TDK

November 2022

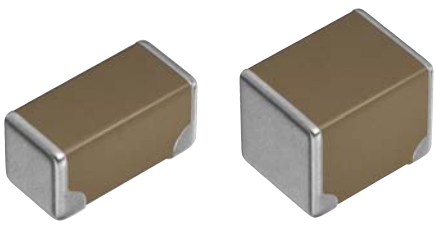
MULTILAYER CERAMIC CHIP CAPACITORS

Automotive grade, soft termination (Low resistance type)

CNA series

CNA5	**3216 [1206 inch]**
CNA6	**3225 [1210 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 in this specification are intended for use in automotive applications under normal operation and usage conditions.
   The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality requires a more stringent level of safety or reliability, or whose failure, malfunction or defect could cause serious damage to society, person or property.
   Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet. 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 this specification, please contact us.

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

   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.

   In addition, although the products listed in this specification are intended for use in automotive applications as described above, they are not prohibited to use in general electronic equipment, whose performance and/or quality doesn't require a more stringent level of safety or reliability, or whose failure, malfunction or defect could not cause serious damage to society, person or property. Therefore, the description of this caution will be applied, when the products are used in general electronic equipment under a normal operation and usage conditions.
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(080AA)	C1608C0G1E103JT000N
January 2013 and later	C1608C0G1E103J080AA	C1608C0G1E103JT000N

CNA series

Soft termination (Low resistance type)

Type: CNA5/3216 [1206 inch], CNA6/3225 [1210 inch]

SERIES OVERVIEW

CNA series is a product incorporating conductive resin layers into the terminal electrodes. Because the resin layers relieve mechanical stress caused by board flexure, the ceramic body is protected from cracks. In addition, unlike conventional soft termination CGA series whose whole terminal electrodes are covered with the resin layers, the resin layers are covering only a board mounting side. This structure allows electric current to pass outside the resin layers, and so electrical resistance has been reduced. CNA series is a TDK's original product.

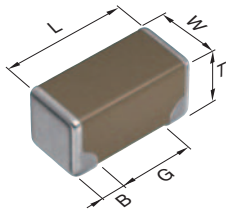
FEATURES

- Achieves both high reliability and low resistance by the original structure.
- Relieves mechanical stress caused by board flexure.
- AEC-Q200 compliant.

APPLICATIONS

- Fail-safe design in battery line.
- Prevention of ceramic body cracks by board bending.

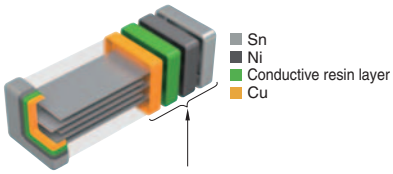
SHAPE & DIMENSIONS



L	Product length
W	Product width
T	Product thickness
B	Terminal width
G	Terminal spacing

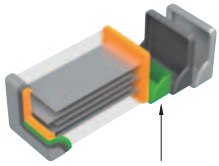
ELECTRODE STRUCTURE DRAWING

Soft termination
(Conventional type)



The conductive resin layer covers overall surface of copper.

Soft termination
(Low resistance type)



The conductive resin layer covers only board mounting side.

Dimensions in mm

Type	L	W	T	B	G
CNA5	3.20+0.30,–0.20	1.60+0.30,–0.20	1.60+0.30,–0.20	0.30 min.	1.00 min.
CNA6	3.20±0.30	2.50±0.30	2.50±0.30	0.50 min.	—

*Dimensional tolerances are typical values.

⚠ 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.

CATALOG NUMBER CONSTRUCTION

CNA	5	L	1	X7R	1H	106	K	160	A	E
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

(1) Series

(2) Dimensions L x W (mm)

Dimensions code	EIA	Length	Width	Terminal width
5	CC1206	3.20	1.60	0.30
6	CC1210	3.20	2.50	0.50

(3) Thickness code

Code	Thickness
L	1.60mm
P	2.50mm

(4) Voltage condition for life test

Symbol	Condition
1	1 x R.V.

(5) Temperature characteristics

Temperature characteristic	Capacitance change	Temperature range
X7R	±15%	–55 to +125°C
X7S	±22%	–55 to +125°C

(6) Rated voltage (DC)

Code	Voltage (DC)
2A	100V
1N	75V
1H	50V
1E	25V
1C	16V
1A	10V

(7) 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

(8) Capacitance tolerance

Code	Tolerance
K	±10%
M	±20%

(9) Thickness

Code	Thickness
160	1.60mm
250	2.50mm

(10) Packaging style

Code	Style
A	178mm reel, 4mm pitch

(11) Special reserved code

Code	Description
E	Soft termination

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Capacitance range chart — CNA5/3216 [1206 inch]

Capacitance		X7R				X7S
(pF)	Code	1N (75V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)
2,200,000	**225**					
4,700,000	**475**					
10,000,000	**106**					
22,000,000	**226**					

Standard thickness 1.60mm

■ For details such as the catalog numbers and product size, please refer to the capacitance range table below.

Capacitance range chart — CNA6/3225 [1210 inch]

Capacitance		X7R			X7S
(pF)	Code	2A (100V)	1H (50V)	1E (25V)	1A (10V)
4,700,000	**475**				
10,000,000	**106**				
22,000,000	**226**				
47,000,000	**476**				

Standard thickness 2.50mm

■ For details such as the catalog numbers and product size, please refer to the capacitance range table below.

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number				
				Rated voltage Edc: 100V	Rated voltage Edc: 75V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
2.2μF	3216	1.60+0.30,–0.20	±10%		CNA5L1X7R1N225K160AE	CNA5L1X7R1H225K160AE		
4.7μF	3216	1.60+0.30,–0.20	±10%			CNA5L1X7R1H475K160AE		
	3225	2.50±0.30	±10%	CNA6P1X7R2A475K250AE		CNA6P1X7R1H475K250AE		
10μF	3216	1.60+0.30,–0.20	±10%			CNA5L1X7R1H106K160AE	CNA5L1X7R1E106K160AE	CNA5L1X7R1C106K160AE
	3225	2.50±0.20	±10%			CNA6P1X7R1H106K250AE		
22μF	3225	2.50±0.30	±20%				CNA6P1X7R1E226M250AE	

Click the part numbers for details

Capacitance range table — Temperature characteristic: X7S (–55 to +125°C, ±22%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number
				Rated voltage Edc: 10V
22μF	3216	1.60+0.30,–0.20	±20%	CNA5L1X7S1A226M160AE
47μF	3225	2.50±0.30	±20%	CNA6P1X7S1A476M250AE

Click the part numbers for details

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Please note that the contents may change without any prior notice due to reasons such as upgrading.

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

TDK:

CGA3E2NP01H152J080AA MLD2016S4R7MTD25 ACM2520-601-2P-T002 C0603X6S1C223K030BC CGA9P1X7T2J474M250KC MLG1005S36NJTD25 C5750X7T2J474KT000N MLP2012S3R3MT0S1 B41231B8338M060 B41252A6338M060 C5750X7R2E105KT0L0U VLS201612CX-4R7M-1 B59721A0120A062 CGA2B2C0G1H101JT0Y0S SPM5030T-R68M-HZ VLS4012CX-1R5M-1 B82793C474N215 CGA9Q4NP02W104J280KA MLF2012DR22JT000 MLG1005SR39JTD25 AVRM1005C6R8NT101N MLF1005G2R2KT000 MLJ1608WR10JT000 NLCV32T-R10M-PFR VLS5045EX-3R3N C1005X5R1V225K050BE CGA4J4X7T2W473K125AE YFF15AC0J105MT0Q0E B57164K0101K000 CGA2B3X7S1A474K050BE