



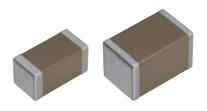
MULTILAYER CERAMIC CHIP CAPACITORS

Automotive grade, serial design

CEU series

CEU3 1608 [0603 inch] CEU4 2012 [0805 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

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

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



CEU series

Serial design

Type: CEU3/1608 [0603 inch], CEU4/2012 [0805 inch]

RoHS







SERIES OVERVIEW

Serial design CEU series, automotive grade of TDK's multilayer ceramic chip capacitor, is a product which has two capacitors in series in single body construction. The structure decreases risk of short circuit failures due to mechanical flex cracks. Additionally, CEU series has higher mechanical endurance by flexible resin layers which absorbs thermal and mechanical stress. The capacitance range is up to 100nF.

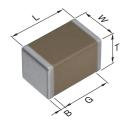
FEATURES

- Serial structure decreases risk of short circuit failures due to mechanical flex cracks.
- Higher mechanical endurance is realized by flexible resin layers.
- AEC-Q200 compliant.

APPLICATIONS

- · Fail-safe design in battery line.
- For circuits requiring safer design

SHAPE & DIMENSIONS

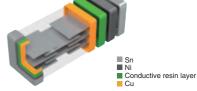


L	Body length
W	Body width
Т	Body height
В	Terminal width
G	Terminal spacing

■ PRODUCT STRUCTURE







A general structure which opposite inner electrodes are alternately stacked.

A product which has two capacitors in series in single body construction and flexible resin layer.

Dimensions in mm

Туре	L	W	Т	В	G
CEU3	1.60+0.20,-0.10	0.80+0.15,-0.10	0.80+0.15,-0.10	0.20min.	0.30min.
CEU4	2.00+0.30,-0.20	1.25+0.25,-0.20	1.25+0.25,-0.20	0.20min.	0.50min.

^{*}Dimensional tolerances are typical values.

MULTILAYER CERAMIC CHIP CAPACITORS



CATALOG NUMBER CONSTRUCTION

CEU	4	J	2	X7R	1H	104	K	125	Α	E	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	

(1) Series

(2) Dimensions L x W (mm)

Code	EIA	Length	Width	Terminal width
3	CC0603	1.60	0.80	0.20
4	CC0805	2.00	1.25	0.20

(3) Thickness code

Code	Thickness
E	0.80 mm
J	1.25 mm

(4) Voltage condition for life test

Symbol	Condition
2	2 × R.V.

(5) Temperature characteristics

Temperature characteristics	Capacitance change	Temperature range
X7R	±15%	−55 to +125°C

(6) Rated voltage (DC)

Code	Voltage (DC)
1H	50V
2A	100V

(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 = 0.5pF101 = 100pF

225 = 2,200,000pF = 2.2µF

(8) Capacitance tolerance

Code	Tolerance
K	±10%
M	±20%

(9) Thickness

Code	Thickness
080	0.80 mm
125	1.25 mm

(10) Packaging style

Code	Style
A	178mm reel, 4mm pitch

(11) Special reserved code

Code	Description
E	Soft termination



Capacitance range chart

CEU3/1608 [0603 inch]

Capacitar	X7R		
(pF)	Code	2A (100V)	1H (50V)
1,000	102		
1,500	152		
2,200	222		
3,300	332		
4,700	472		
6,800	682		
10,000	103		
15,000	153		
22,000	223		
33,000	333		
47,000	473		
01.		0.00	

Standard thickness 0.80mm

Background gray: The product which is not recommended to a new design.

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

Capacitance range chart

CEU4/2012 [0805 inch]

Capacitar	X7R		
(pF)	Code	2A (100V)	1H (50V)
1,000	102		
1,500	152		
2,200	222		
3,300	332		
4,700	472		
6,800	682		
10,000	103		
15,000	153		
22,000	223		
33,000	333		
47,000	473		
68,000	683		
100,000	104		

Standard thickness 1.25 mm

Background gray: The product which is not recommended to a new design.

■ 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%)

1608	Capacitance	Dimensions	Thickness	Capacitance	Catalog number		
10F 10F 2012	-		(mm)			Rated voltage Edc: 50V	
1nF 2012		1608	0.80+0.15,-0.10				
1.5nF 1608	1nF						
1.5nF 1608		2012	1.25+0.25,-0.20				
1.5nF 2012							
1.5nF 2012 1.25+0.25,-0.20 ±10% CEUJEXYRP2A152K125AE CEUJEZYRPA2425W80AE ±20% CEUJEZYRPA2422W80AE ±20% CEUJEZYRPA2422W80AE ±20% CEUJEZYRPA2422W80AE ±20% CEUJEZYRPA2422W80AE ±20% CEUJEZYRPA2422W80AE ±20% CEUJEZYRPA2422W80BAE ±20% CEUJEZYRPA2422W155AE ±20% CEUJEZYRPA232W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233W80BAE ±20% CEUJEZYRPA233ZW80BAE ±20% CEUJEZYRPA233ZW80BAE ±20% CEUJEZYRPA23ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA26ZW125AE ±20% CEUJEZYRPA26ZW125AE ±20% CEUJEZYRPA26ZW155AE ±20% CEUJEZYRPA25ZW155AE ±20% CEUJEZYRPA35ZW155AE ±20% CEUJEZYRPA35ZW155AE ±20% CEUJEZYRPA35ZW155AE ±20% CEUJEZYRPA35ZW155AE ±20% CEUJEZYRPA35ZW155AE ±20% CEUJE		1608	0.80+0.150.10				
2012 1.25+0.25,-0.20 ±10% CEUJ_XXTR2A152K125AE	1.5nF						
1608		2012	1.25+0.250.20				
2.2nF							
2.2nF 2012		1608	0.80+0.15,-0.10				
1608	2.2nF			±20%			
1608		2012	1.25+0.25,-0.20				
3.3nF							
\$\frac{\pmath{\text{20\%}}{2012} \text{1.25+0.25,-0.20}{\pmath{\text{20}\text{600}}{\pmath{\text{20}\text{600}}{\pmath{\text{CEU4J2X7R2A332M125AE}}} \qquad \qquad \qua		1608	608 0.80±0.15 -0.10				
1.25+0.25,-0.20	3 3nF			±20%			
#20% CEU4J2X7R2A332M125AE #20% CEU4J2X7R2A332M125AE #20% CEU4J2X7R2A472K125AE #2012 1.25+0.25,-0.20	0.0	2012	1 25 10 25 -0 20	±10%	CEU4J2X7R2A332K125AE		
4.7nF 1608 0.80+0.15,-0.10 ±20% CEU3E2X7R1H472M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A472K125AE 1608 0.80+0.15,-0.10 ±20% CEU4J2X7R2A472K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A682K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A682K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A682K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A682M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A103K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A103K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A103M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A153K125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A153M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A153M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A153M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R2A153M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H223K080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H223K080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H223K080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H333M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H333M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H333M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473M125AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H4683M125AE 2013 1.25+0.25,-0.20 ±10% CEU4J2X7R1H4683M125AE 2014 1.25+0.25,-0.20 ±10% CEU4J2X7R1H4683M125AE 2015 1.25+0.25,-0.20 ±10% CEU4J2X7R1H4683M125AE 2016 CEU4J2X7R1H4683M125AE ±20%	-	2012	1.25+0.25,-0.20	±20%	CEU4J2X7R2A332M125AE		
4.7nF 2012		1608	0.80±0.15 =0.10	±10%		CEU3E2X7R1H472K080AE	
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#20% CEU4J2X7R2A472M125AE #10% CEU3E2X7R1H682K080AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A682K125AE #208 CEU4J2X7R2A682K125AE #209% CEU4J2X7R2A682M125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A682M125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A103K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A103K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A103M125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R2A13X125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H223K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H223K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K080AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K080AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K080AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K080AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H333K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H473K125AE #2012 1.25+0.25,-0.20 #10% CEU4J2X7R1H683K125AE	4.7111	2012	1 25 . 0 25 0 20	±10%	CEU4J2X7R2A472K125AE		
6.8nF		2012	1.25+0.25,-0.20	±20%	CEU4J2X7R2A472M125AE		
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10nF 2012		1000	1000 0.00.0.15 0.10	±10%		CEU3E2X7R1H103K080AE	
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15nF 2012				±20%	CEU4J2X7R2A103M125AE		
15nF		1608	0.80+0.15,-0.10	±10%		CEU3E2X7R1H153K080AE	
2012 1.25+0.25,-0.20	15.5			±20%		CEU3E2X7R1H153M080AE	
#20% CEU4J2X7R2A153M125AE #108	ISHE	2012	1.05.0.05.0.00	±10%	CEU4J2X7R2A153K125AE		
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#20% CEU4J2X7R1H333M125AE #1608 0.80+0.15,-0.10		2012		±10%		CEU4J2X7R1H333K125AE	
47nF			2012	1.25+0.25,-0.20	±20%		CEU4J2X7R1H333M125AE
#20% CEU3E2X7R1H473M080AE 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473M125AE #2076 CEU4J2X7R1H473M125AE #2076 CEU4J2X7R1H473M125AE #2076 CEU4J2X7R1H683K125AE #2076 CEU4J2X7R1H683M125AE #2076 CEU4J2X7R1H683M125AE		1608	1608 0.80+0.15,-0.10	±10%		CEU3E2X7R1H473K080AE	
4/nF 2012 1.25+0.25,-0.20 ±10% CEU4J2X7R1H473K125AE	47nF			±20%			
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68nF 2012 1.25+0.25,-0.20 ±20% CEU4J2X7R1H683M125AE +10% CEU4J2X7R1H104K125AE	68nF	2012					
+10% CELI4.12X7R1H104K125AF			1.25+0.25,-0.20				
1006 2012 1 26:0 26:0 20	100nF	2012		105 005 655			
±20% CEU4J2X7R1H104M125AE			1.25+0.25,-0.20				

[■] Gray item: The product which is not recommended to a new design.