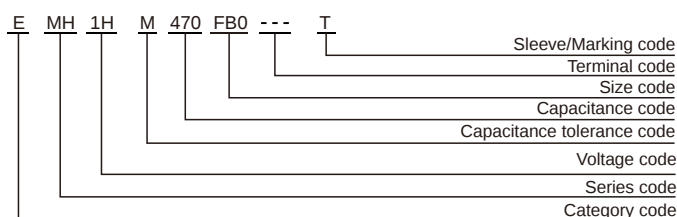
Items	Characteristics													
Category Temperature Range	-40~+130°C(10 ~450 V _{dc})													
Rated Voltage Range	10~450 V _{dc}													
Capacitance Tolerance	±20%(M) (at 20°C,120Hz)													
Leakage Current	10~100 V _{dc}									160~450 V _{dc}				
	E80-GE0					WE0-MN0				I≤0.04CV+100μA (1 minute)				
	I≤0.01CV or 3μA, whichever is greater.(2 minutes)					I≤0.03CV or 4μA, whichever is greater. (2 minutes)								
	Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V)											(at 20°C)		
Dissipation Factor (tanδ)	Rated Voltage(V _{dc})	10	16	25	35	50	63	80	100	160~250	400~450			
	tanδ (max.)	0.24	0.20	0.16	0.14	0.14	0.12	0.12	0.10	0.24	0.30			
	When nominal capacitance exceeds 1,000μF,add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz)													
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(V _{dc})			10	16	25	35	50	63	80	100	160~250	400~450	(at 120Hz)
	E80~GE0	Z(-25°C)/Z(+20°C)		3	2	2	2	2	2	2	2	6	6	
		Z(-40°C)/Z(+20°C)		6	4	4	3	3	3	3	3	10	18	
	WE0~MN0	Z(-25°C)/Z(+20°C)		4	3	2	2	2	2	2	2	6	6	
		Z(-40°C)/Z(+20°C)		8	6	4	3	3	3	3	3	10	18	
Endurance	The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage is applied for a specified period of time at 130°C.													
	Load Life		E80~EB0(10~100V _{dc}): 1000 hours FB0~GH0(10~100V _{dc}): 2000 hours WE0~MN0(10~100V _{dc}): 5000 hours FB0~MN0(160~450V _{dc}): 3000 hours											
	Capacitance Change		≤±30% of the initial value											
	Dissipation Factor (tanδ)		≤300% 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 leaving them under no load at 130°C for 1,000 hours (400~450WV: 500 hours).													
	Rated Voltage(V _{dc})		10~450											
	Capacitance Change		≤±30% of the initial value											
	Dissipation Factor (tanδ)		≤300% of the initial specified value											
	Leakage Current		≤500% of the initial specified value											

DIMENSIONS[mm]



Size code	D	L	A	B	C	W	P
E80	6.3	7.7	6.6	6.6	7.2	0.5~0.8	1.9
E83	6.3	8.0	6.6	6.6	7.2	0.5~0.8	1.9
EB0	6.3	10.5	6.6	6.6	7.2	0.5~0.8	1.9
FB0	8	10.5	8.3	8.3	9.0	0.7~1.1	3.1
FD0	8	12.5	8.3	8.3	9.0	0.7~1.1	3.1
GB0	10	10.5	10.3	10.3	11.0	0.7~1.1	4.5
GD0	10	12.5	10.3	10.3	11.0	0.7~1.1	4.5
GE0	10	13.5	10.3	10.3	11.0	0.7~1.1	4.5
GH0	10	16.5	10.3	10.3	11.0	0.7~1.1	4.5
WE0	12.5	13.5	13.0	13.0	13.7	1.0~1.3	4.5
WG5	12.5	16.0	13.0	13.0	13.7	1.0~1.3	4.5
WM5	12.5	21.0	13.0	13.0	13.7	1.0~1.3	4.5
LH0	16	16.5	17.0	17.0	18.0	1.0~1.3	6.5
LN0	16	21.5	17.0	17.0	18.0	1.0~1.3	6.5
MH0	18	16.5	19.0	19.0	20.0	1.0~1.3	6.5
MN0	18	21.5	19.0	19.0	20.0	1.0~1.3	6.5

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Rated voltage (V _{dc})	Cap.(μF)	Freq.(Hz)	120	1k	10k	100k
10~100	Cap.<220	Cap.<220	0.40	0.75	0.90	1.00
		220≤Cap.<680	0.50	0.85	0.94	1.00
		680≤Cap.<2200	0.60	0.87	0.95	1.00
		2200≤Cap.<3300	0.75	0.90	0.95	1.00
		Cap.≥3300	0.85	0.95	0.98	1.00
		Cap.>33	0.55	0.83	0.97	1.00
160~450	Cap.>33	Cap.>33	0.66	0.86	0.93	1.00

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■ STANDARD RATINGS (Rated ripple current:mArms/130°C 100kHz)

WV (Vdc)	Cap (μF)	Size code	Rated ripple current	Part Number
10(1A)	100	E83	110	EMH1AM101E83D00T
	220	E83	110	EMH1AM221E83D00T
		FB0	220	EMH1AM221FB0D00T
	330	FB0	220	EMH1AM331FB0D00T
		GB0	296	EMH1AM331GB0D00T
	470	GB0	296	EMH1AM471GB0D00T
	1000	WE0	750	EMH1AM102WE0D00T
	2200	LH0	1000	EMH1AM222LH0D00T
	3300	MH0	1200	EMH1AM332MH0D00T
	4700	MN0	1550	EMH1AM472MN0D00T
16(1C)	100	E83	110	EMH1CM101E83D00T
	220	FB0	220	EMH1CM101FB0D00T
		FB0	220	EMH1CM221FB0D00T
	330	GB0	296	EMH1CM331GB0D00T
	470	GD0	340	EMH1CM471GD0D00T
	680	WE0	750	EMH1CM681WE0D00T
	1000	WG5	800	EMH1CM102WG5D00T
25(1E)	1500	LH0	1000	EMH1CM152LH0D00T
	47	E83	110	EMH1EM470E83D00T
	100	E83	110	EMH1EM101E83D00T
		FB0	220	EMH1EM101FB0D00T
	220	FB0	220	EMH1EM221FB0D00T
		GB0	296	EMH1EM221GB0D00T
	330	GB0	296	EMH1EM331GB0D00T
	470	WE0	750	EMH1EM471WE0D00T
	680	WG5	800	EMH1EM681WG5D00T
	1000	LH0	1000	EMH1EM102LH0D00T
35(1V)	33	E83	110	EMH1VM330E83D00T
	47	E83	110	EMH1VM470E83D00T
	100	FB0	220	EMH1VM101FB0D00T
	220	GB0	296	EMH1VM221GB0D00T
	330	WE0	750	EMH1VM331WE0D00T
	470	WG5	900	EMH1VM471WG5D00T
	680	LH0	1000	EMH1VM681LH0D00T
	1000	MH0	1200	EMH1VM102MH0D00T
50(1H)	10	E83	83	EMH1HM100E83D00T
	22	E83	83	EMH1HM220E83D00T
	33	E83	83	EMH1HM330E83D00T
	47	FB0	160	EMH1HM470FB0D00T
		GB0	247	EMH1HM470GB0D00T
	100	GB0	247	EMH1HM101GB0D00T
		WE0	550	EMH1HM101WE0D00T
	220	WE0	550	EMH1HM221WE0D00T
	330	WG5	700	EMH1HM331WG5D00T
	470	LH0	850	EMH1HM471LH0D00T
	560	MH0	920	EMH1HM561MH0D00T
63(1J)	22	E83	65	EMH1JM220E83D00T
	33	FB0	100	EMH1JM330FB0D00T
	47	FB0	125	EMH1JM470FB0D00T
	100	GD0	270	EMH1JM101GD0D00T
	220	WG5	600	EMH1JM221WG5D00T
	330	LH0	820	EMH1JM331LH0D00T
	470	LN0	1100	EMH1JM471LN0D00T

WV (Vdc)	Cap (μF)	Size code	Rated ripple current	Part Number
80(1B)	10	E83	95	EMH1BM100E83D00T
	22	FB0	110	EMH1BM220FB0D00T
		GB0	215	EMH1BM220GB0D00T
	33	FB0	130	EMH1BM330FB0D00T
	47	GB0	245	EMH1BM470GB0D00T
	100	WE0	475	EMH1BM101WE0D00T
100(1K)	10	E83	90	EMH1KM100E83D00T
	22	FB0	105	EMH1KM220FB0D00T
	33	GB0	200	EMH1KM330GB0D00T
	47	GB0	230	EMH1KM470GB0D00T
	68	GD0	275	EMH1KM680GD0D00T
	100	WE0	405	EMH1KM101WE0D00T
160(2C)	220	LH0	650	EMH1KM221LH0D00T
	10	GB0	72	EMH2CM100GB0D00T
	15	FD0	90	EMH2CM150FD0D00T
	22	GD0	150	EMH2CM220GD0D00T
	33	GE0	165	EMH2CM330GE0D00T
	47	GH0	195	EMH2CM470GH0D00T
200(2D)	68	WM5	234	EMH2CM680WM5D00T
	100	WM5	300	EMH2CM101WM5D00T
	10	FE0	90	EMH2DM100FE0D00T
	15	GB0	90	EMH2DM100GB0D00T
		GD0	115	EMH2DM150GD0D00T
	22	GH0	180	EMH2DM220GH0D00T
250(2E)	33	WG5	200	EMH2DM330WG5D00T
	47	WM5	240	EMH2DM470WM5D00T
	4.7	GB0	59	EMH2EM4R7GB0D00T
	10	FE0	94	EMH2EM100FE0D00T
		GB0	94	EMH2EM100GB0D00T
	22	GH0	190	EMH2EM220GH0D00T
400(2G)	33	WM5	210	EMH2EM330WM5D00T
	47	WM5	256	EMH2EM470WM5D00T
	2.2	FB0	30	EMH2GM2R2FB0D00T
	3.3	FB0	40	EMH2GM3R3FB0D00T
	4.7	FE0	65	EMH2GM4R7FE0D00T
		GB0	65	EMH2GM4R7GB0D00T
450(2W)	5.6	FE0	80	EMH2GM5R6FE0D00T
	6.8	GE0	90	EMH2GM6R8GE0D00T
	10	GH0	102	EMH2GM100GH0D00T
	15	WG5	130	EMH2GM150WG5D00T
	22	WM5	204	EMH2GM220WM5D00T
	2.2	GB0	32	EMH2WM2R2GB0D00T
450(2W)	3.3	GD0	36	EMH2WM3R3GD0D00T
	4.7	GE0	48	EMH2WM4R7GE0D00T
	10	WG5	89	EMH2WM100WG5D00T
	15	WM5	115	EMH2WM150WM5D00T
		WM5	115	EMH2WM150WM5D00T