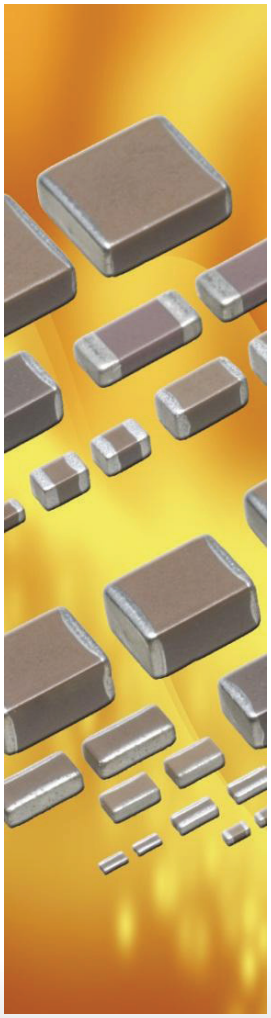
TDK

MULTILAYER CERAMIC CHIP CAPACITORS



C Series
Commercial Grade
Open Mode

Type:

C2012 [EIA CC0805]
C3216 [EIA CC1206]
C3225 [EIA CC1210]
C4532 [EIA CC1812]
C5750 [EIA CC2220]

Issue date:
Oct 2013

REMINDERS

Please read before using this product

SAFETY REMINDERS

REMINDERS

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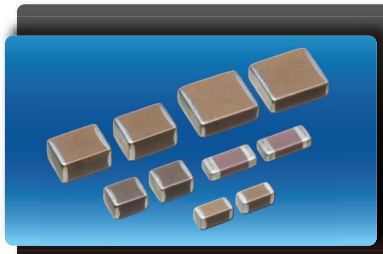
Notice: Effective January 2013, TDK will use a new catalog number which adds product thickness and packaging specification detail. This new catalog number should be referenced on all catalog orders going forward, and is not applicable for OEM part number orders. Please be aware the last five digits of 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	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N



C Series

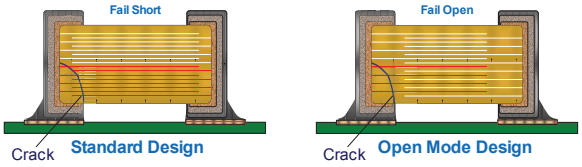
Open Mode

Type: C2012 [EIA CC0805], C3216 [EIA CC1206], C3225 [EIA CC1210], C4532 [EIA CC1812], C5750 [EIA CC2220]

Lead Free | RoHS COMPLIANT | Ecological

Features

- When a chip capacitor is cracked by mechanical stress such as board bending, open mode construction helps user reduce the risk of short circuits.

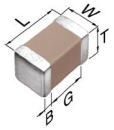


- Open Mode capacitor is designed with wider gap between the terminal and the internal electrodes to help reduce the risk of short circuit in the event of capacitor cracking due to mechanical stress such as board bending.

Applications

- High reliability and high mechanical stress applications
- Battery line circuits with high board flex stress
- DC-DC Converter

Shape & Dimensions



L	Body Length
W	Body Width
T	Body Height
B	Terminal Width
G	Terminal Spacing

Catalog Number Construction

C • 5750 • X7R • 1C • 226 • M • 280 • K • M

Series Name

Dimensions L x W (mm)

Code	Length	Width	Terminal
C2012	2.00 ± 0.20	1.25 ± 0.20	0.20 min.
C3216	3.20 ± 0.20	1.60 ± 0.20	0.20 min.
C3225	3.20 ± 0.40	2.50 ± 0.30	0.20 min.
C4532	4.50 ± 0.40	3.20 ± 0.40	0.20 min.
C5750	5.70 ± 0.40	5.00 ± 0.40	0.20 min.

Temperature Characteristics

Temperature Characteristics	Capacitance Change	Temperature Range
X7R	± 15%	-55 to +125ºC

Rated Voltage (DC)

Code	Voltage (DC)	Code	Voltage (DC)
1C	16V	2A	100V
1E	25V	2E	250V
1H	50V	2J	630V

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.

Ex. 0R2 = 0.2pF; 103 = 10,000pF; 105 = 1,000,000pF = 1,000nF

Capacitance Tolerance

Code	Tolerance
K	± 10%
M	± 20%

Nominal Thickness

Code	Thickness
085	0.85 mm
115	1.15 mm
125	1.25 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

Packaging Style

Code	Style
A	178" Reel, 4mm Pitch
K	178" Reel, 8mm Pitch

Special Reserved Code

Code	Description
M	Open Mode Design

• All specifications are subject to change without notice.

Capacitance Range Chart

EIA CC0805 [C2012]

Capacitance Range Chart

Temperature Characteristics: X7R (± 15%)
Rated Voltage: 250V (2E), 100V (2A), 50V (1H)

Capacitance (pF)	Code	Tolerance	X7R		
			2E (250V)	2A (100V)	1H (50V)
1,000	102	K: ± 10%			
1,500	152				
2,200	222				
3,300	332				
4,700	472				
6,800	682				
10,000	103				
15,000	153				
22,000	223				
100,000	104				

Standard Thickness
0.85 mm
1.25 mm

Capacitance Range Chart

EIA CC1206 [C3216]

Capacitance Range Chart

Temperature Characteristics: X7R (± 15%)
Rated Voltage: 630V (2J), 250V (2E), 100V (2A), 16V (1C)

Capacitance (pF)	Code	Tolerance	X7R			
			2J (630V)	2E (250V)	2A (100V)	1C (16V)
1,000	102	K: ± 10%				
1,500	152	M: ± 20%				
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					
150,000	154					
1,000,000	105					
4,700,000	475					

Standard Thickness
1.15 mm
1.30 mm
1.60 mm

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Capacitance Range Chart

EIA CC1210 [C3225]

Capacitance Range Chart

Temperature Characteristics: X7R (± 15%)

Rated Voltage: 630V (2J), 250V (2E), 100V (2A), 50V (1H), 16V (1C)

Capacitance (pF)	Code	Tolerance	X7R					
			2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
47,000	473	K: ± 10%						
68,000	683							
100,000	104							
150,000	154							
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							
3,300,000	335							
4,700,000	475							

Standard Thickness

- 1.15 mm
- 1.60 mm
- 2.00 mm
- 2.30 mm
- 2.50 mm

Capacitance Range Chart

EIA CC1812 [C4532]

Capacitance Range Chart

Temperature Characteristics: X7R (± 15%)

Rated Voltage: 630V (2J), 250V (2E), 100V (2A), 50V (1H), 25V (1E), 16V (1C)

Capacitance (pF)	Code	Tolerance	X7R					
			2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
68,000	683	K: ± 10%						
100,000	104							
150,000	154							
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
3,300,000	335							
4,700,000	475							
6,800,000	685							
10,000,000	106							

Standard Thickness

- 1.60 mm
- 2.00 mm
- 2.30 mm

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Capacitance Range Chart

EIA CC2220 [C5750]

Capacitance Range Chart

Temperature Characteristics: X7R (± 15%)

Rated Voltage: 630V (2J), 250V (2E), 100V (2A), 50V (1H), 25V (1E), 16V (1C)

Capacitance (pF)	Code	Tolerance	X7R					
			2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
150,000	154	K: ± 10% M: ± 20%						
220,000	224							
330,000	334							
470,000	474							
680,000	684							
1,000,000	105							
1,500,000	155							
2,200,000	225							
3,300,000	335							
4,700,000	475							
6,800,000	685							
10,000,000	106							
15,000,000	156							
22,000,000	226							

Standard Thickness

- 1.60 mm
- 2.00 mm
- 2.30 mm
- 2.80 mm

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Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X7R (-55 to +125ºC, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V	Rated Voltage Edc: 50V
1 nF	2012	0.85 ± 0.15	± 10%		C2012X7R2E102K085AM	C2012X7R2A102K085AM	
	3216	1.15 ± 0.15	± 10%	C3216X7R2J102K115AM			
1.5 nF	2012	0.85 ± 0.15	± 10%		C2012X7R2E152K085AM	C2012X7R2A152K085AM	
	3216	1.15 ± 0.15	± 10%	C3216X7R2J152K115AM			
2.2 nF	2012	0.85 ± 0.15	± 10%		C2012X7R2E222K085AM	C2012X7R2A222K085AM	
	3216	1.15 ± 0.15	± 10%	C3216X7R2J222K115AM			
3.3 nF	2012	0.85 ± 0.15	± 10%		C2012X7R2E332K085AM	C2012X7R2A332K085AM	
	3216	1.15 ± 0.15	± 10%	C3216X7R2J332K115AM			
4.7 nF	2012	0.85 ± 0.15	± 10%		C2012X7R2E472K085AM	C2012X7R2A472K085AM	
	3216	1.15 ± 0.15	± 10%	C3216X7R2J472K115AM			
6.8 nF	2012	0.85 ± 0.15	± 10%			C2012X7R2A682K085AM	
		1.25 ± 0.20	± 10%		C2012X7R2E682K125AM		
	3216	1.15 ± 0.15	± 10%	C3216X7R2J682K115AM			
10 nF	2012	0.85 ± 0.15	± 10%			C2012X7R2A103K085AM	
		1.25 ± 0.20	± 10%		C2012X7R2E103K125AM		
	3216	1.15 ± 0.15	± 10%	C3216X7R2J103K115AM			
15 nF	2012	1.25 ± 0.20	± 10%		C2012X7R2E153K125AM	C2012X7R2A153K125AM	
	3216	1.15 ± 0.15	± 10%		C3216X7R2E153K115AM		
		1.30 ± 0.20	± 10%	C3216X7R2J153K130AM			
22 nF	2012	1.25 ± 0.20	± 10%			C2012X7R2A223K125AM	
	3216	1.15 ± 0.15	± 10%		C3216X7R2E223K115AM		
		1.30 ± 0.20	± 10%	C3216X7R2J223K130AM			
33 nF	3216	1.15 ± 0.15	± 10%			C3216X7R2A333K115AM	
		1.60 ± 0.20	± 10%	C3216X7R2J333K160AM	C3216X7R2E333K160AM		
47 nF	3216	1.15 ± 0.15	± 10%			C3216X7R2A473K115AM	
		1.60 ± 0.20	± 10%		C3216X7R2E473K160AM		
	3225	2.00 ± 0.20	± 10%	C3225X7R2J473K200AM			
68 nF	3216	1.60 ± 0.20	± 10%		C3216X7R2E683K160AM	C3216X7R2A683K160AM	
	3225	2.00 ± 0.20	± 10%	C3225X7R2J683K200AM			
	4532	1.60 ± 0.20	± 10%	C4532X7R2J683K160KM			
100 nF	2012	1.25 ± 0.20	± 10%				C2012X7R1H104K125AM
	3216	1.60 ± 0.20	± 10%		C3216X7R2E104K160AM	C3216X7R2A104K160AM	
	3225	2.00 ± 0.20	± 10%		C3225X7R2E104K200AM		
	4532	2.30 ± 0.20	± 10%	C4532X7R2J104K230KM			
150 nF	3216	1.60 ± 0.20	± 10%			C3216X7R2A154K160AM	
	3225	2.00 ± 0.20	± 10%		C3225X7R2E154K200AM		
	4532	1.60 ± 0.20	± 10%		C4532X7R2E154K160KM		
	5750	1.60 ± 0.20	± 10%	C5750X7R2J154K160KM			
220 nF	3225	2.00 ± 0.20	± 10%		C3225X7R2E224K200AM		
	4532	2.30 ± 0.20	± 10%		C4532X7R2E224K230KM		
	5750	2.30 ± 0.20	± 10%	C5750X7R2J224K230KM			
330 nF	3225	2.00 ± 0.20	± 10%			C3225X7R2A334K200AM	
	4532	2.30 ± 0.20	± 10%		C4532X7R2E334K230KM		
	5750	1.60 ± 0.20	± 10%		C5750X7R2E334K160KM		
470 nF	3225	1.60 ± 0.20	± 10%				C3225X7R1H474K160AM
	4532	2.30 ± 0.20	± 10%		C4532X7R2E474K230KM		
	5750	2.30 ± 0.20	± 10%		C5750X7R2E474K230KM		
680 nF	3225	2.00 ± 0.20	± 10%				C3225X7R1H684K200AM
	4532	2.30 ± 0.20	± 10%			C4532X7R2A684K230KM	
	5750	1.60 ± 0.20	± 10%			C5750X7R2A684K160KM	
		2.30 ± 0.20	± 10%		C5750X7R2E684K230KM		

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Capacitance Range Table

Class 2 (Temperature Stable)

Temperature Characteristics: X7R (-55 to +125ºC, ±15%)

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 250V	Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V
1 µF	3216	1.60 ± 0.20	± 10%		C3216X7R2A105K160AM		
	3225	1.15 ± 0.15	± 10%				C3225X7R1E105K115AM
		2.00 ± 0.20	± 10%		C3225X7R2A105K200AM		
	4532	1.60 ± 0.20	± 10%			C4532X7R1H105K160KM	
	5750	2.30 ± 0.20	± 10%	C5750X7R2E105K230KM	C5750X7R2A105K230KM		
1.5 µF	3225	1.60 ± 0.20	± 10%				C3225X7R1E155K160AM
	4532	2.30 ± 0.20	± 10%			C4532X7R1H155K230KM	
	5750	2.30 ± 0.20	± 10%		C5750X7R2A155K230KM		
2.2 µF	3225	2.00 ± 0.20	± 10%				C3225X7R1E225K200AM
		2.30 ± 0.20	± 10%		C3225X7R2A225K230AM		
	5750	1.60 ± 0.20	± 10%			C5750X7R1H225K160KM	

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	Catalog Number			
				Rated Voltage Edc: 100V	Rated Voltage Edc: 50V	Rated Voltage Edc: 25V	Rated Voltage Edc: 16V
3.3 µF	3225	2.00 ± 0.20	± 10%				C3225X7R1C335K200AM
	4532	1.60 ± 0.20	± 10%			C4532X7R1E335K160KM	
	5750	2.30 ± 0.20	± 10%		C5750X7R1H335K230KM		
4.7 µF	3216	1.60 ± 0.20	± 20%				C3216X7R1C475M160AM
	3225	2.50 ± 0.30	± 10%				C3225X7R1C475K250AM
	4532	2.00 ± 0.20	± 10%			C4532X7R1E475K200KM	
	5750	2.80 ± 0.30	± 10%		C5750X7R1H475K280KM		
6.8 µF	4532	2.00 ± 0.20	± 10%				C4532X7R1C685K200KM
	5750	1.60 ± 0.20	± 10%			C5750X7R1E685K160KM	
10 µF	4532	2.30 ± 0.20	± 10%				C4532X7R1C106K230KM
	5750	2.00 ± 0.20	± 10%			C5750X7R1E106K200KM	
15 µF	5750	2.80 ± 0.30	± 20%			C5750X7R1E156M280KM	
22 µF	5750	2.80 ± 0.30	± 20%				C5750X7R1C226M280KM

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