

MULTILAYER CERAMIC CHIP CAPACITORS

Commercial grade, MEGACAP type

CKG series

Single type

CKG32K [3.6x2.6 mm]

CKG45K [5.0x3.5 mm]

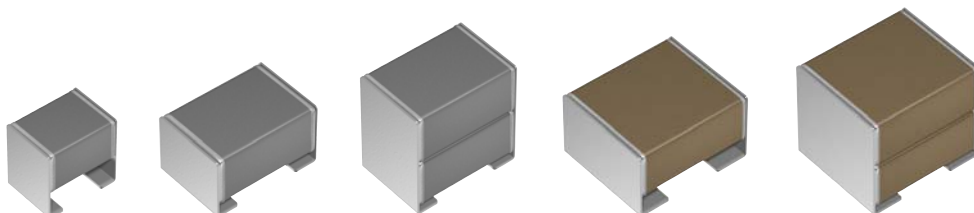
CKG57K [6.0x5.0 mm]

Stacked type

CKG45N [5.0x3.5 mm]

CKG57N [6.0x5.0 mm]

* Dimensions are typical values.



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 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.

- We may modify products or discontinue production of a product listed in this catalog without prior notification.
- 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.
- 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.
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- 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

CKG series

MEGACAP type



Type: CKG32K [3.6x2.6 mm], CKG45K [5.0x3.5 mm], CKG57K [6.0x5.0 mm],
CKG45N [5.0x3.5 mm], CKG57N [6.0x5.0 mm]

SERIES OVERVIEW

CKG series is a product which metal frames are attached to the terminal electrodes of MLCC. It is also referred to as MEGACAP. Because the metal frame relieves mechanical stress and thermal shock, CKG series is an extremely reliable product. In addition, the stacked type is effective in mounting area reduction because twice capacitance functions by the stacked structure.

FEATURES

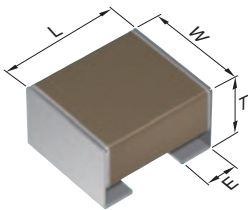
- Metal frames relieve mechanical stress and thermal shock.
- Stacked type has twice the capacitance in the same area.
- C0G type having excellent stable temperature and DC-bias characteristics is also available.
- Mounting on aluminum board is possible.

APPLICATIONS

- X7r products: Smoothing and decoupling applications requiring high capacitance
- C0G products: LC resonant circuits of wireless power transfer, etc.

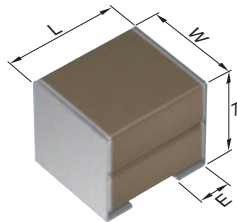
SHAPE & DIMENSIONS

Single type



L	Product length
W	Product width
T	Product thickness
E	Metal-frame width

Stacked type



L	Product length
W	Product width
T	Product thickness
E	Metal-frame width

Dimensions in mm

Type	L	W	T	E
CKG32K	3.60±0.30	2.60±0.30	3.35±0.10	0.80±0.15
CKG45K	5.00±0.50	3.50±0.50	2.90±0.10	1.10±0.30
CKG57K	6.00±0.50	5.00±0.50	3.35±0.15	1.60±0.30
CKG45N	5.00±0.50	3.50±0.50	5.00±0.50	1.10±0.30
CKG57N	6.00±0.50	5.00±0.50	5.00±0.50	1.60±0.30

* Dimensional tolerances are typical values.

CATALOG NUMBER CONSTRUCTION

CKG	57	N	X7R	1V	107	M	500	J	H
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

(1) Series

(2) Dimensions L x W (mm)

Code	Length	Width	Metal-frame width
32	3.60	2.60	0.80
45	5.00	3.50	1.10
57	6.00	5.00	1.60

(3) Structure

Code	Type
K	Single
N	Stacked

(4) Temperature characteristics

Temperature characteristics	Temperature coefficient or capacitance change	Temperature range
C0G	0±30ppm/°C	-55 to +125°C
X5R	±15%	-55 to +85°C
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C
X7T	+22, -33%	-55 to +125°C

(5) Rated voltage (DC)

Code	Voltage (DC)
1C	16V
1E	25V
1V	35V
1H	50V
2A	100V
2E	250V
2W	450V
2J	630V
3A	1000V

(6) 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

(7) Capacitance tolerance

Code	Tolerance
J	± 5%
K	± 10%
M	± 20%

(8) Thickness

Code	Thickness
290	2.90 mm
335	3.35 mm
500	5.00 mm

(9) Packaging style

Code	Style
A	178mm reel, 4mm pitch
J	330mm reel, 8mm pitch


(10) Special reserved code


Code	Description
H	MEGACAP (with metal frame)

Capacitance range chart

CKG32K [3.6x2.6 mm], Single type

Capacitance		COG				
(pF)	Code	3A (1kV)	2J (630V)	2W (450V)	2E (250V)	2A (100V)
1,000	102					
1,200	122					
1,500	152					
1,800	182					
2,200	222					
2,700	272					
3,300	332					
3,900	392					
4,700	472					
5,600	562					
6,800	682					
8,200	822					
10,000	103					
15,000	153					
22,000	223					
33,000	333					
47,000	473					
68,000	683					

Standard thickness  3.35 mm


 Background gray: These products are not recommended for new designs.

■ For details such as the catalog numbers, please refer to the capacitance range table on page 8 and after.

Capacitance range chart

CKG45K [5.0x3.5 mm], Single type

Capacitance		COG		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)
33,000	333			
47,000	473			
68,000	683			


Standard thickness  2.90 mm

■ For details such as the catalog numbers, please refer to the capacitance range table on page 8 and after.

Capacitance range chart

CKG57K [6.0x5.0 mm], Single type

Capacitance		COG		X7R						X7S			X7T			
(pF)	Code	2J (630V)	2E (250V)	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	2A (100V)	1H (50V)	1C (16V)	2J (630V)	2W (450V)	2E (250V)
68,000	683	■														
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					■	■									
6,800,000	685										■					
10,000,000	106								■		■	■				
15,000,000	156									■						
22,000,000	226						■		■							
47,000,000	476							■	■				■			


Standard thickness  3.35 mm

■ For details such as the catalog numbers, please refer to the capacitance range table on page 8 and after.

Capacitance range chart

CKG45N [5.0x3.5 mm], Stacked type

Capacitance		COG		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)
66,000	663	■		
94,000	943		■	
140,000	144			■

Standard thickness  5.00 mm

■ For details such as the catalog numbers, please refer to the capacitance range table on page 8 and after.

Capacitance range chart


CKG57N [6.0x5.0 mm], Stacked type


Capacitance		C0G		X5R				X7R						
(pF)	Code	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)
140,000	144	■												
300,000	304		■											
470,000	474							■						
1,000,000	105								■					
2,200,000	225								■	■				
4,700,000	475									■	■			
10,000,000	106			■							■			
22,000,000	226				■								■	
33,000,000	336													■
47,000,000	476					■					■			
100,000,000	107						■					■	■	

Capacitance		X7S				X7T		
(pF)	Code	2A (100V)	1H (50V)	1E (25V)	1C (16V)	2J (630V)	2W (450V)	2E (250V)
680,000	684					■		
1,000,000	105					■		
1,500,000	155						■	
2,200,000	225						■	
3,300,000	335							■
22,000,000	226	■	■					
47,000,000	476			■				
100,000,000	107				■			

Standard thickness

 5.00 mm

 Background gray: This product is not recommended for new designs.

 For details such as the catalog numbers, please refer to the capacitance range table on page 8 and after.

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

Temperature characteristic: C0G (-55 to +125°C, 0±30ppm/°C)

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number				
				Rated voltage Edc: 1kV	Rated voltage Edc: 630V	Rated voltage Edc: 450V	Rated voltage Edc: 250V	Rated voltage Edc: 100V
1nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A102J335AH				
1.2nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A122J335AH				
1.5nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A152J335AH				
1.8nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A182J335AH				
2.2nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A222J335AH				
2.7nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A272J335AH				
3.3nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A332J335AH				
3.9nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A392J335AH				
4.7nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A472J335AH				
5.6nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A562J335AH				
6.8nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A682J335AH				
8.2nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A822J335AH				
10nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A103J335AH				
15nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A153J335AH				
22nF	3.6x2.6	3.35±0.10	±5%	CKG32KC0G3A223J335AH	CKG32KC0G2J223J335AH	CKG32KC0G2W223J335AH		
33nF	3.6x2.6	3.35±0.10	±5%		CKG32KC0G2J333J335AH	CKG32KC0G2W333J335AH	CKG32KC0G2E333J335AH	
	5.0x3.5	2.90±0.10	±5%		CKG45KC0G2J333J290JH			
47nF	3.6x2.6	3.35±0.10	±5%				CKG32KC0G2E473J335AH	
	5.0x3.5	2.90±0.10	±5%			CKG45KC0G2W473J290JH		
66nF	5.0x3.5	5.00±0.50	±5%		CKG45NC0G2J663J500JH			
	3.6x2.6	3.35±0.10	±5%					CKG32KC0G2A683J335AH
68nF	5.0x3.5	2.90±0.10	±5%				CKG45KC0G2E683J290JH	
	6.0x5.0	3.35±0.15	±5%		CKG57KC0G2J683J335JH			
94nF	5.0x3.5	5.00±0.50	±5%			CKG45NC0G2W943J500JH		
	5.0x3.5	5.00±0.50	±10%				CKG45NC0G2E144K500JH	
140nF	6.0x5.0	5.00±0.50	±10%		CKG57NC0G2J144K500JH			
	6.0x5.0	5.00±0.50	±5%				CKG57KC0G2E154J335JH	
300nF	6.0x5.0	5.00±0.50	±5%				CKG57NC0G2E304J500JH	

■ Gray items: These products are not recommended for new designs.
Click the part numbers for details.

Capacitance range table

Temperature characteristic: X5R (-55 to +85°C, ±15%)

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 100V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
10µF	6.0x5.0	5.00±0.50	±20%	CKG57NX5R2A106M500JH			
22µF	6.0x5.0	5.00±0.50	±20%		CKG57NX5R1H226M500JH		
47µF	6.0x5.0	5.00±0.50	±20%			CKG57NX5R1E476M500JH	
100µF	6.0x5.0	5.00±0.50	±20%				CKG57NX5R1C107M500JH

■ Gray item: This product is not recommended for new designs.
Click the part numbers for details.

MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

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

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number		
				Rated voltage Edc: 630V	Rated voltage Edc: 250V	Rated voltage Edc: 100V
220nF	6.0x5.0	3.35±0.15	±10%	CKG57KX7R2J224K335JH		
			±20%	CKG57KX7R2J224M335JH		
470nF	6.0x5.0	3.35±0.15	±10%		CKG57KX7R2E474K335JH	
			±20%		CKG57KX7R2E474M335JH	
		5.00±0.50	±20%	CKG57NX7R2J474M500JH		
1µF	6.0x5.0	3.35±0.15	±10%	CKG57KX7R2E105K335JH	CKG57KX7R2A105K335JH	
			±20%	CKG57KX7R2E105M335JH	CKG57KX7R2A105M335JH	
		5.00±0.50	±20%	CKG57NX7R2E105M500JH		
2.2µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7R2A225K335JH
			±20%			CKG57KX7R2A225M335JH
		5.00±0.50	±20%	CKG57NX7R2E225M500JH	CKG57NX7R2A225M500JH	CKG57NX7R2A225M500JH
3.3µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7R2A335K335JH
			±20%			CKG57KX7R2A335M335JH
4.7µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7R2A475K335JH
			±20%			CKG57KX7R2A475M335JH
		5.00±0.50	±20%	CKG57NX7R2A475M500JH		
10µF	6.0x5.0	5.00±0.50	±20%			CKG57NX7R2A106M500JH

Click the part numbers for details.

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
4.7µF	6.0x5.0	3.35±0.15	±10%	CKG57KX7R1H475K335JH			
			±20%	CKG57KX7R1H475M335JH			
10µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7R1E106K335JH	
			±20%			CKG57KX7R1E106M335JH	
		5.00±0.50	±20%	CKG57NX7R1H106M500JH			
15µF	6.0x5.0	3.35±0.15	±20%				CKG57KX7R1C156M335JH
22µF	6.0x5.0	3.35±0.15	±20%	CKG57KX7R1H226M335JH		CKG57KX7R1E226M335JH	
			±20%			CKG57NX7R1E226M500JH	
33µF	6.0x5.0	5.00±0.50	±20%				CKG57NX7R1C336M500JH
			±20%				
47µF	6.0x5.0	3.35±0.15	±20%		CKG57KX7R1V476M335JH	CKG57KX7R1E476M335JH	
			±20%	CKG57NX7R1H476M500JH			
100µF	6.0x5.0	5.00±0.50	±20%		CKG57NX7R1V107M500JH	CKG57NX7R1E107M500JH	

Click the part numbers for details.

Capacitance range table

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

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 100V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
6.8µF	6.0x5.0	3.35±0.15	±10%	CKG57KX7S2A685K335JH			
			±20%	CKG57KX7S2A685M335JH			
10µF	6.0x5.0	3.35±0.15	±10%	CKG57KX7S2A106K335JH	CKG57KX7S1H106K335JH		
			±20%	CKG57KX7S2A106M335JH	CKG57KX7S1H106M335JH		
15µF	6.0x5.0	3.35±0.15	±20%	CKG57KX7S2A156M335JH			
22µF	6.0x5.0	5.00±0.50	±20%	CKG57NX7S2A226M500JH	CKG57NX7S1H226M500JH		
			±20%				CKG57KX7S1C476M335JH
47µF	6.0x5.0	3.35±0.15	±20%			CKG57NX7S1E476M500JH	
			±20%				CKG57NX7S1C107M500JH
100µF	6.0x5.0	5.00±0.50	±20%				CKG57NX7S1C107M500JH

Click the part numbers for details.

Capacitance range table

Temperature characteristic: X7T (–55 to +125°C, +22,-33%)

Capacitance	Dimensions (mm)	Thickness (mm)	Capacitance tolerance	Catalog number		
				Rated voltage Edc: 630V	Rated voltage Edc: 450V	Rated voltage Edc: 250V
330nF	6.0x5.0	3.35±0.15	±10%	CKG57KX7T2J334K335JH		
			±20%	CKG57KX7T2J334M335JH		
470nF	6.0x5.0	3.35±0.15	±10%	CKG57KX7T2J474K335JH		
			±20%	CKG57KX7T2J474M335JH		
680nF	6.0x5.0	3.35±0.15	±10%		CKG57KX7T2W684K335JH	
			±20%		CKG57KX7T2W684M335JH	
		5.00±0.50	±20%	CKG57NX7T2J684M500JH		
1µF	6.0x5.0	3.35±0.15	±10%		CKG57KX7T2W105K335JH	
			±20%		CKG57KX7T2W105M335JH	
		5.00±0.50	±20%	CKG57NX7T2J105M500JH		
1.5µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7T2E155K335JH
			±20%			CKG57KX7T2E155M335JH
		5.00±0.50	±20%		CKG57NX7T2W155M500JH	
2.2µF	6.0x5.0	3.35±0.15	±10%			CKG57KX7T2E225K335JH
			±20%			CKG57KX7T2E225M335JH
		5.00±0.50	±20%		CKG57NX7T2W225M500JH	
3.3µF	6.0x5.0	5.00±0.50	±20%			CKG57NX7T2E335M500JH

Click the part numbers for details.