

# CC series

## General purpose capacitor series

### ◆ Features

- » A wide selection of sizes is available (0201 to 2225)
- » High capacitance in given case size
- » Capacitor with lead-free termination (pure Tin)
- » RoHS & HALOGEN compliant

### ◆ Applications

- » For general digital circuit
- » For power supply bypass capacitors
- » For consumer electronics
- » For telecommunication
- » DC to DC converter

### ◆ Part Number

CC	0402	N	100	J	500
Series	Size	Dielectric	Capacitance	Tolerance	Rated voltage
0201	Inch:	N: NPO (COG)	Two significant Digits followed by no. of zeros and P is in place of decimal point	B=±0.1pF C=±0.25pF D=±0.5pF	Two significant Digits followed by no. of zeros and V is in place of decimal point
0402				F=±1%	
0603	X: X7R		Eg.:	G=±2%	6V3 = 6.3 VDC
0805			0P47 = 0.47pF	J=±5%	100 = 10 VDC
1206	B: X5R		0P5 = 0.5pF	K=±10%	160 = 16 VDC
1210			1P0 = 1.0pF	M=±20%	250 = 25 VDC
1808	Y: Y5V		100 = 10x10 <sup>0</sup>	Z= -20/+80%	500 = 50 VDC
1812			= 10pF		
1825					
2220					

### ◆ General Electrical Data

Dielectric	NPO (COG)	X7R	Y5V	X5R
Size	0201, 0402, 0603, 0805, 1206, 1210, 1812, 1825, 2220, 2225	0201, 0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	0402, 0603, 0805, 1206, 1210, 1812	0201, 0402, 0603
Rate Voltage (WVDC)	10, 16V, 25V, 50V			
Capacitance range*	0.1pF to 150nF	100pF to 820nF	10nF to 1.0μF	100pF to 820nF
Capacitance tolerance	Cap≤5pF: B (±0.1pF), C (±0.25pF) 5pF<Cap<10pF: C (±0.25pF), D (±0.5pF) Cap≥10pF: F (±1%), G (±2%), J (±5%), K (±10%)	J (±5%) K (±10%) M (±20%)	M (±20%), Z (-20/+80%)	J (±5%) K (±10%) M (±20%)
Tan δ*	Cap<30pF: Q≥400+20C Cap≥30pF: Q≥1000	Note 1		
Insulation resistance at U <sub>R</sub>	≥10GΩ	≥10GΩ or R x C≥100Ω x F whichever is less		
Operating temperature	-55°C ~ 125°C		-25°C ~ 85°C	-55°C ~ 85°C
Temperature coefficient	±30ppm	±15%	+30/-80%	±15%
Termination	Cu (or Ag)/Ni/Sn (lead-free termination)			

\*Measured at the condition of 30~70% related humidity.

NPO (COG) : Apply 1.0±0.2Vrms, 1.0MHz±10% for Cap≤1000PF and 1.0±0.2Vrms, 1.0KHz±10% for Cap > 1000PF, 25°C at ambient temperature.

X7R: Apply 1.0±0.2Vrms, 1.0KHz±10%, at 25°C ambient temperature.

Y5V: Apply 1.0±0.2Vrms, 1.0KHz±10%, at 20°C ambient temperature.

**Note 1:**  
**X7R/X5R**

Rated Vol.	D.F.	Exception of D.F.			
≥50V	≤2.5%	≤3%	0603≥0.047μF; 0805≥0.18μF; 1206≥0.47μF		
25V	≤3.5%	≤5%	0805≥1μF; 1210≥10μF		
		≤7%	0603≥0.33μF		
16V	≤3.5%	≤5%	0402≥0.033μF; 0603≥0.15μF; 0805≥0.68μF; 1206≥2.2μF		
		≤10%	1210≥22μF; 0603≥0.68μF		
10V	≤5.0%	≤10%	0603≥1μF; 0805≥2.2μF		

**Y5V**

Rated Vol.	D.F.	Exception of D.F.			
≥50V	≤5.0%	7.0%	0603≥0.1μF; 0805≥0.47μF		
25V	≤5.0%	≤7%	0402≥0.047μF; 0603≥0.1μF; 0805≥0.33μF; 1206≥1μF		
		≤9%	0402≥0.068μF; 0603≥0.47μF		
16V(C<1.0μF)	≤7.0%	≤9%	0402≥0.068μF; 0603≥0.68μF		
16V(C≥1.0μF)	≤9.0%	≤12.5%	0805≥4.7μF; 1206≥10μF; 1210≥22μF; 1812≥47μF		
10V	≤12.5%	---	---		

**◆ Capacitance Range**

Dielectric	NPO (COG)																														
	0201			0402				0603				0805				1206				1210				1812			1825	2220	2225		
	Size	10	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	50	50	50
Rated Voltage	10	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	50	50	50	
0.1pF(0P1)																															
0.2pF(0P2)																															
0.3pF(0P3)																															
0.4pF(0P4)																															
0.5pF(0P5)																															
1.0pF(1P0)																															
1.2pF(1P2)																															
1.5pF(1P5)																															
1.8pF(1P8)																															
2.2pF(2P2)																															
2.7pF(2P7)																															
3.3pF(3P3)																															
3.9pF(3P9)																															
4.7pF(4P7)																															
5.6pF(5P6)																															
6.8pF(6P8)																															
8.2pF(8P2)																															
10pF(100)																															
12pF(120)																															
15pF(150)																															
18pF(180)																															
22pF(220)																															
27pF(270)																															
33pF(330)																															
39pF(390)																															
47pF(470)																															
56pF(560)																															
68pF(680)																															
82pF(820)																															
100pF(101)																															
120pF(121)																															
150pF(151)																															
180pF(181)																															
220pF(221)																															
270pF(271)																															
330pF(331)																															
390pF(391)																															
470pF(471)																															
560pF(561)																															
680pF(681)																															
820pF(821)																															



5,600pF(562)	10	16	25	50	10	16	25	50	6.3	10	16	25
6,800pF(682)	10	16	25	50	10	16	25	50	6.3	10	16	25
8,200pF(822)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.010 $\mu$ F(103)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.012 $\mu$ F(123)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.015 $\mu$ F(153)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.018 $\mu$ F(183)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.022 $\mu$ F(223)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.027 $\mu$ F(273)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.033 $\mu$ F(333)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.039 $\mu$ F(393)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.047 $\mu$ F(473)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.056 $\mu$ F(563)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.068 $\mu$ F(683)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.082 $\mu$ F(823)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.10 $\mu$ F(104)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.12 $\mu$ F(124)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.15 $\mu$ F(154)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.18 $\mu$ F(184)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.22 $\mu$ F(224)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.27 $\mu$ F(274)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.33 $\mu$ F(334)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.39 $\mu$ F(394)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.47 $\mu$ F(474)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.56 $\mu$ F(564)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.68 $\mu$ F(684)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.82 $\mu$ F(824)	10	16	25	50	10	16	25	50	6.3	10	16	25

### Capacitance Range

	Dielectric	X5R											
	Size	0201				0402				0603			
	Rated Voltage	10	16	25	50	10	16	25	50	6.3	10	16	25
Capacitance	100pF(101)	10	16	25	50	10	16	25	50	6.3	10	16	25
	220pF(221)	10	16	25	50	10	16	25	50	6.3	10	16	25
	470pF(471)	10	16	25	50	10	16	25	50	6.3	10	16	25
	1,000pF(102)	10	16	25	50	10	16	25	50	6.3	10	16	25
	2,200pF (222)	10	16	25	50	10	16	25	50	6.3	10	16	25
	4,700pF (472)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.010 $\mu$ F (103)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.027 $\mu$ F(273)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.033 $\mu$ F(333)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.039 $\mu$ F(393)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.047 $\mu$ F(473)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.056 $\mu$ F(563)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.068 $\mu$ F(683)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.082 $\mu$ F(823)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.10 $\mu$ F(104)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.15 $\mu$ F(154)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.22 $\mu$ F(224)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.27 $\mu$ F(274)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.33 $\mu$ F(334)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.39 $\mu$ F(394)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.47 $\mu$ F(474)	10	16	25	50	10	16	25	50	6.3	10	16	25
	0.68 $\mu$ F(684)	10	16	25	50	10	16	25	50	6.3	10	16	25
0.82 $\mu$ F(824)	10	16	25	50	10	16	25	50	6.3	10	16	25	

### ◆ Capacitance Range

Dielectric	Y5V												
	0402				0603				0805				
	10	16	25	50	6.3	10	16	25	50	10	16	25	50
Rated Voltage													
Capacitance													
0.010μF(103)													
0.012μF(123)													
0.015μF(153)													
0.018μF(183)													
0.022μF(223)													
0.027μF(273)													
0.033μF(333)													
0.039μF(393)													
0.047μF(473)													
0.056μF(563)													
0.068μF(683)													
0.082μF(823)													
0.10μF(104)													
0.12μF(124)													
0.15μF(154)													
0.18μF(184)													
0.22μF(224)													
0.27μF(274)													
0.33μF(334)													
0.39μF(394)													
0.47μF(474)													
0.56μF(564)													
0.68μF(684)													
0.82μF(824)													

### ◆ Capacitance Range

Dielectric	Y5V											
	1206				1210				1812			
	10	16	25	50	10	16	25	50	10	16	25	50
Rated Voltage												
Capacitance												
0.010μF(103)												
0.015μF(153)												
0.022μF(223)												
0.033μF(333)												
0.047μF(473)												
0.068μF(683)												
0.10μF(104)												
0.15μF(154)												
0.22μF(224)												
0.33μF(334)												
0.47μF(474)												
0.68μF(684)												
1.0μF(105)												