

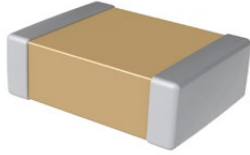
# Ceramic Capacitors

## Surface Mount

### Commercial Grade

COG Dielectric, 10 – 250 VDC

Capacitance Range: 0.50 pF to 0.47  $\mu$ F Temperature Range: -55°C to +125°C



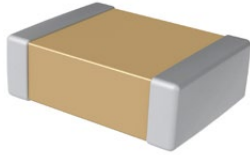
C	1206	C	104	J	3	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance <sup>2</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>3</sup>	Packaging/Grade (C-Spec)
	0201 0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	2 significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 99 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0201	10 pF – 100 pF	10 pF – 100 pF	10 pF – 100 pF				
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1808				330 pF – 4.7 nF	330 pF – 4.7 nF	330 pF – 2.7 nF	330 pF – 2.7 nF
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
1825				3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.012 $\mu$ F	3.9 nF – 0.012 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.22 $\mu$ F	
2225				4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.027 $\mu$ F	4.7 nF – 0.015 $\mu$ F	4.7 nF – 0.015 $\mu$ F

### Commercial Grade (cont)

#### X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 10 pF to 47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	C	106	M	4	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/ Grade (C-Spec)
	0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage								
	6.3	10	16	25	35	50	100	200	250
0402	10 pF – 0.1 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.047 $\mu$ F		10 pF – 0.022 $\mu$ F			
0603	10 pF – 2.2 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 1 $\mu$ F		10 pF – 0.15 $\mu$ F	10 pF – 0.047 $\mu$ F	10 pF – 0.01 $\mu$ F	
0805	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.22 $\mu$ F	10 pF – 0.056 $\mu$ F	180 pF – 0.022 $\mu$ F
1206	10 pF – 22 $\mu$ F	10 pF – 22 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.15 $\mu$ F	1 nF – 0.1 $\mu$ F
1210	10 pF – 47 $\mu$ F	10 pF – 47 $\mu$ F	10 pF – 22 $\mu$ F	10 pF – 22 $\mu$ F		10 pF – 10 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F
1808						330 pF – 0.18 $\mu$ F	330 pF – 0.056 $\mu$ F	330 pF – 0.018 $\mu$ F	
1812				470 pF – 10 $\mu$ F		470 pF – 4.7 $\mu$ F	470 pF – 2.2 $\mu$ F	470 pF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F
1825						3.9 nF – 2.2 $\mu$ F	3.9 nF – 1 $\mu$ F	3.9 nF – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
2220				6.8 nF – 22 $\mu$ F		6.8 nF – 15 $\mu$ F	6.8 nF – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F
2225						4.7 nF – 2.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	0.1 $\mu$ F – 1.2 $\mu$ F

#### X5R Dielectric, 4 – 50 VDC

Capacitance Range: 0.01  $\mu$ F to 100  $\mu$ F • Temperature Range: -55°C to +85°C



C	1206	C	107	M	9	P	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec)
	0201 0402 0603 0805 1206 1210	C = Standard	Two significant digits + number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	7 = 4 9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50	P = X5R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	4	6.3	10	16	25	35	50
0201	0.01 $\mu$ F – 0.1 $\mu$ F	0.01 $\mu$ F – 0.1 $\mu$ F		0.01 $\mu$ F			
0402	0.01 $\mu$ F – 10 $\mu$ F	0.01 $\mu$ F – 10 $\mu$ F	0.01 $\mu$ F – 2.2 $\mu$ F	0.01 $\mu$ F – 1 $\mu$ F			
0603	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 4.7 $\mu$ F	0.1 $\mu$ F – 2.2 $\mu$ F	0.1 $\mu$ F – 1 $\mu$ F		
0805	0.47 $\mu$ F – 47 $\mu$ F	0.47 $\mu$ F – 47 $\mu$ F	0.47 $\mu$ F – 22 $\mu$ F	0.47 $\mu$ F – 10 $\mu$ F	0.47 $\mu$ F – 10 $\mu$ F		1 $\mu$ F
1206		0.27 $\mu$ F – 100 $\mu$ F	0.27 $\mu$ F – 47 $\mu$ F	0.27 $\mu$ F – 22 $\mu$ F	0.27 $\mu$ F – 10 $\mu$ F		4.7 $\mu$ F
1210		0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 22 $\mu$ F	0.39 $\mu$ F – 10 $\mu$ F	0.39 $\mu$ F – 10 $\mu$ F

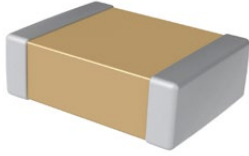
# Ceramic Capacitors

## Surface Mount

### Commercial Grade (cont.)

#### Z5U Dielectric, 50 & 100 VDC

Capacitance Range: 6,800 pF to 2.2 μF • Temperature Range: -10°C to +85°C



C	1825	C	225	M	5	U	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rate Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812 1825 2225	C Standard	2 significant digits + number of zeros	M = ±20% Z = +80%/-20	5 = 50 1 = 100	U = Z5U	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	50	100
0805	6.8 nF – 0.1 μF	6.8 nF – 0.01 μF
1206	0.01 μF – 0.22 μF	0.01 μF – 0.1 μF
1210	0.047 μF – 1 μF	0.047 μF – 0.15 μF
1812	0.082 μF – 1 μF	0.082 μF – 0.15 μF
1825	0.18 μF – 2.2 μF	0.18 μF – 0.39 μF
2225	0.33 μF – 2.2 μF	0.33 μF – 0.47 μF

#### Y5V Dielectric, 6.3 – 50 VDC

Capacitance Range: 0.022 μF to 22 μF Temperature Range: -30°C to +85°C



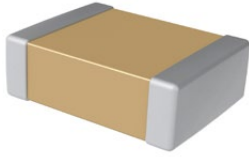
C	1210	C	226	Z	4	V	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard	2 significant digits + number of zeros	Z = +80%/-20% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50	V = Y5V	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	6.3	10	16	25	50
0402	0.022 μF – 2.2 μF	0.022 μF – 2.2 μF	0.022 μF – 0.1 μF		
0603	0.022 μF – 1 μF	0.022 μF – 1 μF	0.022 μF – 1 μF	0.022 μF – 1 μF	
0805	0.022 μF – 10 μF	0.022 μF – 10 μF	0.022 μF – 4.7 μF	0.022 μF – 1 μF	0.022 μF – 1 μF
1206	0.22 μF – 22 μF	0.22 μF – 22 μF	0.22 μF – 10 μF	0.22 μF – 10 μF	
1210	0.22 μF – 22 μF	0.22 μF – 22 μF	0.22 μF – 22 μF	0.22 μF – 22 μF	0.22 μF – 1 μF

### Commercial Grade (cont.)

#### Telecom “Tip and Ring” X7R Dielectric, 250 VDC

Capacitance Range: 180 pF to 1.2 μF • Temperature Range: -55°C to +125°C

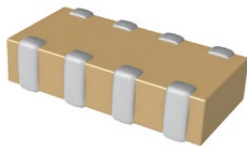


C	1825	C	105	K	A	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C Spec)
	0805 1206 1210 1812 1825 2220 2225	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage
	250
0805	180 pF – 0.022 μF
1206	1 nF – 0.1 μF
1210	2.2 nF – 0.22 μF
1812	6.8 nF – 0.47 μF
1825	0.022 μF – 1 μF
2220	0.082 μF – 1 μF
2225	0.1 μF – 1.2 μF

#### Capacitor Array, C0G Dielectric, 10 – 200 VDC

Capacitance Range: 10 pF to 2,200 pF Temperature Range: -55°C to +125°C



CA	06	4	X	104	K	4	G	A	C	TU
Ceramic Array	Case Size (L" x W") <sup>1</sup>	Number of Capacitors	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	05 = 0508 06 = 0612	2 = 2 4 = 4	X = Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	G = C0G	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum Pb content)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0508	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF
0612	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 180 pF