TDK

February 2022

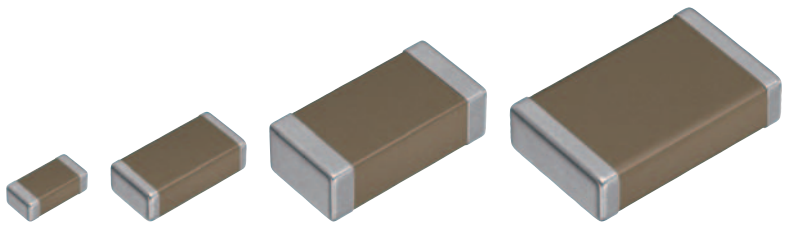
MULTILAYER CERAMIC CHIP CAPACITORS

Commercial grade, low profile

CGB series

CGB1	**0603 [EIA 0201]**
CGB2	**1005 [EIA 0402]**
CGB3	**1608 [EIA 0603]**
CGB4	**2012 [EIA 0805]**

*** 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
   (2) Transportation equipment (cars, 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.
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 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

CGB series

Low profile

Type: CGB1/0603 [EIA 0201], CGB2/1005 [EIA 0402], CGB3/1608 [EIA 0603], CGB4/2012 [EIA 0805]

SERIES OVERVIEW

Low profile CGB series, commercial grade of TDK's multilayer ceramic chip capacitor, is a product whose thickness is lower than general type, and so this is ideal for height-restricted applications such as mobile devices. The available maximum height is from 0.22 mm to 0.65 mm.

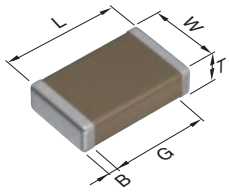
FEATURES

- The product height is lower than general products and products with maximum thicknesses from 0.22 mm to 0.65 mm are available.

APPLICATIONS

- Ideal for height-restricted applications such as smartphone and mobile devices

SHAPE & DIMENSIONS



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

Dimensions in mm

Type	L	W	T	B	G
CGB1	0.60±0.03	0.30±0.03	0.19±0.03	0.10min.	0.20min.
CGB2	1.00±0.05	0.50±0.05	0.30±0.03	0.10min.	0.30min.
CGB3	1.60±0.10	0.80±0.10	0.50±0.05	0.20min.	0.30min.
CGB4	2.00±0.20	1.25±0.20	0.50±0.05	0.20min.	0.50min.

*Dimensional tolerances are typical values.

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CATALOG NUMBER CONSTRUCTION

CGB	2	T	1	X6S	0G	105	M	022	B	C
(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
1	0201	0.60	0.30	0.10 min.
2	0402	1.00	0.50	0.10 min.
3	0603	1.60	0.80	0.20 min.
4	0805	2.00	1.25	0.20 min.

(3) Thickness code

Code	Thickness
T	0.22 mm max.
A	0.33 mm max.
S	0.50 mm max.
B	0.55 mm max.
C	0.65 mm max.

(4) Voltage condition for life test

Symbol	Condition
1	1 × R.V.
3	1.5 × R.V.

(5) Temperature characteristics

Temperature characteristics	Capacitance change	Temperature range
JB	±10%	−25 to +85°C
X5R	±15%	−55 to +85°C
X6S	±22%	−55 to +105°C
X7R	±15%	−55 to +125°C
X7S	±22%	−55 to +125°C

(6) Rated voltage (DC)

Code	Voltage (DC)
0G	4V
0J	6.3V
1A	10V
1C	16V
1E	25V

(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%
M	±20%

(9) Thickness

Code	Thickness
022	0.22 mm max.
033	0.33 mm max.
050	0.50 mm max.
055	0.55 mm max.
065	0.65 mm max.

(10) Packaging style

Code	Style
A	178mm reel, 4mm pitch
B	178mm reel, 2mm pitch

(11) Special reserved code

Code	Description
B,C	TDK internal code

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Capacitance range chart — CGB1/0603 [EIA 0201]

Capacitance		X5R	X6S
(pF)	Code	0J (6.3V)	0G (4V)
100,000	**104**		

Standard thickness 0.22 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 7 and after.

Capacitance range chart — CGB2/1005 [EIA 0402]

Capacitance		JB					X5R				
(pF)	Code	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	0G (4V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	0G (4V)
220,000	**224**										
470,000	**474**										
1,000,000	**105**										
2,200,000	**225**										

Capacitance		X6S			X7S	
(pF)	Code	1A (10V)	0J (6.3V)	0G (4V)	0J (6.3V)	0G (4V)
220,000	**224**					
470,000	**474**					
1,000,000	**105**					

Standard thickness 0.22 mm 0.33 mm

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

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Capacitance range chart — CGB3/1608 [EIA 0603]

Capacitance		JB					X5R				
(pF)	Code	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	0G (4V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	0G (4V)
470,000	**474**										
1,000,000	**105**										
2,200,000	**225**										
4,700,000	**475**										
10,000,000	**106**										

Capacitance		X6S				X7R		X7S
(pF)	Code	1C (16V)	1A (10V)	0J (6.3V)	0G (4V)	1A (10V)	0J (6.3V)	0G (4V)
1,000,000	**105**							
2,200,000	**225**							
4,700,000	**475**							

Standard thickness 0.50 mm 0.55 mm

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Capacitance range chart

CGB4/2012 [EIA 0805]

Capacitance		JB			X5R			X6S			X7R	
(pF)	Code	1E (25V)	1C (16V)	1A (10V)	1E (25V)	1C (16V)	1A (10V)	1C (16V)	1A (10V)	0J (6.3V)	1A (10V)	0J (6.3V)
1,000,000	**105**											
2,200,000	**225**											

Standard thickness 0.55 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 7 and after.

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Capacitance range table — Temperature characteristic: JB (–25 to +85°C, ±10%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 25V	Rated voltage Edc: 16V	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V
470nF	1005	0.33max.	±10%		CGB2A1JB1C474K033BC	CGB2A3JB1A474K033BB	
			±20%		CGB2A1JB1C474M033BC	CGB2A3JB1A474M033BB	
	1608	0.55max.	±10%	CGB3B3JB1E474K055AB			
			±20%	CGB3B3JB1E474M055AB			
1μF	1005	0.33max.	±10%	CGB2A1JB1E105K033BC	CGB2A1JB1C105K033BC	CGB2A1JB1A105K033BC	CGB2A3JB0J105K033BB
			±20%	CGB2A1JB1E105M033BC	CGB2A1JB1C105M033BC	CGB2A1JB1A105M033BC	CGB2A3JB0J105M033BB
	1608	0.55max.	±10%	CGB3B1JB1E105K055AC	CGB3B3JB1C105K055AB		
			±20%	CGB3B1JB1E105M055AC	CGB3B3JB1C105M055AB		
	2012	0.55max.	±10%	CGB4B3JB1E105K055AB			
			±20%	CGB4B3JB1E105M055AB			
2.2μF	1005	0.33max.	±20%				CGB2A1JB0J225M033BC
	1608	0.55max.	±10%		CGB3B1JB1C225K055AC	CGB3B3JB1A225K055AB	
			±20%		CGB3B1JB1C225M055AC	CGB3B3JB1A225M055AB	
	2012	0.55max.	±10%	CGB4B1JB1E225K055AC	CGB4B3JB1C225K055AB	CGB4B3JB1A225K055AB	
			±20%	CGB4B1JB1E225M055AC	CGB4B3JB1C225M055AB	CGB4B3JB1A225M055AB	
4.7μF	1608	0.55max.	±10%			CGB3B1JB1A475K055AC	CGB3B3JB0J475K055AB
			±20%			CGB3B1JB1A475M055AC	CGB3B3JB0J475M055AB
10μF	1608	0.50max.	±20%				CGB3S1JB0J106M050AC
		0.65max.	±20%				CGB3C1JB0J106M065AC

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number
				Rated voltage Edc: 4V
1μF	1005	0.33max.	±10%	CGB2A3JB0G105K033BB
			±20%	CGB2A3JB0G105M033BB
10μF	1608	0.50max.	±20%	CGB3S3JB0G106M050AB

■ 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	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 25V	Rated voltage Edc: 16V	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V
100nF	0603	0.22max.	±20%				CGB1T3X5R0J104M022BB
220nF	1005	0.22max.	±20%				CGB2T3X5R0J224M022BB
470nF	1005	0.22max.	±20%				CGB2T3X5R0J474M022BB
		0.33max.	±10%		CGB2A1X5R1C474K033BC	CGB2A3X5R1A474K033BB	
			±20%		CGB2A1X5R1C474M033BC	CGB2A3X5R1A474M033BB	
	1608	0.55max.	±10%	CGB3B3X5R1E474K055AB			
			±20%	CGB3B3X5R1E474M055AB			
1μF	1005	0.33max.	±10%	CGB2A1X5R1E105K033BC	CGB2A1X5R1C105K033BC	CGB2A1X5R1A105K033BC	CGB2A3X5R0J105K033BB
			±20%	CGB2A1X5R1E105M033BC	CGB2A1X5R1C105M033BC	CGB2A1X5R1A105M033BC	CGB2A3X5R0J105M033BB
	1608	0.55max.	±10%	CGB3B1X5R1E105K055AC	CGB3B3X5R1C105K055AB		
			±20%	CGB3B1X5R1E105M055AC	CGB3B3X5R1C105M055AB		
	2012	0.55max.	±10%	CGB4B3X5R1E105K055AB			
			±20%	CGB4B3X5R1E105M055AB			
2.2μF	1005	0.33max.	±20%				CGB2A1X5R0J225M033BC
	1608	0.55max.	±10%		CGB3B1X5R1C225K055AC	CGB3B3X5R1A225K055AB	
			±20%		CGB3B1X5R1C225M055AC	CGB3B3X5R1A225M055AB	
	2012	0.55max.	±10%	CGB4B1X5R1E225K055AC	CGB4B3X5R1C225K055AB	CGB4B3X5R1A225K055AB	
			±20%	CGB4B1X5R1E225M055AC	CGB4B3X5R1C225M055AB	CGB4B3X5R1A225M055AB	
4.7μF	1608	0.55max.	±10%			CGB3B1X5R1A475K055AC	CGB3B3X5R0J475K055AB
			±20%			CGB3B1X5R1A475M055AC	CGB3B3X5R0J475M055AB
10μF	1608	0.50max.	±10%				CGB3S1X5R0J106M050AC
		0.65max.	±20%				CGB3C1X5R0J106M065AC

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number
				Rated voltage Edc: 4V
470nF	1005	0.22max.	±20%	CGB2T1X5R0G474M022BC
1μF	1005	0.22max.	±20%	CGB2T1X5R0G105M022BC
		0.33max.	±10%	CGB2A3X5R0G105K033BB
			±20%	CGB2A3X5R0G105M033BB
10μF	1608	0.50max.	±20%	CGB3S3X5R0G106M050AB

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Capacitance range table　Temperature characteristic: X6S (–55 to +105°C, ±22%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 16V	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
100nF	0603	0.22max.	±20%				CGB1T3X6S0G104M022BB
220nF	1005	0.22max.	±20%				CGB2T1X6S0G224M022BC
470nF	1005	0.22max.	±10%				CGB2T1X6S0G474M022BC
		0.33max.	±10%		CGB2A1X6S1A474K033BC	CGB2A3X6S0J474K033BB	CGB2A1X6S0G474K033BC
			±20%		CGB2A1X6S1A474M033BC	CGB2A3X6S0J474M033BB	CGB2A1X6S0G474M033BC
1μF	1005	0.22max.	±20%				CGB2T1X6S0G105M022BC
		0.33max.	±10%		CGB2A1X6S1A105K033BC	CGB2A1X6S0J105K033BC	CGB2A1X6S0G105K033BC
			±20%		CGB2A1X6S1A105M033BC	CGB2A1X6S0J105M033BC	CGB2A1X6S0G105M033BC
	1608	0.55max.	±10%	CGB3B1X6S1C105K055AC	CGB3B3X6S1A105K055AB		
			±20%	CGB3B1X6S1C105M055AC	CGB3B3X6S1A105M055AB		
2.2μF	1608	0.55max.	±10%		CGB3B1X6S1A225K055AC	CGB3B3X6S0J225K055AB	CGB3B3X6S0G225K055AB
			±20%		CGB3B1X6S1A225M055AC	CGB3B3X6S0J225M055AB	CGB3B3X6S0G225M055AB
	2012	0.55max.	±10%	CGB4B1X6S1C225K055AC	CGB4B3X6S1A225K055AB	CGB4B3X6S0J225K055AB	
			±20%	CGB4B1X6S1C225M055AC	CGB4B3X6S1A225M055AB	CGB4B3X6S0J225M055AB	
4.7μF	1608	0.55max.	±10%				CGB3B1X6S0G475K055AC
			±20%				CGB3B1X6S0G475M055AC

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number	
				Rated voltage Edc: 10V	Rated voltage Edc: 6.3V
1μF	1608	0.55max.	±10%	CGB3B1X7R1A105K055AC	CGB3B3X7R0J105K055AB
			±20%	CGB3B1X7R1A105M055AC	CGB3B3X7R0J105M055AB
2.2μF	2012	0.55max.	±10%	CGB4B1X7R1A225K055AC	CGB4B3X7R0J225K055AB
			±20%	CGB4B1X7R1A225M055AC	CGB4B3X7R0J225M055AB

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number	
				Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
470nF	1005	0.33max.	±10%		CGB2A1X7S0G474K033BC
			±20%		CGB2A1X7S0G474M033BC
1μF	1005	0.33max.	±10%	CGB2A1X7S0J105K033BC	CGB2A1X7S0G105K033BC
			±20%	CGB2A1X7S0J105M033BC	CGB2A1X7S0G105M033BC
2.2μF	1608	0.55max.	±10%		CGB3B1X7S0G225K055AC
			±20%		CGB3B1X7S0G225M055AC

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