

MULTILAYER CERAMIC CHIP CAPACITORS



CGJ Series High Reliability Grade General (Up to 50V)

Type:

**CGJ2 [EIA CC0402]
CGJ3 [EIA CC0603]
CGJ4 [EIA CC0805]
CGJ5 [EIA CC1206]
CGJ6 [EIA CC1210]**



REMINDERS

Please read before using this product

SAFETY REMINDERS



REMINDERS

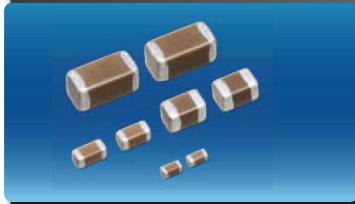
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Notice: Effective January 2013, TDK will use a new catalog number which adds product thickness and packaging specification detail. This new catalog number should be referenced on all catalog orders going forward, and is not applicable for OEM part number orders. Please be aware the last five digits of the catalog number will differ from the item description (internal control number) on the product label. Contact your local TDK Sales representative for more information.

(Example)

Catalog Issued date	Catalog Number	Item Description (On Delivery Label)
Prior to January 2013	C1608C0G1E103J(080AA)	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N

MULTILAYER CERAMIC CHIP CAPACITORS



CGJ Series General (Up to 50V)

Type: CGJ2 [EIA CC0402], CGJ3 [EIA CC0603], CGJ4 [EIA CC0805],
CGJ5 [EIA CC1206], CGJ6 [EIA CC1210]

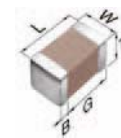
Features

- Highly reliable products with long lifespans.
- Reliability tests based on AEC-Q200 requirements.
- Guaranteed TC Bias.
- UHF (Ultra High Frequency) RFID tag to allow integration with customer RFID programs such as inventory management is available by option.
- Tamper proof seal to assist in the identification of authentic TDK CGJ products.
- CGJ customer priority backed by TDK factory support.

Applications

- Smart Meter, Smart Grid, LED Lighting
- Industrial Application, Telecom Base Station
- Solar Micro-inverters, Charging station
- Military Communication Equipment
- Class 1 & 2 Medical Equipment
- Applications that require extended life performance

Shape & Dimensions



L	Body Length
W	Body Width
T	Body Height
B	Terminal Width
G	Terminal Spacing

Catalog Number Construction

CGJ • 5 • L • 2 • X7R • 1A • 106 • K • 160 • A • A

Series Name

Dimensions L x W (mm)

Code	Length	Width	Terminal
2	1.00 ± 0.05	0.50 ± 0.05	0.10 min.
3	1.60 ± 0.10	0.80 ± 0.10	0.20 min.
4	2.00 ± 0.20	1.25 ± 0.20	0.20 min.
5	3.20 ± 0.20	1.60 ± 0.20	0.20 min.
6	3.20 ± 0.40	2.50 ± 0.30	0.20 min.

* Standard dimensions

Thickness T Code (mm)

Code	Thickness
B	0.50 mm
C	0.60 mm
E	0.80 mm
F	0.85 mm
H	1.15 mm
J	1.25 mm
L	1.60 mm
M	2.00 mm
N	2.30 mm
P	2.50 mm

Voltage Condition for Life Test

Symbol	Condition
1	1 × R.V.
2	2 × R.V.
3	1.5 × R.V.
4	1.2 × R.V.

Temperature Characteristics

Temperature Characteristics	Temperature Coefficient or Capacitance Change	Temperature Range
C0G	0±30 ppm/°C	-55 to +125°C
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C

Rated Voltage (DC)

Code	Voltage (DC)
0J	6.3V
1A	10V
1C	16V
1E	25V
1H	50V

Nominal Capacitance (pF)

The capacitance is expressed in three digit codes and in units of pico Farads (pF). The first and second digits identify the first and second significant figures of the capacitance. The third digit identifies the multiplier. R designates a decimal point.

Ex. 0R2 = 0.2pF; 103 = 10,000pF; 105 = 1,000,000pF = 1,000nF = 1μF

Capacitance Tolerance

Code	Tolerance
C	± 0.25 pF
D	± 0.5 pF
J	± 5%
K	± 10%

Nominal Thickness

Code	Thickness
050	0.50 mm
060	0.60 mm
080	0.80 mm
085	0.85 mm
115	1.15 mm
125	1.25 mm
160	1.60 mm
200	2.00 mm
230	2.30 mm
250	2.50 mm

Packaging Style

Code	Style
A	178 mm Reel, 4 mm Pitch
B	178 mm Reel, 2 mm Pitch

Special Reserved Code

Code	Description
A to C	TDK Internal Code

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance Range Chart

CGJ2(1005) [EIA CC0402]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)

Rated Voltage: 50V (1H), 25V (1E), 16V (1C)

Capacitance		Tolerance	C0G	X7R		
(pF)	Code		1H (50V)	1H (50V)	1E (25V)	1C (16V)
1	010	C : $\pm 0.25\text{pF}$				
1.5	1R5					
2	020					
2.2	2R2					
3	030					
3.3	3R3					
4	040					
4.7	4R7					
5	050					
6	060	D : $\pm 0.5\text{pF}$				
6.8	6R8					
7	070					
8	080					
9	090					
10	100					
12	120	J : $\pm 5\%$				
15	150					
18	180					
22	220					
27	270					
33	330					
39	390					
47	470					
56	560					
68	680					
82	820					
100	101					
120	121					
150	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1,000	102	C0G; J : $\pm 5\%$ X7R; K : $\pm 10\%$				
1,500	152					
2,200	222					
3,300	332					
4,700	472					
6,800	682					
10,000	103					
15,000	153					
22,000	223					
33,000	333					
47,000	473					
68,000	683					
100,000	104					

Standard Thickness  0.50 mm

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance Range Chart

CGJ3(1608) [EIA CC0603]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)

Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance		Tolerance	C0G	X7R				
(pF)	Code		1H (50V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
1	010	C: $\pm 0.25\text{pF}$						
1.5	1R5							
2	020							
2.2	2R2							
3	030							
3.3	3R3							
4	040							
4.7	4R7							
5	050	D: $\pm 0.5\text{pF}$						
6	060							
6.8	6R8							
7	070							
8	080							
9	090							
10	100	J: $\pm 5\%$						
12	120							
15	150							
18	180							
22	220							
27	270							
33	330							
39	390							
47	470							
56	560							
68	680							
82	820							
100	101							
120	121							
150	151							
180	181							
220	221							
270	271							
330	331							
390	391							
470	471							
560	561							
680	681							
820	821							
1,000	102							
1,200	122							
1,500	152							
1,800	182							
2,200	222							
2,700	272							
3,300	332							
3,900	392							
4,700	472							
5,600	562							
6,800	682							
8,200	822							
10,000	103	C0G; J: $\pm 5\%$						
15,000	153							
22,000	223	X7R; K: $\pm 10\%$						
33,000	333							
47,000	473							
68,000	683							
100,000	104							
150,000	154							
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							

Standard Thickness
0.80 mm

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance Range Chart

CGJ4(2012) [EIA CC0805]

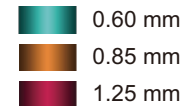
Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)

Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance		Tolerance	C0G	X7R				
(pF)	Code		1H (50V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
100	101	J : $\pm 5\%$						
120	121							
150	151							
180	181							
220	221							
270	271							
330	331							
390	391							
470	471							
560	561							
680	681							
820	821							
1,000	102							
1,200	122							
1,500	152							
1,800	182							
2,200	222							
2,700	272							
3,300	332							
3,900	392							
4,700	472							
5,600	562							
6,800	682							
8,200	822							
10,000	103							
15,000	153							
22,000	223							
33,000	333	C0G; J : $\pm 5\%$						
47,000	473							
68,000	683							
100,000	104							
150,000	154							
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							
3,300,000	335							
4,700,000	475							
6,800,000	685							
10,000,000	106							
		X7R; K : $\pm 10\%$						

Standard Thickness



MULTILAYER CERAMIC CHIP CAPACITORS



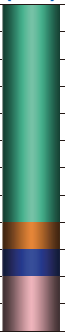
Capacitance Range Chart

CGJ5(3216) [EIA CC1206]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)

Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

Capacitance		Tolerance	C0G	X7R				
(pF)	Code		1H (50V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
3,900	392	J: $\pm 5\%$						
4,700	472							
5,600	562							
6,800	682							
8,200	822							
10,000	103							
15,000	153							
22,000	223							
33,000	333							
47,000	473							
68,000	683							
100,000	104							
470,000	474	K: $\pm 10\%$						
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							
3,300,000	335							
4,700,000	475							
6,800,000	685							
10,000,000	106							

Standard Thickness

	0.60 mm
	0.85 mm
	1.15 mm
	1.60 mm

Capacitance Range Chart

CGJ6(3225) [EIA CC1210]

Capacitance Range Chart

Temperature Characteristics: X7R ($\pm 15\%$), X7S ($\pm 22\%$)

Rated Voltage: 50V (1H), 25V (1E), 16V (1C)

Capacitance		Tolerance	X7R			X7S
(pF)	Code		1H (50V)	1E (25V)	1C (16V)	1H (50V)
1,000,000	105	K: $\pm 10\%$				
1,500,000	155					
4,700,000	475					
6,800,000	685					
10,000,000	106					

Standard Thickness

	1.60 mm
	2.00 mm
	2.30 mm
	2.50 mm

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X7R(-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V	Rated Voltage Edc: 10V
2.2 µF	2012	1.25 ± 0.20	± 10%		CGJ4J3X7R1E225K125AB	CGJ4J2X7R1C225K125AA	CGJ4J2X7R1A225K125AA
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L3X7R1H225K160AB	CGJ5L2X7R1E225K160AA	CGJ5L2X7R1C225K160AA	CGJ5L2X7R1A225K160AA
3.3 µF	2012	1.25 ± 0.20	± 10%		CGJ4J1X7R1E335K125AC	CGJ4J3X7R1C335K125AB	CGJ4J2X7R1A335K125AA
	3216	1.60 +0.30/-0.10	± 10%		CGJ5L3X7R1E335K160AB	CGJ5L2X7R1C335K160AA	CGJ5L2X7R1A335K160AA
4.7 µF	2012	1.25 ± 0.20	± 10%		CGJ4J1X7R1E475K125AC	CGJ4J3X7R1C475K125AB	CGJ4J2X7R1A475K125AA
	3216	1.60 +0.30/-0.10	± 10%		CGJ5L3X7R1E475K160AB	CGJ5L2X7R1C475K160AA	CGJ5L2X7R1A475K160AA
6.8 µF	3216	1.60 +0.30/-0.10	± 10%				CGJ5L2X7R1A685K160AA
10 µF	3216	1.60 +0.30/-0.10	± 10%				CGJ5L2X7R1A106K160AA

Class 2 (Temperature Stable)

Temperature Characteristics: X7R(-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 6.3V	
220 nF	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J224K125AA	
330 nF	1608	0.80 ± 0.10	± 10%	CGJ3E2X7R0J334K080AA	
	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J334K125AA	
470 nF	1608	0.80 ± 0.10	± 10%	CGJ3E2X7R0J474K080AA	
	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J474K125AA	
680 nF	1608	0.80 ± 0.10	± 10%	CGJ3E2X7R0J684K080AA	
	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J684K125AA	
1 µF	1608	0.80 ± 0.10	± 10%	CGJ3E2X7R0J105K080AA	
	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J105K125AA	
1.5 µF	1608	0.80 ± 0.10	± 10%	CGJ3E1X7R0J155K080AC	
	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J155K125AA	
2.2 µF	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J155K160AA	
	1608	0.80 ± 0.10	± 10%	CGJ3E1X7R0J225K080AC	
3.3 µF	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J225K125AA	
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J225K160AA	
4.7 µF	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J335K125AA	
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J335K160AA	
6.8 µF	2012	1.25 ± 0.20	± 10%	CGJ4J2X7R0J475K125AA	
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J475K160AA	
10 µF	2012	1.25 ± 0.20	± 10%	CGJ4J1X7R0J685K125AC	
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J685K160AA	
10 µF	2012	1.25 ± 0.20	± 10%	CGJ4J1X7R0J106K125AC	
	3216	1.60 +0.30/-0.10	± 10%	CGJ5L2X7R0J106K160AA	

Class 2 (Temperature Stable)

Temperature Characteristics: X7S(-55 to +125°C, ±22%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated Voltage Edc: 50V	
4.7 µF	3225	2.30 ± 0.20	± 10%	CGJ6N3X7S1H475K230AB	
6.8 µF	3225	2.50 ± 0.30	± 10%	CGJ6P3X7S1H685K250AB	
10 µF	3225	2.50 ± 0.30	± 10%	CGJ6P3X7S1H106K250AB	