



**THE DATASHEET OF
C4532X7R3A472K160KA**



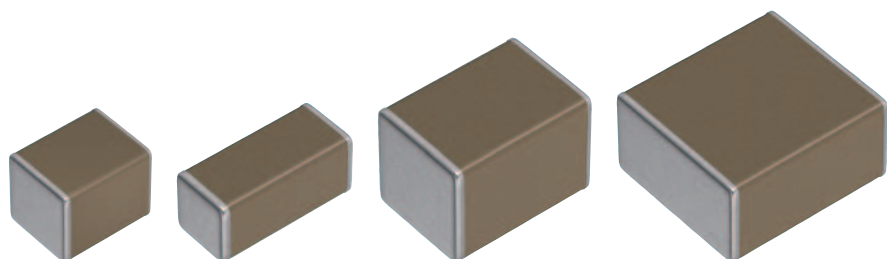
MULTILAYER CERAMIC CHIP CAPACITORS

Commercial grade, high voltage (1,000V and over)

C series

C3225	[1210 inch]
C4520	[1808 inch]
C4532	[1812 inch]
C5750	[2220 inch]

* Dimensions code: JIS[EIA]



REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using this products.

REMINDERS

1. The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.

If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us.

- | | |
|--|--|
| (1) Aerospace/aviation equipment | (8) Public information-processing equipment |
| (2) Transportation equipment (cars, electric trains, ships, etc.) | (9) Military equipment |
| (3) Medical equipment (excepting Pharmaceutical Affairs Law classification Class1,2) | (10) Electric heating apparatus, burning equipment |
| (4) Power-generation control equipment | (11) Disaster prevention/crime prevention equipment |
| (5) Atomic energy-related equipment | (12) Safety equipment |
| (6) Seabed equipment | (13) Other applications that are not considered general-purpose applications |
| (7) Transportation control equipment | |

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

- We may modify products or discontinue production of a product listed in this catalog without prior notification.
- 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.
- 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.
- Any reproduction or transferring of the contents of this catalog is prohibited without prior permission from our company.
- 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.
- 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(080AA)	C1608C0G1E103JT000N
January 2013 and later	C1608C0G1E103J080AA	C1608C0G1E103JT000N

C series

High voltage (1,000V and over)

Type: C3225 [1210 inch], C4520 [1808 inch], C4532 [1812 inch],
C5750 [2220 inch]



SERIES OVERVIEW

High voltage C series, commercial grade of TDK's multilayer ceramic chip capacitor, is a product which has realized the high withstanding voltage characteristic by the unique inner structure. Voltage rating of 1,000V to 3,000V with capacitance range up to 33nF.

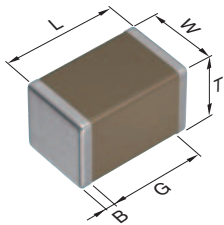
FEATURES

- Voltage rating of 1,000V, 2,000V and 3,000V
- Operating temperature range: -55 to +125°C
- COG and CH types which have excellent stable temperature and DC-bias characteristics are available

APPLICATIONS

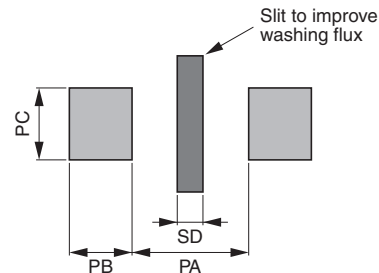
- Wireless charging units such as DC-DC converter and Inverter
- Decoupling, snubber and resonant circuits of high voltage circuits

SHAPE & DIMENSIONS



L	Body length
W	Body width
T	Body height
B	Terminal width
G	Terminal spacing

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.

Type	Dimensions in mm			
	L	W	T	B
C3225	3.20±0.40	2.50±0.30	2.50±0.30	0.20 min.
C4520	4.50±0.40	2.00±0.20	2.00±0.20	0.20 min.
C4532	4.50±0.40	3.20±0.40	2.50±0.30	0.20 min.
C5750	5.70±0.40	5.00±0.40	2.80±0.30	0.20 min.

*Dimensional tolerances are typical values.

CATALOG NUMBER CONSTRUCTION

C	5750	C0G	3A	333	J	280	K	C
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

(1) Series

(2) Dimensions L x W (mm)

Code	EIA	Length	Width	Terminal width
C3225	CC1210	3.20	2.50	0.20min.
C4520	CC1808	4.50	2.00	0.20min.
C4532	CC1812	4.50	3.20	0.20min.
C5750	CC2220	5.70	5.00	0.20min.

(3) 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

(4) Rated voltage (DC)

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

(5) 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.

(Example)0R5 = 0.5pF
 101 = 100pF
 225 = 2,200,000pF = 2.2μF

(6) Capacitance tolerance

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

(7) 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

(8) Packaging style

Code	Style
A	178mm reel, 4mm pitch
K	178mm reel, 8mm pitch

(9) Special reserved code




Code	Description
A,C	TDK internal code


MULTILAYER CERAMIC CHIP CAPACITORS

Capacitance range chart

C3225 [1210 inch]

Capacitance		COG
(pF)	Code	3A (1kV)
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	
12,000	123	
15,000	153	
18,000	183	
22,000	223	

Standard thickness  2.00 mm  2.30 mm  2.50 mm






 Background gray: These products are not recommended for new designs.


■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range chart


C4520 [1808 inch]

Capacitance		COG		JB		X7R	
(pF)	Code	3F (3kV)	3F (3kV)	3D (2kV)	3A (1kV)	3D (2kV)	3A (1kV)
10	100						
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

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■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.


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Capacitance range chart

C4532 [1812 inch]

Capacitance		C0G		CH		JB		X7R	
(pF)	Code	3F (3kV)	3F (3kV)	3D (2kV)	3A (1kV)	3D (2kV)	3A (1kV)	3D (2kV)	3A (1kV)
100	101								
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

 Background gray: These products are not recommended for new designs.

■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range chart

C5750 [2220 inch]

Capacitance		C0G
(pF)	Code	3A (1kV)
10,000	103	
12,000	123	
15,000	153	
18,000	183	
22,000	223	
27,000	273	
33,000	333	

Standard thickness  2.80 mm

 Background gray: These products are not recommended for new designs.

■ For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range table

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

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

■ Gray items: These products are not recommended for new designs.

Capacitance range table

Temperature characteristic: CH (–25 to +85°C, 0±60ppm/°C)

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

■ Gray items: These products are not recommended for new designs.

Capacitance range table

Temperature characteristic: JB (–25 to +85°C, ±10%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number	
				Rated voltage Edc: 2kV	Rated voltage Edc: 1kV
470pF	4520	1.30±0.20	±10%	C4520JB3D471K130KA	C4520JB3A471K130KA
			±20%	C4520JB3D471M130KA	C4520JB3A471M130KA
1nF	4520	1.30±0.20	±10%	C4520JB3D102K130KA	C4520JB3A102K130KA
			±20%	C4520JB3D102M130KA	C4520JB3A102M130KA
2.2nF	4532	1.30±0.20	±10%	C4532JB3D222K130KA	
			±20%	C4532JB3D222M130KA	
4.7nF	4532	1.60±0.20	±10%		C4532JB3A472K160KA
			±20%		C4532JB3A472M160KA
10nF	4532	2.00±0.20	±10%		C4532JB3A103K200KA
			±20%		C4532JB3A103M200KA

Capacitance range table

Temperature characteristic: X7R (–55 to +125°C, ±15%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number	
				Rated voltage Edc: 2kV	Rated voltage Edc: 1kV
470pF	4520	1.30±0.20	±10%	C4520X7R3D471K130KA	C4520X7R3A471K130KA
			±20%	C4520X7R3D471M130KA	C4520X7R3A471M130KA
1nF	4520	1.30±0.20	±10%	C4520X7R3D102K130KA	C4520X7R3A102K130KA
			±20%	C4520X7R3D102M130KA	C4520X7R3A102M130KA
2.2nF	4532	1.30±0.20	±10%	C4532X7R3D222K130KA	
			±20%	C4532X7R3D222M130KA	
4.7nF	4532	1.60±0.20	±10%		C4532X7R3A472K160KA
			±20%		C4532X7R3A472M160KA
10nF	4532	2.00±0.20	±10%		C4532X7R3A103K200KA
			±20%		C4532X7R3A103M200KA

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