



## MULTILAYER CERAMIC CHIP CAPACITORS

### **CGA Series Automotive Grade High Voltage (1000V and over)**

Type:

**CGA7 [EIA CC1808]**

**CGA8 [EIA CC1812]**

Issue date:  
**Apr 2015**



## REMINDERS

Please read before using this product

### SAFETY REMINDERS



### REMINDERS

1. If you intend to use a product listed in this catalog for a purpose that may cause loss of life or other damage, you must contact our company's sales window.
2. We may modify products or discontinue production of a product listed in this catalog without prior notification.
3. We provide "Delivery Specification" that explain precautions for the specifications and safety of each product listed in this catalog. We strongly recommend that you exchange these delivery specifications with customers that use one of these products.
4. If you plan to export a product listed in this catalog, keep in mind that it may be a restricted item according to the "Foreign Exchange and Foreign Trade Control Law". In such cases, it is necessary to acquire export permission in harmony with this law.
5. Any reproduction or transferring of the contents of this catalog is prohibited without prior permission from our company.
6. We are not responsible for problems that occur related to the intellectual property rights or other rights of our company or a third party when you use a product listed in this catalog. We do not grant license of these rights.
7. This catalog only applies to products purchased through our company or one of our company's official agencies. This catalog does not apply to products that are purchased through other third parties.

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)

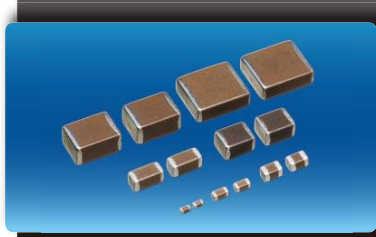
Catalog Issued date	Catalog Number	Item Description (On Delivery Label)
Prior to January 2013	C1608C0G1E103J	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N



## CGA Series

### High Voltage (1000V and over)

Type: CGA7 [EIA CC1808], CGA8 [EIA CC1812]



#### Features



- Advanced design provides improved withstand voltage characteristics.
- TDK's proprietary internal electrode structure and the use of low-dielectric-strength material result in highly reliable performance in high-voltage applications.
- Complies with ISO8802-3 for LAN applications.
- Designed exclusively for reflow soldering.
- AEC-Q200 compliant.

#### Applications



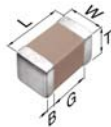
- Application in decoupling and snubber of high voltage circuits of EVs or HEVs
- General high voltage circuits.
- Noise bypass for power supply
- Transceiver for LAN
- Hub, etc

#### Cautions



- A slit of about 1mm on the circuit board is recommended to improve removal of the flux after soldering.
- Ensure that this product is completely dried following washing.
- Because this product will be subjected to high voltages, use only low-activity rosin flux (with 0.2% max. of chlorine).
- Using this product with aluminum circuit boards must be considered a special implementation because the high heat stress levels are involved. In case of using aluminum circuit boards, please contact TDK.

#### Shape & Dimensions



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



#### Catalog Number Construction

CGA • 8 • M • 1 • X7R • 3A • 103 • K • 200 • K • A

#### Series Name

#### Dimensions L x W (mm)

Code	Length	Width	Terminal
7	4.50 ± 0.40	2.00 ± 0.30	0.20 min.
8	4.50 ± 0.40	3.20 ± 0.40	0.20 min.

#### Thickness T Code (mm)

Code	Thickness	Code	Thickness
F	0.85 mm	M	2.00 mm
G	1.10 mm	N	2.30 mm
K	1.30 mm	P	2.50 mm
L	1.60 mm		

#### Voltage Condition for Life Test

Symbol	Condition
1	1 x 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

#### Rated Voltage (DC)

Code	Voltage (DC)
3A	1,000V
3D	2,000V
3F	3,000V

#### 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
F	± 1pF
K	± 10%
M	± 20%

#### Nominal Thickness

Code	Thickness	Code	Thickness	Code	Thickness
085	0.85 mm	160	1.60 mm	250	2.50 mm
110	1.10 mm	200	2.00 mm		
130	1.30 mm	230	2.30 mm		

#### Packaging Style

Code	Style
A	178 mm Reel, 4 mm Pitch
K	178 mm Reel, 8 mm Pitch

#### Special Reserved Code

Code	Description
A, B	TDK Internal Code



## Capacitance Range Chart

## CGA7(4520) [EIA CC1808]

### Capacitance Range Chart

Temperature Characteristics: C0G ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), X7R ( $\pm 15\%$ )  
 Rated Voltage: 3000V (3F), 2000V (3D), 1000V (3A)

Capacitance (pF)	Code	Tolerance	C0G			X7R		
			3F (3KV)	3D (2KV)	3A (1KV)			
10	100	F: $\pm 1\text{pF}$ K: $\pm 10\%$ M: $\pm 20\%$						
12	120							
15	150							
18	180							
22	220							
27	270							
33	330							
39	390							
47	470							
56	560							
68	680							
82	820							
100	101							
470	471							
1,000	102							

Standard Thickness

- 0.85 mm
- 1.10 mm
- 1.30 mm
- 1.60 mm
- 2.00 mm



## Capacitance Range Chart

## CGA8(4532) [EIA CC1812]

### Capacitance Range Chart

Temperature Characteristics: C0G ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), X7R ( $\pm 15\%$ )  
 Rated Voltage: 3000V (3F), 2000V (3D), 1000V (3A)

Capacitance (pF)	Code	Tolerance	C0G			X7R		
			3F (3KV)	3D (2KV)	3A (1KV)			
100	101	K: $\pm 10\%$ M: $\pm 20\%$						
120	121							
150	151							
180	181							
220	221							
270	271							
330	331							
2,200	222							
4,700	472							
10,000	103							

Standard Thickness

- 1.30 mm
- 1.60 mm
- 2.00 mm
- 2.30 mm
- 2.50 mm



## Capacitance Range Table

### Class 1 (Temperature Compensating)

Temperature Characteristics: C0G (-55 to +125°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number		
				Rated Voltage Edc: 3KV	Rated Voltage Edc: 2KV	Rated Voltage Edc: 1KV
10 pF	4520	0.85 ± 0.15	± 1pF	CGA7F1C0G3F100F085KA		
12 pF	4520	0.85 ± 0.15	± 10%	CGA7F1C0G3F120K085KA		
15 pF	4520	1.10 ± 0.20	± 10%	CGA7G1C0G3F150K110KA		
18 pF	4520	1.10 ± 0.20	± 10%	CGA7G1C0G3F180K110KA		
22 pF	4520	1.10 ± 0.20	± 10%	CGA7G1C0G3F220K110KA		
27 pF	4520	1.60 ± 0.20	± 10%	CGA7L1C0G3F270K160KA		
33 pF	4520	1.60 ± 0.20	± 10%	CGA7L1C0G3F330K160KA		
39 pF	4520	1.60 ± 0.20	± 10%	CGA7L1C0G3F390K160KA		
47 pF	4520	1.60 ± 0.20	± 10%	CGA7L1C0G3F470K160KA		
56 pF	4520	2.00 ± 0.20	± 10%	CGA7M1C0G3F560K200KA		
68 pF	4520	2.00 ± 0.20	± 10%	CGA7M1C0G3F680K200KA		
82 pF	4520	2.00 ± 0.20	± 10%	CGA7M1C0G3F820K200KA		
100 pF	4520	2.00 ± 0.20	± 10%	CGA7M1C0G3F101K200KA		
	4532	1.60 ± 0.20	± 10%	CGA8L1C0G3F101K160KA		
120 pF	4532	1.60 ± 0.20	± 10%	CGA8L1C0G3F121K160KA		
150 pF	4532	1.60 ± 0.20	± 10%	CGA8L1C0G3F151K160KA		
180 pF	4532	1.60 ± 0.20	± 10%	CGA8L1C0G3F181K160KA		
220 pF	4532	2.00 ± 0.20	± 10%	CGA8M1C0G3F221K200KA		
270 pF	4532	2.30 ± 0.20	± 10%	CGA8N1C0G3F271K230KA		
330 pF	4532	2.50 ± 0.30	± 10%	CGA8P1C0G3F331K250KA		

### Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number		
				Rated Voltage Edc: 3KV	Rated Voltage Edc: 2KV	Rated Voltage Edc: 1KV
470 pF	4520	1.30 ± 0.20	± 10%	CGA7K1X7R3D471K130KA	CGA7K1X7R3A471K130KA	
			± 20%	CGA7K1X7R3D471M130KA	CGA7K1X7R3A471M130KA	
1 nF	4520	1.30 ± 0.20	± 10%	CGA7K1X7R3D102K130KA	CGA7K1X7R3A102K130KA	
			± 20%	CGA7K1X7R3D102M130KA	CGA7K1X7R3A102M130KA	
2.2 nF	4532	1.30 ± 0.20	± 10%	CGA8K1X7R3D222K130KA		
			± 20%	CGA8K1X7R3D222M130KA		
4.7 nF	4532	1.60 ± 0.20	± 10%		CGA8L1X7R3A472K160KA	
			± 20%		CGA8L1X7R3A472M160KA	
10 nF	4532	2.00 ± 0.20	± 10%		CGA8M1X7R3A103K200KA	
			± 20%		CGA8M1X7R3A103M200KA	