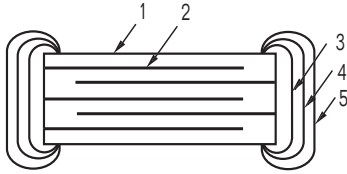


CONSTRUCTION



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

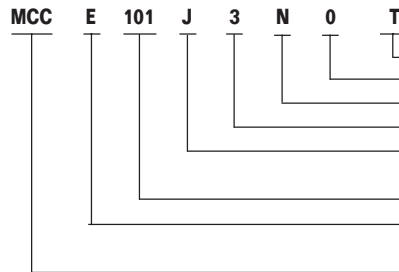
DIMENSIONS

(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	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	2.6 Max	2.2 Max	2.75 Max	2.2 Max

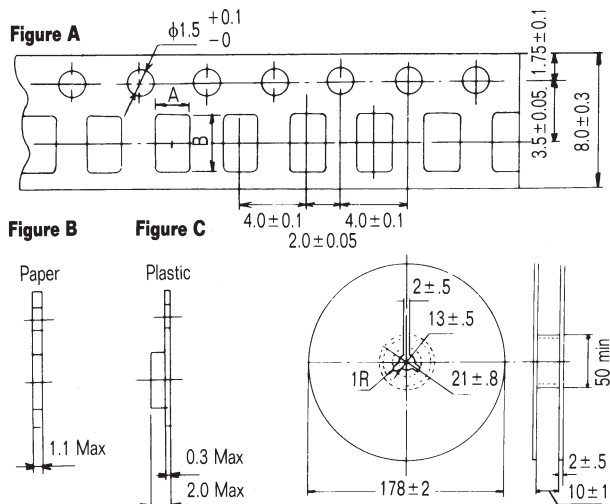
*High capacitance values only.

ORDERING INFORMATION



PACKAGING: T= Tape & Reel
 TEMPERATURE CHARACTERISTIC: O = NPO, R = X7R, 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: 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.

MULTILAYER CHIP CAPACITORS — TYPE MCC

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 μ F (@ 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	1,000 pF to 100 μ F (@ 1 Vrms, ± 0.2 Vrms, 1 kHz ± 0.1 kHz)	1,000 pF to 1.5 μ F (@ 1 Vrms ± 0.2 Vrms, 1 kHz ± 0.1 kHz)
Capacitance Tolerance	Code B ± 0.1 pF C ± .25 pF D ± .5 pF F ± 1% G ± 2% J ± 5% Capacitance Tolerance ≤ 10 pF .5 pF to 5 pF 1 pF to 9 pF ≤ 1000 pF ≤ 1000 pF ≥ 10 pF	Code K = ± 10% Code J = ± 5%	Code Z = + 80 – 20% Code M = ±20%	Code M = ± 20%
Operating Temp. Range	–55° C to +125° C (X7R), –55° C to +85° C (X5R)	–55° C to +125° C (X7R), –55° C to +85° C (X5R)	–30° C to +85° C	+10° C to +85° C
Temperature Characteristic	T.C. Coefficient (ppm/° C) NPO ± 30 Capacitance .5 pF to .012 μ F	± 15% within –55° C to +125° C (@ 0 VDC) ± 22% to –82% max. within –30° C to +85° 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)
Working Voltage (WVDC)	25, 50, 100, 250	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 pF	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										
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		25V								
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 μ F										
123	.012										

CAPACITANCE VALUE

3-Digit Code pF	Capacitance Value	X7R/X5R											
		0201	0402	0603	0805		1206		1210		1812	2220	
		25V	25V	50V	100V	50V	100V	50V	100V	50V	25V	25V	50V
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		16V										
392	3900		16V										
472	4700		16V										
562	5600												
682	6800		10V	16V									
822	8200		10V										
103	.01 μ F												
123	.012												
153	.015												
183	.018												
223	.022			25V									
273	.027												
333	.033		10V										
393	.039												
473	.047		16V										
563	.056												
683	.068												
823	.082												
104	.1												
124	.12												
154	.15												
184	.18												
224	.22					25V							
274	.27												
334	.33			10V									
394	.39												
474	.47												
564	.56							25V					
684	.68								25V				
824	.82												
105	1.0												
125	1.2												
155	1.5												
185	1.8												
225	2.2			6.3V									
335	3.3				10V				16V				
475	4.7				6.3V				10V				
106	10.0								6.3V			25V	
226	22.0									6.3V		10V	25V
476	47.0										6.3V	10V	
107	100.0											6.3V	

MULTILAYER CHIP CAPACITORS — TYPE MCC

CAPACITANCE VALUE

3-Digit Code pF	Capaci- tance Value	Z5U							
		0603		0805		1206		1210	
		50V	25V	50V	25V	50V	25V	50V	25V
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	Capaci- tance Value	Y5V													
		0201		0402		0603		0805		1206		1210		1812	2220
		25V	25V	50V	25V	50V	25V	50V	25V	50V	25V	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	6.3V	16V												
154	.15														
224	.22														
274	.27		10V		16V										
334	.33														
474	.47														
564	.56				10V										
684	.68						25V								
105	1.0														
155	1.5														
225	2.2									35V					
335	3.3				6.3V							35V			
395	3.9							16V							
475	4.7														
106	10							10V							
226	22								16V						
476	47									10V			16V	25V	
107	100												10V	16V	

MULTILAYER CHIP CAPACITORS — TYPE MCC

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

Capacitance Value	NPO														3-Digit Code pF	Capacitance Value	X7R															
	0603		0805		1206			1808				1812					0603		0805		1206			1808				1812				
	250V	500V	1KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV			250V	500V	1KV	500V	1KV	2KV	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV		
0.50 pF															101	100																
1.0 pF		250V		250V											121	120																
1.2															151	150		250V														
1.5															181	180																
1.8															221	220																
2.0															271	270																
2.2															331	330																
2.7															391	390																
3.0															471	470																
3.3															561	560																
3.9															621	620		250V		250V												
4.0															681	680																
4.7															821	820																
5.0															102	1000																
5.6															122	1200																
6.0															152	1500																
6.8															182	1800																
7.0															222	2200																
8.0															272	2700																
8.2															332	3300																
9.0															392	3900																
10															472	4700																
12															562	5600																
15															682	6800																
18															822	8200																
22															103	.01µF																
27															123	.012																
33															153	.015																
39															183	.018																
47															223	.022																
56															273	.027																
68															333	.033																
82															393	.039																
100															473	.047																
120															563	.056																
150															683	.068																
180															823	.082																
220															104	.1																
270															124	.12																
330		250V													154	.15																
390															184	.18																
470															224	.22																
560															274	.27																
620				250V											334	.33																
680															394	.39																
820															474	.47																
1000															564	.56																
1200															684	.68																
1500															824	.82																
1800															105	1																
2200																																
2700																																
3300																																
3900																																
4700																																
5600																																
6800																																
8200																																
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.082																																