

MK series

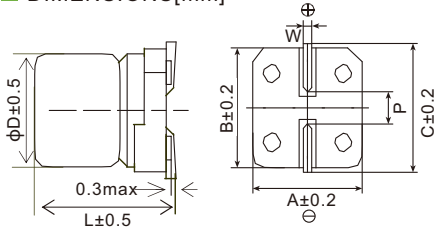
- Endurance: +105°C 2,000 ~ 3,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

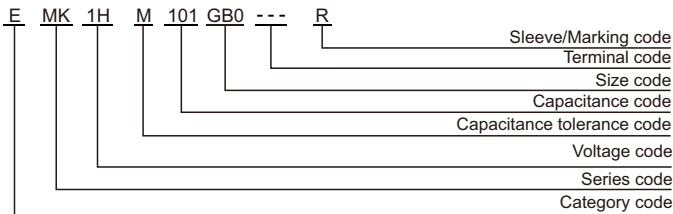
Items	Characteristics											
Category Temperature Range	-40~+105°C(6.3~450 V _{dc})											
Rated Voltage Range	6.3~450 V _{dc}											
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)											
Leakage Current	6.3~100 V _{dc}						160~450 V _{dc}					
	I≤0.01CV or 3μA, whichever is greater. (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	63	80	100	160~250	400~450
	tanδ (max.)	D80~E80	0.30	0.24	0.20	0.16	0.14	0.12	0.12	0.12	0.12	-
EB0~MN0 0.40 0.30 0.26 0.16 0.14 0.12 0.12 0.12 0.12 0.12 0.15 0.20 (at 20°C, 120Hz)												
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(V _{dc})	6.3	10	16	25	35	50	63	80	100	160~250	400~450
	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2	6	6
	Z(-40°C)/Z(+20°C)	10	8	6	4	3	3	3	3	3	10	18
(at 120Hz)												
Endurance	The specifications listed below shall be met 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 (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 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 (tanδ)	≤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
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
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

Freq.(Hz)	120	1k	10k	100k
Rated voltage(V _{dc})				
6.3~450	0.50	0.80	0.90	1.00

MK series
STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size code	tanδ	Rated ripple current (mA _{rms} /105°C, 100kHz)	Part Number
6.3(0J)	100	D80	0.30	105	EMK0JM101D80D00*
	220	E80	0.30	160	EMK0JM221E80D00*
	330	FB0	0.40	340	EMK0JM331FB0D00*
	1000	GB0	0.40	860	EMK0JM102GB0D00*
10(1A)	33	D80	0.24	105	EMK1AM330D80D00*
	100	E80	0.24	175	EMK1AM101E80D00*
	220	E80	0.24	180	EMK1AM221E80D00*
	330	FB0	0.30	340	EMK1AM331FB0D00*
	470	FB0	0.30	360	EMK1AM471FB0D00*
	820	GB0	0.30	860	EMK1AM821GB0D00*
16(1C)	47	D80	0.20	105	EMK1CM470D80D00*
	100	E80	0.20	175	EMK1CM101E80D00*
	150	E80	0.20	190	EMK1CM151E80D00*
	220	FB0	0.26	500	EMK1CM221FB0D00*
	330	FB0	0.26	545	EMK1CM331FB0D00*
	470	GB0	0.26	800	EMK1CM471GB0D00*
25(1E)	33	D80	0.16	105	EMK1EM330D80D00*
	47	E80	0.16	180	EMK1EM470E80D00*
	100	E80	0.16	205	EMK1EM101E80D00*
	220	FB0	0.16	550	EMK1EM221FB0D00*
	330	GB0	0.16	780	EMK1EM331GB0D00*
	470	GD0	0.16	875	EMK1EM471GD0D00*
35(1V)	10	D80	0.14	105	EMK1VM100D80D00*
	22	D80	0.14	110	EMK1VM220D80D00*
	47	E80	0.14	210	EMK1VM470E80D00*
	100	FB0	0.14	575	EMK1VM101FB0D00*
	220	GB0	0.14	835	EMK1VM221GB0D00*
	330	GD0	0.14	900	EMK1VM331GD0D00*
50(1H)	10	D80	0.12	90	EMK1HM100D80D00*
	22	E80	0.12	175	EMK1HM220E80D00*
	33	E80	0.12	180	EMK1HM330E80D00*
	47	FB0	0.12	540	EMK1HM470FB0D00*
	100	GB0	0.12	700	EMK1HM101GB0D00*
	220	WE0	0.12	900	EMK1HM221WE0D00*
	330	WG5	0.12	1180	EMK1HM331WG5D00*
63(1J)	10	D80	0.12	85	EMK1JM100D80D00*
	22	E80	0.12	150	EMK1JM220E80D00*
	33	FB0	0.12	375	EMK1JM330FB0D00*
	47	FB0	0.12	450	EMK1JM470FB0D00*
	100	GB0	0.12	575	EMK1JM101GB0D00*
	220	WE0	0.12	890	EMK1JM221WE0D00*
80(1B)	10	E80	0.12	140	EMK1BM100E80D00*
	22	FB0	0.12	375	EMK1BM220FB0D00*
	33	FB0	0.12	450	EMK1BM330FB0D00*
	47	GB0	0.12	575	EMK1BM470GB0D00*
	100	GD0	0.12	600	EMK1BM101GD0D00*
	150	WE0	0.12	800	EMK1BM151WE0D00*
	220	WG5	0.12	960	EMK1BM221WG5D00*
100(1K)	4.7	D80	0.12	70	EMK1KM4R7D80D00*
	10	E80	0.12	135	EMK1KM100E80D00*
	22	FB0	0.12	345	EMK1KM220FB0D00*
	33	GB0	0.12	560	EMK1KM330GB0D00*
	47	GB0	0.12	575	EMK1KM470GB0D00*
	100	WE0	0.12	680	EMK1KM101WE0D00*

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■ STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size code	tanδ	Rated ripple current (mA _{rms} /105°C,100kHz)	Part Number
160(2C)	10	GB0	0.15	90	EMK2CM100GB0D00*
	15	GB0	0.15	136	EMK2CM150GB0D00*
	22	GE0	0.15	180	EMK2CM220GE0D00*
		WE0	0.15	200	EMK2CM220WE0D00*
	33	GH0	0.15	240	EMK2CM330GH0D00*
		WE0	0.15	310	EMK2CM330WE0D00*
	47	WG5	0.15	420	EMK2CM470WG5D00*
		LH0	0.15	520	EMK2CM470LH0D00*
	68	LN0	0.15	660	EMK2CM680LN0D00*
		MH0	0.15	660	EMK2CM680MH0D00*
100	LN0	0.15	780	EMK2CM101LN0D00*	
	MN0	0.15	780	EMK2CM101MN0D00*	
200(2D)	10	GB0	0.15	120	EMK2DM100GB0D00*
	15	GB0	0.15	164	EMK2DM150GB0D00*
	22	GE0	0.15	200	EMK2DM220GE0D00*
		WG5	0.15	236	EMK2DM220WG5D00*
	33	GH0	0.15	260	EMK2DM330GH0D00*
		WG5	0.15	300	EMK2DM330WG5D00*
	47	WM5	0.15	440	EMK2DM470WM5D00*
		LN0	0.15	556	EMK2DM470LN0D00*
68	LN0	0.15	680	EMK2DM680LN0D00*	
250(2E)	2.2	EB0	0.15	56	EMK2EM2R2EB0D00*
	3.3	EB0	0.15	68	EMK2EM3R3EB0D00*
	4.7	FB0	0.15	96	EMK2EM4R7FB0D00*
		GB0	0.15	104	EMK2EM4R7GB0D00*
	10	WE0	0.15	184	EMK2EM100WE0D00*
	22	LH0	0.15	364	EMK2EM220LH0D00*
	33	LN0	0.15	470	EMK2EM330LN0D00*
MH0		0.15	470	EMK2EM330MH0D00*	
47	MN0	0.15	580	EMK2EM470MN0D00*	
400(2G)	1	E80	0.20	28	EMK2GM010E80D00*
	1.5	EB0	0.20	36	EMK2GM1R5EB0D00*
		EB0	0.20	44	EMK2GM2R2EB0D00*
	2.2	FB0	0.20	52	EMK2GM2R2FB0D00*
		FB0	0.20	64	EMK2GM3R3FB0D00*
	3.3	GB0	0.20	72	EMK2GM3R3GB0D00*
		FE0	0.20	72	EMK2GM3R9FE0D00*
	3.9	GB0	0.20	76	EMK2GM3R9GB0D00*
		FB0	0.20	78	EMK2GM4R7FB0D00*
	4.7	FD0	0.20	80	EMK2GM4R7FD0D00*
		GB0	0.20	84	EMK2GM4R7GB0D00*
	5.6	FD0	0.20	96	EMK2GM5R6FD0D00*
	6.8	FE0	0.20	108	EMK2GM6R8FE0D00*
	8.2	FG0	0.20	130	EMK2GM8R2FG0D00*
	10	GH0	0.20	156	EMK2GM100GH0D00*
		LH0	0.20	176	EMK2GM100LH0D00*
	15	WG5	0.20	184	EMK2GM150WG5D00*
LH0		0.20	210	EMK2GM150LH0D00*	
22	LN0	0.20	260	EMK2GM220LN0D00*	
	MN0	0.20	280	EMK2GM330MN0D00*	
450(2W)	2.2	GB0	0.20	50	EMK2WM2R2GB0D00*
	3.3	WE0	0.20	80	EMK2WM3R3WE0D00*
	4.7	WE0	0.20	96	EMK2WM4R7WE0D00*
	10	LH0	0.20	170	EMK2WM100LH0D00*
	15	LN0	0.20	200	EMK2WM150LN0D00*
	22	LN0	0.20	240	EMK2WM220LN0D00*

Note: "*" may be "R" or "T".
 "R": Capacitors with red marking
 "T": Capacitors with PET sleeve

Surface Mount Type