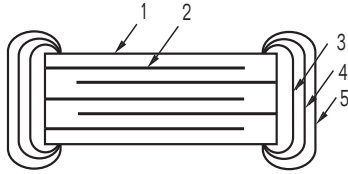


### CONSTRUCTION



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

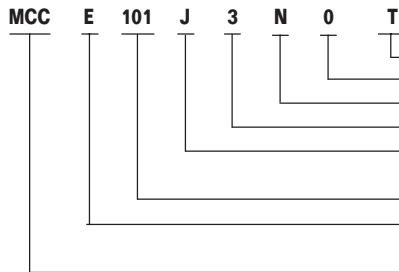
### DIMENSIONS

(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 <sup>+0.3</sup> <sub>-0.1</sub>	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 <sup>+0.25</sup> <sub>-0.15</sub>	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	

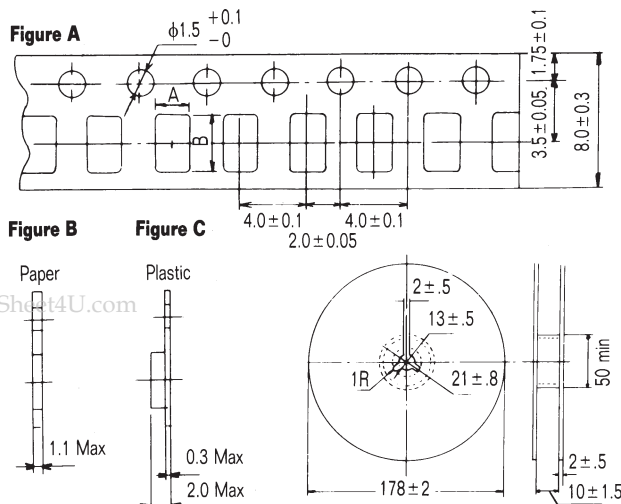
\*High capacitance values only.

### 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

	NPO Dielectric	X7R/X5R Dielectric	Y5V Dielectric	Z5U Dielectric														
<b>Temperature Characteristic</b>																		
<b>Capacitance Range</b>	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)														
<b>Capacitance Tolerance</b>	<table border="0"> <tr> <td><b>Code</b></td> <td><b>Capacitance Tolerance</b></td> </tr> <tr> <td>B</td> <td>± 0.1 pF</td> </tr> <tr> <td>C</td> <td>± .25 pF</td> </tr> <tr> <td>D</td> <td>± .5 pF</td> </tr> <tr> <td>F</td> <td>± 1%</td> </tr> <tr> <td>G</td> <td>± 2%</td> </tr> <tr> <td>J</td> <td>± 5%</td> </tr> </table>	<b>Code</b>	<b>Capacitance Tolerance</b>	B	± 0.1 pF	C	± .25 pF	D	± .5 pF	F	± 1%	G	± 2%	J	± 5%	Code K = ± 10% Code J = ± 5%	Code Z = + 80 - 20% Code M = ± 20%	Code M = ± 20%
<b>Code</b>	<b>Capacitance Tolerance</b>																	
B	± 0.1 pF																	
C	± .25 pF																	
D	± .5 pF																	
F	± 1%																	
G	± 2%																	
J	± 5%																	
<b>Operating Temp. Range</b>	-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														
<b>Temperature Characteristic</b>	<table border="0"> <tr> <td><b>T.C. Symbol</b></td> <td><b>Coefficient (ppm/° C)</b></td> <td><b>Capacitance</b></td> </tr> <tr> <td>NPO</td> <td>± 30</td> <td>.5 pF to .012 μF</td> </tr> </table>	<b>T.C. Symbol</b>	<b>Coefficient (ppm/° C)</b>	<b>Capacitance</b>	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)								
<b>T.C. Symbol</b>	<b>Coefficient (ppm/° C)</b>	<b>Capacitance</b>																
NPO	± 30	.5 pF to .012 μF																
<b>Working Voltage (WVDC)</b>	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														
<b>Dissipation Factor (DF)</b>	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)														
<b>Insulation Resistance (IR)</b>	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)														
<b>Dielectric Withstanding Voltage</b>	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.)														
<b>Temperature vs. Capacitance and Dissipation Factor</b>																		
<b>Typical Curve</b>																		
<b>DC Voltage vs. Capacitance</b>																		
<b>Typical Curve</b>																		

# 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 μF												
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	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																
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	1.0																
125	1.2																
155	1.5																
185	1.8																
225	2.2																
335	3.3																
475	4.7																
106	10.0																
226	22.0																
476	47.0																
107	100.0																

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# 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 $\mu$ 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 $\mu$ 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	

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# 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															

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