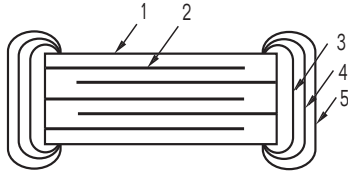


CONSTRUCTION



1. Ceramic Dielectric
2. Inner Electrode (Palladium/Silver)
3. Inner Termination (Palladium/Silver)
4. Nickel Barrier Layer
5. Solder Plating

DIMENSIONS

(Unit: mm)

Dimension	EIA (Size Code)									
	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	4.5 ± 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	1.9 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, H = 100V, I = 250V, L = 500V, Q = 1KV, V=2KV, Y = 3KV, W = 5KV
									TYPE: MCC = MULTILAYER CHIP CAPACITORS

TAPING PACKAGE/REEL DIMENSION

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 22 μF (@ 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	1,000 pF to 100 μF (@ 1 Vrms, ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	1,000 pF to 1.5 μF (@ 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)																					
Capacitance Tolerance	<table border="1"> <thead> <tr> <th>Code</th> <th>Capacitance Tolerance</th> <th>Capacitance</th> </tr> </thead> <tbody> <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>≤ 1000 pF</td> </tr> <tr> <td>G</td> <td>± 2%</td> <td>≤ 1000 pF</td> </tr> <tr> <td>J</td> <td>± 5%</td> <td>≥ 10 pF</td> </tr> </tbody> </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%	≤ 1000 pF	G	± 2%	≤ 1000 pF	J	± 5%	≥ 10 pF	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%	≤ 1000 pF																							
G	± 2%	≤ 1000 pF																							
J	± 5%	≥ 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="1"> <thead> <tr> <th>T.C. Symbol</th> <th>Temperature Coefficient (ppm/° C)</th> <th>Capacitance</th> </tr> </thead> <tbody> <tr> <td>NPO</td> <td>± 30</td> <td>.5 pF to .012 μF</td> </tr> </tbody> </table>	T.C. Symbol	Temperature Coefficient (ppm/° C)	Capacitance	NPO	± 30	.5 pF to .012 μF	± 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 .012 μF																							
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													
		0201		0402		0603		0805		1206		1210			
		25V	50V	50V	100V	50V	100V	50V	100V	50V	100V				
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														
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														

CAPACITANCE VALUE

3-Digit Code	Capacitance Value	X7R/X5R														
		0201		0402		0603		0805		1206		1210		1812		2220
		25V	50V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V	25V
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															
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															
106	10															
226	22															
476	47															
686	68															
107	100															



MULTILAYER CHIP CAPACITORS — TYPE MCC

CAPACITANCE VALUE

3-Digit Code pF	Capacitance Value	Z5U							
		0603		0805		1206		1210	
		50V	25V	50V	25V	50V	25V	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								
153	.015								
223	.022								
273	.027	25V							
333	.033								
473	.047								
683	.068								
104	.1								
154	.15								
224	.22								
334	.33		16V						
474	.47								
684	.68								
105	1.0				16V				
155	1.5						16V		

CAPACITANCE VALUE

3-Digit Code pF	Capacitance Value	Y5V													
		0201		0402		0603		0805		1206		1210		1812	2220
		25V	25V	50V	25V	50V	25V	50V	25V	50V	25V	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	6.3V	16V												
154	.15														
224	.22														
274	.27		10V												
334	.33														
474	.47														
564	.56					10V									
684	.68														
105	1.0														
155	1.5														
225	2.2									35V					
335	3.3					6.3V									
395	3.9														
475	4.7														
106	10									16V					
226	22									10V					
476	47														
107	100												16V	25V	
													10V	16V	

MULTILAYER CHIP CAPACITORS — TYPE MCC

CAPACITANCE VALUE (HIGH VOLTAGE) CAPACITANCE VALUE (HIGH VOLTAGE)

Capacitance Value	NPO														
	0603			0805			1206			1808			1812		
	250V	500V	1KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV	
0.50 pF															
1.0 pF		250V		250V											
1.2															
1.5															
1.8															
2.0															
2.2															
2.7															
3.0															
3.3															
3.9															
4.0															
4.7															
5.0															
5.6															
6.0															
6.8															
7.0															
8.0															
8.2															
9.0															
10															
12															
15															
18															
22															
27															
33															
39															
47															
56															
68															
82															
100															
120															
150															
180															
220															
270															
330		250V													
390															
470															
560															
620				250V											
680															
820															
1000															
1200															
1500															
1800				250V											
2200															
2700															
3300							250V								
3900															
4700															
5600															
6800															
8200															
.01µF															
.012															
.015															
.018															
.022															
.027															
.033															
.047															
.056															
.068															
.082															

3-Digit Code pF	Capacitance Value	X7R														
		0603			0805			1206			1808			1812		
		250V	500V	1KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV	
101	100															
121	120															
151	150		250V													
181	180															
221	220															
271	270															
331	330															
391	390															
471	470															
561	560															
621	620		250V		250V											
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		250V													
103	.01µF															
123	.012															
153	.015				250V											
183	.018															
223	.022															
273	.027															
333	.033															
393	.039															
473	.047															
563	.056															
683	.068															
823	.082															
104	.1															
124	.12								250V				250V			
154	.15															
184	.18															
224	.22															
274	.27															
334	.33															
394	.39															
474	.47															
564	.56															
684	.68															
824	.82															
105	1															