TDK

August 2016

MULTILAYER CERAMIC CHIP CAPACITORS

C Series
Commercial Grade
High Voltage (1000V and over)

Type:

C3225 [EIA CC1210]
C4520 [EIA CC1808]
C4532 [EIA CC1812]
C5750 [EIA CC2220]

REMINDERS

Please read before using this product

SAFETY REMINDERS

⚠ REMINDERS

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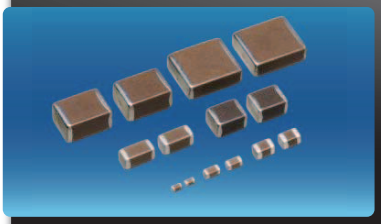
Notice: Effective January 2013, TDK will use a new catalog number which adds product thickness and packaging specification detail. This new catalog number should be referenced on all catalog orders going forward, and is not applicable for OEM part number orders. Please be aware the last five digits of 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

Lead Free | RoHS COMPLIANT | Ecological



C Series

High Voltage (1000V and over)

Type: C3225 [EIA CC1210], C4520 [EIA CC1808], C4532 [EIA CC1812], C5750 [EIA CC2220]

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.

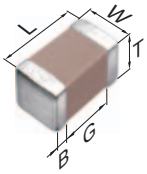
Applications

- Inverter circuits with a liquid crystal backlight
- LAN card
- 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

C • 4532 • X7R • 3A • 103 • K • 200 • K • A

Series Name

Dimensions L x W (mm)

Code	Length	Width	Terminal
C3225	3.20 ± 0.40	2.50 ± 0.30	0.20 min.
C4520	4.50 ± 0.40	2.00 ± 0.30	0.20 min.
C4532	4.50 ± 0.40	3.20 ± 0.40	0.20 min.
C5750	5.70 ± 0.40	5.00 ± 0.40	0.20 min.

Temperature Characteristics

Temperature Characteristics	Temperature Coefficient or Capacitance Change	Temperature Range
C0G	0±30 ppm/°C	-55 to +125°C
CH	0±60 ppm/°C	-25 to +85°C
JB	±10%	-25 to +85°C
X7R	±15%	-55 to +125°C

Rated Voltage (DC)

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

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.

Ex. 100=10pF; 101=100pF; 333=33,000pF

Capacitance Tolerance

Code	Tolerance
F	± 1pF
J	± 5%
K	± 10%
M	± 20%

Nominal Thickness

Code	Thickness
085	0.85 mm
110	1.10 mm
130	1.30 mm
160	1.60 mm
200	2.00 mm
230	2.30 mm
250	2.50 mm
280	2.80 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	TDK Internal Code
C	TDK Internal Code

Capacitance Range Chart

EIA CC1210 [C3225]

Capacitance Range Chart

Temperature Characteristics: C0G (0±30ppm/℃)

Rated Voltage：1KV (3A)

Capacitance		Tolerance	C0G
(pF)	Code		3A (1KV)
1,000	**102**	J: ±5%	
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**		
12,000	**123**		
15,000	**153**		
18,000	**183**		
22,000	**223**		

Standard Thickness

- 2.00 mm
- 2.30 mm
- 2.50 mm

Capacitance Range Chart

EIA CC1808 [C4520]

Capacitance Range Chart

Temperature Characteristics: C0G (0±30ppm/℃), CH (0±60ppm/℃), JB (±10%), X7R (±15%)

Rated Voltage：3KV (3F), 2KV (3D), 1KV (3A)

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

Standard Thickness

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

Capacitance Range Chart

EIA CC1812 [C4532]

Capacitance Range Chart

Temperature Characteristics: C0G (0±30ppm/℃), CH (0±60ppm/℃), JB (±10%), X7R (±15%)

Rated Voltage：3KV (3F), 2KV (3D), 1KV (3A)

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

Standard Thickness

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

Capacitance Range Chart

EIA CC2220 [C5750]

Capacitance Range Chart

Temperature Characteristics: C0G (0±30ppm/℃)

Rated Voltage：1KV (3A)

Capacitance		Tolerance	C0G
(pF)	Code		3A (1KV)
10,000	**103**	J: ±5%	
12,000	**123**		
15,000	**153**		
18,000	**183**		
22,000	**223**		
27,000	**273**		
33,000	**333**		

Standard Thickness

- 2.80 mm

Capacitance Range Table

Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated VoltageEdc：3KV	Rated VoltageEdc：1KV
10 pF	4520	0.85 ± 0.15	± 1pF	C4520C0G3F100F085KA	
12 pF	4520	0.85 ± 0.15	± 10%	C4520C0G3F120K085KA	
15 pF	4520	1.10 ± 0.20	± 10%	C4520C0G3F150K110KA	
18 pF	4520	1.10 ± 0.20	± 10%	C4520C0G3F180K110KA	
22 pF	4520	1.10 ± 0.20	± 10%	C4520C0G3F220K110KA	
27 pF	4520	1.60 ± 0.20	± 10%	C4520C0G3F270K160KA	
33 pF	4520	1.60 ± 0.20	± 10%	C4520C0G3F330K160KA	
39 pF	4520	1.60 ± 0.20	± 10%	C4520C0G3F390K160KA	
47 pF	4520	1.60 ± 0.20	± 10%	C4520C0G3F470K160KA	
56 pF	4520	2.00 ± 0.20	± 10%	C4520C0G3F560K200KA	
68 pF	4520	2.00 ± 0.20	± 10%	C4520C0G3F680K200KA	
82 pF	4520	2.00 ± 0.20	± 10%	C4520C0G3F820K200KA	
100 pF	4520	2.00 ± 0.20	± 10%	C4520C0G3F101K200KA	
	4532	1.60 ± 0.20	± 10%	C4532C0G3F101K160KA	
120 pF	4532	1.60 ± 0.20	± 10%	C4532C0G3F121K160KA	
150 pF	4532	1.60 ± 0.20	± 10%	C4532C0G3F151K160KA	
180 pF	4532	1.60 ± 0.20	± 10%	C4532C0G3F181K160KA	
220 pF	4532	2.00 ± 0.20	± 10%	C4532C0G3F221K200KA	
270 pF	4532	2.30 ± 0.20	± 10%	C4532C0G3F271K230KA	
330 pF	4532	2.50 ± 0.30	± 10%	C4532C0G3F331K250KA	
1 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A102J200AC
1.2 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A122J200AC
1.5 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A152J200AC
1.8 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A182J200AC
2.2 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A222J200AC
2.7 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A272J200AC
3.3 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A332J200AC
3.9 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A392J200AC
4.7 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A472J200AC
5.6 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A562J200AC
6.8 nF	3225	2.00 ± 0.20	± 5%		C3225C0G3A682J200AC
8.2 nF	3225	2.30 ± 0.20	± 5%		C3225C0G3A822J230AC
10 nF	3225	2.50 ± 0.30	± 5%		C3225C0G3A103J250AC
	5750	2.80 ± 0.30	± 5%		C5750C0G3A103J280KC
12 nF	3225	2.50 ± 0.30	± 5%		C3225C0G3A123J250AC
	5750	2.80 ± 0.30	± 5%		C5750C0G3A123J280KC
15 nF	3225	2.50 ± 0.30	± 5%		C3225C0G3A153J250AC
	5750	2.80 ± 0.30	± 5%		C5750C0G3A153J280KC
18 nF	3225	2.50 ± 0.30	± 5%		C3225C0G3A183J250AC
	5750	2.80 ± 0.30	± 5%		C5750C0G3A183J280KC
22 nF	3225	2.50 ± 0.30	± 5%		C3225C0G3A223J250AC
	5750	2.80 ± 0.30	± 5%		C5750C0G3A223J280KC
27 nF	5750	2.80 ± 0.30	± 5%		C5750C0G3A273J280KC
33 nF	5750	2.80 ± 0.30	± 5%		C5750C0G3A333J280KC

Capacitance Range Table

Class 1 (Temperature Compensating)

Temperature Characteristics: CH (-25 to +85℃, 0±60ppm/℃)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number
				Rated VoltageEdc：3KV
10 pF	4520	0.85 ± 0.15	± 1pF	C4520CH3F100F085KA
12 pF	4520	0.85 ± 0.15	± 10%	C4520CH3F120K085KA
15 pF	4520	1.10 ± 0.20	± 10%	C4520CH3F150K110KA
18 pF	4520	1.10 ± 0.20	± 10%	C4520CH3F180K110KA
22 pF	4520	1.10 ± 0.20	± 10%	C4520CH3F220K110KA
27 pF	4520	1.60 ± 0.20	± 10%	C4520CH3F270K160KA
33 pF	4520	1.60 ± 0.20	± 10%	C4520CH3F330K160KA
39 pF	4520	1.60 ± 0.20	± 10%	C4520CH3F390K160KA
47 pF	4520	1.60 ± 0.20	± 10%	C4520CH3F470K160KA
56 pF	4520	2.00 ± 0.20	± 10%	C4520CH3F560K200KA
68 pF	4520	2.00 ± 0.20	± 10%	C4520CH3F680K200KA
82 pF	4520	2.00 ± 0.20	± 10%	C4520CH3F820K200KA
100 pF	4520	2.00 ± 0.20	± 10%	C4520CH3F101K200KA
	4532	1.60 ± 0.20	± 10%	C4532CH3F101K160KA
120 pF	4532	1.60 ± 0.20	± 10%	C4532CH3F121K160KA
150 pF	4532	1.60 ± 0.20	± 10%	C4532CH3F151K160KA
180 pF	4532	1.60 ± 0.20	± 10%	C4532CH3F181K160KA
220 pF	4532	2.00 ± 0.20	± 10%	C4532CH3F221K200KA
270 pF	4532	2.30 ± 0.20	± 10%	C4532CH3F271K230KA
330 pF	4532	2.50 ± 0.30	± 10%	C4532CH3F331K250KA

Class 2 (Temperature Stable)

Temperature Characteristics: JB (-25 to +85℃, ±10%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated VoltageEdc：2KV	Rated VoltageEdc：1KV
470 pF	4520	1.30 ± 0.20	± 10%	C4520JB3D471K130KA	C4520JB3A471K130KA
			± 20%	C4520JB3D471M130KA	C4520JB3A471M130KA
1 nF	4520	1.30 ± 0.20	± 10%	C4520JB3D102K130KA	C4520JB3A102K130KA
			± 20%	C4520JB3D102M130KA	C4520JB3A102M130KA
2.2 nF	4532	1.30 ± 0.20	± 10%	C4532JB3D222K130KA	
			± 20%	C4532JB3D222M130KA	
4.7 nF	4532	1.60 ± 0.20	± 10%		C4532JB3A472K160KA
			± 20%		C4532JB3A472M160KA
10 nF	4532	2.00 ± 0.20	± 10%		C4532JB3A103K200KA
			± 20%		C4532JB3A103M200KA

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number	
				Rated VoltageEdc：2KV	Rated VoltageEdc：1KV
470 pF	4520	1.30 ± 0.20	± 10%	C4520X7R3D471K130KA	C4520X7R3A471K130KA
			± 20%	C4520X7R3D471M130KA	C4520X7R3A471M130KA
1 nF	4520	1.30 ± 0.20	± 10%	C4520X7R3D102K130KA	C4520X7R3A102K130KA
			± 20%	C4520X7R3D102M130KA	C4520X7R3A102M130KA
2.2 nF	4532	1.30 ± 0.20	± 10%	C4532X7R3D222K130KA	
			± 20%	C4532X7R3D222M130KA	
4.7 nF	4532	1.60 ± 0.20	± 10%		C4532X7R3A472K160KA
			± 20%		C4532X7R3A472M160KA
10 nF	4532	2.00 ± 0.20	± 10%		C4532X7R3A103K200KA
			± 20%		C4532X7R3A103M200KA

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