

MK series

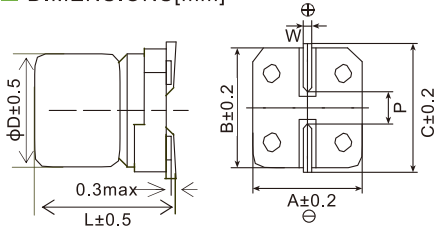
- Endurance: +105°C 2,000 ~ 3,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

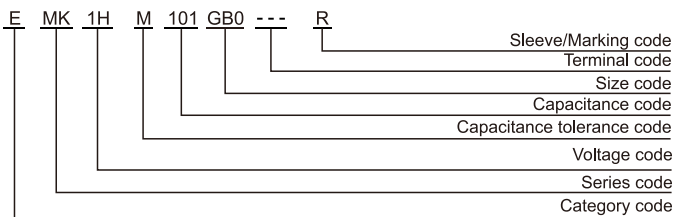
Items	Characteristics											
Category Temperature Range	-40~+105°C(6.3~450 V _{dc})											
Rated Voltage Range	6.3~450 V _{dc}											
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)											
Leakage Current	6.3~100 V _{dc}						160~450 V _{dc}					
	I≤0.01CV or 3μA, whichever is greater. (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	-	0.20
EB0~MN0 0.40 0.30 0.26 0.16 0.14 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

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

Surface Mount Type

MK series
STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size code	tanδ	Rated ripple current (mA _{rms} /105°C, 100kHz)
6.3(0J)	100	D80	0.30	105
	220	E80	0.30	160
	330	FB0	0.40	340
	1000	GB0	0.40	860
10(1A)	33	D80	0.24	105
	100	E80	0.24	175
	220	E80	0.24	180
	330	FB0	0.30	340
	470	FB0	0.30	360
16(1C)	820	GB0	0.30	860
	47	D80	0.20	105
	100	E80	0.20	175
	150	E80	0.20	190
	220	FB0	0.26	500
25(1E)	330	FB0	0.26	545
	470	GB0	0.26	800
	33	D80	0.16	105
	47	E80	0.16	180
	100	E80	0.16	205
35(1V)	220	FB0	0.16	550
	330	GB0	0.16	780
	470	GD0	0.16	875
	10	D80	0.14	105
	22	D80	0.14	110
50(1H)	47	E80	0.14	210
	100	FB0	0.14	575
	220	GB0	0.14	835
	330	GD0	0.14	900
	10	D80	0.12	90
63(1J)	22	E80	0.12	175
	33	E80	0.12	180
	47	FB0	0.12	540
	100	GB0	0.12	700
	220	WE0	0.12	900
80(1B)	330	WG5	0.12	1180
	10	D80	0.12	85
	22	E80	0.12	150
	33	FB0	0.12	375
	47	FB0	0.12	450
100(1K)	100	GB0	0.12	575
	220	WE0	0.12	890
	10	E80	0.12	140
	22	FB0	0.12	375
	33	FB0	0.12	450
160(2C)	47	GB0	0.12	575
	100	GD0	0.12	600
	150	WE0	0.12	800
	220	WG5	0.12	960
	4.7	D80	0.12	70
200(2D)	10	E80	0.12	135
	22	FB0	0.12	345
	33	GB0	0.12	560
	47	GB0	0.12	575
250(2E)	100	WE0	0.12	680
	1	E80	0.20	28
	1.5	EB0	0.20	36
	2.2	EB0	0.20	44
	2.2	FB0	0.20	52
400(2G)	3.3	FB0	0.20	64
	3.3	GB0	0.20	72
	3.9	FE0	0.20	72
	3.9	GB0	0.20	76
	4.7	FB0	0.20	78
	4.7	FD0	0.20	80
	4.7	GB0	0.20	84
	5.6	FD0	0.20	96
	6.8	FE0	0.20	108
	8.2	FG0	0.20	130
	10	GH0	0.20	156
	10	LH0	0.20	176
	15	WG5	0.20	184
	15	LH0	0.20	210
	22	LN0	0.20	260
33	MN0	0.20	280	
450(2W)	2.2	GB0	0.20	50
	3.3	WE0	0.20	80
	4.7	WE0	0.20	96
	10	LH0	0.20	170
	15	LN0	0.20	200
22	LN0	0.20	240	

WV (V _{dc})	Cap (μF)	Size code	tanδ	Rated ripple current (mA _{rms} /105°C, 100kHz)
160(2C)	10	GB0	0.15	90
	15	GB0	0.15	136
	22	GE0	0.15	180
	22	WE0	0.15	200
	33	GH0	0.15	240
	33	WE0	0.15	310
	47	WG5	0.15	420
	47	LH0	0.15	520
	68	LN0	0.15	660
	68	MH0	0.15	660
200(2D)	100	LN0	0.15	780
	100	MN0	0.15	780
	10	GB0	0.15	120
	15	GB0	0.15	164
	22	GE0	0.15	200
	22	WG5	0.15	236
	33	GH0	0.15	260
	33	WG5	0.15	300
	47	WM5	0.15	440
	47	LN0	0.15	556
250(2E)	68	LN0	0.15	680
	2.2	EB0	0.15	56
	3.3	EB0	0.15	68
	4.7	FB0	0.15	96
	4.7	GB0	0.15	104
	10	WE0	0.15	184
	22	LH0	0.15	364
400(2G)	33	LN0	0.15	470
	33	MH0	0.15	470
	47	MN0	0.15	580
	1	E80	0.20	28
	1.5	EB0	0.20	36
	2.2	EB0	0.20	44
	2.2	FB0	0.20	52
	3.3	FB0	0.20	64
	3.3	GB0	0.20	72
	3.9	FE0	0.20	72
	3.9	GB0	0.20	76
	4.7	FB0	0.20	78
	4.7	FD0	0.20	80
	4.7	GB0	0.20	84
	5.6	FD0	0.20	96
6.8	FE0	0.20	108	
8.2	FG0	0.20	130	
10	GH0	0.20	156	
10	LH0	0.20	176	
15	WG5	0.20	184	
15	LH0	0.20	210	
22	LN0	0.20	260	
33	MN0	0.20	280	
450(2W)	2.2	GB0	0.20	50
	3.3	WE0	0.20	80
	4.7	WE0	0.20	96
	10	LH0	0.20	170
	15	LN0	0.20	200
22	LN0	0.20	240	