TDK

August 2021

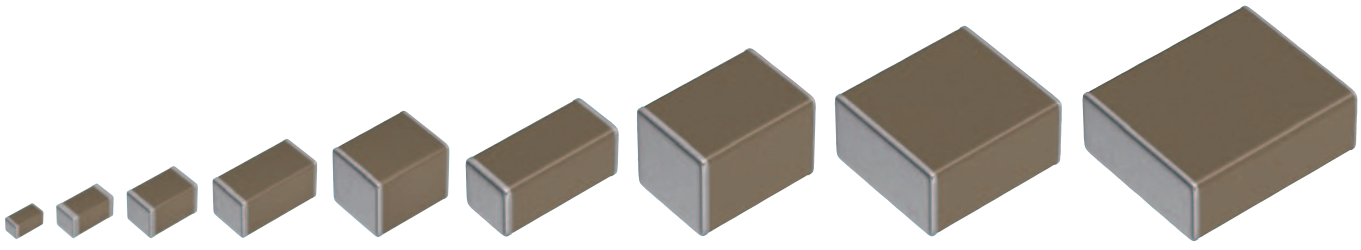
MULTILAYER CERAMIC CHIP CAPACITORS

Automotive grade, soft termination

CGA series

CGA2	**1005 [0402 inch]**
CGA3	**1608 [0603 inch]**
CGA4	**2012 [0805 inch]**
CGA5	**3216 [1206 inch]**
CGA6	**3225 [1210 inch]**
CGA7	**4520 [1808 inch]**
CGA8	**4532 [1812 inch]**
CGA9	**5750 [2220 inch]**
CGAD	**7563 [3025 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 property.
   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 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

CGA series

Soft termination

RoHS REACH SVHC-Free Halogen Free Lead Free

Type: CGA2/1005 [0402 inch], CGA3/1608 [0603 inch], CGA4/2012 [0805 inch], CGA5/3216 [1206 inch], CGA6/3225 [1210 inch], CGA7/4520 [1808 inch], CGA8/4532 [1812 inch], CGA9/5750 [2220 inch], CGAD/7563 [3025 inch]

SERIES OVERVIEW

Soft termination CGA series, automotive grade of TDK's multilayer ceramic chip capacitor, is a product incorporating a conductive resin layer into the terminal electrodes. The resin layer protects the ceramic body from cracks by relieving stress caused by thermal shock and board flexure.

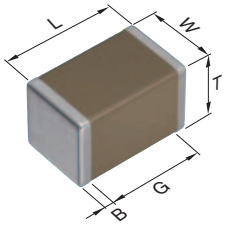
FEATURES

- High resistance to mechanical stress and thermal shock by resin layers
- X8R and X8L type whose maximum temperature are up to 150°C are available
- C0G type having excellent stable temperature and DC-bias characteristics is also available
- AEC-Q200 compliant

APPLICATIONS

- Fail-safe design for battery line
- Prevention of ceramic element crack by board bending
- Prevention of solder crack by thermal shock
- Equipment such as mobile devices and smart key having a high possibility of drop

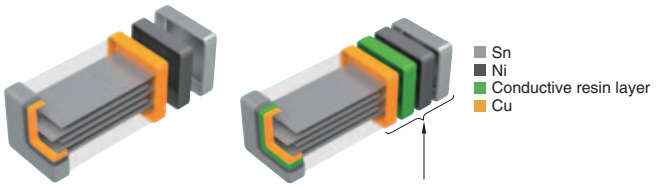
SHAPE & DIMENSIONS



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

TERMINAL ELECTRODE STRUCTURES

General type Soft termination



3-layer structure of Cu, Ni and Sn.

4-layer structure including conductive resin layer.

Dimensions in mm

Type	L	W	T	B	G
CGA2	1.00+0.15,-0.05	0.50+0.10,-0.05	0.50+0.10,-0.05	0.10 min.	0.30 min.
CGA3	1.60+0.20,-0.10	0.80+0.15,-0.10	0.80+0.15,-0.10	0.20 min.	0.30 min.
CGA4	2.00+0.45,-0.20	1.25+0.25,-0.20	1.25+0.25,-0.20	0.20 min.	0.50 min.
CGA5	3.20+0.40,-0.20	1.60+0.30,-0.20	1.60+0.30,-0.20	0.20 min.	1.00 min.
CGA6	3.20+0.50,-0.40	2.50±0.30	2.50±0.30	0.20 min.	—
CGA7	4.50+0.50,-0.40	2.00+0.30,-0.20	1.30±0.20	0.20 min.	—
CGA8	4.50+0.50,-0.40	3.20±0.40	2.50±0.30	0.20 min.	—
CGA9	5.70+0.50,-0.40	5.00±0.40	2.50±0.30	0.20 min.	—
CGAD	7.50±0.50	6.30±0.50	2.50 max.	0.30 min.	—

*Dimensional tolerances are typical values.

CATALOG NUMBER CONSTRUCTION

CGA	6	P	3	X7R	1E	226	M	250	A	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
2	CC0402	1.00	0.50	0.10
3	CC0603	1.60	0.80	0.20
4	CC0805	2.00	1.25	0.20
5	CC1206	3.20	1.60	0.20
6	CC1210	3.20	2.50	0.20
7	CC1808	4.50	2.00	0.20
8	CC1812	4.50	3.20	0.20
9	CC2220	5.70	5.00	0.20
D	CC3025	7.50	6.30	0.30

(3) Thickness code

Code	Thickness
B	0.50 mm
C	0.60 mm
E	0.80 mm
F	0.85 mm
H	1.15 mm
J	1.25 mm
K	1.30 mm
L	1.60 mm
M	2.00 mm
N	2.30 mm
P	2.50 mm

(4) Voltage condition for life test

Symbol	Condition
1	1 × R.V.
2	2 × R.V.
3	1.5 × R.V.
4	1.2 × R.V.

(5) Temperature characteristics

Temperature characteristics	Temperature coefficient or capacitance change	Temperature range
C0G	0±30 ppm/℃	–55 to +125℃
X7R	±15%	–55 to +125℃
X7S	±22%	–55 to +125℃
X7T	+22,-33%	–55 to +125℃
X8R	±15%	–55 to +150℃
X8L	+15, –40%	–55 to +150°C

(6) Rated voltage (DC)

Code	Voltage (DC)
0J	6.3V
1A	10V
1C	16V
1E	25V
1V	35V
1H	50V
2A	100V
2E	250V
2W	450V
2J	630V
3A	1000V
3D	2000V
3F	3000V

(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
J	±5%
K	±10%
M	±20%

(9) Thickness

Code	Thickness
050	0.50 mm
060	0.60 mm
080	0.80 mm
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

(10) Packaging style

Code	Style
A	178mm reel, 4mm pitch
B	178mm reel, 2mm pitch
K	178mm reel, 8mm pitch
L	330mm reel, 12mm pitch

(11) Special reserved code

Code	Description
E	Soft termination

Capacitance range chart

CGA2/1005 [0402 inch]

Capacitance		C0G		X7R				X7S		X8R			
(pF)	Code	2A (100V)	1H (50V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1C (16V)	1A (10V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
100	101												
150	151												
220	221												
330	331												
470	471												
680	681												
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												
100,000	104												
220,000	224												
470,000	474												

Standard thickness 0.50 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 11 and after.

Capacitance range chart

CGA3/1608 [0603 inch]

Capacitance		C0G			X7R				X7S			X8R			
(pF)	Code	2E (250V)	2A (100V)	1H (50V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)	2A (100V)	1C (16V)	1A (10V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)
100	101														
330	331														
470	471														
680	681														
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														
100,000	104														
150,000	154														
220,000	224														
330,000	334														
470,000	474														
1,000,000	105														
2,200,000	225														

Standard thickness 0.8 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 11 and after.

Capacitance range chart

CGA4/2012 [0805 inch]

Capacitance		C0G				X7R						X7S			
(pF)	Code	2W (450V)	2E (250V)	2A (100V)	1H (50V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	2A (100V)	1E (25V)	1C (16V)	1A (10V)
100	101														
150	151														
220	221														
330	331														
470	471														
680	681														
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														
10,000	103														
15,000	153														
22,000	223														
33,000	333														
47,000	473														
100,000	104														
220,000	224														
470,000	474														
1,000,000	105														
2,200,000	225														
4,700,000	475														
10,000,000	106														

Capacitance		X7T		X8R				X8L			
(pF)	Code	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)	1H (50V)	1V (35V)	1E (25V)	1A (10V)
10,000	103										
22,000	223										
33,000	333										
47,000	473										
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										
2,200,000	225										
4,700,000	475										
10,000,000	106										

Standard thickness 0.60 mm 0.85 mm 1.25 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 11 and after.

Capacitance range chart

CGA5/3216 [1206 inch]

Capacitance		C0G					X7R							X7S
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1V (35V)	1E (25V)	0J (6.3V)	2A (100V)
1,000	102													
2,200	222													
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													
100,000	104													
220,000	224													
470,000	474													
1,000,000	105													
2,200,000	225													
4,700,000	475													
10,000,000	106													
22,000,000	226													

Capacitance		X7T			X8R				X8L
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	1C (16V)	1E (25V)
47,000	473								
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								
10,000,000	106								

Standard thickness 0.85 mm 1.15 mm 1.30 mm 1.60 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 11 and after.

Capacitance range chart

CGA6/3225 [1210 inch]

Capacitance		C0G					X7R					X7S		X7T		
(pF)	Code	3A (1kV)	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	1H (50V)	1E (25V)	2A (100V)	1H (50V)	2J (630V)	2W (450V)	2E (250V)
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															
15,000	153															
22,000	223															
33,000	333															
47,000	473															
68,000	683															
100,000	104															
150,000	154															
220,000	224															
330,000	334															
470,000	474															
1,000,000	105															
2,200,000	225															
3,300,000	335															
4,700,000	475															
10,000,000	106															
22,000,000	226															

Capacitance		X8R		
(pF)	Code	2A (100V)	1E (25V)	1C (16V)
470,000	474			
680,000	684			
3,300,000	335			
4,700,000	475			
10,000,000	106			

Standard thickness 1.60 mm 2.00 mm 2.30 mm 2.50 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range chart — CGA7/4520 [1808 inch]

Capacitance		X7R
(pF)	Code	3D (2kV)
1,000	102	

Standard thickness
1.30 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range chart — CGA8/4532 [1812 inch]

Capacitance		C0G		X7R			X7T		
(pF)	Code	3F (3kV)	2J (630V)	3D (2kV)	2J (630V)	2E (250V)	2J (630V)	2W (450V)	2E (250V)
330	331								
2,200	222								
33,000	333								
100,000	104								
220,000	224								
470,000	474								
1,000,000	105								

Standard thickness
1.30 mm
2.00 mm
2.30 mm
2.50 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range chart — CGA9/5750 [2220 inch]

Capacitance		C0G			X7R		X7S	X7T		
(pF)	Code	2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
68,000	683									
150,000	154									
220,000	224									
470,000	474									
1,000,000	105									
2,200,000	225									
10,000,000	106									

Standard thickness
2.30 mm
2.50 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range chart — CGAD/7563 [3025 inch]

Capacitance		X7R
(pF)	Code	1E (25V)
47,000,000	476	

Standard thickness
2.30 mm

■For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range table — Temperature characteristic: C0G (–55 to +125°C, 0±30ppm/°C)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 3kV	Rated voltage Edc: 1kV	Rated voltage Edc: 630V	Rated voltage Edc: 450V
100pF	2012	0.60±0.15	±5%				CGA4C4C0G2W101J060AE
150pF	2012	0.60±0.15	±5%				CGA4C4C0G2W151J060AE
220pF	2012	0.60±0.15	±5%				CGA4C4C0G2W221J060AE
330pF	2012	0.60±0.15	±5%				CGA4C4C0G2W331J060AE
	4532	2.50±0.30	±10%	CGA8P1C0G3F331K250KE			
470pF	2012	0.60±0.15	±5%				CGA4C4C0G2W471J060AE
680pF	2012	0.60±0.15	±5%				CGA4C4C0G2W681J060AE
1nF	2012	0.60±0.15	±5%				CGA4C4C0G2W102J060AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A102J200AE		
1.2nF	2012	0.60±0.15	±5%				CGA4C4C0G2W122J060AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A122J200AE		
1.5nF	2012	0.85±0.15	±5%				CGA4F4C0G2W152J085AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A152J200AE		
1.8nF	2012	0.85±0.15	±5%				CGA4F4C0G2W182J085AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A182J200AE		
2.2nF	2012	0.85±0.15	±5%				CGA4F4C0G2W222J085AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A222J200AE		
2.7nF	2012	1.25+0.25,-0.20	±5%				CGA4J4C0G2W272J125AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A272J200AE		
3.3nF	2012	1.25+0.25,-0.20	±5%				CGA4J4C0G2W332J125AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A332J200AE		
3.9nF	2012	1.25+0.25,-0.20	±5%				CGA4J4C0G2W392J125AE
	3216	0.85±0.15	±5%			CGA5F4C0G2J392J085AE	
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A392J200AE		
4.7nF	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A472J200AE		
5.6nF	3216	1.15±0.15	±5%			CGA5H4C0G2J562J115AE	
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A562J200AE		
6.8nF	3216	1.15±0.15	±5%			CGA5H4C0G2J682J115AE	CGA5H4C0G2W682J115AE
	3225	2.00+0.30,-0.20	±5%		CGA6M1C0G3A682J200AE		
8.2nF	3216	1.15±0.15	±5%				CGA5H4C0G2W822J115AE
		1.60+0.30,-0.20	±5%			CGA5L4C0G2J822J160AE	
	3225	2.30+0.30,-0.20	±5%		CGA6N1C0G3A822J230AE		
10nF	3216	1.60+0.30,-0.20	±5%			CGA5L4C0G2J103J160AE	CGA5L4C0G2W103J160AE
15nF	3225	1.60+0.30,-0.20	±5%			CGA6L4C0G2J153J160AE	
33nF	3225	2.50±0.30	±5%			CGA6P4C0G2J333J250AE	CGA6P4C0G2W333J250AE
	4532	2.00+0.30,-0.20	±5%			CGA8M4C0G2J333J200KE	
68nF	5750	2.30+0.30,-0.20	±5%			CGA9N1C0G2J683J230KE	

Click the part numbers for details.

Capacitance range table — Temperature characteristic: C0G (–55 to +125°C, 0±30ppm/°C)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number		
				Rated voltage Edc: 250V	Rated voltage Edc: 100V	Rated voltage Edc: 50V
100pF	1005	0.50+0.10,-0.05	±5%		CGA2B2C0G2A101J050BE	CGA2B2C0G1H101J050BE
	1608	0.80+0.15,-0.10	±5%			CGA3E2C0G1H101J080AE
150pF	1005	0.50+0.10,-0.05	±5%		CGA2B2C0G2A151J050BE	CGA2B2C0G1H151J050BE
220pF	1005	0.50+0.10,-0.05	±5%		CGA2B2C0G2A221J050BE	CGA2B2C0G1H221J050BE
330pF	1005	0.50+0.10,-0.05	±5%		CGA2B2C0G2A331J050BE	CGA2B2C0G1H331J050BE
	1608	0.80+0.15,-0.10	±5%		CGA3E2C0G2A331J080AE	CGA3E2C0G1H331J080AE
470pF	1005	0.50+0.10,-0.05	±5%		CGA2B1C0G2A471J050BE	CGA2B2C0G1H471J050BE
	1608	0.80+0.15,-0.10	±5%		CGA3E2C0G2A471J080AE	CGA3E2C0G1H471J080AE
680pF	1005	0.50+0.10,-0.05	±5%		CGA2B1C0G2A681J050BE	CGA2B2C0G1H681J050BE
	1608	0.80+0.15,-0.10	±5%		CGA3E2C0G2A681J080AE	CGA3E2C0G1H681J080AE
1nF	1005	0.50+0.10,-0.05	±5%		CGA2B1C0G2A102J050BE	CGA2B2C0G1H102J050BE
	1608	0.80+0.15,-0.10	±5%	CGA3E3C0G2E102J080AE	CGA3E2C0G2A102J080AE	CGA3E2C0G1H102J080AE
1.2nF	1608	0.80+0.15,-0.10	±5%	CGA3E3C0G2E122J080AE	CGA3E2C0G2A122J080AE	CGA3E2C0G1H122J080AE
1.5nF	1608	0.80+0.15,-0.10	±5%	CGA3E3C0G2E152J080AE	CGA3E2C0G2A152J080AE	CGA3E2C0G1H152J080AE
1.8nF	1608	0.80+0.15,-0.10	±5%	CGA3E3C0G2E182J080AE	CGA3E2C0G2A182J080AE	CGA3E2C0G1H182J080AE
2.2nF	1608	0.80+0.15,-0.10	±5%		CGA3E2C0G2A222J080AE	CGA3E2C0G1H222J080AE
2.7nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A272J080AE	CGA3E2C0G1H272J080AE
3.3nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A332J080AE	CGA3E2C0G1H332J080AE
	2012	0.85±0.15	±5%	CGA4F3C0G2E332J085AE		
3.9nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A392J080AE	CGA3E2C0G1H392J080AE
	2012	1.25+0.25,-0.20	±5%	CGA4J3C0G2E392J125AE		
4.7nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A472J080AE	CGA3E2C0G1H472J080AE
	2012	1.25+0.25,-0.20	±5%	CGA4J3C0G2E472J125AE		
5.6nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A562J080AE	CGA3E2C0G1H562J080AE
	2012	1.25+0.25,-0.20	±5%	CGA4J3C0G2E562J125AE		
6.8nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A682J080AE	CGA3E2C0G1H682J080AE
	2012	1.25+0.25,-0.20	±5%	CGA4J3C0G2E682J125AE		
8.2nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A822J080AE	CGA3E2C0G1H822J080AE
10nF	1608	0.80+0.15,-0.10	±5%		CGA3E1C0G2A103J080AE	CGA3E2C0G1H103J080AE
	3216	1.15±0.15	±5%	CGA5H3C0G2E103J115AE		
15nF	2012	0.85±0.15	±5%		CGA4F1C0G2A153J085AE	CGA4F2C0G1H153J085AE
	3216	1.60+0.30,-0.20	±5%	CGA5L3C0G2E153J160AE		
22nF	2012	1.25+0.25,-0.20	±5%		CGA4J1C0G2A223J125AE	CGA4J2C0G1H223J125AE
	3225	1.60+0.30,-0.20	±5%	CGA6L3C0G2E223J160AE		
33nF	2012	1.25+0.25,-0.20	±5%		CGA4J1C0G2A333J125AE	CGA4J2C0G1H333J125AE
47nF	3216	1.15±0.15	±5%		CGA5H1C0G2A473J115AE	CGA5H2C0G1H473J115AE
68nF	3216	1.60+0.30,-0.20	±5%		CGA5L1C0G2A683J160AE	CGA5L2C0G1H683J160AE
	3225	2.30+0.30,-0.20	±5%		CGA6N2C0G2A683J230AE	
100nF	3216	1.60+0.30,-0.20	±5%		CGA5L1C0G2A104J160AE	CGA5L2C0G1H104J160AE
150nF	5750	2.30+0.30,-0.20	±5%	CGA9N4C0G2E154J230KE	CGA9N2C0G2A154J230KE	

Click the part numbers for details.

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number				
				Rated voltage Edc: 2kV	Rated voltage Edc: 630V	Rated voltage Edc: 250V	Rated voltage Edc: 100V	Rated voltage Edc: 50V
1nF	1005	0.50+0.10,-0.05	±10%					CGA2B2X7R1H102K050BE
			±20%					CGA2B2X7R1H102M050BE
	1608	0.80 +0.15,-0.10	±10%				CGA3E2X7R2A102K080AE	CGA3E2X7R1H102K080AE
			±20%				CGA3E2X7R2A102M080AE	CGA3E2X7R1H102M080AE
	2012	0.85±0.15	±10%			CGA4F3X7R2E102K085AE	CGA4F2X7R2A102K085AE	
			±20%			CGA4F3X7R2E102M085AE	CGA4F2X7R2A102M085AE	
	3216	1.15±0.15	±10%		CGA5H4X7R2J102K115AE			
			±20%		CGA5H4X7R2J102M115AE			
	4520	1.30±0.20	±10%	CGA7K1X7R3D102K130KE				
			±20%	CGA7K1X7R3D102M130KE				
2.2nF	1005	0.50+0.10,-0.05	±10%					CGA2B2X7R1H222K050BE
			±20%					CGA2B2X7R1H222M050BE
	1608	0.80+0.15,-0.10	±10%				CGA3E2X7R2A222K080AE	CGA3E2X7R1H222K080AE
			±20%				CGA3E2X7R2A222M080AE	CGA3E2X7R1H222M080AE
	2012	0.85±0.15	±10%			CGA4F3X7R2E222K085AE	CGA4F2X7R2A222K085AE	
			±20%			CGA4F3X7R2E222M085AE	CGA4F2X7R2A222M085AE	
	3216	1.15±0.15	±10%		CGA5H4X7R2J222K115AE			
			±20%		CGA5H4X7R2J222M115AE			
	4532	1.30±0.20	±10%	CGA8K1X7R3D222K130KE				
			±20%	CGA8K1X7R3D222M130KE				
3.3nF	3216	1.15±0.15	±10%		CGA5H4X7R2J332K115AE			
			±20%		CGA5H4X7R2J332M115AE			
4.7nF	1005	0.50+0.10,-0.05	±10%					CGA2B2X7R1H472K050BE
			±20%					CGA2B2X7R1H472M050BE
	1608	0.80+0.15,-0.10	±10%				CGA3E2X7R2A472K080AE	CGA3E2X7R1H472K080AE
			±20%				CGA3E2X7R2A472M080AE	CGA3E2X7R1H472M080AE
	2012	0.85±0.15	±10%			CGA4F3X7R2E472K085AE	CGA4F2X7R2A472K085AE	
			±20%			CGA4F3X7R2E472M085AE	CGA4F2X7R2A472M085AE	
	3216	1.15±0.15	±10%		CGA5H4X7R2J472K115AE			
			±20%		CGA5H4X7R2J472M115AE			
10nF	1005	0.50+0.10,-0.05	±10%					CGA2B3X7R1H103K050BE
			±20%					CGA2B3X7R1H103M050BE
	1608	0.80 +0.15,-0.10	±10%				CGA3E2X7R2A103K080AE	CGA3E2X7R1H103K080AE
			±20%				CGA3E2X7R2A103M080AE	CGA3E2X7R1H103M080AE
	2012	0.85±0.15	±10%				CGA4F2X7R2A103K085AE	
			±20%				CGA4F2X7R2A103M085AE	
		1.25 +0.25,-0.20	±10%			CGA4J3X7R2E103K125AE		
			±20%			CGA4J3X7R2E103M125AE		
	3216	1.15±0.15	±10%		CGA5H4X7R2J103K115AE			
			±20%		CGA5H4X7R2J103M115AE			
22nF	1005	0.50+0.10,-0.05	±10%					CGA2B3X7R1H223K050BE
			±20%					CGA2B3X7R1H223M050BE
	1608	0.80+0.15,-0.10	±10%				CGA3E2X7R2A223K080AE	CGA3E2X7R1H223K080AE
			±20%				CGA3E2X7R2A223M080AE	CGA3E2X7R1H223M080AE
	2012	1.25 +0.25,-0.20	±10%			CGA4J3X7R2E223K125AE	CGA4J2X7R2A223K125AE	
			±20%			CGA4J3X7R2E223M125AE	CGA4J2X7R2A223M125AE	
	3216	1.15±0.15	±10%			CGA5H3X7R2E223K115AE		
			±20%			CGA5H3X7R2E223M115AE		
		1.30±0.20	±10%		CGA5K4X7R2J223K130AE			
			±20%		CGA5K4X7R2J223M130AE			
33nF	3216	1.60+0.30,-0.20	±10%		CGA5L4X7R2J333K160AE			
			±20%		CGA5L4X7R2J333M160AE			

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

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 630V	Rated voltage Edc: 250V	Rated voltage Edc: 100V	Rated voltage Edc: 50V
47nF	1005	0.50+0.10,-0.05	±10%				CGA2B3X7R1H473K050BE
			±20%				CGA2B3X7R1H473M050BE
	1608	0.80+0.15,-0.10	±10%				CGA3E2X7R1H473K080AE
			±20%				CGA3E2X7R1H473M080AE
	2012	1.25+0.25,-0.20	±10%			CGA4J2X7R2A473K125AE	
			±20%			CGA4J2X7R2A473M125AE	
	3216	1.60+0.30,-0.20	±10%		CGA5L3X7R2E473K160AE		
			±20%		CGA5L3X7R2E473M160AE		
	3225	2.00+0.30,-0.20	±10%	CGA6M4X7R2J473K200AE			
			±20%	CGA6M4X7R2J473M200AE			
68nF	3225	2.00+0.30,-0.20	±10%	CGA6M4X7R2J683K200AE			
			±20%	CGA6M4X7R2J683M200AE			
100nF	1005	0.50+0.10,-0.05	±10%				CGA2B3X7R1H104K050BE
			±20%				CGA2B3X7R1H104M050BE
	1608	0.80+0.15,-0.10	±10%				CGA3E2X7R1H104K080AE
			±20%				CGA3E2X7R1H104M080AE
	2012	1.25+0.25,-0.20	±10%			CGA4J2X7R2A104K125AE	CGA4J2X7R1H104K125AE
			±20%			CGA4J2X7R2A104M125AE	CGA4J2X7R1H104M125AE
	3216	1.60+0.30,-0.20	±10%		CGA5L3X7R2E104K160AE	CGA5L2X7R2A104K160AE	
			±20%		CGA5L3X7R2E104M160AE	CGA5L2X7R2A104M160AE	
	3225	2.00+0.30,-0.20	±10%		CGA6M3X7R2E104K200AE		
			±20%		CGA6M3X7R2E104M200AE		
	4532	2.30+0.30,-0.20	±10%	CGA8N4X7R2J104K230KE			
			±20%	CGA8N4X7R2J104M230KE			
220nF	1608	0.80+0.15,-0.10	±10%				CGA3E3X7R1H224K080AE
			±20%				CGA3E3X7R1H224M080AE
	2012	1.25+0.25,-0.20	±10%				CGA4J2X7R1H224K125AE
			±20%				CGA4J2X7R1H224M125AE
	3216	1.15±0.15	±10%			CGA5H2X7R2A224K115AE	
			±20%			CGA5H2X7R2A224M115AE	
	3225	2.00+0.30,-0.20	±10%		CGA6M3X7R2E224K200AE		
			±20%		CGA6M3X7R2E224M200AE		
	5750	2.30+0.30,-0.20	±10%	CGA9N4X7R2J224K230KE			
			±20%	CGA9N4X7R2J224M230KE			
470nF	1608	0.80+0.15,-0.10	±10%				CGA3E3X7R1H474K080AE
			±20%				CGA3E3X7R1H474M080AE
	2012	1.25+0.25,-0.20	±10%				CGA4J3X7R1H474K125AE
			±20%				CGA4J3X7R1H474M125AE
	3216	1.60+0.30,-0.20	±10%			CGA5L2X7R2A474K160AE	
			±20%			CGA5L2X7R2A474M160AE	
	3225	2.00+0.30,-0.20	±10%			CGA6M2X7R2A474K200AE	
			±20%			CGA6M2X7R2A474M200AE	
	4532	2.30+0.30,-0.20	±10%		CGA8N3X7R2E474K230KE		
			±20%		CGA8N3X7R2E474M230KE		
1μF	2012	1.25+0.25,-0.20	±10%				CGA4J3X7R1H105K125AE
			±20%				CGA4J3X7R1H105M125AE
	3216	1.60+0.30,-0.20	±10%			CGA5L2X7R2A105K160AE	CGA5L3X7R1H105K160AE
			±20%			CGA5L2X7R2A105M160AE	CGA5L3X7R1H105M160AE
	3225	1.60+0.30,-0.20	±10%				CGA6L2X7R1H105K160AE
			±20%				CGA6L2X7R1H105M160AE
		2.00+0.30,-0.20	±10%			CGA6M2X7R2A105K200AE	
			±20%			CGA6M2X7R2A105M200AE	
	5750	2.30+0.30,-0.20	±10%		CGA9N3X7R2E105K230KE		
			±20%		CGA9N3X7R2E105M230KE		
2.2μF	2012	1.25+0.25,-0.20	±10%				CGA4J3X7R1H225K125AE
			±20%				CGA4J3X7R1H225M125AE
	3216	1.60+0.30,-0.20	±10%				CGA5L3X7R1H225K160AE
			±20%				CGA5L3X7R1H225M160AE
	3225	2.00+0.30,-0.20	±10%				CGA6M3X7R1H225K200AE
			±20%				CGA6M3X7R1H225M200AE
		2.30+0.30,-0.20	±10%			CGA6N3X7R2A225K230AE	
			±20%			CGA6N3X7R2A225M230AE	
4.7μF	2012	1.25+0.25,-0.20	±10%				CGA4J1X7R1H475K125AE
	3216	1.60+0.30,-0.20	±10%				CGA5L3X7R1H475K160AE
			±20%				CGA5L3X7R1H475M160AE
10μF	3216	1.60+0.30,-0.20	±10%				CGA5L1X7R1H106K160AE

Click the part numbers for details.

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 35V	Rated voltage Edc: 25V	Rated voltage Edc: 16V	Rated voltage Edc: 6.3V
220nF	1005	0.50+0.10,-0.05	±10%	CGA2B1X7R1V224K050BE	CGA2B3X7R1E224K050BE	CGA2B2X7R1C224K050BE	
			±20%	CGA2B1X7R1V224M050BE	CGA2B3X7R1E224M050BE	CGA2B2X7R1C224M050BE	
	1608	0.80+0.15,-0.10	±10%	CGA3E3X7R1V224K080AE			
			±20%	CGA3E3X7R1V224M080AE			
470nF	1608	0.80+0.15,-0.10	±10%	CGA3E1X7R1V474K080AE	CGA3E3X7R1E474K080AE		
			±20%	CGA3E1X7R1V474M080AE	CGA3E3X7R1E474M080AE		
1µF	1608	0.80+0.15,-0.10	±10%	CGA3E1X7R1V105K080AE	CGA3E1X7R1E105K080AE		
			±20%	CGA3E1X7R1V105M080AE	CGA3E1X7R1E105M080AE		
	2012	1.25+0.25,-0.20	±10%	CGA4J3X7R1V105K125AE			
			±20%	CGA4J3X7R1V105M125AE			
2.2µF	2012	1.25+0.25,-0.20	±10%	CGA4J1X7R1V225K125AE	CGA4J3X7R1E225K125AE		
			±20%	CGA4J1X7R1V225M125AE	CGA4J3X7R1E225M125AE		
	3216	1.60+0.30,-0.20	±10%	CGA5L3X7R1V225K160AE	CGA5L2X7R1E225K160AE		
			±20%	CGA5L3X7R1V225M160AE	CGA5L2X7R1E225M160AE		
4.7µF	2012	1.25+0.25,-0.20	±10%	CGA4J1X7R1V475K125AE	CGA4J1X7R1E475K125AE	CGA4J3X7R1C475K125AE	
			±20%	CGA4J1X7R1V475M125AE	CGA4J1X7R1E475M125AE	CGA4J3X7R1C475M125AE	
	3216	1.60+0.30,-0.20	±10%	CGA5L1X7R1V475K160AE			
			±20%	CGA5L1X7R1V475M160AE			
10µF	3216	1.60+0.30,-0.20	±10%	CGA5L1X7R1V106K160AE	CGA5L1X7R1E106K160AE		
			±20%	CGA5L1X7R1V106M160AE	CGA5L1X7R1E106M160AE		
22µF	3216	1.60+0.30,-0.20	±20%				CGA5L1X7R0J226M160AE
	3225	2.50±0.30	±20%		CGA6P3X7R1E226M250AE		
47µF	7563	2.30 (2.50max.)	±20%		CGADN3X7R1E476M230LE		

Click the part numbers for details.

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number				
				Rated voltage Edc: 100V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V	Rated voltage Edc: 10V
47nF	1608	0.80+0.15,-0.10	±10%	CGA3E3X7S2A473K080AE				
			±20%	CGA3E3X7S2A473M080AE				
100nF	1608	0.80+0.15,-0.10	±10%	CGA3E3X7S2A104K080AE				
			±20%	CGA3E3X7S2A104M080AE				
220nF	2012	0.85±0.15	±10%	CGA4F3X7S2A224K085AE				
			±20%	CGA4F3X7S2A224M085AE				
470nF	1005	0.50+0.10,-0.05	±10%				CGA2B1X7S1C474K050BE	CGA2B3X7S1A474K050BE
			±20%				CGA2B1X7S1C474M050BE	CGA2B3X7S1A474M050BE
	2012	1.25+0.25,-0.20	±10%	CGA4J3X7S2A474K125AE				
			±20%	CGA4J3X7S2A474M125AE				
1µF	2012	1.25+0.25,-0.20	±10%	CGA4J3X7S2A105K125AE				
			±20%	CGA4J3X7S2A105M125AE				
2.2µF	1608	0.80+0.15,-0.10	±10%				CGA3E1X7S1C225K080AE	CGA3E3X7S1A225K080AE
			±20%				CGA3E1X7S1C225M080AE	CGA3E3X7S1A225M080AE
	3216	1.60+0.30,-0.20	±10%	CGA5L3X7S2A225K160AE				
			±20%	CGA5L3X7S2A225M160AE				
3.3µF	3225	2.00+0.30,-0.20	±10%	CGA6M3X7S2A335K200AE				
			±20%	CGA6M3X7S2A335M200AE				
4.7µF	3225	2.00+0.30,-0.20	±10%	CGA6M3X7S2A475K200AE				
			±20%	CGA6M3X7S2A475M200AE				
		2.30+0.30,-0.20	±10%		CGA6N3X7S1H475K230AE			
			±20%		CGA6N3X7S1H475M230AE			
10µF	2012	1.25+0.25,-0.20	±10%			CGA4J1X7S1E106K125AE	CGA4J1X7S1C106K125AE	CGA4J3X7S1A106K125AE
			±20%				CGA4J1X7S1C106M125AE	CGA4J3X7S1A106M125AE
	3225	2.50±0.30	±10%		CGA6P3X7S1H106K250AE			
			±20%		CGA6P3X7S1H106M250AE			
	5750	2.30+0.30,-0.20	±10%	CGA9N3X7S2A106K230KE				
			±20%	CGA9N3X7S2A106M230KE				

Click the part numbers for details.

Capacitance range table — Temperature characteristic: X7T (–55 to +125°C, +22, –33%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number		
				Rated voltage Edc: 630V	Rated voltage Edc: 450V	Rated voltage Edc: 250V
10 nF	2012	0.85±0.15	± 10%		CGA4F4X7T2W103K085AE	
			± 20%		CGA4F4X7T2W103M085AE	
22 nF	2012	1.25+0.25,-0.20	± 10%		CGA4J4X7T2W223K125AE	
			± 20%		CGA4J4X7T2W223M125AE	
47 nF	2012	1.25+0.25,-0.20	± 10%		CGA4J4X7T2W473K125AE	CGA4J3X7T2E473K125AE
			± 20%		CGA4J4X7T2W473M125AE	CGA4J3X7T2E473M125AE
	3216	1.60+0.30,-0.20	± 10%	CGA5L1X7T2J473K160AE		
			± 20%	CGA5L1X7T2J473M160AE		
100 nF	2012	1.25+0.25,-0.20	± 10%			CGA4J3X7T2E104K125AE
			± 20%			CGA4J3X7T2E104M125AE
	3216	1.60+0.30,-0.20	± 10%		CGA5L4X7T2W104K160AE	
			± 20%		CGA5L4X7T2W104M160AE	
	3225	1.60+0.30,-0.20	± 10%	CGA6L1X7T2J104K160AE		
			± 20%	CGA6L1X7T2J104M160AE		
150nF	3225	2.00+0.30,-0.20	±10%	CGA6M1X7T2J154K200AE		
			±20%	CGA6M1X7T2J154M200AE		
220 nF	3216	1.60+0.30,-0.20	± 10%			CGA5L3X7T2E224K160AE
			± 20%			CGA5L3X7T2E224M160AE
	3225	2.00+0.30,-0.20	± 10%		CGA6M4X7T2W224K200AE	
			± 20%		CGA6M4X7T2W224M200AE	
	4532	2.00+0.30,-0.20	± 10%	CGA8M1X7T2J224K200KE		
			± 20%	CGA8M1X7T2J224M200KE		
330nF	3225	2.00+0.30,-0.20	±10%			CGA6M3X7T2E334K200AE
			±20%			CGA6M3X7T2E334M200AE
470 nF	4532	2.30+0.30,-0.20	± 10%		CGA8N4X7T2W474K230KE	
			± 20%		CGA8N4X7T2W474M230KE	
	5750	2.50±0.30	± 10%	CGA9P1X7T2J474K250KE		
			± 20%	CGA9P1X7T2J474M250KE		
1 µF	4532	2.50±0.30	± 10%			CGA8P3X7T2E105K250KE
			± 20%			CGA8P3X7T2E105M250KE
	5750	2.50±0.30	± 10%		CGA9P4X7T2W105K250KE	
			± 20%		CGA9P4X7T2W105M250KE	
2.2 uF	5750	2.50±0.30	± 10%			CGA9P3X7T2E225K250KE
			± 20%			CGA9P3X7T2E225M250KE

Click the part numbers for details.

Capacitance range table — Temperature characteristic: X8R (–55 to +150°C, ±15%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 100V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
150pF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A151K050BE	CGA2B2X8R1H151K050BE		
			±20%	CGA2B2X8R2A151M050BE	CGA2B2X8R1H151M050BE		
220pF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A221K050BE	CGA2B2X8R1H221K050BE		
			±20%	CGA2B2X8R2A221M050BE	CGA2B2X8R1H221M050BE		
330pF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A331K050BE	CGA2B2X8R1H331K050BE		
			±20%	CGA2B2X8R2A331M050BE	CGA2B2X8R1H331M050BE		
470pF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A471K050BE	CGA2B2X8R1H471K050BE		
			±20%	CGA2B2X8R2A471M050BE	CGA2B2X8R1H471M050BE		
680pF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A681K050BE	CGA2B2X8R1H681K050BE		
			±20%	CGA2B2X8R2A681M050BE	CGA2B2X8R1H681M050BE		
1nF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A102K050BE	CGA2B2X8R1H102K050BE		
			±20%	CGA2B2X8R2A102M050BE	CGA2B2X8R1H102M050BE		
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A102K080AE	CGA3E2X8R1H102K080AE		
			±20%	CGA3E2X8R2A102M080AE	CGA3E2X8R1H102M080AE		
1.5nF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A152K050BE	CGA2B2X8R1H152K050BE		
			±20%	CGA2B2X8R2A152M050BE	CGA2B2X8R1H152M050BE		
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A152K080AE	CGA3E2X8R1H152K080AE		
			±20%	CGA3E2X8R2A152M080AE	CGA3E2X8R1H152M080AE		
2.2nF	1005	0.50+0.10,-0.05	±10%	CGA2B2X8R2A222K050BE	CGA2B2X8R1H222K050BE		
			±20%	CGA2B2X8R2A222M050BE	CGA2B2X8R1H222M050BE		
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A222K080AE	CGA3E2X8R1H222K080AE		
			±20%	CGA3E2X8R2A222M080AE	CGA3E2X8R1H222M080AE		
3.3nF	1005	0.50+0.10,-0.05	±10%	CGA2B3X8R2A332K050BE	CGA2B2X8R1H332K050BE		
			±20%	CGA2B3X8R2A332M050BE	CGA2B2X8R1H332M050BE		
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A332K080AE	CGA3E2X8R1H332K080AE		
			±20%	CGA3E2X8R2A332M080AE	CGA3E2X8R1H332M080AE		
4.7nF	1005	0.50+0.10,-0.05	±10%		CGA2B2X8R1H472K050BE		
			±20%		CGA2B2X8R1H472M050BE		
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A472K080AE	CGA3E2X8R1H472K080AE		
			±20%	CGA3E2X8R2A472M080AE	CGA3E2X8R1H472M080AE		
6.8nF	1005	0.50+0.10,-0.05	±10%		CGA2B3X8R1H682K050BE	CGA2B2X8R1E682K050BE	
			±20%		CGA2B3X8R1H682M050BE	CGA2B2X8R1E682M050BE	
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A682K080AE	CGA3E2X8R1H682K080AE		
			±20%	CGA3E2X8R2A682M080AE	CGA3E2X8R1H682M080AE		
10nF	1005	0.50+0.10,-0.05	±10%		CGA2B3X8R1H103K050BE	CGA2B2X8R1E103K050BE	
			±20%		CGA2B3X8R1H103M050BE	CGA2B2X8R1E103M050BE	
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A103K080AE	CGA3E2X8R1H103K080AE		
			±20%	CGA3E2X8R2A103M080AE	CGA3E2X8R1H103M080AE		
15nF	1005	0.50+0.10,-0.05	±10%			CGA2B3X8R1E153K050BE	
			±20%			CGA2B3X8R1E153M050BE	
	1608	0.80+0.15,-0.10	±10%	CGA3E2X8R2A153K080AE	CGA3E2X8R1H153K080AE		
			±20%	CGA3E2X8R2A153M080AE	CGA3E2X8R1H153M080AE		
22nF	1005	0.50+0.10,-0.05	±10%			CGA2B3X8R1E223K050BE	
			±20%			CGA2B3X8R1E223M050BE	
	1608	0.80+0.15,-0.10	±10%	CGA3E3X8R2A223K080AE	CGA3E2X8R1H223K080AE		
			±20%	CGA3E3X8R2A223M080AE	CGA3E2X8R1H223M080AE		
	2012	1.25+0.25,-0.20	±10%	CGA4J2X8R2A223K125AE			
			±20%	CGA4J2X8R2A223M125AE			
33nF	1005	0.50+0.10,-0.05	±10%			CGA2B1X8R1E333K050BE	CGA2B3X8R1C333K050BE
			±20%			CGA2B1X8R1E333M050BE	CGA2B3X8R1C333M050BE
	1608	0.80+0.15,-0.10	±10%		CGA3E2X8R1H333K080AE		
			±20%		CGA3E2X8R1H333M080AE		
	2012	1.25+0.25,-0.20	±10%	CGA4J3X8R2A333K125AE			
			±20%	CGA4J3X8R2A333M125AE			
47nF	1005	0.50+0.10,-0.05	±10%			CGA2B1X8R1E473K050BE	CGA2B3X8R1C473K050BE
			±20%			CGA2B1X8R1E473M050BE	CGA2B3X8R1C473M050BE
	1608	0.80+0.15,-0.10	±10%		CGA3E2X8R1H473K080AE		
			±20%		CGA3E2X8R1H473M080AE		
	2012	1.25+0.25,-0.20	±10%	CGA4J3X8R2A473K125AE			
			±20%	CGA4J3X8R2A473M125AE			
68nF	1608	0.80+0.15,-0.10	±10%		CGA3E3X8R1H683K080AE	CGA3E2X8R1E683K080AE	
			±20%		CGA3E3X8R1H683M080AE	CGA3E2X8R1E683M080AE	
	2012	1.25+0.25,-0.20	±10%	CGA4J3X8R2A683K125AE	CGA4J2X8R1H683K125AE		
			±20%	CGA4J3X8R2A683M125AE	CGA4J2X8R1H683M125AE		

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

Capacitance range table — Temperature characteristic: X8R (–55 to +150°C, ±15%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 100V	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
100nF	1608	0.80+0.15,-0.10	±10%		CGA3E3X8R1H104K080AE	CGA3E2X8R1E104K080AE	
			±20%		CGA3E3X8R1H104M080AE	CGA3E2X8R1E104M080AE	
	2012	1.25+0.25,-0.20	±10%		CGA4J2X8R1H104K125AE		
			±20%		CGA4J2X8R1H104M125AE		
	3216	1.15±0.15	±10%	CGA5H2X8R2A104K115AE			
			±20%	CGA5H2X8R2A104M115AE			
150nF	1608	0.80+0.15,-0.10	±10%			CGA3E3X8R1E154K080AE	
			±20%			CGA3E3X8R1E154M080AE	
	2012	0.85±0.15	±10%			CGA4F2X8R1E154K085AE	
			±20%			CGA4F2X8R1E154M085AE	
		1.25+0.25,-0.20	±10%		CGA4J3X8R1H154K125AE		
			±20%		CGA4J3X8R1H154M125AE		
	3216	1.60+0.30,-0.20	±10%	CGA5L2X8R2A154K160AE			
			±20%	CGA5L2X8R2A154M160AE			
220nF	1608	0.80+0.15,-0.10	±10%			CGA3E3X8R1E224K080AE	
			±20%			CGA3E3X8R1E224M080AE	
	2012	1.25+0.25,-0.20	±10%		CGA4J3X8R1H224K125AE	CGA4J2X8R1E224K125AE	
			±20%		CGA4J3X8R1H224M125AE	CGA4J2X8R1E224M125AE	
	3216	1.60+0.30,-0.20	±10%	CGA5L3X8R2A224K160AE			
			±20%	CGA5L3X8R2A224M160AE			
330nF	1608	0.80+0.15,-0.10	±10%			CGA3E1X8R1E334K080AE	CGA3E3X8R1C334K080AE
			±20%			CGA3E1X8R1E334M080AE	CGA3E3X8R1C334M080AE
	2012	1.25+0.25,-0.20	±10%			CGA4J2X8R1E334K125AE	
			±20%			CGA4J2X8R1E334M125AE	
	3216	1.60+0.30,-0.20	±10%	CGA5L3X8R2A334K160AE	CGA5L2X8R1H334K160AE		
			±20%	CGA5L3X8R2A334M160AE	CGA5L2X8R1H334M160AE		
470nF	1608	0.80+0.15,-0.10	±10%				CGA3E3X8R1C474K080AE
			±20%				CGA3E3X8R1C474M080AE
	2012	1.25+0.25,-0.20	±10%			CGA4J3X8R1E474K125AE	
			±20%			CGA4J3X8R1E474M125AE	
	3216	1.60+0.30,-0.20	±10%		CGA5L2X8R1H474K160AE		
			±20%		CGA5L2X8R1H474M160AE		
	3225	2.00+0.30,-0.20	±10%	CGA6M3X8R2A474K200AE			
			±20%	CGA6M3X8R2A474M200AE			
680nF	2012	1.25+0.25,-0.20	±10%			CGA4J1X8R1E684K125AE	CGA4J3X8R1C684K125AE
			±20%			CGA4J1X8R1E684M125AE	CGA4J3X8R1C684M125AE
	3216	1.60+0.30,-0.20	±10%		CGA5L3X8R1H684K160AE		
			±20%		CGA5L3X8R1H684M160AE		
	3225	2.50±0.30	±10%	CGA6P3X8R2A684K250AE			
			±20%	CGA6P3X8R2A684M250AE			
1μF	2012	1.25+0.25,-0.20	±10%			CGA4J1X8R1E105K125AE	CGA4J3X8R1C105K125AE
			±20%			CGA4J1X8R1E105M125AE	CGA4J3X8R1C105M125AE
	3216	1.60+0.30,-0.20	±10%		CGA5L3X8R1H105K160AE	CGA5L2X8R1E105K160AE	
			±20%		CGA5L3X8R1H105M160AE	CGA5L2X8R1E105M160AE	
1.5μF	3216	1.60+0.30,-0.20	±10%			CGA5L3X8R1E155K160AE	
			±20%			CGA5L3X8R1E155M160AE	
2.2μF	3216	1.60+0.30,-0.20	±10%			CGA5L3X8R1E225K160AE	
			±20%			CGA5L3X8R1E225M160AE	
3.3μF	3216	1.60+0.30,-0.20	±10%			CGA5L1X8R1E335K160AE	CGA5L3X8R1C335K160AE
			±20%			CGA5L1X8R1E335M160AE	CGA5L3X8R1C335M160AE
	3225	2.50±0.30	±10%			CGA6P2X8R1E335K250AE	
			±20%			CGA6P2X8R1E335M250AE	
4.7μF	3216	1.60+0.30,-0.20	±10%			CGA5L1X8R1E475K160AE	CGA5L3X8R1C475K160AE
			±20%			CGA5L1X8R1E475M160AE	CGA5L3X8R1C475M160AE
	3225	2.50±0.30	±10%			CGA6P3X8R1E475K250AE	
			±20%			CGA6P3X8R1E475M250AE	
10μF	3225	2.50±0.30	±10%			CGA6P1X8R1E106K250AE	CGA6P3X8R1C106K250AE
			±20%			CGA6P1X8R1E106M250AE	CGA6P3X8R1C106M250AE

Click the part numbers for details.

Capacitance range table　　Temperature characteristic: X8L (–55 to +150°C, +15,–40%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number			
				Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V	Rated voltage Edc: 10V
470nF	2012	1.25+0.25,-0.20	±10%	CGA4J1X8L1H474K125AE			
1μF	2012	1.25+0.25,-0.20	±10%	CGA4J1X8L1H105K125AE			
2.2μF	2012	1.25+0.25,-0.20	±10%		CGA4J1X8L1V225K125AE		
4.7μF	2012	1.25+0.25,-0.20	±10%			CGA4J1X8L1E475K125AE	
10μF	2012	1.25+0.25,-0.20	±10%				CGA4J1X8L1A106K125AE
	3216	1.60+0.30,-0.20	±10%			CGA5L1X8L1E106K160AE	

Click the part numbers for details.