

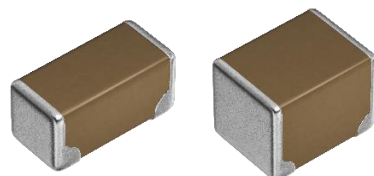
MULTILAYER CERAMIC CHIP CAPACITORS

Commercial grade, Soft termination (Low resistance type)

CNC series

CNC5	3216 [CC1206]
CNC6	3225 [CC1210]

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) | (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 |
| (7) Transportation control equipment | 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.

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.

- 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.

CNC series

Soft termination (Low resistance type)

Type: CNC5: 3216 [CC1206], CNC6: 3225 [CC1210]



SERIES OVERVIEW

CNC 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 C 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. CNC series is a TDK's original product.

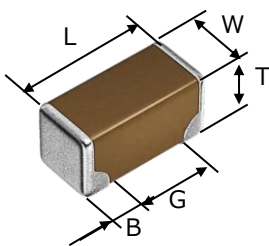
FEATURES

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

APPLICATIONS

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

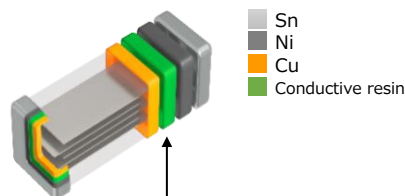
SHAPE & DIMENSIONS



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

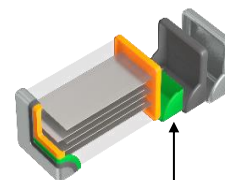
ELECTRODE STRUCTURE DRAWING

Soft termination
(Conventional type)



The conductive resin layer covers entire surface of the termination.

Soft termination
(Low resistance type)



The conductive resin layer covers only board mounting side.

Dimensions in mm

Type	L	W	T	B	G
CNC5	3.20+0.30,-0.20	1.60+0.30,-0.20	1.60+0.30,-0.20	0.30 min.	1.00 min.
	3.20±0.30	2.50±0.20	2.50±0.20		
CNC6		2.50±0.30	2.50±0.30	0.50 min.	---
	3.20+0.40,-0.30	2.50+0.40,-0.30	2.50+0.40,-0.30		
	3.20+0.50,-0.30				

Dimensional tolerances are typical values. Please check the actual values on the product page of the website.

- 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

CNC	6	P	1	X7S	1A	476	M	250	A	E
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

(1) Series

(2) Dimensions code

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

Dimensions are typical values.

(3) Thickness code

Code	Nominal thickness
L	1.60 mm
P	2.50 mm

(4) Voltage condition for life test

Code	Condition
1	1 x R.V.
4	1.2 x R.V.

(5) Temperature characteristics

Temperature characteristics	Temperature coefficient or capacitance change	Temperature range
NP0	0±30 ppm/°C	-55 to +150 °C
C0G	0±30 ppm/°C	
X7R	±15%	-55 to +125 °C
X7S	±22%	

(6) Rated voltage (DC)

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

(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 = 0.5 pF
 101 = 100 pF
 225 = 2,200,000 pF = 2.2 μF

(8) Capacitance tolerance

Code	Tolerance
G	±2%
J	±5%
K	±10%
M	±20%

(9) Nominal thickness

Code	Nominal thickness
160	1.60 mm
250	2.50 mm

(10) Packaging style

Code	Style
A	178 mm reel, 4 mm pitch

(11) Special reserved code

Code	Description
E	Soft termination

- 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.

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range chart

CNC5: 3216 [CC1206]

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					

Nominal thickness  1.60 mm

- Click the charts for details.
- For details such as the catalog numbers, please refer to the capacitance range table on page 6.

Capacitance range chart

CNC6: 3225 [CC1210]

Capacitance		COG			NP0	X7R			X7S
(pF)	Code	3B (1,250V)	3A (1,000V)	2J (630V)	2J (630V)	2A (100V)	1H (50V)	1E (25V)	1A (10V)
8,200	822								
10,000	103								
12,000	123								
15,000	153								
18,000	183								
22,000	223								
33,000	333								
4,700,000	475								
10,000,000	106								
22,000,000	226								
47,000,000	476								

Nominal thickness  2.50 mm

- Click the charts for details.
- For details such as the catalog numbers, please refer to the capacitance range table on page 6.

- 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.

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

C0G (-55 to +125°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers		
				Rated voltage: DC1250V	Rated voltage: DC1000V	Rated voltage: DC630V
8.2 nF	3225	2.50+0.40,-0.30	±2%	CNC6P1C0G3B822G250AE		
			±5%	CNC6P1C0G3B822J250AE		
10 nF	3225	2.50+0.40,-0.30	±2%	CNC6P1C0G3B103G250AE	CNC6P1C0G3A103G250AE	
			±5%	CNC6P1C0G3B103J250AE	CNC6P1C0G3A103J250AE	
12 nF	3225	2.50+0.40,-0.30	±2%		CNC6P1C0G3A123G250AE	
			±5%		CNC6P1C0G3A123J250AE	
15 nF	3225	2.50+0.40,-0.30	±2%		CNC6P1C0G3A153G250AE	
			±5%		CNC6P1C0G3A153J250AE	
18 nF	3225	2.50+0.40,-0.30	±2%		CNC6P1C0G3A183G250AE	
			±5%		CNC6P1C0G3A183J250AE	
22 nF	3225	2.50+0.40,-0.30	±2%		CNC6P1C0G3A223G250AE	
			±5%		CNC6P1C0G3A223J250AE	
33 nF	3225	2.50+0.40,-0.30	±2%			CNC6P4C0G2J333G250AE
			±5%			CNC6P4C0G2J333J250AE

•Click the catalog numbers for details.

Capacitance range table

NP0 (-55 to +150°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers
				Rated voltage: DC630V
33 nF	3225	2.50+0.40,-0.30	±2%	CNC6P4NP02J333G250AE
			±5%	CNC6P4NP02J333J250AE

•Click the catalog numbers for details.

Capacitance range table

X7R (-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers		
				Rated voltage: DC100V	Rated voltage: DC75V	Rated voltage: DC50V
2.2 μF	3216	1.60+0.30,-0.20	±10%		CNC5L1X7R1N225K160AE	CNC5L1X7R1H225K160AE
4.7 μF	3216	1.60+0.30,-0.20	±10%			CNC5L1X7R1H475K160AE
	3225	2.50±0.30	±10%	CNC6P1X7R2A475K250AE		CNC6P1X7R1H475K250AE
10 μF	3225	2.50+0.40,-0.30	±10%	CNC6P1X7R2A106K250AE		
		2.50±0.20	±10%			CNC6P1X7R1H106K250AE
22 μF	3225	2.50±0.30	±10%			CNC6P1X7R1H226K250AE

•Click the catalog numbers for details.

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers	
				Rated voltage: DC25V	Rated voltage: DC16V
10 μF	3216	1.60+0.30,-0.20	±10%	CNC5L1X7R1E106K160AE	CNC5L1X7R1C106K160AE
22 μF	3225	2.50±0.30	±20%	CNC6P1X7R1E226M250AE	

•Click the catalog numbers for details.

Capacitance range table

X7S (-55 to +125°C, ±22%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers
				Rated voltage: DC10V
22 μF	3216	1.60+0.30,-0.20	±20%	CNC5L1X7S1A226M160AE
47 μF	3225	2.50±0.30	±20%	CNC6P1X7S1A476M250AE

•Click the catalog numbers for details.

•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.