

# MULTILAYER CERAMIC CHIP CAPACITORS

Automotive grade, soft termination (Low resistance type)

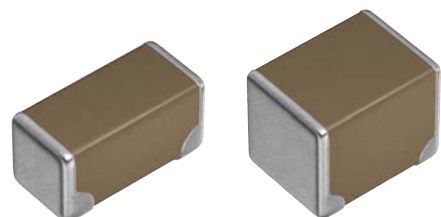
## CNA series

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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.

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- |  |  |
|--|--|
| (1) Aerospace/aviation equipment   | (8) Public information-processing equipment                                  |
| (2) Transportation equipment (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.

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.

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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

# CNA series

## Soft termination (Low resistance type)



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

### SERIES OVERVIEW

TDK multilayer ceramic chip capacitor low resistance type soft termination automotive grade CNA series is a product which conductive resin layers are included in terminations. It's different from conventional soft termination CGA series which overall surface of termination is covered with the resin layers, lower electric resistance has been realized because the current can pass through low resistive layers by covering only soldering positions with the resin layers.

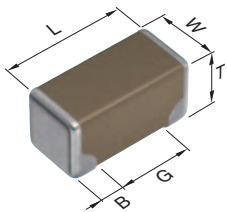
### FEATURES

- Lower electric resistance has been realized because the current can pass through low resistive layers by covering only soldering positions with conductive resin layers.
- Therefore, this product can contribute to reliability improvement by promotion of replacement to soft termination type.
- AEC-Q200 compliant.

### APPLICATIONS

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

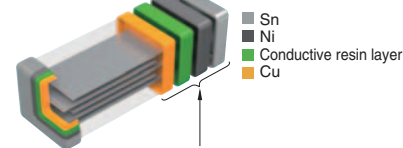
### SHAPE & DIMENSIONS



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

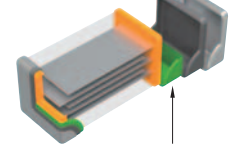
### ELECTRODE STRUCTURE DRAWING

Soft termination  
(Conventional type)



Termination consists of 4 layers including conductive resin layer.

Soft termination  
(Low resistance type)



The conductive resin layer is only applied at the soldering positions.

Dimensions in mm

Type	L	W	T	B	G
<b>CNA5</b>	3.20+0.30,-0.20	1.60+0.30,-0.20	1.60+0.30,-0.20	0.30 min.	1.00 min.
<b>CNA6</b>	3.20±0.30	2.50±0.30	2.50±0.30	0.50 min.	—

\*Dimensional tolerances are typical values.

**CATALOG NUMBER CONSTRUCTION**

<b>CNA</b>	<b>6</b>	<b>P</b>	<b>1</b>	<b>X7R</b>	<b>1H</b>	<b>106</b>	<b>K</b>	<b>250</b>	<b>A</b>	<b>E</b>
(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 characteristics	Capacitance change	Temperature range
X7R	±15%	-55 to +125°C

## (6) Rated voltage (DC)

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

## (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%

## (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

## Capacitance range chart

### CNA5/3216 [1206 inch]

Capacitance		X7R		
(pF)	Code	1N (75V)	1H (50V)	1C (16V)
2,200,000	225			
4,700,000	475			
10,000,000	106			






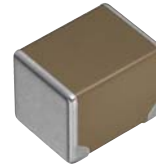
Standard thickness  1.60mm


■ Please refer to the capacitance range table at P-6 for the details such as product thickness and capacitance tolerance.

## Capacitance range chart

### CNA6/3225 [1210 inch]

Capacitance		X7R	
(pF)	Code	2A (100V)	1H (50V)
4,700,000	475		
10,000,000	106		



Standard thickness  2.50mm

■ Please refer to the capacitance range table at P-6 for the details such as product thickness and capacitance tolerance.

## Capacitance range table

## Temperature characteristics: 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: 16V
2.2μF	3216	1.60+0.30,–0.20	±10%		<a href="#">CNA5L1X7R1N225K160AE</a>	<a href="#">CNA5L1X7R1H225K160AE</a>	
	3216	1.60+0.30,–0.20	±10%			<a href="#">CNA5L1X7R1H475K160AE</a>	
4.7μF	3225	2.50±0.30	±10%	<a href="#">CNA6P1X7R2A475K250AE</a>		<a href="#">CNA6P1X7R1H475K250AE</a>	
	3216	1.60+0.30,–0.20	±10%				<a href="#">CNA5L1X7R1C106K160AE</a>
10μF	3216	1.60+0.30,–0.20	±10%				
	3225	2.50±0.20	±10%			<a href="#">CNA6P1X7R1H106K250AE</a>	

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