

MK series

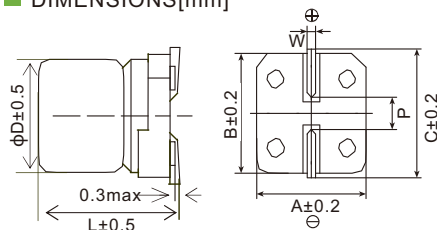
- Endurance: 2,000 ~ 3,000 hours at 105°C
- Designed for surface mounting on high density PC board
- Compliant to AEC-Q200
- **RoHS Compliant**



SPECIFICATIONS

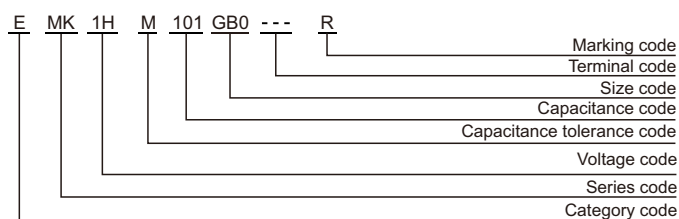
Items	Characteristics										
Category Temperature Range	-55~+105°C(6.3~100 V _{dc}) -40~+105°C(160~450 V _{dc})										
Rated Voltage Range	6.3~450 V _{dc}										
Capacitance Tolerance	±20%(M) (at 20°C,120Hz)										
Leakage Current	6.3~100 V _{dc}							160~450 V _{dc}			
	I≤0.01CV or 3μA, whichever is greater. (2 minutes)							I≤0.04CV+100μA (1 minute)			
	Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C)										
Dissipation Factor (tanδ)	Rated Voltage(V _{dc})		6.3	10	16	25	35	50~100	160~250	400~450	(at 20°C,120Hz)
	Dissipation Factor(Max.)	D80~E83	0.30	0.24	0.20	0.16	0.14	0.12	0.15	0.20	
		E80~WM5	0.40	0.30	0.26	0.16	0.14	0.12	0.15	0.20	
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(V _{dc})		6.3	10	16	25	35	50~100	160~250	400~450	(at 120Hz)
	Z(-25°C)/Z(+20°C)		4	3	2	2	2	2	6	6	
	Z(-40°C)/Z(+20°C)		6	4	3	3	3	3	10	18	
	Z(-55°C)/Z(+20°C)		8	6	4	3	3	3	-	-	
Endurance	The specifications listed below shall be satisfied when the capacitors are restored to 20°C after rated voltage is applied for a specified period of time at 105°C.										
	Load Life		2,000 hours(160~450V _{dc} : 3,000 hours)								
	Capacitance Change		≤±20% of the initial value								
	Dissipation Factor		≤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 leaving them under no load at 105°C for 1,000 hours (6.3~100V _{dc} : 500 hours).										
	Capacitance Change		≤±20% of the initial value								
	Dissipation Factor		≤200% of the initial specified value								
	Leakage Current		≤200% of the initial specified value								

■ DIMENSIONS[mm]



Size code	D	L	A	B	C	W	P
D80	5	7.7	5.3	5.3	5.9	0.5~0.8	1.4
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
FE0	8	13.5	8.3	8.3	9.0	0.7~1.1	3.1
FG0	8	15.5	8.3	8.3	9.0	0.7~1.1	3.1
G80	10	7.7	10.3	10.3	11.0	0.7~1.1	4.5
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

■ PART NUMBERING SYSTEM



Note: 1)Tolerance shall be L+1.3(max.) for G80.

2) M type forming is available for Size E83 ~ GH0.

■ RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Freq.(Hz)	120	1k	10k	100k
Rated voltage(V _{dc})	0.50	0.80	0.90	1.00

MK series

STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size code	Rated ripple current (mA _{rms} /105°C, 100kHz)	Part Number
6.3	100	D80	105	EMK0JM101D80---R
	220	E83	160	EMK0JM221E83---R
	330	FB0	340	EMK0JM331FB0---R
	1000	GB0	860	EMK0JM102GB0---R
10	33	D80	105	EMK1AM330D80---R
	100	E83	175	EMK1AM101E83---R
	220	E83	180	EMK1AM221E83---R
	330	FB0	340	EMK1AM331FB0---R
	470	FB0	360	EMK1AM471FB0---R
	820	GB0	860	EMK1AM821GB0---R
16	47	D80	105	EMK1CM470D80---R
	100	E83	175	EMK1CM101E83---R
	150	E83	190	EMK1CM151E83---R
	220	FB0	500	EMK1CM221FB0---R
	330	FB0	545	EMK1CM331FB0---R
25	470	GB0	800	EMK1CM471GB0---R
	33	D80	105	EMK1EM330D80---R
	47	E83	180	EMK1EM470E83---R
	100	E83	205	EMK1EM101E83---R
	220	FB0	550	EMK1EM221FB0---R
	330	GB0	780	EMK1EM331GB0---R
35	470	GD0	875	EMK1EM471GD0---R
	10	D80	105	EMK1VM100D80---R
	22	D80	110	EMK1VM220D80---R
	47	E83	210	EMK1VM470E83---R
	100	FB0	575	EMK1VM101FB0---R
	220	GB0	835	EMK1VM221GB0---R
50	330	GD0	900	EMK1VM331GD0---R
	10	E83	120	EMK1HM100E83---R
	22	E83	175	EMK1HM220E83---R
	33	E83	180	EMK1HM330E83---R
	47	E83	190	EMK1HM470E83---R
	47	FB0	540	EMK1HM470FB0---R
	100	FB0	600	EMK1HM101FB0---R
	100	GB0	700	EMK1HM101GB0---R
	220	GD0	800	EMK1HM221GD0---R
	220	WE0	900	EMK1HM221WE0---R
63	330	WG5	1180	EMK1HM331WG5---R
	10	D80	85	EMK1JM100D80---R
	22	E83	150	EMK1JM220E83---R
	33	FB0	375	EMK1JM330FB0---R
	47	FB0	450	EMK1JM470FB0---R
	100	GB0	575	EMK1JM101GB0---R
	220	WE0	890	EMK1JM221WE0---R
80	10	E83	140	EMK1BM100E83---R
	22	FB0	375	EMK1BM220FB0---R
	33	FB0	450	EMK1BM330FB0---R
	47	GB0	575	EMK1BM470GB0---R
	100	GD0	600	EMK1BM101GD0---R
	150	WE0	800	EMK1BM151WE0---R
	220	WG5	960	EMK1BM221WG5---R
100	4.7	D80	70	EMK1KM470D80---R
	10	E83	135	EMK1KM100E83---R
	22	FB0	345	EMK1KM220FB0---R
	33	GB0	560	EMK1KM330GB0---R
	47	GB0	575	EMK1KM470GB0---R
	100	WE0	680	EMK1KM101WE0---R
160	10	FB0	83	EMK2CM100FB0---R
	10	G80	81	EMK2CM100G80---R
	15	FD0	136	EMK2CM150FD0---R
	22	GD0	170	EMK2CM220GD0---R
	33	GE0	215	EMK2CM330GE0---R
	47	GH0	380	EMK2CM470GH0---R
	68	WM5	630	EMK2CM680WM5---R
	100	WM5	700	EMK2CM101WM5---R

WV (Vdc)	Cap (μF)	Size code	Rated ripple current (mA _{rms} /105°C, 100kHz)	Part Number
200	10	FB0	118	EMK2DM100FB0---R
	10	GB0	130	EMK2DM100GB0---R
	15	FE0	170	EMK2DM150FE0---R
	22	GE0	200	EMK2DM220GE0---R
	33	GH0	260	EMK2DM330GH0---R
	47	WM5	440	EMK2DM470WM5---R
	68	WM5	640	EMK2DM680WM5---R
250	2.2	EB0	56	EMK2EM2R2EB0---R
	3.3	EB0	68	EMK2EM3R3EB0---R
	4.7	FB0	96	EMK2EM4R7FB0---R
	10	FD0	166	EMK2EM100FD0---R
	22	GH0	300	EMK2EM220GH0---R
	33	WM5	420	EMK2EM330WM5---R
	47	WM5	460	EMK2EM470WM5---R
400	2.2	EB0	44	EMK2GM2R2EB0---R
	3.3	FB0	64	EMK2GM3R3FB0---R
	4.7	FB0	78	EMK2GM4R7FB0---R
	5.6	FD0	96	EMK2GM5R6FD0---R
	6.8	FE0	108	EMK2GM6R8FE0---R
	8.2	FG0	130	EMK2GM8R2FG0---R
	8.2	GE0	130	EMK2GM8R2GE0---R
	10	GE0	140	EMK2GM100GE0---R
	15	GH0	174	EMK2GM150GH0---R
	22	WM5	235	EMK2GM220WM5---R
450	2.2	FB0	45	EMK2WM2R2FB0---R
	2.2	GB0	50	EMK2WM2R2GB0---R
	3.3	GB0	72	EMK2WM3R3GB0---R
	4.7	GB0	80	EMK2WM4R7GB0---R
	6.8	GE0	100	EMK2WM6R8GE0---R
	10	GH0	136	EMK2WM100GH0---R
	15	WM5	180	EMK2WM150WM5---R
	22	WM5	218	EMK2WM220WM5---R