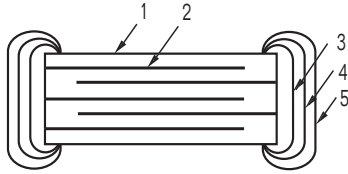


CONSTRUCTION



1. Ceramic Dielectric
2. Inner Electrode (Palladium/Silver)
3. Inner Termination (Palladium/Silver)
4. Nickel Barrier Layer
5. Solder Plating (Sn-100% Matte Tin)

DIMENSIONS

(Unit: mm)

EIA (Size Code) Dimension	8 (0201)	0 (0402)	1 (0603)	2 (0805)	3 (1206)	4 (1210)	5 (1812)	6 (2220)	7* (1808)
	L	0.6±0.03	1.0 ± 0.05	1.6 ± 0.2	2.0 ^{+0.3} _{-0.1}	3.2 ± 0.15	3.2 ± 0.4	4.5 ± 0.4	5.7 ± 0.4
W	0.3 ± 0.03	0.5 ± 0.05	0.8 ± 0.2	1.25 ^{+0.25} _{-0.15}	1.6 ± 0.15	2.5 ± 0.3	3.2 ± 0.3	5.0 ± 0.4	2.0 ± 0.2
H	0.3 ± 0.03	0.5 ± 0.05	0.6 ± 0.1 1.25 ≥ 1uF Max	0.6 ± 0.1 1.25 ≥ 1uF Max	1.80 Max	2.5 Max	2.2 Max	2.75 Max	2.2 Max

*High capacitance values only.

ORDERING INFORMATION

MCC E 101 J 3 N 0 T F ——— LEAD FREE / ROHS

PACKAGING: T = Tape & Reel
 TEMPERATURE CHARACTERISTIC: O = NPO, R = X7R, S = X5R, T = X6S, W = X7S, U = Z5U, V = Y5V
 END TERMINATION: N = Pd, Ag, Ni, SOL
 SIZE: 8=0201, 0 = 0402, 1 = 0603, 2 = 0805, 3 = 1206, 4 = 1210, 5 = 1812, 6 = 2220, 7 = 1808
 TOLERANCE: B = ± 0.1pF, C = ± 0.25pF, D = ± 0.5pF, F = ± 1%, G = ± 2%, J = + 5%,
 K = ± 10%, M = ± 20%, Z = + 80 - 20%, (B, C, D, F ≤ 1000pF)
 CAPACITANCE: 3 digit code in pF
 VOLTAGE: G=4V, J=6.3V, B=10V, A=16V, C=25V, D=35V, E=50V, K=63V, H=100V, N= 200V, I=250V
 L=500V, P=630V, Q=1KV, V=2KV, Y=3KV, U=4KV, W=5KV
 TYPE: MCC = MULTILAYER CHIP CAPACITORS

TAPING PACKAGE/REEL DIMENSION

Figure B Paper: 1.1 Max

Figure C Plastic: 0.3 Max, 2.0 Max

Window dimensions (Unit: mm)

Size Code	A	B
8	0.37 ± 0.06	0.67 ± 0.06
0	0.65 ± 0.05	1.15 ± 0.05
1	1.0 ± 0.2	1.9 ± 0.2
2	1.65 ± 0.2	2.4 ± 0.2
3	2.0 ± 0.2	3.6 ± 0.2
4	2.9 ± 0.2	3.6 ± 0.2
5	3.6 ± 0.2	4.9 ± 0.2
6	5.5 ± 0.3	6.2 ± 0.3
7	2.3 ± 0.2	4.9 ± 0.2

Standard packing quantity

Material	Qty/Reel	Size Code	Thickness (H)
Paper Tape	10,000 pcs/reel	8, 0	0.5
Paper Tape	4,000 pcs/reel	1, 2, 3	0.6, 0.85
Plastic Tape	2,000 pcs/reel	4	1.25 Max.
Plastic Tape	1,000 pcs/reel	5, 7	3.5 Max.
Plastic Tape	500 pcs/reel	6	3.5 Max.

CHARACTERISTICS

Temperature Characteristic	NPO Dielectric	X7R/X5R Dielectric	Y5V Dielectric	Z5U Dielectric																					
Capacitance Range	.5 pF to .012 (@ 0.5 Vrms to 5 Vrms, 1 MHz ± 0.1 MHz for values ≤ 1,000 pF, and 1 Vrms ± 0.2 Vrms, 1 kHz for values > 1,000 pF)	100 pF to 100 uF (@ 1Vrms ± 0.2 Vrms, 1kHz ± 0.1 kHz)	1,000 pF to 100 uF (@ 1 Vrms, ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	1,000 pF to 1.5 uF (@ 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)																					
Capacitance Tolerance	<table border="0"> <tr> <td>Code</td> <td>Capacitance Tolerance</td> <td>Capacitance</td> </tr> <tr> <td>B</td> <td>± 0.1 pF</td> <td>≤ 10 pF</td> </tr> <tr> <td>C</td> <td>± .25 pF</td> <td>.5 pF to 5 pF</td> </tr> <tr> <td>D</td> <td>± .5 pF</td> <td>1 pF to 9 pF</td> </tr> <tr> <td>F</td> <td>± 1%</td> <td>≤ 0.033 uF</td> </tr> <tr> <td>G</td> <td>± 2%</td> <td>≤ 0.033 uF</td> </tr> <tr> <td>J,K,M</td> <td>± 5%, ± 10%, ± 20%</td> <td>≥ 10 pF</td> </tr> </table>	Code	Capacitance Tolerance	Capacitance	B	± 0.1 pF	≤ 10 pF	C	± .25 pF	.5 pF to 5 pF	D	± .5 pF	1 pF to 9 pF	F	± 1%	≤ 0.033 uF	G	± 2%	≤ 0.033 uF	J,K,M	± 5%, ± 10%, ± 20%	≥ 10 pF	Code M = ± 20% Code K = ± 10% Code J = ± 5%	Code Z = + 80 - 20% Code M = ± 20%	Code M = ± 20%
Code	Capacitance Tolerance	Capacitance																							
B	± 0.1 pF	≤ 10 pF																							
C	± .25 pF	.5 pF to 5 pF																							
D	± .5 pF	1 pF to 9 pF																							
F	± 1%	≤ 0.033 uF																							
G	± 2%	≤ 0.033 uF																							
J,K,M	± 5%, ± 10%, ± 20%	≥ 10 pF																							
Operating Temp. Range	-55° C to +125° C	-55° C to +125° C (X7R), -55° C to +85° C (X5R)	-30° C to +85° C	+10° C to +85° C																					
Temperature Characteristic	<table border="0"> <tr> <td>T.C. Symbol</td> <td>Temperature Coefficient (ppm/° C)</td> <td>Capacitance</td> </tr> <tr> <td>NPO</td> <td>± 30</td> <td>.5 pF to .033 uF</td> </tr> </table>	T.C. Symbol	Temperature Coefficient (ppm/° C)	Capacitance	NPO	± 30	.5 pF to .033 uF	± 15% within -55° C to +125° C (@ 0 VDC)	+22% to -82% max. within -30° C to +85° C (@ 0 VDC)	+22% to -56% max. within +10° to +85° C (@ 0 VDC)															
T.C. Symbol	Temperature Coefficient (ppm/° C)	Capacitance																							
NPO	± 30	.5 pF to .033 uF																							
Working Voltage (WVDC)	6.3, 10, 16, 25, 50, 100, 250, 500, 1K, 2K, 3K	6.3,10,16, 25, 35, 50,100,250,500,1K,3K, 5K	6.3, 10, 16, 25, 35, 50, 100	16, 25, 50, 100																					
Dissipation Factor (DF)	0.25% max. for values less than 30 pF, and 0.1% max. for 30 pF and above. (@ +25° C, 0.5 Vrms to 5 Vrms, 1 MHz ± 0.1 MHz)	2.5% max. (@ +25° C, 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	5% max. (@ +25° C, 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	5% max. (@ +25° C, 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)																					
Insulation Resistance (IR)	10,000 megohms min. or 500 megohm-microfarads min., whichever is less. (@ +25° C, WVDC for 1 minute ± 5 seconds)	10,000 megohms min. or 500 megohm-microfarads min., whichever is less. (@ +25° C, WVDC for 1 minute ± 5 seconds)	10,000 megohms min. or 500 megohm-microfarads min., whichever is less. (@ +25° C, WVDC for 1 minute ± 5 seconds)	10,000 megohms min. or 500 megohm-microfarads min., whichever is less. (@ +25° C, WVDC for 1 minute ± 5 seconds)																					
Dielectric Withstanding Voltage	3 x WVDC (@ 50 mA max. charging-discharging current between terminations for 1 to 5 seconds.)	2.5 x WVDC (@ 50 mA max. charging-discharging current between terminations for 1 to 5 seconds.)	2.5 x WVDC (@ 50 mA max. charging-discharging current between terminations for 1 to 5 seconds.)	2.5 x WVDC (@ 50 mA max. charging-discharging current between terminations for 1 to 5 seconds.)																					
Temperature vs. Capacitance and Dissipation Factor Typical Curve																									
DC Voltage vs. Capacitance Typical Curve																									

MULTILAYER CHIP CAPACITORS - TYPE MCC

CAPACITANCE VALUE

3-Digit Code	Capacitance Value	NPO/COG															
		0201		0402		0603		0805		1206		1210		1812		2220	
		25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	
0R5	0.50 pF																
1R0	1.0 pF																
1R2	1.2																
1R3	1.3																
1R5	1.5																
1R8	1.8																
020	2.0																
2R2	2.2																
2R7	2.7																
030	3.0																
3R3	3.3																
3R9	3.9																
040	4.0																
4R7	4.7																
050	5.0																
5R6	5.6																
060	6.0																
6R8	6.8																
070	7.0																
080	8.0																
8R2	8.2																
090	9.0																
100	10																
120	12																
150	15																
180	18																
200	20																
220	22																
240	24																
270	27																
330	33																
390	39																
470	47																
560	56																
680	68																
820	82																
101	100																
121	120																
151	150																
181	180																
221	220																
271	270																
331	330																
391	390																
471	470																
561	560																
681	680																
821	820																
102	1000																
122	1200																
152	1500																
182	1800																
222	2200																
272	2700																
332	3300																
392	3900																
472	4700																
562	5600																
682	6800																
822	8200																
103	.01 µF																
123	.012																
153	.015																
183	.018																
223	.022																
273	.027																
333	.033																
393	.039																
473	.047																
563	.056																
683	.068																
823	.082																
104	.1																
124	.12																
154	.15																
184	.18																
224	.22																
274	.27																
334	.33																
394	.39																
474	.47																
564	.56																
684	.68																
824	.82																
105	1																
125	1.2																
155	1.5																
185	1.8																
225	2.2																
335	3.3																
475	4.7																
685	6.8																
106	10																
226	22																
336	33																
476	47																
686	68																
107	100																

CAPACITANCE VALUE

3-Digit Code	Capacitance Value	X7R/X5R															
		0201		0402		0603		0805		1206		1210		1812		2220	
		25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	
101	100 pF																
121	120																
151	150																
181	180																
221	220																
271	270																
331	330																
391	390																
471	470																
561	560																
681	680																
821	820																
102	1000																
122	1200																
152	1500																
182	1800																
222	2200																
272	2700																
332	3300																
392	3900																
472	4700																
562	5600																
682	6800																
822	8200																
103	.01 µF																
123	.012																
153	.015																
183	.018																
223	.022																
273	.027																
333	.033																
393	.039																
473	.047																
563	.056																
683	.068																
823	.082																
104	.1																
124	.12																
154	.15																
184	.18																
224	.22																
274	.27																
334	.33																
394	.39																
474	.47																

MULTILAYER CHIP CAPACITORS - TYPE MCC

CAPACITANCE VALUE

3-Digit Code	Capacitance Value	Z5U									
		0603			0805			1206		1210	
		50V	50V	100V	50V	100V	50V	100V	50V	100V	
102	1000 pF										
152	1500										
182	1800										
222	2200										
272	2700										
332	3300										
472	4700										
562	5600										
682	6800										
822	8200										
103	.01 μ F										
153	.015										
223	.022										
273	.027										
333	.033										
473	.047										
683	.068										
104	.1										
154	.15										
224	.22										
334	.33										
474	.47	25V									
684	.68	16V									
105	1.0										
155	1.5									25V	

CAPACITANCE VALUE

3-Digit Code	Capacitance Value	Y5V																	
		0201			0402			0603		0805		1206		1210		1812		2220	
		25V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	25V	50V	50V	50V	50V	50V	
102	1000 pF																		
152	1500																		
182	1800																		
222	2200																		
272	2700																		
332	3300																		
472	4700																		
562	5600																		
682	6800																		
822	8200																		
103	.01 μ F	16V																	
153	.015																		
223	.022	10V																	
273	.027																		
333	.033																		
473	.047	6.3V																	
683	.068																		
104	.1	10V																	
154	.15		16V																
224	.22																		
274	.27		10V																
334	.33																		
474	.47																		
564	.56								25V										
684	.68																		
105	1.0																		
155	1.5																		
225	2.2																		
335	3.3																		
395	3.9																		
475	4.7																		
106	10																		
226	22																		
476	47																		
107	100																		

MULTILAYER CHIP CAPACITORS - TYPE MCC

CAPACITANCE VALUE (HIGH VOLTAGE)

3-Digit Code	Capacitance Value	NPO / COG																							
		0402			0603		0805		1206		1210			1808				1812				2220			
		250V	250V	500V	500V	1KV	2KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV			
0R5	0.50 pF																								
1R0	1.0 pF																								
1R2	1.2																								
1R5	1.5																								
1R8	1.8																								
020	2.0																								
2R2	2.2																								
2R7	2.7																								
030	3.0																								
3R3	3.3																								
3R9	3.9																								
040	4.0																								
4R7	4.7																								
050	5.0																								
5R6	5.6																								
060	6.0																								
6R8	6.8																								
070	7.0																								
080	8.0																								
8R2	8.2																								
090	9.0																								
100	10																								
120	12																								
150	15																								
180	18																								
220	22																								
270	27																								
330	33																								
390	39																								
470	47	200V																							
560	56																								
680	68																								
820	82																								
101	100																								
121	120																								
151	150																								
181	180																								
201	200																								
221	220																								
271	270																								
331	330	200V																							
391	390																								
471	470																								
561	560																								
621	620																								
681	680																								
821	820																								
102	1000																								
122	1200																								
152	1500																								
182	1800																								
222	2200			200V																					
272	2700																								
332	3300																								
392	3900																								
472	4700									250V															
562	5600																								
682	6800																								
822	8200									250V															
103	.01µF																								
123	.012																								
153	.015																								
183	.018																								
223	.022																								
273	.027																								
333	.033																								
473	.047																								

MULTILAYER CHIP CAPACITORS - TYPE MCC

CAPACITANCE VALUE (HIGH VOLTAGE)

3-Digit Code	Capacitance Value	X7R / X5R																			
		0603		0805		1206		1210			1808			1812				2220			
		250V	500V	500V	1KV	2KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV
101	100 pF																				
121	120																				
151	150																				
181	180																				
221	220																				
271	270																				
331	330																				
391	390																				
471	470																				
561	560																				
621	620																				
681	680																				
821	820																				
102	1000																				
122	1200																				
152	1500																				
182	1800																				
222	2200																				
272	2700																				
332	3300																				
392	3900																				
472	4700																				
562	5600																				
682	6800	200V																			
822	8200																				
103	.01µF																				
123	.012																				
153	.015																				
183	.018		250V																		
223	.022							630V													
273	.027																				
333	.033	200V						630V													
393	.039																				
473	.047																				
563	.056		200V	250V																	
683	.068								250V												
823	.082								200V												
104	.1	200V																			
124	.12																				
154	.15			250V			250V														
184	.18																				
224	.22			200V			250V						250V								
274	.27																				
334	.33			200V			250V						250V								
394	.39																				
474	.47			200V																	
564	.56												250V								
684	.68			200V																	
824	.82																				
105	1												250V								
155	1.5												200V								
225	2.2																	250V			
335	3.3																				
475	4.7																	200V			