

October 2018

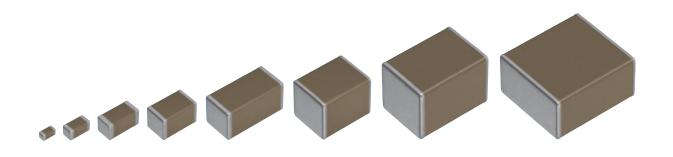
# MULTILAYER CERAMIC CHIP CAPACITORS

## Automotive grade, general (Up to 75V)

CGA series

CGA1	0603 [0201 inch]
CGA2	1005 [0402 inch]
CGA3	1608 [0603 inch]
CGA4	2012 [0805 inch]
CGA5	3216 [1206 inch]
CGA6	3225 [1210 inch]
CGA8	4532 [1812 inch]
CGA9	5750 [2220 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.

## <u> REMINDERS</u>

 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

# General (Up to 75V)

Type: CGA1/0603 [0201 inch], CGA2/1005 [0402 inch], CGA3/1608 [0603 inch], CGA4/2012 [0805 inch], CGA5/3216 [1206 inch], CGA6/3225 [1210 inch], CGA8/4532 [1812 inch], CGA9/5750 [2220 inch]

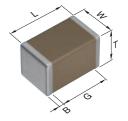
#### SERIES OVERVIEW

TDK multilayer ceramic chip capacitor automotive grade CGA series is a product for surface mount which multiple sheets of dielectric and conductive material are layered alternately. The monolithic structure ensures superior mechanical strength and reliability. Also the lower ESR, ESL and better frequency characteristics are offered by the simple structure than other capacitors. The capacitance range is up to 47uF and the line-up has been expanding to the region of the film capacitor or electrolytic capacitor.

#### FEATURES

- The superior mechanical strength and reliability due to the monolithic structure
- · Low ESR, ESL and excellent frequency characteristics allow for a circuit design that closely conforms to theoretical values.
- Low self-heating and high ripple resistance due to low ESR.
- No polarity.
- · AEC-Q200 compliant.

#### SHAPE & DIMENSIONS



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

#### APPLICATIONS

- · Automotive electronic equipment (Engine control units, Sensor modules and Battery line smoothing)
- LC resonance circuit (C0G).
- · Applications requiring higher reliability

#### PRODUCT STRUCTURE



The structure which multiple sheets of dielectric and conductive material are layered alternately. The superior mechanical strength and reliability are realized by the monolithic and simple structure.

				Dim	ensions in mm
Туре	L	W	Т	В	G
CGA1	0.60±0.03	0.30±0.03	0.30±0.03	0.10 min.	0.20 min.
CGA2	1.00±0.05	0.50±0.05	$0.50 \pm 0.05$	0.10 min.	0.30 min.
CGA3	1.60±0.10	0.80±0.10	0.80±0.10	0.20 min.	0.30 min.
CGA4	2.00±0.20	1.25±0.20	1.25±0.20	0.20 min.	0.50 min.
CGA5	3.20±0.20	1.60±0.20	1.60±0.20	0.20 min.	1.00 min.
CGA6	3.20±0.40	2.50±0.30	2.50±0.30	0.20 min.	_
CGA8	4.50±0.40	3.20±0.40	2.50±0.30	0.20 min.	_
CGA9	5.70±0.40	5.00±0.40	2.50±0.30	0.20 min.	_
*Dimens	ional tolerances ar	e typical values			

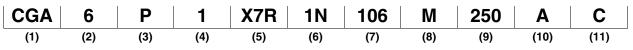
\*Dimensional tolerances are typical values.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.



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#### CATALOG NUMBER CONSTRUCTION



(1) Series

#### (2) Dimensions L x W (mm)

Code	EIA	Length	Width	Terminal width
1	CC0201	0.60	0.30	0.10
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
8	CC1812	4.50	3.20	0.20
9	CC2220	5.70	5.00	0.20

(6) Rated voltage (DC)

Code	Voltage (DC)	
0J	6.3V	
1A	10V	
1C	16V	
1E	25V	
1V	35V	
1H	50V	
1N	75V	

(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
С	±0.25pF
D	±0.50pF
J	±5%
K	±10%
М	±20%

#### (9) Thickness

Thickness
0.30 mm
0.50 mm
0.60 mm
0.80 mm
0.85 mm
1.15 mm
1.25 mm
1.60 mm
2.00 mm
2.30 mm
2.50 mm
2.80 mm
3.20 mm

#### (10) Packaging style

Style
178mm reel, 4mm pitch
178mm reel, 2mm pitch
178mm reel, 8mm pitch

#### (11) Special reserved code

Code	Description	
A,B,C	TDK internal code	

Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

## (3) Thickness code

Code	Thickness	
A	0.30 mm	
В	0.50 mm	
С	0.60 mm	
E F	0.80 mm	
F	0.85 mm	
Н	1.15 mm	
J	1.25 mm	
L	1.60 mm	
Μ	2.00 mm	
N	2.30 mm	
Р	2.50 mm	
Q	2.80 mm	
R	3.20 mm	

#### (4) Voltage condition for life test

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

#### (5) Temperature characteristics

Temperature coefficient or capacitance change	Temperature range
0±30 ppm/°C	-55 to +125°C
±15%	-55 to +85°C
±15%	-55 to +125°C
±22%	-55 to +125°C
	or capacitance change 0±30 ppm/°C ±15% ±15%

#### **Capacitance range chart**

Capacitar	nce	C	DG			X7R		
(pF)	Code	1H (50V)	1E (25V)	1H (50V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)
1	010							. ,
1.5	1R5							
2	020							
2.2	2R2							
3	030		-					
3.3	3R3							
4	040							
4.7	4R7							
5	050							
6	060							
6.8	6R8							
7	070							
8	080							
9	090							
10	100							
12	120							
15	150							
18	180							
22	220							
27	270							
33	330							
39	390							
47	470							
56	560							
68	680							
82	820							
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							
Standard thickn	000		30mm					

Standard thickness

0.30mm

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

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#### CGA1/0603 [0201 inch]

## **Capacitance range chart**

CGA2/1005	10402	inch
	L	

Capacitar	ice	C0G			X5R					X	7R				7S
(pF)	Code	1H (50V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	1C (16V)	1/ (10
1	010														
1.5	1R5														
2	020														
2.2	2R2														
3	030	_													
3.3	3R3	-													
4	040	_													
4.7	4R7	_													
5	050	-													
6	060	-													
6.8	6R8	_													
7	070	-													
8	080	_													
9	090	_													
10	100	_													
12	120	_													
15	150	_													
18	180	_													
22	220	_													
27	270	-													
33	330	_													
39	390	_													
47	470														
56	560														
68	680														
82	820														
100	101														
120	121														
150	151	-													
180	181	-													
220	221														
270	271	-													
330	331	_													
390	391	_													
470	471	-													
560	561	_													
680	681														
820	821	_													
1,000	102							-							
1,500	152							-							
2,200	222							-							
3,300	332							-							
4,700	472							-							
6,800 10,000	682 103							-							
10,000	103		-	-	-				-	-					
22,000	223		-		-			-	-						
33,000	333														
47,000	473		-	-		-		-		-					
47,000 68,000	683		-	-	-	-			-		-				
100,000			-	-		-		-		-	-				
150,000	104 154					-	-		-		-				
						-	+		-	-	+	+	-		
220,000	224														
330,000 470,000	334 474													-	
4/11/11/11	4/4	1	1				1	1			1	1	1		

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

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

#### **Capacitance range chart**

(pF)         Code         1H (50V)         1H (50V)         1H (50V)         1H (50V)           1         010         1.5         1.5           2         020         2         2           3         030         3.3         3R3         2         2           3         030         3.3         3R3         2         2         2           3         030         3.3         3R3         2         2         2           3         030         3.3         3R3         2         2         2           6         060         6         6         0         2         3         3 <t< th=""><th>Capacitar</th><th>ice</th><th>C0G</th><th>X5R</th><th>X7R</th></t<>	Capacitar	ice	C0G	X5R	X7R
1.5       1R5         2       020         2.2       2R2         3       030         3.3       3R3         4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681	(pF)	Code			
2       020         2.2       2R2         3       030         3.3       3R3         4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821	1	010			
2.2       2R2         3       030         3.3       3R3         4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102 <t< th=""><th>1.5</th><th>1R5</th><th></th><th></th><th></th></t<>	1.5	1R5			
3       030         3.3       3R3         4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         8       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122      <	2	020			
3.3       3R3         4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       990         10       100         12       120         15       150         18       180         22       220         27       270         33       330         399       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,800       182	2.2	2R2			
4       040         4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       990         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         33       330         33       330         33       330         34       101         120       121         150       151         180       181         220       221         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,800       182	3	030			
4.7       4R7         5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         820       221         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,500       152         1,800       182         2,200       222	3.3	3R3			
5       050         6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,500       152         1,800       182         2,200       222         2,700       272	4	040			
6       060         6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,300       182         2,200       222         2,700       272         3,300       332         3,900       392 <th>4.7</th> <th>4R7</th> <th></th> <th></th> <th></th>	4.7	4R7			
6.8       6R8         7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,300       182         2,200       222         2,700       272         3,300       332         3,900       392         4,700       472	5	050			
7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,500       152         1,800       182         2,700       272         3,300       332         3,900       392         4,700       472         5,600       6	6	060			
7       070         8       080         9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,500       152         1,800       182         2,700       272         3,300       332         3,900       392         4,700       472         5,600       6	6.8	6R8			
9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,200       122         1,800       182         2,700       272         3,300       332         3,900       392         4,700       472         5,600       562         6,800       682         8,200		070			
9       090         10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         1,000       102         1,200       122         1,200       122         1,800       182         2,700       272         3,300       332         3,900       392         4,700       472         5,600       562         6,800       682         8,200	8	080			
10       100         12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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	9				
12       120         15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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<					
15       150         18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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,					
18       180         22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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 <td< th=""><th></th><th></th><th>-</th><th></th><th></th></td<>			-		
22       220         27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
27       270         33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
33       330         39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
39       390         47       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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       470         56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
56       560         68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
68       680         82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
82       820         100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
100       101         120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
120       121         150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			-		
150       151         180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			_		
180       181         220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			_		
220       221         270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			_		
270       271         330       331         390       391         470       471         560       561         680       681         820       821         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			_		
330       331         390       391         470       471         560       561         680       681         820       821         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			_		
390       391         470       471         560       561         680       681         820       821         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			_		
470       471         560       561         680       681         820       821         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			_		
560       561         680       681         820       821         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			_		
680       681         820       821         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			_		
820       821         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					
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					
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	820	821			
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					
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	,				
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					
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					
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					
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		272			
4,700       472         5,600       562         6,800       682         8,200       822         10,000       103         15,000       153         22,000       223         33,000       333					
5,600       562         6,800       682         8,200       822         10,000       103         15,000       153         22,000       223         33,000       333					
6,800       682         8,200       822         10,000       103         15,000       153         22,000       223         33,000       333	4,700	472			
8,200       822         10,000       103         15,000       153         22,000       223         33,000       333	5,600	562			
10,000         103           15,000         153           22,000         223           33,000         333	6,800	682			
15,000         153           22,000         223           33,000         333	8,200	822			
15,000         153           22,000         223           33,000         333	10,000	103			
22,000         223           33,000         333	· ·				
33,000 333					
					-
	47,000	473			-
68,000 683				-	-
Standard thickness 0.80mm		ess	l l	.somm	

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

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

(7/23)

### CGA3/1608 [0603 inch]

## ⊗TDK

#### **Capacitance range chart**

## CGA3/1608 [0603 inch]

Capacitar	nce			X	5R					X7R				X7S	
(pF)	Code	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	0J (6.3V)	1C (16V)	1A (10V)	0G (4V)
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														

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

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

## **Capacitance range chart**

## CGA4/2012 [0805 inch]

Capacita	nce	C0G			X5R					X	7R				X7S	
(pF)	Code	1H (50V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	1H (50V)	1V (35V)	1E (25V)	1C (16V)	1A (10V)	0J (6.3V)	1E (25V)	1C (16V)	1A (10V)
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															
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															
6,800,000	685															
10,000,000	106															
andard thick	ness		0.60 m	m	0.8	5 mm		1.25 m	m							
Backgr	ound gray:	The proc	duct which	n is not re	commen	ded to a i	new desig	jn.								

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

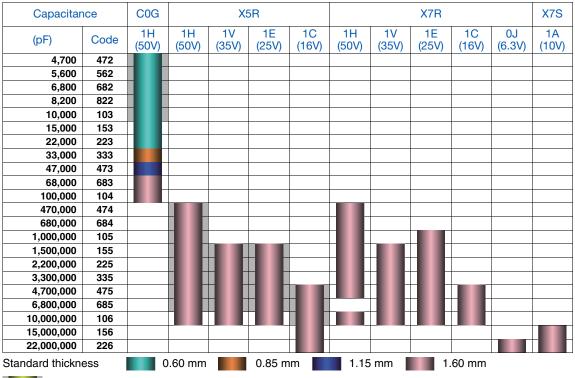
A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

#### ⊗TDK

(10/23)

#### Capacitance range chart

## CGA5/3216 [1206 inch]

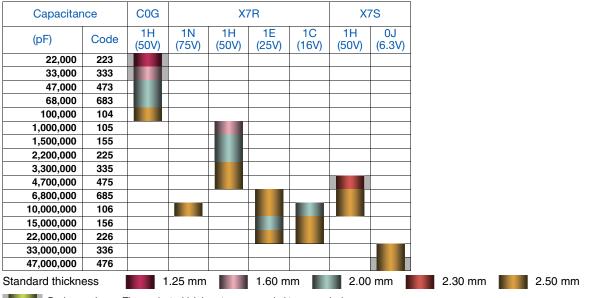


Background gray: The product which is not recommended to a new design.

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

#### **Capacitance range chart**

#### CGA6/3225 [1210 inch]



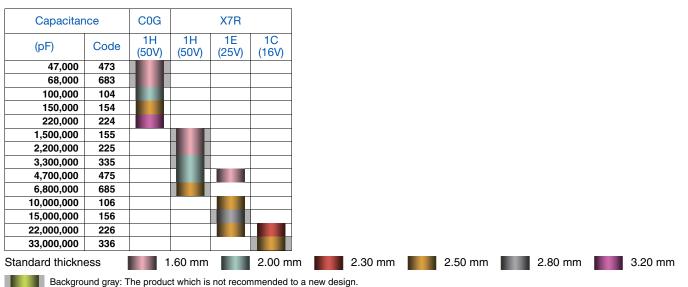
Background gray: The product which is not recommended to a new design.

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

#### ⊗TDK

#### Capacitance range chart

## CGA8/4532 [1812 inch]



Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

### **Capacitance range chart**

Capacitar	nce		X7R			
(pF)	Code	1H (50V)	1E (25V)	1C (16V)	+	
4,700,000	475				1	
6,800,000	685				Ī	
10,000,000	106				Ī	
15,000,000	156				1	
22,000,000	226				Ī	
47,000,000	476				Ī	
Standard thickn	ess	2	2.00 mm		2.30 mm	2.50 mm
	. –					

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

Please refer to the capacitance range table at P-12 and after for the details such as product thickness and capacitance tolerance.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

#### CGA9/5750 [2220 inch]

#### **Capacitance range table**

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

pacitarice	Dimensions	(mm)	Capacitance tolerance	Rated voltage Edc: 50V	Rated voltage Edc: 25
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H010C030BA	CGA1A2C0G1E010C030
1pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H010C050BA	
•	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H010C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H1R5C030BA	CGA1A2C0G1E1R5C030
1.5pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H1R5C050BA	
- 1	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H1R5C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H020C030BA	CGA1A2C0G1E020C030
2pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H020C050BA	
-р.	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H020C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H2R2C030BA	CGA1A2C0G1E2R2C030
2.2pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H2R2C050BA	OGATAZOUGTEZHZOUG
2.20	1608	0.80±0.00	±0.25pF	CGA3E2C0G1H2R2C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H030C030BA	CGA1A2C0G1E030C030
2nE	1005	0.30±0.03		CGA2B2C0G1H030C050BA	CGATAZCOGTE030C030
3pF			±0.25pF		
	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H030C080AA	
0.0-5	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H3R3C030BA	CGA1A2C0G1E3R3C030
3.3pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H3R3C050BA	
	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H3R3C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H040C030BA	CGA1A2C0G1E040C030
4pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H040C050BA	
	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H040C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H4R7C030BA	CGA1A2C0G1E4R7C030
4.7pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H4R7C050BA	
	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H4R7C080AA	
	0603	0.30±0.03	±0.25pF	CGA1A2C0G1H050C030BA	CGA1A2C0G1E050C030
5pF	1005	0.50±0.05	±0.25pF	CGA2B2C0G1H050C050BA	
	1608	0.80±0.10	±0.25pF	CGA3E2C0G1H050C080AA	
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H060D030BA	CGA1A2C0G1E060D030
6pF	1005	0.50±0.05	±0.50pF	CGA2B2C0G1H060D050BA	
	1608	0.80±0.10	±0.50pF	CGA3E2C0G1H060D080AA	
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H6R8D030BA	CGA1A2C0G1E6R8D030
6.8pF	1005	0.50±0.05	±0.50pF	CGA2B2C0G1H6R8D050BA	00,111,2000,120,100000
0.001	1608	0.80±0.00	±0.50pF	CGA3E2C0G1H6R8D080AA	
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H070D030BA	CGA1A2C0G1E070D030
7nE	1005			CGA2B2C0G1H070D050BA	CGATA2COGTE070D030
7pF		0.50±0.05	±0.50pF		
	1608	0.80±0.10	±0.50pF	CGA3E2C0G1H070D080AA	001110000150005000
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H080D030BA	CGA1A2C0G1E080D030
8pF	1005	0.50±0.05	±0.50pF	CGA2B2C0G1H080D050BA	
	1608	0.80±0.10	±0.50pF	CGA3E2C0G1H080D080AA	
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H090D030BA	CGA1A2C0G1E090D030
9pF	1005	0.50±0.05	±0.50pF	CGA2B2C0G1H090D050BA	
	1608	0.80±0.10	±0.50pF	CGA3E2C0G1H090D080AA	
	0603	0.30±0.03	±0.50pF	CGA1A2C0G1H100D030BA	CGA1A2C0G1E100D030
10pF	1005	0.50±0.05	±0.50pF	CGA2B2C0G1H100D050BA	
	1608	0.80±0.10	±0.50pF	CGA3E2C0G1H100D080AA	
-	0603	0.30±0.03	±5%	CGA1A2C0G1H120J030BA	CGA1A2C0G1E120J030
12pF	1005	0.50±0.05	±5%	CGA2B2C0G1H120J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H120J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H150J030BA	CGA1A2C0G1E150J030
15pF	1005	0.50±0.05	±5%	CGA2B2C0G1H150J050BA	
-1	1608	0.80±0.10	±5%	CGA3E2C0G1H150J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H180J030BA	CGA1A2C0G1E180J030
18pF	1005	0.50±0.05	±5%	CGA2B2C0G1H180J050BA	
Topi	1608	0.80±0.00	±5%	CGA3E2C0G1H180J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H220J030BA	CGA1A2C0G1E220J030
00-5					CGATAZOUGTEZZUJUJU
22pF	1005	0.50±0.05	±5%	CGA2B2C0G1H220J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H220J080AA	00444000045050
07. 5	0603	0.30±0.03	±5%	CGA1A2C0G1H270J030BA	CGA1A2C0G1E270J030
27pF	1005	0.50±0.05	±5%	CGA2B2C0G1H270J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H270J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H330J030BA	CGA1A2C0G1E330J030
33pF	1005	0.50±0.05	±5%	CGA2B2C0G1H330J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H330J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H390J030BA	CGA1A2C0G1E390J030
39pF	1005	0.50±0.05	±5%	CGA2B2C0G1H390J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H390J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H470J030BA	CGA1A2C0G1E470J030
47pF	1005	0.50±0.05	±5%	CGA2B2C0G1H470J050BA	
r -	1608	0.80±0.10	±5%	CGA3E2C0G1H470J080AA	

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

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#### **MULTILAYER CERAMIC CHIP CAPACITORS**

#### **Capacitance range table**

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

apacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number Rated voltage Edc: 50V	Rated voltage Edc: 25
	0603	0.30±0.03	±5%	CGA1A2C0G1H560J030BA	CGA1A2C0G1E560J030
56pF	1005	0.50±0.05	±5%	CGA2B2C0G1H560J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H560J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H680J030BA	CGA1A2C0G1E680J030
68pF	1005	0.50±0.05	±5%	CGA2B2C0G1H680J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H680J080AA	
	0603	0.30±0.03	±5%	CGA1A2C0G1H820J030BA	CGA1A2C0G1E820J030
82pF	1005	0.50±0.05	±5%	CGA2B2C0G1H820J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H820J080AA	001110000151011000
100-5	0603	0.30±0.03	±5%	CGA1A2C0G1H101J030BA	CGA1A2C0G1E101J030
100pF	1005 1608	0.50±0.05	±5%	CGA2B2C0G1H101J050BA	
	1005	0.80±0.10 0.50±0.05	±5% ±5%	CGA3E2C0G1H101J080AA CGA2B2C0G1H121J050BA	
120pF	1608	0.80±0.00	±5%	CGA3E2C0G1H121J080AA	
	1005	0.50±0.10	±5%	CGA2B2C0G1H151J050BA	
150pF	1608	0.80±0.00	±5%	CGA3E2C0G1H151J080AA	
	1005	0.50±0.05	±5%	CGA2B2C0G1H181J050BA	
180pF	1608	0.80±0.10	±5%	CGA3E2C0G1H181J080AA	
000-5	1005	0.50±0.05	±5%	CGA2B2C0G1H221J050BA	
220pF	1608	0.80±0.10	±5%	CGA3E2C0G1H221J080AA	
070-5	1005	0.50±0.05	±5%	CGA2B2C0G1H271J050BA	
270pF	1608	0.80±0.10	±5%	CGA3E2C0G1H271J080AA	
330pF	1005	0.50±0.05	±5%	CGA2B2C0G1H331J050BA	
330pr	1608	0.80±0.10	±5%	CGA3E2C0G1H331J080AA	
390pF	1005	0.50±0.05	±5%	CGA2B2C0G1H391J050BA	
390bi	1608	0.80±0.10	±5%	CGA3E2C0G1H391J080AA	
470pF	1005	0.50±0.05	±5%	CGA2B2C0G1H471J050BA	
47001	1608	0.80±0.10	±5%	CGA3E2C0G1H471J080AA	
560pF	1005	0.50±0.05	±5%	CGA2B2C0G1H561J050BA	
000p.	1608	0.80±0.10	±5%	CGA3E2C0G1H561J080AA	
680pF	1005	0.50±0.05	±5%	CGA2B2C0G1H681J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H681J080AA	
820pF	1005	0.50±0.05	±5%	CGA2B2C0G1H821J050BA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H821J080AA	
4	1005	0.50±0.05	±5%	CGA2B2C0G1H102J050BA	
1nF	1608	0.80±0.10	±5%	CGA3E2C0G1H102J080AA	
	2012 1608	0.60±0.15 0.80±0.10	±5% ±5%	CGA4C2C0G1H102J060AA CGA3E2C0G1H122J080AA	
1.2nF	2012	0.60±0.15	±5%	CGA4C2C0G1H122J060AA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H152J080AA	
1.5nF	2012	0.60±0.15	±5%	CGA4C2C0G1H152J060AA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H182J080AA	
1.8nF	2012	0.60±0.15	±5%	CGA4C2C0G1H182J060AA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H222J080AA	
2.2nF	2012	0.60±0.15	±5%	CGA4C2C0G1H222J060AA	
0.7.5	1608	0.80±0.10	±5%	CGA3E2C0G1H272J080AA	
2.7nF	2012	0.60±0.15	±5%	CGA4C2C0G1H272J060AA	
3.3nF	1608	0.80±0.10	±5%	CGA3E2C0G1H332J080AA	
3.3HF	2012	0.60±0.15	±5%	CGA4C2C0G1H332J060AA	
3.9nF	1608	0.80±0.10	±5%	CGA3E2C0G1H392J080AA	
0.011	2012	0.60±0.15	±5%	CGA4C2C0G1H392J060AA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H472J080AA	
4.7nF	2012	0.60±0.15	±5%	CGA4C2C0G1H472J060AA	
	3216	0.60±0.15	±5%	CGA5C2C0G1H472J060AA	
	1608	0.80±0.10	±5%	CGA3E2C0G1H562J080AA	
5.6nF	2012	0.60±0.15	±5%	CGA4C2C0G1H562J060AA	
	3216	0.60±0.15	±5%	CGA5C2C0G1H562J060AA	
C 0	1608	0.80±0.10	±5%	CGA3E2C0G1H682J080AA	
6.8nF	2012	0.60±0.15	±5%	CGA4C2C0G1H682J060AA CGA5C2C0G1H682J060AA	
	3216	0.60±0.15	±5%		
8.2nF	1608 2012	0.80±0.10 0.60±0.15	±5% ±5%	CGA3E2C0G1H822J080AA CGA4C2C0G1H822J060AA	
0.211	3216	0.60±0.15	±5%	CGA5C2C0G1H822J060AA CGA5C2C0G1H822J060AA	
	1608	0.80±0.15	±5%	CGA3E2C0G1H103J080AA	
10nF	2012	0.60±0.10	±5%	CGA4C2C0G1H103J060AA	
	3216	0.60±0.15	±5%	CGA5C2C0G1H103J060AA	
	2012	0.85±0.15	±5%	CGA4F2C0G1H153J085AA	
15nF	3216	0.60±0.15	±5%	CGA5C2C0G1H153J060AA	
	2012	1.25±0.20	±5%	CGA4J2C0G1H223J125AA	
22nF	3216	0.60±0.15	±5%	CGA5C2C0G1H223J060AA	
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#### **MULTILAYER CERAMIC CHIP CAPACITORS**

### **Capacitance range table**

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

Capacitance	Dimonsions	Thickness	Capacitance	Catalog number
Capacitance	Dimensions	(mm)	tolerance	Rated voltage Edc: 50V
	2012	1.25±0.20	±5%	CGA4J2C0G1H333J125AA
33nF	3216	0.85±0.15	±5%	CGA5F2C0G1H333J085AA
	3225	1.60±0.20	±5%	CGA6L2C0G1H333J160AA
	3216	1.15±0.15	±5%	CGA5H2C0G1H473J115AA
47nF	3225	2.00±0.20	±5%	CGA6M2C0G1H473J200AA
	4532	1.60±0.20	±5%	CGA8L2C0G1H473J160KA
	3216	1.60±0.20	±5%	CGA5L2C0G1H683J160AA
68nF	3225	2.00±0.20	±5%	CGA6M2C0G1H683J200AA
	4532	1.60±0.20	±5%	CGA8L2C0G1H683J160KA
	3216	1.60±0.20	±5%	CGA5L2C0G1H104J160AA
100nF	3225	2.50±0.30	±5%	CGA6P2C0G1H104J250AA
	4532	2.00±0.20	±5%	CGA8M2C0G1H104J200KA
150nF	4532	2.50±0.30	±5%	CGA8P2C0G1H154J250KA
220nF	4532	3.20±0.30	±5%	CGA8R2C0G1H224J320KA

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

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

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V
220×E	1005	0.50.0.05	±10%	CGA2B2X5R1H221K050BA		
220pF	1005	0.50±0.05	±20%	CGA2B2X5R1H221M050BA		
330pF	1005	0.50±0.05	±10%	CGA2B2X5R1H331K050BA		
000001	1005	0.00±0.00	±20%	CGA2B2X5R1H331M050BA		
470pF	1005	0.50±0.05	±10%	CGA2B2X5R1H471K050BA		
			±20%	CGA2B2X5R1H471M050BA		
680pF	1005	0.50±0.05	±10%	CGA2B2X5R1H681K050BA		
			±20%	CGA2B2X5R1H681M050BA		
	1005	0.50±0.05	±10%	CGA2B2X5R1H102K050BA		
1nF			±20%	CGA2B2X5R1H102M050BA		
	1608	0.80±0.10	±10% ±20%	CGA3E2X5R1H102K080AA		
			±20%	CGA3E2X5R1H102M080AA CGA2B2X5R1H152K050BA		
	1005	0.50±0.05	±10%	CGA2B2X5R1H152K050BA CGA2B2X5R1H152M050BA		
1.5nF			±20%	CGA3E2X5R1H152K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H152M080AA		
			±10%	CGA2B2X5R1H222K050BA		
	1005	0.50±0.05	±10%	CGA2B2X5R1H222M050BA		
2.2nF			±10%	CGA3E2X5R1H222K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H222M080AA		
			±10%	CGA2B2X5R1H332K050BA		
	1005	0.50±0.05	±20%	CGA2B2X5R1H332M050BA		
3.3nF			±10%	CGA3E2X5R1H332K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H332M080AA		
			±10%	CGA2B2X5R1H472K050BA		
	1005	0.50±0.05	±20%	CGA2B2X5R1H472M050BA		
4.7nF	1000	0.00.0.10	±10%	CGA3E2X5R1H472K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H472M080AA		
	1005	0.50±0.05	±10%	CGA2B2X5R1H682K050BA		
6.8nF	1005	0.50±0.05	±20%	CGA2B2X5R1H682M050BA		
0.00	1608	0.80±0.10	±10%	CGA3E2X5R1H682K080AA		
	1008	0.80±0.10	±20%	CGA3E2X5R1H682M080AA		
	1005	0.50±0.05	±10%	CGA2B3X5R1H103K050BB	CGA2B3X5R1V103K050BB	CGA2B2X5R1E103K050B
10nF	1000	0.00±0.00	±20%	CGA2B3X5R1H103M050BB	CGA2B3X5R1V103M050BB	CGA2B2X5R1E103M050E
	1608	0.80±0.10	±10%	CGA3E2X5R1H103K080AA		
			±20%	CGA3E2X5R1H103M080AA		
	1005	0.50±0.05	±10%	CGA2B3X5R1H153K050BB	CGA2B3X5R1V153K050BB	CGA2B2X5R1E153K050B
15nF			±20%	CGA2B3X5R1H153M050BB	CGA2B3X5R1V153M050BB	CGA2B2X5R1E153M050E
	1608	0.80±0.10	±10%	CGA3E2X5R1H153K080AA		
			±20%	CGA3E2X5R1H153M080AA	00 1000/501/000/05000	
	1005	0.50±0.05	±10%	CGA2B3X5R1H223K050BB	CGA2B3X5R1V223K050BB	CGA2B2X5R1E223K050B
22nF			±20%	CGA2B3X5R1H223M050BB	CGA2B3X5R1V223M050BB	CGA2B2X5R1E223M050E
	1608	0.80±0.10	±10% ±20%	CGA3E2X5R1H223K080AA CGA3E2X5R1H223M080AA		
			±20%	CGA2B3X5R1H333K050BB	CGA2B3X5R1V333K050BB	CGA2B2X5R1E333K050B
	1005	0.50±0.05	±20%	CGA2B3X5R1H333M050BB	CGA2B3X5R1V333M050BB	CGA2B2X5R1E333M050E
33nF			±10%	CGA3E2X5R1H333K080AA	COALBOXSIII VSSSIIIOSOBB	OGAZDZASITI ESSSINOSOL
	1608	0.80±0.10	±20%	CGA3E2X5R1H333M080AA		
			±20%	CGA2B3X5R1H473K050BB	CGA2B3X5R1V473K050BB	CGA2B2X5R1E473K050B
	1005	0.50±0.05	±20%	CGA2B3X5R1H473M050BB	CGA2B3X5R1V473M050BB	CGA2B2X5R1E473M050E
47nF			±10%	CGA3E2X5R1H473K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H473M080AA		
			±10%	CGA2B3X5R1H683K050BB	CGA2B3X5R1V683K050BB	CGA2B3X5R1E683K050E
	1005	0.50±0.05	±20%	CGA2B3X5R1H683M050BB	CGA2B3X5R1V683M050BB	CGA2B3X5R1E683M050E
68nF	1000	0.00.010	±10%	CGA3E2X5R1H683K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1H683M080AA		
	1005	0 50 . 0 05	±10%	CGA2B3X5R1H104K050BB	CGA2B3X5R1V104K050BB	CGA2B3X5R1E104K050E
100-5	1005	0.50±0.05	±20%	CGA2B3X5R1H104M050BB	CGA2B3X5R1V104M050BB	CGA2B3X5R1E104M050E
100nF	1600	0.00.0.10	±10%	CGA3E2X5R1H104K080AA		CGA3E2X5R1E104K080A
	1608	0.80±0.10	±20%	CGA3E2X5R1H104M080AA		CGA3E2X5R1E104M080A
	1608	0.80±0.10	±10%	CGA3E3X5R1H154K080AB	CGA3E3X5R1V154K080AB	CGA3E2X5R1E154K080A
	1008	0.80±0.10	±20%	CGA3E3X5R1H154M080AB	CGA3E3X5R1V154M080AB	CGA3E2X5R1E154M080A
150nE			120 /0	CONCECTORITIO		
150nF	2012	1.25±0.20	±10%	CGA4J2X5R1H154K125AA		

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

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

Conceitonee	Dimonoiana	Thickness	Capacitance	Catalog number		
Japachance	Dimensions	(mm)	tolerance	Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V
	1608	0.80±0.10	±10%	CGA3E3X5R1H224K080AB	CGA3E3X5R1V224K080AB	CGA3E2X5R1E224K080AA
220nF	1000	0.00±0.10	±20%	CGA3E3X5R1H224M080AB	CGA3E3X5R1V224M080AB	CGA3E2X5R1E224M080A
22011	2012	1.25±0.20	±10%	CGA4J2X5R1H224K125AA		
	2012	1.25±0.20	±20%	CGA4J2X5R1H224M125AA		
	1608	0.80±0.10	±10%	CGA3E3X5R1H334K080AB	CGA3E3X5R1V334K080AB	CGA3E3X5R1E334K080AB
000-5	1000	0.80±0.10	±20%	CGA3E3X5R1H334M080AB	CGA3E3X5R1V334M080AB	CGA3E3X5R1E334M080A
330nF	0010	1.05.0.00	±10%	CGA4J2X5R1H334K125AA		
	2012	1.25±0.20	±20%	CGA4J2X5R1H334M125AA		
	1000	0.00.0.10	±10%	CGA3E3X5R1H474K080AB	CGA3E3X5R1V474K080AB	CGA3E3X5R1E474K080AI
	1608	0.80±0.10	±20%	CGA3E3X5R1H474M080AB	CGA3E3X5R1V474M080AB	CGA3E3X5R1E474M080A
170 F	0010	1 05 0 00	±10%	CGA4J3X5R1H474K125AB	CGA4J3X5R1V474K125AB	CGA4J2X5R1E474K125A
470nF	2012	1.25±0.20	±20%	CGA4J3X5R1H474M125AB	CGA4J3X5R1V474M125AB	CGA4J2X5R1E474M125A
	0010		±10%	CGA5L2X5R1H474K160AA		
	3216	1.60+0.30,-0.10	±20%	CGA5L2X5R1H474M160AA		
	1000		±10%	CGA3E3X5R1H684K080AB	CGA3E3X5R1V684K080AB	CGA3E3X5R1E684K080A
	1608	0.80±0.10	±20%	CGA3E3X5R1H684M080AB	CGA3E3X5R1V684M080AB	CGA3E3X5R1E684M080A
	2012		±10%	CGA4J3X5R1H684K125AB	CGA4J3X5R1V684K125AB	CGA4J2X5R1E684K125A
680nF		1.25±0.20	±20%	CGA4J3X5R1H684M125AB	CGA4J3X5R1V684M125AB	CGA4J2X5R1E684M125A
	3216	1.60+0.30,-0.10	±10%	CGA5L2X5R1H684K160AA		
			±20%	CGA5L2X5R1H684M160AA		
	1000		±10%	CGA3E3X5R1H105K080AB	CGA3E3X5R1V105K080AB	CGA3E3X5R1E105K080A
	1608	0.80±0.10	±20%	CGA3E3X5R1H105M080AB	CGA3E3X5R1V105M080AB	CGA3E3X5R1E105M080A
	0010		±10%	CGA4J3X5R1H105K125AB	CGA4J3X5R1V105K125AB	CGA4J2X5R1E105K125A
1µF	2012	1.25±0.20	±20%	CGA4J3X5R1H105M125AB	CGA4J3X5R1V105M125AB	CGA4J2X5R1E105M125A
			±10%	CGA5L2X5R1H105K160AA		
	3216	1.60+0.30,-0.10	±20%	CGA5L2X5R1H105M160AA		
	2012		±10%	CGA4J3X5R1H155K125AB	CGA4J3X5R1V155K125AB	CGA4J3X5R1E155K125AI
		1.25±0.20	±20%	CGA4J3X5R1H155M125AB	CGA4J3X5R1V155M125AB	CGA4J3X5R1E155M125A
1.5µF		6 1.60+0.30,-0.10	±10%	CGA5L3X5R1H155K160AB	CGA5L3X5R1V155K160AB	CGA5L2X5R1E155K160A
	3216		±20%	CGA5L3X5R1H155M160AB	CGA5L3X5R1V155M160AB	CGA5L2X5R1E155M160A
	2012		±10%	CGA4J3X5R1H225K125AB	CGA4J3X5R1V225K125AB	CGA4J3X5R1E225K125A
	2012	1.25±0.20	±20%	CGA4J3X5R1H225M125AB	CGA4J3X5R1V225M125AB	CGA4J3X5R1E225M125A
2.2µF			±10%	CGA5L3X5R1H225K160AB	CGA5L3X5R1V225K160AB	CGA5L2X5R1E225K160A
	3216	1.60+0.30,-0.10	±20%	CGA5L3X5R1H225M160AB	CGA5L3X5R1V225M160AB	CGA5L2X5R1E225M160A
			±10%	CGA4J3X5R1H335K125AB	CGA4J3X5R1V335K125AB	CGA4J3X5R1E335K125AI
	2012	1.25±0.20	±20%	CGA4J3X5R1H335M125AB	CGA4J3X5R1V335M125AB	CGA4J3X5R1E335M125A
3.3µF			±10%	CGA5L3X5R1H335K160AB	CGA5L3X5R1V335K160AB	CGA5L2X5R1E335K160A
	3216	1.60+0.30,-0.10	±20%	CGA5L3X5R1H335M160AB	CGA5L3X5R1V335M160AB	CGA5L2X5R1E335M160A
	0010	1.05.0.00	±10%	CGA4J3X5R1H475K125AB	CGA4J3X5R1V475K125AB	CGA4J3X5R1E475K125AI
	2012	1.25±0.20	±20%	CGA4J3X5R1H475M125AB	CGA4J3X5R1V475M125AB	CGA4J3X5R1E475M125A
4.7µF			±10%	CGA5L3X5R1H475K160AB	CGA5L3X5R1V475K160AB	CGA5L2X5R1E475K160A
	3216	1.60+0.30,-0.10	±20%	CGA5L3X5R1H475M160AB	CGA5L3X5R1V475M160AB	CGA5L2X5R1E475M160A
			+10%	CGA5L3X5R1H685K160AB	CGA5L3X5R1V685K160AB	CGA5L3X5R1E685K160AI
6.8µF	3216	1.60+0.30,-0.10				
6.8µF	3216		±20%	CGA5L3X5R1H685M160AB	CGA5L3X5R1V685M160AB	CGA5L3X5R1E685M160A
6.8μF 10μF	3216	1.60+0.30,-0.10	±20% ±10%	CGA5L3X5R1H685M160AB CGA5L3X5R1H106K160AB	CGA5L3X5R1V685M160AB CGA5L3X5R1V106K160AB	CGA5L3X5R1E685M160AI CGA5L3X5R1E106K160AE

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

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

**⊘TDK** 

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

Canacitanco	Dimensions	Thickness	Capacitance	Catalog number		
apacitatice	Dimensions	(mm)	tolerance	Rated voltage Edc: 16V	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V
33nF	1005	0.50±0.05	±10%	CGA2B2X5R1C333K050BA		
0011	1005	0.00±0.00	±20%	CGA2B2X5R1C333M050BA		
47nF	1005	0.50±0.05	±10%	CGA2B2X5R1C473K050BA		
4711	1005	0.00±0.00	±20%	CGA2B2X5R1C473M050BA		
68nF	1005	0.50±0.05	±10%	CGA2B2X5R1C683K050BA		
0011	1005	0.30±0.03	±20%	CGA2B2X5R1C683M050BA		
100nF	1005	0.50±0.05	±10%	CGA2B2X5R1C104K050BA	CGA2B2X5R1A104K050BA	
TUUTE	1005	0.50±0.05	±20%	CGA2B2X5R1C104M050BA	CGA2B2X5R1A104M050BA	
150nF	1005	0.50±0.05	±10%	CGA2B1X5R1C154K050BC	CGA2B3X5R1A154K050BB	
15011	1005	0.50±0.05	±20%	CGA2B1X5R1C154M050BC	CGA2B3X5R1A154M050BB	
	1005	0.50±0.05	±10%	CGA2B1X5R1C224K050BC	CGA2B3X5R1A224K050BB	
	1005	0.50±0.05	±20%	CGA2B1X5R1C224M050BC	CGA2B3X5R1A224M050BB	
220nF	1000		±10%	CGA3E2X5R1C224K080AA		
	1608	0.80±0.10	±20%	CGA3E2X5R1C224M080AA		
			±10%	CGA3E2X5R1C334K080AA	CGA3E2X5R1A334K080AA	
330nF	1608	0.80±0.10	±20%	CGA3E2X5R1C334M080AA	CGA3E2X5R1A334M080AA	
			±10%	CGA3E2X5R1C474K080AA	CGA3E2X5R1A474K080AA	
470nF	1608	0.80±0.10	±20%	CGA3E2X5R1C474M080AA	CGA3E2X5R1A474M080AA	
			±10%	CGA3E2X5R1C684K080AA	CGA3E2X5R1A684K080AA	
	1608 2012	0.80±0.10	±20%	CGA3E2X5R1C684M080AA	CGA3E2X5R1A684M080AA	
680nF			±10%	CGA4J2X5R1C684K125AA		
		1.25±0.20	±20%	CGA4J2X5R1C684M125AA		
	1608	0.80±0.10	±10%	CGA3E1X5R1C105K080AC	CGA3E2X5R1A105K080AA	
			±10%	CGA3E1X5R1C105M080AC	CGA3E2X5R1A105M080AA	
1µF	2012	1.25±0.20	±10%	CGA4J2X5R1C105K125AA	CARCEZASITIATOSINOCOAA	
			±10%	CGA4J2X5R1C105K125AA		
			±20%	CGA3E1X5R1C155K080AC	CGA3E3X5R1A155K080AB	
	1608	0.80±0.10	±10%	CGA3E1X5R1C155K080AC	CGA3E3X5R1A155K080AB CGA3E3X5R1A155M080AB	
1.5µF	2012	012 1.25±0.20				
			±10%	CGA4J2X5R1C155K125AA	CGA4J2X5R1A155K125AA	
			±20%	CGA4J2X5R1C155M125AA	CGA4J2X5R1A155M125AA	
	1608	0.80±0.10	±10%	CGA3E1X5R1C225K080AC	CGA3E3X5R1A225K080AB	
2.2µF	1000		±20%	CGA3E1X5R1C225M080AC	CGA3E3X5R1A225M080AB	
	2012	1.25±0.20	±10%	CGA4J2X5R1C225K125AA	CGA4J2X5R1A225K125AA	
	2012		±20%	CGA4J2X5R1C225M125AA	CGA4J2X5R1A225M125AA	
	1608	0.80±0.10	±10%		CGA3E1X5R1A335K080AC	CGA3E3X5R0J335K080AI
3.3µF		0.0020110	±20%		CGA3E1X5R1A335M080AC	CGA3E3X5R0J335M080A
0.0µ1	2012	1.25±0.20	±10%	CGA4J3X5R1C335K125AB	CGA4J2X5R1A335K125AA	
	LUIL	1.20±0.20	±20%	CGA4J3X5R1C335M125AB	CGA4J2X5R1A335M125AA	
	1608	0.80±0.10	±10%			CGA3E1X5R0J475K080A0
	1000	0.00±0.10	±20%			CGA3E1X5R0J475M080A
4.7µF	2012	1.25±0.20	±10%	CGA4J3X5R1C475K125AB	CGA4J2X5R1A475K125AA	
4.7 µi	2012	1.23±0.20	±20%	CGA4J3X5R1C475M125AB	CGA4J2X5R1A475M125AA	
	0010	1 00.0 00 0 10	±10%	CGA5L2X5R1C475K160AA		
	3216	1.60+0.30,-0.10	±20%	CGA5L2X5R1C475M160AA		
	0010	1 05 0 00	±10%	CGA4J1X5R1C685K125AC	CGA4J3X5R1A685K125AB	
0.0.5	2012	1.25±0.20	±20%	CGA4J1X5R1C685M125AC	CGA4J3X5R1A685M125AB	
6.8µF	0010	1 00 0 00 0 15	+10%	CGA5L2X5R1C685K160AA		
	3216	1.60+0.30,-0.10	±20%	CGA5L2X5R1C685M160AA		
			±10%	CGA4J1X5R1C106K125AC	CGA4J3X5R1A106K125AB	
	2012	1.25±0.20	±20%	CGA4J1X5R1C106M125AC	CGA4J3X5R1A106M125AB	
10µF			±10%	CGA5L1X5R1C106K160AC		
	3216	1.60+0.30,-0.10	±10%	CGA5L1X5R1C106M160AC		
15µF	3216	1.60+0.30,-0.10	±20%	CGA5L1X5R1C156M160AC		
22µF	3216	1.60+0.30,-0.10	±20%	CGA5L1X5R1C226M160AC		

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#### **MULTILAYER CERAMIC CHIP CAPACITORS**

### **Capacitance range table**

#### Temperature characteristics: X7R (-55 to +125°C, ±15%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V
			±10%	CGA1A2X7R1H101K030BA	Halod Vollago Edd. 00 V	CGA1A2X7R1E101K030BA
100pF	0603	0.30±0.03	±20%	CGA1A2X7R1H101M030BA		CGA1A2X7R1E101M030BA
450-5	0000	0.00.0.00	±10%	CGA1A2X7R1H151K030BA		CGA1A2X7R1E151K030BA
150pF	0603	0.30±0.03	±20%	CGA1A2X7R1H151M030BA		CGA1A2X7R1E151M030BA
	0603	0.30±0.03	±10%	CGA1A2X7R1H221K030BA		CGA1A2X7R1E221K030BA
220pF	0003	0.30±0.03	±20%	CGA1A2X7R1H221M030BA		CGA1A2X7R1E221M030BA
220pr	1005	0.50±0.05	±10%	CGA2B2X7R1H221K050BA		
	1005	0.50±0.05	±20%	CGA2B2X7R1H221M050BA		
	0603	0.30±0.03	±10%	CGA1A2X7R1H331K030BA		CGA1A2X7R1E331K030BA
330pF	0000	0.00±0.00	±20%	CGA1A2X7R1H331M030BA		CGA1A2X7R1E331M030BA
0000	1005	0.50±0.05	±10%	CGA2B2X7R1H331K050BA		
		0.0020.00	±20%	CGA2B2X7R1H331M050BA		
	0603	0.30±0.03	±10%	CGA1A2X7R1H471K030BA		CGA1A2X7R1E471K030B/
470pF			±20%	CGA1A2X7R1H471M030BA		CGA1A2X7R1E471M030B
	1005	0.50±0.05	±10%	CGA2B2X7R1H471K050BA		
			±20%	CGA2B2X7R1H471M050BA		0.0 1 / 1.0)/70 / 500 / / (0.000
	0603	0.30±0.03	±10%			CGA1A2X7R1E681K030B/
680pF			±20%	004000//704//004//05004		CGA1A2X7R1E681M030B/
	1005	0.50±0.05	±10%	CGA2B2X7R1H681K050BA		
			±20%	CGA2B2X7R1H681M050BA		
	0603	0.30±0.03	±10% ±20%			CGA1A2X7R1E102K030B/ CGA1A2X7R1E102M030B/
						CGATAZA/ RTETUZIWU30D/
1nF	1005	0.50±0.05	±10% ±20%	CGA2B2X7R1H102K050BA CGA2B2X7R1H102M050BA		
			±20%	CGA3E2X7R1H102K080AA		
	1608	0.80±0.10	±10%	CGA3E2X7R1H102K080AA		
			±10%	CARLEXATITICE MODERA		CGA1A2X7R1E152K030B
		0.30±0.03	±20%			CGA1A2X7R1E152M030B
			±10%	CGA2B2X7R1H152K050BA		CONTRACTOR INCOOL
1.5nF		0.50±0.05	±20%	CGA2B2X7R1H152M050BA		
	1608	608 0.80±0.10	±10%	CGA3E2X7R1H152K080AA		
			±20%	CGA3E2X7R1H152M080AA		
	0603	0.30±0.03	±10%			CGA1A2X7R1E222K030BA
			±20%			CGA1A2X7R1E222M030B
			±10%	CGA2B2X7R1H222K050BA		
2.2nF	1005	0.50±0.05	±20%	CGA2B2X7R1H222M050BA		
	1000	0.00.0.10	±10%	CGA3E2X7R1H222K080AA		
	1608	0.80±0.10	±20%	CGA3E2X7R1H222M080AA		
	0603	0603 0.30±0.03	±10%			CGA1A2X7R1E332K030B
	0003	0.30±0.03	±20%			CGA1A2X7R1E332M030B
3.3nF	1005	5 0.50±0.05	±10%	CGA2B2X7R1H332K050BA		
0.011	1005	0.00±0.00	±20%	CGA2B2X7R1H332M050BA		
	1608	0.80±0.10	±10%	CGA3E2X7R1H332K080AA		
		0.0020110	±20%	CGA3E2X7R1H332M080AA		
	1005	0.50±0.05	±10%	CGA2B2X7R1H472K050BA		
4.7nF			±20%	CGA2B2X7R1H472M050BA		
	1608	0.80±0.10	±10%	CGA3E2X7R1H472K080AA		
			±20%	CGA3E2X7R1H472M080AA		
	1005	0.50±0.05	±10%	CGA2B2X7R1H682K050BA		
6.8nF			±20%	CGA2B2X7R1H682M050BA		
	1608	0.80±0.10	±10%	CGA3E2X7R1H682K080AA		
			±20%	CGA3E2X7R1H682M080AA	004000/704/400/05000	
	1005	0.50±0.05	±10%	CGA2B3X7R1H103K050BB	CGA2B3X7R1V103K050BB	CGA2B2X7R1E103K050B
10nF			±20%	CGA2B3X7R1H103M050BB	CGA2B3X7R1V103M050BB	CGA2B2X7R1E103M050B
	1608	0.80±0.10	±10% ±20%	CGA3E2X7R1H103K080AA		
				CGA3E2X7R1H103M080AA		
	1005	0.50±0.05	±10% ±20%	CGA2B3X7R1H153K050BB CGA2B3X7R1H153M050BB	CGA2B3X7R1V153K050BB CGA2B3X7R1V153M050BB	CGA2B2X7R1E153K050B CGA2B2X7R1E153M050B
15nF			±20% ±10%	CGA2E3X7R1H153M050EB CGA3E2X7R1H153K080AA	UGA2DOATH (V IDOIVIDOUBD	00A202A/ATE100W0000
	1608	0.80±0.10	±10%	CGA3E2X7R1H153K080AA CGA3E2X7R1H153M080AA		
			±20%	CGA2B3X7R1H223K050BB	CGA2B3X7R1V223K050BB	CGA2B2X7R1E223K050B
	1005	0.50±0.05	±10% ±20%	CGA2B3X7R1H223K050BB CGA2B3X7R1H223M050BB	CGA2B3X7R1V223K050BB CGA2B3X7R1V223M050BB	CGA2B2X7R1E223K050B
22nF			±20% ±10%	CGA2E3X7R1H223M050EE CGA3E2X7R1H223K080AA	UGALDOATH (VZZOWUDUBB	USALDEAT IN TERESIVIUOUD
22115		0.80±0.10				

#### Temperature characteristics: X7R (-55 to +125°C, ±15%)

apacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V
	1005	0.50.0.05	±10%	CGA2B3X7R1H333K050BB	CGA2B3X7R1V333K050BB	CGA2B1X7R1E333K050B
33nF	1005	0.50±0.05	±20%	CGA2B3X7R1H333M050BB	CGA2B3X7R1V333M050BB	CGA2B1X7R1E333M050B
33HF	1608	0.80±0.10	±10%	CGA3E2X7R1H333K080AA		
	1000	0.00±0.10	±20%	CGA3E2X7R1H333M080AA		
	1005	0.50±0.05	±10%	CGA2B3X7R1H473K050BB	CGA2B3X7R1V473K050BB	CGA2B1X7R1E473K050B
47nF			±20%	CGA2B3X7R1H473M050BB	CGA2B3X7R1V473M050BB	CGA2B1X7R1E473M050B
	1608	0.80±0.10	±10%	CGA3E2X7R1H473K080AA		
			±20%	CGA3E2X7R1H473M080AA	004000/704/000/05000	
	1005	0.50±0.05	±10% ±20%	CGA2B3X7R1H683K050BB CGA2B3X7R1H683M050BB	CGA2B3X7R1V683K050BB	CGA2B3X7R1E683K050B
68nF -			±20%	CGA3E2X7R1H683K080AA	CGA2B3X7R1V683M050BB	CGA2B3X7R1E683M050E
	1608	0.80±0.10	±10%	CGA3E2X7R1H683M080AA		
			±10%	CGA2B3X7R1H104K050BB	CGA2B3X7R1V104K050BB	CGA2B3X7R1E104K050E
	1005	0.50±0.05	±20%	CGA2B3X7R1H104M050BB	CGA2B3X7R1V104M050BB	CGA2B3X7R1E104M050E
100nF			±10%	CGA3E2X7R1H104K080AA		CGA3E2X7R1E104K080A
	1608	0.80±0.10	±20%	CGA3E2X7R1H104M080AA		CGA3E2X7R1E104M080A
	2012	1.25±0.20	±10%	CGA4J2X7R1H104K125AA		
	1005	0.50±0.05	±10%		CGA2B1X7R1V154K050BC	CGA2B3X7R1E154K050E
	1005	0.30±0.03	±20%		CGA2B1X7R1V154M050BC	CGA2B3X7R1E154M050E
150nF	1608	0.80±0.10	±10%	CGA3E3X7R1H154K080AB	CGA3E3X7R1V154K080AB	CGA3E2X7R1E154K080A
100111		0.0010.10	±20%	CGA3E3X7R1H154M080AB	CGA3E3X7R1V154M080AB	CGA3E2X7R1E154M080A
	2012	1.25±0.20	±10%	CGA4J2X7R1H154K125AA		
			±20%	CGA4J2X7R1H154M125AA		
	1005	0.50±0.05	±10%		CGA2B1X7R1V224K050BC	CGA2B3X7R1E224K050E
			±20%	CCA0E0V7D111004/2000AD	CGA2B1X7R1V224M050BC	CGA2B3X7R1E224M050E
220nF	1608	0.80±0.10	±10%	CGA3E3X7R1H224K080AB	CGA3E3X7R1V224K080AB	CGA3E1X7R1E224K080A
			±20% ±10%	CGA3E3X7R1H224M080AB CGA4J2X7R1H224K125AA	CGA3E3X7R1V224M080AB	CGA3E1X7R1E224M080A CGA4J2X7R1E224K125A
	2012	1.25±0.20	±10%	CGA4J2X7R1H224K125AA CGA4J2X7R1H224M125AA		UGA4J2A7 N IE224K I23A
			±20%	CGA3E3X7R1H334K080AB	CGA3E1X7R1V334K080AC	CGA3E3X7R1E334K080A
	1608	0.80±0.10	±10%	CGA3E3X7R1H334M080AB	CGA3E1X7R1V334M080AC	CGA3E3X7R1E334M080/
330nF			±10%	CGA4J2X7R1H334K125AA		Canded Strine Commons
	2012	1.25±0.20	±20%	CGA4J2X7R1H334M125AA		
			±10%	CGA3E3X7R1H474K080AB	CGA3E1X7R1V474K080AC	CGA3E3X7R1E474K080A
	1608	0.80±0.10	±20%	CGA3E3X7R1H474M080AB	CGA3E1X7R1V474M080AC	CGA3E3X7R1E474M080A
470-5	0010	4.05.0.00	±10%	CGA4J3X7R1H474K125AB	CGA4J3X7R1V474K125AB	CGA4J2X7R1E474K125A
470nF	2012	1.25±0.20	±20%	CGA4J3X7R1H474M125AB	CGA4J3X7R1V474M125AB	CGA4J2X7R1E474M125A
	3216	1.60+0.30,-0.10	±10%	CGA5L2X7R1H474K160AA		
	3210	1.00+0.00,-0.10	±20%	CGA5L2X7R1H474M160AA		
	1608	0.80±0.10	±10%		CGA3E1X7R1V684K080AC	CGA3E1X7R1E684K080A
	1000	0.0020.10	±20%		CGA3E1X7R1V684M080AC	CGA3E1X7R1E684M080A
680nF	2012	1.25±0.20	±10%	CGA4J3X7R1H684K125AB	CGA4J3X7R1V684K125AB	CGA4J3X7R1E684K125A
	2012		±20%	CGA4J3X7R1H684M125AB	CGA4J3X7R1V684M125AB	CGA4J3X7R1E684M125A
	3216	1.60+0.30,-0.10	±10%	CGA5L2X7R1H684K160AA		
			±20%	CGA5L2X7R1H684M160AA	CGA3E1X7R1V105K080AC	
	1608	0.80±0.10	±10% ±20%		CGA3E1X7R1V105K080AC	CGA3E1X7R1E105K080A CGA3E1X7R1E105M080A
			±20% ±10%	CGA4J3X7R1H105K125AB	CGA4J3X7R1V105M080AC	CGA3E1X7R1E105M080A CGA4J3X7R1E105K125A
	2012	1.25±0.20	±10%	CGA4J3X7R1H105M125AB	CGA4J3X7R1V105K125AB	CGA4J3X7R1E105M125A
1µF			±10%	CGA5L3X7R1H105K160AB		CGA5L2X7R1E105K160A
	3216	1.60+0.30,-0.10	±20%	CGA5L3X7R1H105M160AB		CGA5L2X7R1E105M1604
	0005		±10%	CGA6L2X7R1H105K160AA		
	3225	1.60±0.20	±20%	CGA6L2X7R1H105M160AA		
	0010	4.05.0.00	±10%	CGA4J3X7R1H155K125AB	CGA4J1X7R1V155K125AC	CGA4J3X7R1E155K125A
	2012	1.25±0.20	±20%	CGA4J3X7R1H155M125AB	CGA4J1X7R1V155M125AC	CGA4J3X7R1E155M125A
	3216	1.60+0.30,-0.10	±10%	CGA5L3X7R1H155K160AB	CGA5L3X7R1V155K160AB	CGA5L2X7R1E155K160A
1.5µF	0210	1.0010.00, 0.10	±20%	CGA5L3X7R1H155M160AB	CGA5L3X7R1V155M160AB	CGA5L2X7R1E155M160A
	3225	2.00±0.20	±10%	CGA6M2X7R1H155K200AA		
			±20%	CGA6M2X7R1H155M200AA		
	4532	1.60±0.20	±10%	CGA8L2X7R1H155K160KA		
	2012	1.25±0.20	±10%	CGA4J3X7R1H225K125AB	CGA4J1X7R1V225K125AC	CGA4J3X7R1E225K125A
			±20%	CGA4J3X7R1H225M125AB	CGA4J1X7R1V225M125AC	CGA4J3X7R1E225M125A
0.005	3216	1.60+0.30,-0.10	±10%	CGA5L3X7R1H225K160AB	CGA5L3X7R1V225K160AB	CGA5L2X7R1E225K160A
2.2µF			±20%	CGA5L3X7R1H225M160AB	CGA5L3X7R1V225M160AB	CGA5L2X7R1E225M160A
	3225	2.00±0.20	±10%	CGA6M3X7R1H225K200AB		
			±20%	CGA6M3X7R1H225M200AB		

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

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

#### Temperature characteristics: X7R (-55 to +125°C, ±15%)

$4.7 \mu F = \begin{array}{c c c c c c c c c c c c c c c c c c c $	Canacitanco	Dimensione	Thickness	Capacitance	Catalog number			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Capacitatice	Dimensions	(mm)	tolerance	Rated voltage Edc: 75V	Rated voltage Edc: 50V	Rated voltage Edc: 35V	Rated voltage Edc: 25V
$3.3 \mu F$ $3.3 $		2012	4.05.0.00	±10%			CGA4J1X7R1V335K125AC	CGA4J1X7R1E335K125AC
$3.3 \mu F = \frac{3216}{3.225} = \frac{3216}{2.50 \pm 0.30} = \frac{10\%}{1.0\%} = \frac{320\%}{CGA6P3X7R1H335M250AB} = \frac{322\%}{CGA6P3X7R1H335M250AB} = \frac{322\%}{CGA6P3X7R1H335M250AB} = \frac{322\%}{CGA6P3X7R1H335M250AB} = \frac{322\%}{CGA6P3X7R1H335M250AB} = \frac{3216}{1.60 \pm 0.30, -0.10} = \frac{110\%}{1.0\%} = \frac{CGA6P3X7R1H335M250AB}{CGA4J1X7R1V475K125AC} = \frac{CGA4J1X7R1V475K125AC}{CGA4J1X7R1V475K125AC} = \frac{2012}{2.50 \pm 0.30} = \frac{110\%}{2.20\%} = \frac{CGA5L3X7R1H475K160AB}{CGA5L3X7R1H475K160AB} = \frac{CGA4J1X7R1V475K125AC}{CGA4J1X7R1V475K125AC} = \frac{2012}{2.50 \pm 0.30} = \frac{110\%}{2.20\%} = \frac{CGA5L3X7R1H475K160AB}{CGA5L3X7R1H475K160AB} = \frac{CGA5L1X7R1V475K160AC}{CGA6J2X7R1H475K250AB} = \frac{160 \pm 0.20}{2.00 \pm 0.20} = \frac{110\%}{2.00\%} = \frac{CGA6P3X7R1H475K250AB}{CGA5L3X7R1H475K250AB} = \frac{160 \pm 0.20}{2.00 \pm 0.20} = \frac{10\%}{2.00 \pm 0.20} = \frac{10\%}{2.00\%} = \frac{CGA6P3X7R1H475K250AB}{CGA5L3X7R1H475K250AB} = \frac{160 \pm 0.20}{2.00 \pm 0.20} = \frac{10\%}{2.00 \pm 0.20} = \frac{10\%}{2.00 \pm 0.20} = \frac{10\%}{2.00\%} = \frac{CGA6P3X7R1H475K250AB}{CGA5L3X7R1H475K250AB} = \frac{CGA5L3X7R1H475K250AB}{CGA5L3X7R1H475K250AB} = \frac{CGA5L3X7R1H475K250AB}{CGA5L3X7R1H475K250AB} = \frac{160 \pm 0.20}{2.00 \pm 0.20} = \frac{10\%}{2.00 \pm 0.20} = \frac{10\%}{2.0$		2012	1.25±0.20	±20%			CGA4J1X7R1V335M125AC	CGA4J1X7R1E335M125AC
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		2016	1 60 0 20 0 10	±10%		CGA5L3X7R1H335K160AB	CGA5L1X7R1V335K160AC	CGA5L1X7R1E335K160AC
$\frac{3225}{2.50\pm0.30} = \frac{\pm 20\%}{\pm 20\%} = \frac{CGA6P3X7R1H335M250AB}{CGA4D1X7R1H475K125AC} = CGA4J1X7R1V475K125AC} = CGA5L3X7R1V475K160AB} = CGA5L3X7R1V475K160AB} = CGA5L3X7R1V475K160AC} = CGA5L3X7R1V475K160AB} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K160AD} = CGA5L3X7R1V475K200AB} = 200\% = 200\%20 \pm 10\%$ = CGA6B3X7R114475K200KB = CGA5L3X7R1V475K160AC} = CGA5L3X7R1V475K160AC} = CGA5L3X7R1V475K160AC = CGA5L3X7R1V685K160AC = CGA5L3X7R1V685K1	3.3µF	5210	1.00+0.30,-0.10	±20%		CGA5L3X7R1H335M160AB	CGA5L1X7R1V335M160AC	CGA5L1X7R1E335M160AC
1 + 20% +		3225	2 50±0 30	±10%		CGA6P3X7R1H335K250AB		
$4.7 \mu F = \frac{2012}{1.25 \pm 0.20} - \frac{\pm 10\%}{.20\%} - \frac{CGA4J1X7R11475K125AC}{CGA4J1X7R11475K125AC} - CGA4J1X7R11475K125AC} - CGA4J1X7R11475K125AC - CGA4J1X7R1475X125AC - CGA4J1X7R14$		0220	2.30±0.30	±20%		CGA6P3X7R1H335M250AB		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		4532	2.00±0.20	±10%		CGA8M2X7R1H335K200KA		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		2012	1 25±0 20	±10%		CGA4J1X7R1H475K125AC	CGA4J1X7R1V475K125AC	CGA4J1X7R1E475K125AC
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		2012	1.23±0.20	±20%			CGA4J1X7R1V475M125AC	CGA4J1X7R1E475M125AC
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		3216	1 60+0 30 -0 10					CGA5L1X7R1E475K160AC
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		5210	1.00+0.00,-0.10	±20%		CGA5L3X7R1H475M160AB	CGA5L1X7R1V475M160AC	CGA5L1X7R1E475M160AC
$\frac{120\%}{4532} \frac{1.60\pm0.20}{2.00\pm0.20} \frac{\pm20\%}{\pm20\%} \frac{1.60\pm0.20}{-2.00\pm0.20} \frac{\pm10\%}{\pm20\%} \frac{1.60\pm0.20}{-2.00\pm0.20} \frac{\pm10\%}{-2.00\pm0.20} \frac{\pm10\%}{-2.00\pm0.20} \frac{-2.00\pm0.20}{-2.00\pm0.20} \frac{\pm10\%}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\pm0.20} \frac{-2.00\pm0.20}{-2.00\pm0.20} \frac{\pm10\%}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\pm0.20} \frac{-2.00\pm0.20}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\%} \frac{-2.00\%}{-2.00\%} \frac{-2.00\%}{-2.00\%} \frac{-2.00\%}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\%} \frac{-2.00\%}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\%} \frac{-2.00\%}{-2.00\%} \frac{-2.00\pm0.20}{-2.00\pm0.20} \frac{-2.00\%}{-2.00\%} \frac{-2.00\%}{-2.0$	4 7uE	3005	2 50+0 20	±10%		CGA6P3X7R1H475K250AB		
$\frac{4532}{16 + 20\%} = \frac{1.80\pm0.20}{2.00\pm0.20} \pm 10\% \\ \hline CGA8M3X7R1H475K200KB \\ \hline 5750 2.00\pm0.20 \pm 10\% \\ \hline CGA9M2X7R1H475K200KA \\ \hline CGA5L1X7R1V685K160AC \\ \hline CGA5L1X7R1V106K160AC \\ \hline CGA5L1X7R1V06K16AC \\ \hline CGA5L1X7R1V06K16AC \\ \hline CGA5L1X7R1V06K16AC $	4.7µi	5225	2.50±0.30	±20%		CGA6P3X7R1H475M250AB		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		4532		±10%				CGA8L2X7R1E475K160KA
$\frac{5750}{2.00\pm0.20} \pm 10\% \\ CGA9M2X7R1H475K200KA \\ \frac{3216}{1.60+0.30,-0.10} \pm 10\% \\ \pm 20\% \\ CGA5L1X7R1V685K160AC \\ CGA5L1X7R1V685M160AC \\ CGA5L1X7R1V685M160AC \\ CGA5L1X7R1V685M160AC \\ CGA5L1X7R1V685M160AC \\ CGA5L1X7R1V685M160AC \\ CGA5L1X7R1V685M160AC \\ CGA8P3X7R1H685K250KB \\ CGA8P3X7R1H685K250KA \\ \frac{3216}{1.60+0.30,-0.10} \pm 10\% \\ CGA5L1X7R1V106K160AC \\ CGA5L1X7R1V106K160AC \\ CGA5L1X7R1V106K160AC \\ CGA5L1X7R1V106M160AC \\ CGA5L1X7R1V00C \\ CGA5L1X7R1V00C \\ CGA5L1X7R1V00C \\ CGA5L1X7V0C \\ CGA5L1X7V0C \\ C$				±20%				CGA8L2X7R1E475M160KA
$ \begin{array}{c} & 3216 \\ & 1.60 + 0.30, -0.10 \\ \hline \pm 10\% \\ \hline \pm 20\% \\ \hline & CGA5L1X7R1V685K160AC \\ \hline & CGA5L1X7R1V685M160AC \\ \hline & CGA5L1X7R1V685K250KB \\ \hline & CGA5L1X7R1V106K160AC \\ \hline & CGA5L1X7R1V106K160AC \\ \hline & CGA5L1X7R1V106K160AC \\ \hline & CGA5L1X7R1V106K160AC \\ \hline & CGA5L1X7R1V106M160AC \\ \hline & CGA5L1X7R1V10F \\ \hline & CGA5L1X7R1V \\ \hline & CGA5L1X7R1V \\ \hline & CGA5L1X7$	-		2.00±0.20	±10%		CGA8M3X7R1H475K200KB		
$\frac{3216}{3225} \frac{1.60+0.30,-0.10}{\pm 20\%} \xrightarrow{\begin{tabular}{ c c c c } \hline & & & & & & & & & & & & & & & & & & $		5750	2.00±0.20	±10%		CGA9M2X7R1H475K200KA		
$6.8\mu F = \frac{120\%}{3225} + \frac{120\%}{2.50\pm0.30} + \frac{110\%}{220\%} + \frac{10\%}{320\%} + $		3216	1.60+0.30,-0.10	±10%			CGA5L1X7R1V685K160AC	CGA5L1X7R1E685K160AC
$ \begin{array}{c} 6.8 \mu F \\ \hline & 3225 \\ \hline & 2.50 \pm 0.30 \\ \hline & \pm 20\% \\ \hline \\ \hline & 5750 \\ \hline & 2.50 \pm 0.30 \\ \hline & \pm 10\% \\ \hline \\ & 5750 \\ \hline & 2.50 \pm 0.30 \\ \hline & \pm 10\% \\ \hline \\ & CGA8P3X7R1H685K250KA \\ \hline \\ & CGA9P2X7R1H685K250KA \\ \hline \\ & CGA5L1X7R1V106K160AC \\ \hline \\ & CGA5L1X7R1V106M160AC \\ \hline \\ & CGA5L1X7R1V10AC \\ \hline \\ & CGA5L1X7R1V10AC \\ \hline \\ & CGA5L1X7R1V10AC \\ $				±20%			CGA5L1X7R1V685M160AC	CGA5L1X7R1E685M160AC
$\frac{120\%}{160} = \frac{120\%}{160} = \frac{120\%}{160} = \frac{120\%}{160} = \frac{110\%}{160} = 11$	6 8uE			±10%				CGA6P3X7R1E685K250AE
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.0µ1							CGA6P3X7R1E685M250AE
$10\mu F = \begin{bmatrix} 3216 \\ 3225 \\ 2.50\pm0.30 \\ \hline \pm 10\% \\ \hline \pm 20\% \\ \hline \pm 20\% \\ \hline CGA5L1X7R1H106K160AC \\ \hline CGA5L1X7R1V106M160AC \\ \hline C$		4532	2.50±0.30	±10%		CGA8P3X7R1H685K250KB		
$\frac{3216}{1.60+0.30,-0.10} + \frac{20\%}{\pm 20\%} + \frac{CGA5L1X7R1V106M160AC}{CGA5L1X7R1V106M160AC} + \frac{20\%}{40\%} + \frac{10\%}{\pm 20\%} + \frac{10\%}{20\%} + 10\%$		5750	2.50±0.30			CGA9P2X7R1H685K250KA		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		3216	1 60+0 30 -0 10			CGA5L1X7R1H106K160AC	CGA5L1X7R1V106K160AC	CGA5L1X7R1E106K160AC
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		0210	1.0010.00, 0.10				CGA5L1X7R1V106M160AC	CGA5L1X7R1E106M160AC
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		3225	2 50+0 30					CGA6P1X7R1E106K250AC
$\frac{2.00\pm0.20}{2.30\pm0.20} \pm 20\%$ $\frac{2.00\pm0.20}{2.30\pm0.20} \pm 10\%$ $\frac{3225}{2.00\pm0.20} \pm 20\%$ $\frac{3225}{2.80\pm0.30} \pm 20\%$ $\frac{5750}{2.30\pm0.20} \pm 20\%$ $\frac{3225}{2.50\pm0.30} \pm 20\%$	10µF	0220	2.30±0.30	±20%	CGA6P1X7R1N106M250AC			CGA6P1X7R1E106M250AC
$\frac{5750}{2.30\pm0.20} \frac{\pm10\%}{\pm10\%} \frac{CGA9N3X7R1H106K230KB}{CGA9N3X7R1H106K230KB} CG$ $\frac{3225}{2.00\pm0.20} \frac{\pm20\%}{\pm20\%} CG$ $\frac{5750}{5750} \frac{2.30\pm0.20}{\pm20\%} \frac{\pm20\%}{CG} CG$ $\frac{3225}{2.50\pm0.30} \frac{\pm20\%}{\pm20\%} CG$ $\frac{3225}{5750} \frac{2.50\pm0.30}{\pm20\%} \frac{\pm20\%}{CG} CG$		4532	2.50±0.30	±10%				CGA8P2X7R1E106K250KA
2.30±0.20         ±10%         CGA9N3X7R1H106K230KB           15μF         3225         2.00±0.20         ±20%         CG           15μF         4532         2.80±0.30         ±20%         CG           5750         2.30±0.20         ±20%         CG           3225         2.50±0.30         ±20%         CG           22μF         4532         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG		5750	2.00±0.20	±20%				CGA9M2X7R1E106M200KA
15μF         4532         2.80±0.30         ±20%         CG           5750         2.30±0.20         ±20%         CG           3225         2.50±0.30         ±20%         CG           22μF         4532         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG		0/00	2.30±0.20	±10%		CGA9N3X7R1H106K230KB		
5750         2.30±0.20         ±20%         CG           3225         2.50±0.30         ±20%         CG           22μF         4532         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG		3225	2.00±0.20	±20%				CGA6M3X7R1E156M200AE
3225         2.50±0.30         ±20%         CC           22μF         4532         2.50±0.30         ±20%         CC           5750         2.50±0.30         ±20%         CC	15µF		2.80±0.30					CGA8Q3X7R1E156M280KE
22μF         4532         2.50±0.30         ±20%         CG           5750         2.50±0.30         ±20%         CG			2.30±0.20					CGA9N2X7R1E156M230KA
5750 2.50±0.30 ±20% CG			2.50±0.30					CGA6P3X7R1E226M250AE
	22µF	4532	2.50±0.30	±20%				CGA8P1X7R1E226M250KC
47uE 5750 2 30+0 20 +20%		5750	2.50±0.30	±20%				CGA9P2X7R1E226M250KA
	47µF	5750	2.30±0.20	±20%				CGA9N3X7R1E476M230KB

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

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## Capacitance range table

#### Temperature characteristics: X7R (-55 to +125°C, ±15%)

Japacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number Rated voltage Edc: 16V	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V
100pF	0603	0.30±0.03	±10%	CGA1A2X7R1C101K030BA	-	-
төөрг	0003	0.30±0.03	±20%	CGA1A2X7R1C101M030BA		
150pF	0603	0.30±0.03	±10%	CGA1A2X7R1C151K030BA		
			±20%	CGA1A2X7R1C151M030BA		
220pF	0603	0.30±0.03	±10% ±20%	CGA1A2X7R1C221K030BA CGA1A2X7R1C221M030BA		
			±20%	CGA1A2X7R1C221M030BA CGA1A2X7R1C331K030BA		
330pF	0603	0.30±0.03	±20%	CGA1A2X7R1C331M030BA		
(TO E			±10%	CGA1A2X7R1C471K030BA		
470pF	0603	0.30±0.03	±20%	CGA1A2X7R1C471M030BA		
680pF	0603	0.30±0.03	±10%	CGA1A2X7R1C681K030BA		
00001	0000	0.0010.00	±20%	CGA1A2X7R1C681M030BA		
1nF	0603	0.30±0.03	±10%	CGA1A2X7R1C102K030BA		
			±20%	CGA1A2X7R1C102M030BA		
1.5nF	0603	0.30±0.03	±10% ±20%	CGA1A2X7R1C152K030BA CGA1A2X7R1C152M030BA		
			±20%	CGA1A2X7R1C222K030BA		
2.2nF	0603	0.30±0.03	±20%	CGA1A2X7R1C222M030BA		
0.0-5	0000	0.00.0.00	±10%	CGA1A2X7R1C332K030BA		
3.3nF	0603	0.30±0.03	±20%	CGA1A2X7R1C332M030BA		
4.7nF	0603	0.30±0.03	±10%	CGA1A2X7R1C472K030BA		
4.711	0000	0.0010.00	±20%	CGA1A2X7R1C472M030BA		
6.8nF	0603	0.30±0.03	±10%	CGA1A2X7R1C682K030BA		
			±20%	CGA1A2X7R1C682M030BA	CC 41 40Y7D1 4100K000D4	
10nF	0603	0.30±0.03	±10% ±20%		CGA1A2X7R1A103K030BA CGA1A2X7R1A103M030BA	CGA1A2X7R0J103K030B/ CGA1A2X7R0J103M030B/
			±20%	CGA2B2X7R1C333K050BA	COATAZATITATOSINOSOBA	COATAZATHOJ TOJMOJOD
33nF	1005	0.50±0.05	±20%	CGA2B2X7R1C333M050BA		
	1005		±10%	CGA2B2X7R1C473K050BA		
47nF	1005	0.50±0.05	±20%	CGA2B2X7R1C473M050BA		
68nF	1005	0.50±0.05	±10%	CGA2B1X7R1C683K050BC		
	1005	0.30±0.05	±20%	CGA2B1X7R1C683M050BC		
100nF	1005	0.50±0.05	±10%	CGA2B1X7R1C104K050BC		
			±20%	CGA2B1X7R1C104M050BC	00 400 1/2014 15 1/205000	
150nF	1005	0.50±0.05	±10% ±20%	CGA2B2X7R1C154K050BA	CGA2B1X7R1A154K050BC	CGA2B3X7R0J154K050BI
			±20%	CGA2B2X7R1C154M050BA CGA2B2X7R1C224K050BA	CGA2B1X7R1A154M050BC CGA2B1X7R1A224K050BC	CGA2B3X7R0J154M050B CGA2B3X7R0J224K050B
	1005	0.50±0.05	±20%	CGA2B2X7R1C224M050BA	CGA2B1X7R1A224M050BC	CGA2B3X7R0J224M050B
220nF			±10%	CGA3E2X7R1C224K080AA		
	1608	0.80±0.10	±20%	CGA3E2X7R1C224M080AA		
330nF	1608	1609 0.90,0.10	±10%	CGA3E1X7R1C334K080AC		
33011F	1000	0.80±0.10	±20%	CGA3E1X7R1C334M080AC		
	1608	0.80±0.10	±10%	CGA3E1X7R1C474K080AC		
470nF			±20%	CGA3E1X7R1C474M080AC		
	2012	1.25±0.20	±10%	CGA4J2X7R1C474K125AA		
	1608	0.80±0.10	±10% ±20%	CGA3E1X7R1C684K080AC CGA3E1X7R1C684M080AC		
680nF			±10%	CGA4J2X7R1C684K125AA		
	2012	1.25±0.20	±20%	CGA4J2X7R1C684M125AA		
	1000		±10%	CGA3E1X7R1C105K080AC		
1	1608	0.80±0.10	±20%	CGA3E1X7R1C105M080AC		
1µF	2012	1.25±0.20	±10%	CGA4J2X7R1C105K125AA		
	2012	1.23±0.20	±20%	CGA4J2X7R1C105M125AA		
	1608	0.80±0.10	±10%			CGA3E1X7R0J155K080A0
1.5µF			±20%			CGA3E1X7R0J155M080A
•	2012	1.25±0.20	±10%	CGA4J3X7R1C155K125AB		
			±20%	CGA4J3X7R1C155M125AB		
	1608	0.80±0.10	±10% ±20%			CGA3E1X7R0J225K080A0 CGA3E1X7R0J225M080A0
2.2µF			±20% ±10%	CGA4J3X7R1C225K125AB		JUNUE IN HUUZZOWUOUA
	2012	1.25±0.20	±20%	CGA4J3X7R1C225M125AB		
	00.15	1.05	±10%	CGA4J3X7R1C335K125AB	CGA4J3X7R1A335K125AB	
3.3µF	2012	1.25±0.20	±20%	CGA4J3X7R1C335M125AB		
	2012	1.05+0.00	±10%	CGA4J3X7R1C475K125AB	CGA4J3X7R1A475K125AB	
4.7µF	2012	1.25±0.20	±20%	CGA4J3X7R1C475M125AB		
4./μr	3216	1.60+0.30,-0.10	±10%	CGA5L3X7R1C475K160AB		
	0210		±20%	CGA5L3X7R1C475M160AB		

 $\blacksquare$  Gray item: The product which is not recommended to a new design.

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

#### Temperature characteristics: X7R (-55 to +125°C, ±15%)

Capacitance	Dimensions	Thickness (mm)	Capacitance tolerance	Catalog number Rated voltage Edc: 16V	Rated voltage Edc: 6.3V
	0010	1.05.0.00	±10%		CGA4J1X7R0J685K125AC
C 0E	2012	1.25±0.20	±20%		CGA4J1X7R0J685M125AC
6.8µF	3216	1.60+0.300.10	±10%	CGA5L1X7R1C685K160AC	
	3210	1.00+0.30,-0.10	±20%	CGA5L1X7R1C685M160AC	
	2012	1.25±0.20	±10%		CGA4J1X7R0J106K125AC
	2012	1.25±0.20	±20%		CGA4J1X7R0J106M125AC
10µF	3216	1.60+0.30,-0.10	±10%	CGA5L1X7R1C106K160AC	
τομε			±20%	CGA5L1X7R1C106M160AC	
	3225	2.00+0.20	±10%	CGA6M3X7R1C106K200AB	
		225 2.00±0.20	±20%	CGA6M3X7R1C106M200AB	
15µF	3225	2.50±0.30	±20%	CGA6P3X7R1C156M250AB	
	3216	1.60+0.30,-0.10	±20%		CGA5L1X7R0J226M160AC
22µF	3225	2.50±0.30	±20%	CGA6P1X7R1C226M250AC	
	4532	2.30±0.20	±20%	CGA8N3X7R1C226M230KB	
33µF	4532	2.50±0.30	±20%	CGA8P1X7R1C336M250KC	
47µF	5750	2.30±0.20	±20%	CGA9N3X7R1C476M230KB	

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

A Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

**⊘TDK** 

**⊗TDK** 

#### **MULTILAYER CERAMIC CHIP CAPACITORS**

## **Capacitance range table**

#### Temperature characteristics: X7S (-55 to +125°C, ±22%)

0	Dimensione	Thickness	Capacitance	Catalog number		
Capacitance	Dimensions	(mm)	tolerance	Rated voltage Edc: 50V	Rated voltage Edc: 25V	Rated voltage Edc: 16V
330nF	1005	0.50±0.05	±10%			CGA2B1X7S1C334K050BC
330NF	1005	0.50±0.05	±20%			CGA2B1X7S1C334M050B0
470nF	1005	0.50+0.05	±10%			CGA2B1X7S1C474K050BC
470nF	1005	0.50±0.05	±20%			CGA2B1X7S1C474M050B0
1.5.5	1000	0.00.0.10	±10%			CGA3E1X7S1C155K080AC
1.5µF	1608	0.80±0.10	±20%			CGA3E1X7S1C155M080A0
0.0.5	1608	000 0.00 0.00	±10%			CGA3E1X7S1C225K080AC
2.2µF		0.80±0.10	±20%			CGA3E1X7S1C225M080AC
4.7µF	3225	2.30±0.20	±10%	CGA6N3X7S1H475K230AB		
	2012	2012 1.25±0.20	±10%			CGA4J1X7S1C685K125AC
C 0E			±20%			CGA4J1X7S1C685M125AC
6.8µF	0005	0.50.0.00	±10%	CGA6P3X7S1H685K250AB		
	3225	2.50±0.30	±20%	CGA6P3X7S1H685M250AB		
	2012	1.25+0.20	±10%		CGA4J1X7S1E106K125AC	CGA4J1X7S1C106K125AC
10.5	2012	1.25±0.20	±20%			CGA4J1X7S1C106M125AC
10µF	3225	2 50 0 20	±10%	CGA6P3X7S1H106K250AB		
	3225	2.50±0.30	±20%	CGA6P3X7S1H106M250AB		

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

Capacitance	Dimensions	Thickness	Capacitance	Catalog number		
Capacitance	Dimensions	(mm)	tolerance	Rated voltage Edc: 10V	Rated voltage Edc: 6.3V	Rated voltage Edc: 4V
000-F	1005	0.50.0.05	±10%	CGA2B3X7S1A334K050BB		
330nF	1005	0.50±0.05	±20%	CGA2B3X7S1A334M050BB		
470-5	1005	0.50.0.05	±10%	CGA2B3X7S1A474K050BB		
470nF	1005	0.50±0.05	±20%	CGA2B3X7S1A474M050BB		
1.505	1608	0.00.0.10	±10%	CGA3E3X7S1A155K080AB		
1.5µF	1608	0.80±0.10	±20%	CGA3E3X7S1A155M080AB		
0.0.5	1608	3 0.80±0.10	±10%	CGA3E3X7S1A225K080AB		
2.2µF			±20%	CGA3E3X7S1A225M080AB		
C 0E	2012	2012 1.25±0.20	±10%	CGA4J3X7S1A685K125AB		
6.8µF			±20%	CGA4J3X7S1A685M125AB		
	1608	0.80+0.30,-0.10	±20%			CGA3E1X7S0G106M080AC
10µF	0010	1.05.0.00	±10%	CGA4J3X7S1A106K125AB		
	2012	1.25±0.20	±20%	CGA4J3X7S1A106M125AB		
15µF	3216	1.60+0.30,-0.10	±20%	CGA5L1X7S1A156M160AC		
22µF	3216	1.60+0.30,-0.10	±20%	CGA5L1X7S1A226M160AC		
33µF	3225	2.50±0.30	±20%		CGA6P1X7S0J336M250AC	
47µF	3225	2.50±0.30	±20%		CGA6P1X7S0J476M250AC	

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

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