



MULTILAYER CERAMIC CHIP CAPACITORS



CGA Series Automotive Grade Mid Voltage (100 to 630V)

Type:

CGA2 [EIA CC0402]
CGA3 [EIA CC0603]
CGA4 [EIA CC0805]
CGA5 [EIA CC1206]
CGA6 [EIA CC1210]
CGA8 [EIA CC1812]
CGA9 [EIA CC2220]

Issue date:
January 2013



Version A13

REMINDERS

Please read before using this product

SAFETY REMINDERS



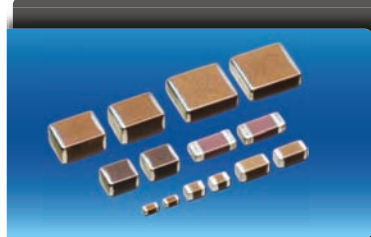
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(Example)

Catalog Issued date	TDK Part Number (In Catalog)	TDK Item Description (On Delivery Label)
Prior to January 2013	C1608C0G1E103J	C1608C0G1E103JT000N
January 2013 and Later	C1608C0G1E103J080AA	C1608C0G1E103JT000N



CGA Series

Mid Voltage (100 to 630V)

Type: CGA2 [EIA CC0402], CGA3 [EIA CC0603], CGA4 [EIA CC0805], CGA5 [EIA CC1206], CGA6 [EIA CC1210], CGA8 [EIA CC1812], CGA9 [EIA CC2220]



Features



- Voltage rating of 100V to 630V with capacitance range up to 15μF.
- High capacitance has been achieved through precision technologies that enable the use of multiple thinner ceramic dielectric layers.
- Low residual inductance assures superior frequency characteristics.
- Excellent DC Bias properties.
- A lineup with wide-ranging rated voltages that enables selections that are suitable for needs.
- AEC-Q200 compliant.

Applications



- Application in decoupling, smoothing, and snubber circuits of inverters or DC-DC converters of HEVs or EVs
- Countermeasure against voltage surge and noise in connectors

Shape & Dimensions



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



Part Number Construction

CGA • 9 • P • 3 • X7S • 2A • 156 • M • 250 • K • B

Series Name

Dimensions L x W (mm)

Code	Length	Width	Terminal
2	1.00 ± 0.05	0.50 ± 0.05	0.10 min.
3	1.60 ± 0.10	0.80 ± 0.10	0.20 min.
4	2.00 ± 0.20	1.25 ± 0.20	0.20 min.
5	3.20 ± 0.20	1.60 ± 0.20	0.20 min.
6	3.20 ± 0.40	2.50 ± 0.30	0.20 min.
8	4.50 ± 0.40	3.20 ± 0.40	0.20 min.
9	5.70 ± 0.40	5.00 ± 0.40	0.20 min.

*Dimension tolerance are typical values

Thickness T Code (mm)

Code	Thickness
B	0.50 mm
C	0.60 mm
E	0.80 mm
F	0.85 mm
H	1.15 mm
J	1.25 mm
K	1.30 mm
L	1.60 mm
M	2.00 mm
N	2.30 mm
P	2.50 mm
R	3.20 mm

Voltage Condition for Life Test

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

Temperature Characteristics

Temperature Characteristics	Capacitance Change	Temperature Range
C0G	0±30 ppm/°C	-55 to +125°C
X7R	±15%	-55 to +125°C
X7S	±22%	-55 to +125°C
X7S	+22/-33%	-55 to +125°C

Rated Voltage (DC)

Code	Voltage (DC)
2A	100V
2E	250V
2W	450V
2J	630V

Nominal Capacitance (pF)

The capacitance is expressed in three digit codes and in units of pico Farads (pF). The first and second digits identify the first and second significant figures of the capacitance. The third digit identifies the multiplier. R designates a decimal point. Ex. 0R2 = 0.2pF; 103 = 10,000pF; 105 = 1,000,000pF = 1,000nF = 1μF

Capacitance Tolerance

Code	Tolerance
C	± 0.25pF
D	± 0.50pF
J	± 5%
K	± 10%
M	± 20%

Nominal Thickness

Code	Thickness
050	0.50 mm
060	0.60 mm
125	1.25 mm

*See Thickness T Code for complete list

Packaging Style

Code	Style
A	178" Reel, 4mm Pitch
B	178" Reel, 2mm Pitch
K	178" Reel, 8mm Pitch

Special Reserved Code

Code	Description
A, B, C	TDK Internal Code

Capacitance Range Chart

CGA2(1005) [EIA CC0402]

Capacitance Range Chart
Temperature Characteristics: X7S (±22%)
Rated Voltage: 100V (2A)

Capacitance (pF)	Code	Tolerance	X7S
			2A (100V)
1,000	102	K: ± 10% M: ± 20%	
1,500	152		
2,200	222		
3,300	332		
4,700	472		
6,800	682		
10,000	103		

Standard Thickness
0.50 mm



Capacitance Range Chart

CGA3(1608) [EIA CC0603]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$), X7S ($\pm 22\%$)

Rated Voltage: 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	C0G		X7R	X7S
			2E (250V)	2A (100V)	2A (100V)	2A (100V)
1	010	C: $\pm 0.25\text{pF}$				
1.5	1R5	D: $\pm 0.50\text{pF}$				
2	020	J: $\pm 5\%$				
2.2	2R2	K: $\pm 10\%$				
3	030	M: $\pm 20\%$				
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					
1,200	122					
1,500	152					
2,200	222					
3,300	332					
4,700	472					
6,800	682					
10,000	103					
15,000	153					
22,000	223					
33,000	333					
47,000	473					
68,000	683					
100,000	104					

Standard Thickness

 0.80 mm



Capacitance Range Chart

CGA4(2012) [EIA CC0805]

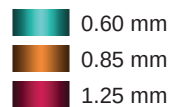
Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$), X7S ($\pm 22\%$), X7T ($+22/-33\%$)

Rated Voltage: 450V (2W), 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	C0G		X7R		X7S	X7T	
			2E (250V)	2A (100V)	2E (250V)	2A (100V)	2A (100V)	2W (450V)	2E (250V)
100	101	J: $\pm 5\%$							
220	221	K: $\pm 10\%$							
470	471	M: $\pm 20\%$							
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								
6,800	682								
10,000	103								
15,000	153								
22,000	223								
33,000	333								
47,000	473								
68,000	683								
100,000	104								
150,000	154								
220,000	224								
330,000	334								
470,000	474								
680,000	684								
1,000,000	105								

Standard Thickness





Capacitance Range Chart

CGA5(3216) [EIA CC1206]

Capacitance Range Chart

Temperature Characteristics: C0G (0 ± 30ppm/°C), X7R (±15%), X7S (±22%), X7T (+22/-33%)

Rated Voltage: 630V (2J), 450V (2W), 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	C0G			X7R			X7S	X7T		
			2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
100	101	J: ± 5%										
120	121	K: ± 10%										
150	151	M: ± 20%										
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											
47,000	473											
68,000	683											
100,000	104											
150,000	154											
220,000	224											
330,000	334											
470,000	474											
680,000	684											
1,000,000	105											
1,500,000	155											
2,200,000	225											

Standard Thickness

0.60 mm
0.85 mm
1.15 mm
1.30 mm
1.60 mm



Capacitance Range Chart

CGA6(3225) [EIA CC1210]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$), X7S ($\pm 22\%$), X7T ($+22/-33\%$)

Rated Voltage: 630V (2J), 450V (2W), 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	C0G			X7R			X7S	X7T		
			2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
3,900	392	J: $\pm 5\%$										
4,700	472	K: $\pm 10\%$										
5,600	562	M: $\pm 20\%$										
6,800	682											
8,200	822											
10,000	103											
15,000	153											
22,000	223											
33,000	333											
47,000	473											
68,000	683											
100,000	104											
150,000	154											
220,000	224											
330,000	334											
470,000	474											
680,000	684											
1,000,000	105											
1,500,000	155											
2,200,000	225											
3,300,000	335											
4,700,000	475											

Standard Thickness

	1.25 mm
	1.60 mm
	2.00 mm
	2.30 mm



Capacitance Range Chart

CGA8(4532) [EIA CC1812]

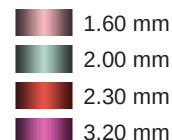
Capacitance Range Chart

Temperature Characteristics: C0G (0 ± 30ppm/°C), X7R (±15%), X7S (±22%), X7T (+22/-33%)

Rated Voltage: 630V (2J), 450V (2W), 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	C0G			X7R			X7S	X7T		
			2J (630V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
8,200	822	J: ± 5%										
10,000	103	K: ± 10%										
15,000	153	M: ± 20%										
22,000	223											
33,000	333											
47,000	473											
68,000	683											
100,000	104											
150,000	154											
220,000	224											
330,000	334											
470,000	474											
680,000	684											
1,000,000	105											
1,500,000	155											
2,200,000	225											
3,300,000	335											
4,700,000	475											

Standard Thickness



Capacitance Range Chart

CGA9(5750) [EIA CC2220]

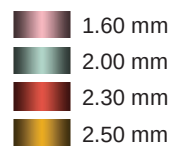
Capacitance Range Chart

Temperature Characteristics: X7R (±15%), X7S (±22%), X7T (+22/-33%)

Rated Voltage: 630V (2J), 450V (2W), 250V (2E), 100V (2A)

Capacitance (pF)	Code	Tolerance	X7R			X7S	X7T		
			2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
150,000	154	K: ± 10%							
220,000	224	M: ± 20%							
330,000	334								
470,000	474								
680,000	684								
1,000,000	105								
1,500,000	155								
2,200,000	225								
3,300,000	335								
4,700,000	475								
6,800,000	685								
10,000,000	106								
15,000,000	156								

Standard Thickness





Capacitance Range Table

Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number		
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V
1 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A010C080AA
1.5 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A1R5C080AA
2 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A020C080AA
2.2 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A2R2C080AA
3 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A030C080AA
3.3 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A3R3C080AA
4 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A040C080AA
4.7 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A4R7C080AA
5 pF	1608	0.80 ± 0.10	± 0.25pF			CGA3E2C0G2A050C080AA
6 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A060D080AA
6.8 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A6R8D080AA
7 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A070D080AA
8 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A080D080AA
9 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A090D080AA
10 pF	1608	0.80 ± 0.10	± 0.50pF			CGA3E2C0G2A100D080AA
12 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A120J080AA
15 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A150J080AA
18 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A180J080AA
22 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A220J080AA
27 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A270J080AA
33 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A330J080AA
39 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A390J080AA
47 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A470J080AA
56 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A560J080AA
68 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A680J080AA
82 pF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A820J080AA
100 pF	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E101J080AA	CGA3E2C0G2A101J080AA
	2012	0.60 ± 0.15	± 5%			CGA4C2C0G2A101J060AA
120 pF	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J101J060AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E121J080AA	CGA3E2C0G2A121J080AA
150 pF	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J121J060AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E151J080AA	CGA3E2C0G2A151J080AA
180 pF	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J151J060AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E181J080AA	CGA3E2C0G2A181J080AA
220 pF	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J181J060AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E221J080AA	CGA3E2C0G2A221J080AA
270 pF	2012	0.60 ± 0.15	± 5%			CGA4C2C0G2A221J060AA
	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J221J060AA		
330 pF	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E271J080AA	CGA3E2C0G2A271J080AA
	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J271J060AA		
390 pF	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E331J080AA	CGA3E2C0G2A331J080AA
	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J331J060AA		
470 pF	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E391J080AA	CGA3E2C0G2A391J080AA
	3216	0.60 ± 0.15	± 5%	CGA5C4C0G2J391J060AA		
560 pF	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E471J080AA	CGA3E2C0G2A471J080AA
	2012	0.60 ± 0.15	± 5%			CGA4C2C0G2A471J060AA
680 pF	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J471J085AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E561J080AA	CGA3E2C0G2A561J080AA
820 pF	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J561J085AA		
	1608	0.80 ± 0.10	± 5%		CGA3E3C0G2E681J080AA	CGA3E2C0G2A681J080AA
1 nF	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A821J080AA
	2012	0.60 ± 0.15	± 5%		CGA4C3C0G2E821J060AA	
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J821J085AA		
	1608	0.80 ± 0.10	± 5%			CGA3E2C0G2A102J080AA
	2012	0.60 ± 0.15	± 5%			CGA4C2C0G2A102J060AA
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J102J085AA		
	1608	0.80 ± 0.10	± 5%			CGA4F3C0G2E102J085AA
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J102J085AA		



Capacitance Range Table

Class 1 (Temperature Compensating)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
1.2 nF	1608	0.80 ± 0.10	± 5%				CGA3E2C0G2A122J080AA
	2012	0.60 ± 0.15	± 5%				CGA4C2C0G2A122J060AA
		0.85 ± 0.15	± 5%		CGA4F3C0G2E122J085AA		
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J122J085AA			
1.5 nF	2012	0.60 ± 0.15	± 5%				CGA4C2C0G2A152J060AA
		0.85 ± 0.15	± 5%		CGA4F3C0G2E152J085AA		
	3216	1.15 ± 0.15	± 5%	CGA5H4C0G2J152J115AA			
1.8 nF	2012	0.85 ± 0.15	± 5%				CGA4F2C0G2A182J085AA
		1.25 ± 0.20	± 5%		CGA4J3C0G2E182J125AA		
	3216	1.15 ± 0.15	± 5%	CGA5H4C0G2J182J115AA			
2.2 nF	2012	0.85 ± 0.15	± 5%				CGA4F2C0G2A222J085AA
		1.25 ± 0.20	± 5%		CGA4J3C0G2E222J125AA		
	3216	1.15 ± 0.15	± 5%	CGA5H4C0G2J222J115AA			
2.7 nF	2012	1.25 ± 0.20	± 5%			CGA4J3C0G2E272J125AA	CGA4J2C0G2A272J125AA
	3216	1.60 ± 0.20	± 5%	CGA5L4C0G2J272J160AA			
3.3 nF	2012	1.25 ± 0.20	± 5%				CGA4J2C0G2A332J125AA
		0.85 ± 0.15	± 5%		CGA5F3C0G2E332J085AA		
	3216	1.60 ± 0.20	± 5%	CGA5L4C0G2J332J160AA			
3.9 nF	2012	1.25 ± 0.20	± 5%				CGA4J2C0G2A392J125AA
		0.60 ± 0.15	± 5%				CGA5C2C0G2A392J060AA
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J392J085AA			
		1.15 ± 0.15	± 5%		CGA5H3C0G2E392J115AA		
	3225	1.25 ± 0.20	± 5%	CGA6J4C0G2J392J125AA			
4.7 nF	2012	1.25 ± 0.20	± 5%				CGA4J2C0G2A472J125AA
	3216	0.85 ± 0.15	± 5%	CGA5F4C0G2J472J085AA			CGA5F2C0G2A472J085AA
		1.15 ± 0.15	± 5%		CGA5H3C0G2E472J115AA		
	3225	1.60 ± 0.20	± 5%	CGA6L4C0G2J472J160AA			
5.6 nF	3216	0.85 ± 0.15	± 5%				CGA5F2C0G2A562J085AA
		1.15 ± 0.15	± 5%	CGA5H4C0G2J562J115AA		CGA5H3C0G2E562J115AA	
	3225	1.60 ± 0.20	± 5%	CGA6L4C0G2J562J160AA			
6.8 nF	3216	1.15 ± 0.15	± 5%	CGA5H4C0G2J682J115AA			CGA5H2C0G2A682J115AA
		1.60 ± 0.20	± 5%		CGA5L3C0G2E682J160AA		
	3225	2.00 ± 0.20	± 5%	CGA6M4C0G2J682J200AA			
8.2 nF	3216	1.15 ± 0.15	± 5%				CGA5H2C0G2A822J115AA
		1.60 ± 0.20	± 5%	CGA5L4C0G2J822J160AA		CGA5L3C0G2E822J160AA	
	3225	1.25 ± 0.20	± 5%	CGA6J4C0G2J822J125AA			
		1.60 ± 0.20	± 5%	CGA8L4C0G2J822J160KA			
10 nF	3216	1.15 ± 0.15	± 5%				CGA5H2C0G2A103J115AA
		1.60 ± 0.20	± 5%	CGA5L4C0G2J103J160AA			
	3225	1.25 ± 0.20	± 5%	CGA6J4C0G2J103J125AA			
		1.60 ± 0.20	± 5%		CGA6L3C0G2E103J160AA		
4532	1.60 ± 0.20	± 5%	CGA8L4C0G2J103J160KA				
15 nF		1.25 ± 0.20	± 5%				CGA6J2C0G2A153J125AA
		1.60 ± 0.20	± 5%	CGA6L4C0G2J153J160AA			
	3225	2.00 ± 0.20	± 5%			CGA6M3C0G2E153J200AA	
		4532	2.50 ± 0.30	± 5%	CGA8P4C0G2J153J250KA		
22 nF	3225	1.60 ± 0.20	± 5%				CGA6L2C0G2A223J160AA
		2.30 ± 0.20	± 5%	CGA6N4C0G2J223J230AA			
	4532	1.60 ± 0.20	± 5%			CGA8L3C0G2E223J160KA	
		3.20 ± 0.30	± 5%	CGA8R4C0G2J223J320KA			
33 nF	3225	2.00 ± 0.20	± 5%				CGA6M2C0G2A333J200AA
	4532	2.50 ± 0.30	± 5%	CGA6P4C0G2J333J250AA			
		2.00 ± 0.20	± 5%			CGA8M3C0G2E333J200KA	
47 nF	3225	2.30 ± 0.20	± 5%				CGA6N2C0G2A473J230AA
	4532	2.00 ± 0.20	± 5%				CGA8M2C0G2A473J200KA
		3.20 ± 0.30	± 5%			CGA8R3C0G2E473J320KA	
68 nF	4532	2.50 ± 0.30	± 5%				CGA8P2C0G2A683J250KA
100 nF	4532	3.20 ± 0.30	± 5%				CGA8R2C0G2A104J320KA



Capacitance Range Table

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
1 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A102K080AA
			± 20%				CGA3E2X7R2A102M080AA
	2012	0.85 ± 0.15	± 10%			CGA4F3X7R2E102K085AA	CGA4F2X7R2A102K085AA
			± 20%			CGA4F3X7R2E102M085AA	CGA4F2X7R2A102M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J102K115AA			
			± 20%	CGA5H4X7R2J102M115AA			
1.5 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A152K080AA
			± 20%				CGA3E2X7R2A152M080AA
	2012	0.85 ± 0.15	± 10%			CGA4F3X7R2E152K085AA	CGA4F2X7R2A152K085AA
			± 20%			CGA4F3X7R2E152M085AA	CGA4F2X7R2A152M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J152K115AA			
			± 20%	CGA5H4X7R2J152M115AA			
2.2 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A222K080AA
			± 20%				CGA3E2X7R2A222M080AA
	2012	0.85 ± 0.15	± 10%			CGA4F3X7R2E222K085AA	CGA4F2X7R2A222K085AA
			± 20%			CGA4F3X7R2E222M085AA	CGA4F2X7R2A222M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J222K115AA			
			± 20%	CGA5H4X7R2J222M115AA			
3.3 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A332K080AA
			± 20%				CGA3E2X7R2A332M080AA
	2012	0.85 ± 0.15	± 10%			CGA4F3X7R2E332K085AA	CGA4F2X7R2A332K085AA
			± 20%			CGA4F3X7R2E332M085AA	CGA4F2X7R2A332M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J332K115AA			
			± 20%	CGA5H4X7R2J332M115AA			
4.7 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A472K080AA
			± 20%				CGA3E2X7R2A472M080AA
	2012	0.85 ± 0.15	± 10%			CGA4F3X7R2E472K085AA	CGA4F2X7R2A472K085AA
			± 20%			CGA4F3X7R2E472M085AA	CGA4F2X7R2A472M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J472K115AA			
			± 20%	CGA5H4X7R2J472M115AA			
6.8 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A682K080AA
			± 20%				CGA3E2X7R2A682M080AA
	2012	0.85 ± 0.15	± 10%				CGA4F2X7R2A682K085AA
		1.25 ± 0.20	± 20%				CGA4F2X7R2A682M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J682K115AA		CGA4J3X7R2E682K125AA	
			± 20%	CGA5H4X7R2J682M115AA		CGA4J3X7R2E682M125AA	
10 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A103K080AA
			± 20%				CGA3E2X7R2A103M080AA
	2012	0.85 ± 0.15	± 10%				CGA4F2X7R2A103K085AA
		1.25 ± 0.20	± 20%			CGA4J3X7R2E103K125AA	CGA4F2X7R2A103M085AA
	3216	1.15 ± 0.15	± 10%	CGA5H4X7R2J103K115AA		CGA4J3X7R2E103M125AA	
			± 20%	CGA5H4X7R2J103M115AA			
15 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A153K080AA
			± 20%				CGA3E2X7R2A153M080AA
	2012	1.25 ± 0.20	± 10%			CGA4J3X7R2E153K125AA	CGA4J2X7R2A153K125AA
			± 20%			CGA4J3X7R2E153M125AA	CGA4J2X7R2A153M125AA
	3216	1.15 ± 0.15	± 10%			CGA5H3X7R2E153K115AA	
		1.30 ± 0.20	± 20%	CGA5K4X7R2J153K130AA		CGA5H3X7R2E153M115AA	
22 nF	1608	0.80 ± 0.10	± 10%				CGA3E2X7R2A223K080AA
			± 20%				CGA3E2X7R2A223M080AA
	2012	1.25 ± 0.20	± 10%			CGA4J3X7R2E223K125AA	CGA4J2X7R2A223K125AA
			± 20%			CGA4J3X7R2E223M125AA	CGA4J2X7R2A223M125AA
	3216	1.15 ± 0.15	± 10%			CGA5H3X7R2E223K115AA	
			± 20%			CGA5H3X7R2E223M115AA	



Capacitance Range Table

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
22 nF	3216	1.30 ± 0.20	± 10%	CGA5K4X7R2J223K130AA			
			± 20%	CGA5K4X7R2J223M130AA			
33 nF	2012	1.25 ± 0.20	± 10%				CGA4J2X7R2A333K125AA
			± 20%				CGA4J2X7R2A333M125AA
	3216	1.15 ± 0.15	± 10%				CGA5H2X7R2A333K115AA
			± 20%				CGA5H2X7R2A333M115AA
		1.60 ± 0.20	± 10%	CGA5L4X7R2J333K160AA		CGA5L3X7R2E333K160AA	
			± 20%	CGA5L4X7R2J333M160AA		CGA5L3X7R2E333M160AA	
47 nF	2012	1.25 ± 0.20	± 10%				CGA4J2X7R2A473K125AA
			± 20%				CGA4J2X7R2A473M125AA
	3216	1.15 ± 0.15	± 10%				CGA5H2X7R2A473K115AA
			± 20%				CGA5H2X7R2A473M115AA
		1.60 ± 0.20	± 10%			CGA5L3X7R2E473K160AA	
			± 20%			CGA5L3X7R2E473M160AA	
	3225	2.00 ± 0.20	± 10%	CGA6M4X7R2J473K200AA			
			± 20%	CGA6M4X7R2J473M200AA			
68 nF	2012	0.85 ± 0.15	± 10%				CGA4F2X7R2A683K085AA
			± 20%				CGA4F2X7R2A683M085AA
	3216	1.60 ± 0.20	± 10%			CGA5L3X7R2E683K160AA	CGA5L2X7R2A683K160AA
			± 20%			CGA5L3X7R2E683M160AA	CGA5L2X7R2A683M160AA
	3225	2.00 ± 0.20	± 10%	CGA6M4X7R2J683K200AA			
			± 20%	CGA6M4X7R2J683M200AA			
	4532	1.60 ± 0.20	± 10%	CGA8L4X7R2J683K160KA			
			± 20%	CGA8L4X7R2J683M160KA			
100 nF	2012	1.25 ± 0.20	± 10%				CGA4J2X7R2A104K125AA
			± 20%				CGA4J2X7R2A104M125AA
	3216	1.60 ± 0.20	± 10%			CGA5L3X7R2E104K160AA	CGA5L2X7R2A104K160AA
			± 20%			CGA5L3X7R2E104M160AA	CGA5L2X7R2A104M160AA
	3225	2.00 ± 0.20	± 10%			CGA6M3X7R2E104K200AA	
			± 20%			CGA6M3X7R2E104M200AA	
	4532	2.30 ± 0.20	± 10%	CGA8N4X7R2J104K230KA			
			± 20%	CGA8N4X7R2J104M230KA			
150 nF	3216	1.60 ± 0.20	± 10%				CGA5L2X7R2A154K160AA
			± 20%				CGA5L2X7R2A154M160AA
	3225	2.00 ± 0.20	± 10%			CGA6M3X7R2E154K200AA	
			± 20%			CGA6M3X7R2E154M200AA	
	4532	1.60 ± 0.20	± 10%			CGA8L3X7R2E154K160KA	
			± 20%			CGA8L3X7R2E154M160KA	
	5750	1.60 ± 0.20	± 10%	CGA9L4X7R2J154K160KA			
			± 20%	CGA9L4X7R2J154M160KA			
220 nF	3216	1.15 ± 0.15	± 10%				CGA5H2X7R2A224K115AA
			± 20%				CGA5H2X7R2A224M115AA
	3225	2.00 ± 0.20	± 10%			CGA6M3X7R2E224K200AA	
			± 20%			CGA6M3X7R2E224M200AA	
	4532	2.30 ± 0.20	± 10%			CGA8N3X7R2E224K230KA	
			± 20%			CGA8N3X7R2E224M230KA	
	5750	2.30 ± 0.20	± 10%	CGA9N4X7R2J224K230KA			
			± 20%	CGA9N4X7R2J224M230KA			
330 nF	3216	1.30 ± 0.20	± 10%				CGA5K2X7R2A334K130AA
			± 20%				CGA5K2X7R2A334M130AA
	3225	2.00 ± 0.20	± 10%				CGA6M2X7R2A334K200AA
			± 20%				CGA6M2X7R2A334M200AA
	4532	2.30 ± 0.20	± 10%			CGA8N3X7R2E334K230KA	
			± 20%			CGA8N3X7R2E334M230KA	
	5750	1.60 ± 0.20	± 10%			CGA9L3X7R2E334K160KA	
			± 20%			CGA9L3X7R2E334M160KA	
470 nF	3216	1.60 ± 0.20	± 10%				CGA5L2X7R2A474K160AA
			± 20%				CGA5L2X7R2A474M160AA
	3225	2.00 ± 0.20	± 10%				CGA6M2X7R2A474K200AA
			± 20%				CGA6M2X7R2A474M200AA



Capacitance Range Table

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
470 nF	4532	2.30 ± 0.20	± 10%			CGA8N3X7R2E474K230KA	
			± 20%			CGA8N3X7R2E474M230KA	
	5750	2.30 ± 0.20	± 10%			CGA9N3X7R2E474K230KA	
			± 20%			CGA9N3X7R2E474M230KA	
680 nF	3216	1.60 ± 0.20	± 10%				CGA5L2X7R2A684K160AA
			± 20%				CGA5L2X7R2A684M160AA
	3225	1.60 ± 0.20	± 10%				CGA6L2X7R2A684K160AA
			± 20%				CGA6L2X7R2A684M160AA
	4532	2.30 ± 0.20	± 10%				CGA8N2X7R2A684K230KA
			± 20%				CGA8N2X7R2A684M230KA
	5750	2.30 ± 0.20	± 10%			CGA9N3X7R2E684K230KA	
			± 20%			CGA9N3X7R2E684M230KA	
1 µF	3216	1.60 ± 0.20	± 10%				CGA5L2X7R2A105K160AA
			± 20%				CGA5L2X7R2A105M160AA
	3225	2.00 ± 0.20	± 10%				CGA6M2X7R2A105K200AA
			± 20%				CGA6M2X7R2A105M200AA
	4532	2.30 ± 0.20	± 10%				CGA8N2X7R2A105K230KA
			± 20%				CGA8N2X7R2A105M230KA
	5750	2.30 ± 0.20	± 10%			CGA9L2X7R2A105K160KA	
			± 20%			CGA9L2X7R2A105M160KA	
1.5 µF	3225	2.00 ± 0.20	± 10%				CGA6M3X7R2A155K200AB
			± 20%				CGA6M3X7R2A155M200AB
	4532	2.30 ± 0.20	± 10%				CGA8N2X7R2A155K230KA
			± 20%				CGA8N2X7R2A155M230KA
	5750	2.30 ± 0.20	± 10%				CGA9N2X7R2A155K230KA
			± 20%				CGA9N2X7R2A155M230KA
	5750	2.30 ± 0.20	± 10%			CGA9N3X7R2E105K230KA	CGA9N2X7R2A105K230KA
			± 20%			CGA9N3X7R2E105M230KA	CGA9N2X7R2A105M230KA
2.2 µF	3225	2.30 ± 0.20	± 10%				CGA6N3X7R2A225K230AB
			± 20%				CGA6N3X7R2A225M230AB
	4532	2.30 ± 0.20	± 10%				CGA8N2X7R2A225K230KA
			± 20%				CGA8N2X7R2A225M230KA
	5750	2.30 ± 0.20	± 10%				CGA9N2X7R2A225K230KA
			± 20%				CGA9N2X7R2A225M230KA
	5750	2.30 ± 0.20	± 10%				CGA9N2X7R2A225K230KA
			± 20%				CGA9N2X7R2A225M230KA
3.3 µF	5750	2.30 ± 0.20	± 10%				CGA9N2X7R2A335K230KA
			± 20%				CGA9N2X7R2A335M230KA
4.7 µF	5750	2.30 ± 0.20	± 10%				CGA9N2X7R2A475K230KA
			± 20%				CGA9N2X7R2A475M230KA

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
1 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A102K050BB
			± 20%				CGA2B3X7S2A102M050BB
1.5 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A152K050BB
			± 20%				CGA2B3X7S2A152M050BB
2.2 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A222K050BB
			± 20%				CGA2B3X7S2A222M050BB
3.3 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A332K050BB
			± 20%				CGA2B3X7S2A332M050BB
4.7 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A472K050BB
			± 20%				CGA2B3X7S2A472M050BB
6.8 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A682K050BB
			± 20%				CGA2B3X7S2A682M050BB
10 nF	1005	0.50 ± 0.05	± 10%				CGA2B3X7S2A103K050BB
			± 20%				CGA2B3X7S2A103M050BB
33 nF	1608	0.80 ± 0.10	± 10%				CGA3E3X7S2A333K080AB
			± 20%				CGA3E3X7S2A333M080AB



Capacitance Range Table

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
47 nF	1608	0.80 ± 0.10	± 10%				CGA3E3X7S2A473K080AB
			± 20%				CGA3E3X7S2A473M080AB
68 nF	1608	0.80 ± 0.10	± 10%				CGA3E3X7S2A683K080AB
			± 20%				CGA3E3X7S2A683M080AB
100 nF	1608	0.80 ± 0.10	± 10%				CGA3E3X7S2A104K080AB
			± 20%				CGA3E3X7S2A104M080AB
150 nF	2012	0.85 ± 0.15	± 10%				CGA4F3X7S2A154K085AB
			± 20%				CGA4F3X7S2A154M085AB
220 nF	2012	0.85 ± 0.15	± 10%				CGA4F3X7S2A224K085AB
			± 20%				CGA4F3X7S2A224M085AB
330 nF	2012	1.25 ± 0.20	± 10%				CGA4J3X7S2A334K125AB
			± 20%				CGA4J3X7S2A334M125AB
470 nF	2012	1.25 ± 0.20	± 10%				CGA4J3X7S2A474K125AB
			± 20%				CGA4J3X7S2A474M125AB
680 nF	2012	1.25 ± 0.20	± 10%				CGA4J3X7S2A684K125AB
			± 20%				CGA4J3X7S2A684M125AB
1 µF	2012	1.25 ± 0.20	± 10%				CGA4J3X7S2A105K125AB
			± 20%				CGA4J3X7S2A105M125AB
1.5 µF	3216	1.60 ± 0.20	± 10%				CGA5L3X7S2A155K160AB
			± 20%				CGA5L3X7S2A155M160AB
2.2 µF	3216	1.60 ± 0.20	± 10%				CGA5L3X7S2A225K160AB
			± 20%				CGA5L3X7S2A225M160AB
3.3 µF	3225	2.00 ± 0.20	± 10%				CGA6M3X7S2A335K200AB
			± 20%				CGA6M3X7S2A335M200AB
	4532	2.00 ± 0.20	± 10%				CGA8M3X7S2A335K200KB
			± 20%				CGA8M3X7S2A335M200KB
4.7 µF	3225	2.00 ± 0.20	± 10%				CGA6M3X7S2A475K200AB
			± 20%				CGA6M3X7S2A475M200AB
	4532	2.30 ± 0.20	± 10%				CGA8N3X7S2A475K230KB
			± 20%				CGA8N3X7S2A475M230KB
6.8 µF	5750	2.00 ± 0.20	± 10%				CGA9M3X7S2A685K200KB
			± 20%				CGA9M3X7S2A685M200KB
10 µF	5750	2.30 ± 0.20	± 10%				CGA9N3X7S2A106K230KB
			± 20%				CGA9N3X7S2A106M230KB
15 µF	5750	2.50 ± 0.30	± 20%				CGA9P3X7S2A156M250KB

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
10 nF	2012	0.85 ± 0.15	± 10%		CGA4F4X7T2W103K085AA		
			± 20%		CGA4F4X7T2W103M085AA		
	3216	0.85 ± 0.15	± 10%	CGA5F1X7T2J103K085AC			
			± 20%	CGA5F1X7T2J103M085AC			
15 nF	2012	0.85 ± 0.15	± 10%		CGA4F4X7T2W153K085AA		
			± 20%		CGA4F4X7T2W153M085AA		
	3216	0.85 ± 0.15	± 10%	CGA5F1X7T2J153K085AC			
			± 20%	CGA5F1X7T2J153M085AC			
22 nF	2012	1.25 ± 0.20	± 10%		CGA4J4X7T2W223K125AA		
			± 20%		CGA4J4X7T2W223M125AA		
	3216	1.15 ± 0.15	± 10%	CGA5H1X7T2J223K115AC			
			± 20%	CGA5H1X7T2J223M115AC			
33 nF	2012	1.25 ± 0.20	± 10%		CGA4J4X7T2W333K125AA	CGA4J3X7T2E333K125AA	
			± 20%		CGA4J4X7T2W333M125AA	CGA4J3X7T2E333M125AA	
	3216	1.15 ± 0.15	± 10%	CGA5H1X7T2J333K115AC			
			± 20%	CGA5H1X7T2J333M115AC			
47 nF	2012	1.25 ± 0.20	± 10%		CGA4J4X7T2W473K125AA	CGA4J3X7T2E473K125AA	
			± 20%		CGA4J4X7T2W473M125AA	CGA4J3X7T2E473M125AA	
	3216	1.60 ± 0.20	± 10%	CGA5L1X7T2J473K160AC			
			± 20%	CGA5L1X7T2J473M160AC			



Capacitance Range Table

Class 2 (Temperature Stable)

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

Capacitance	Size	Thickness (mm)	Capacitance Tolerance	TDK Part Number			
				Rated Voltage Edc: 630V	Rated Voltage Edc: 450V	Rated Voltage Edc: 250V	Rated Voltage Edc: 100V
68 nF	2012	1.25 ± 0.20	± 10%			CGA4J3X7T2E683K125AA	
			± 20%			CGA4J3X7T2E683M125AA	
	3216	1.30 ± 0.20	± 10%		CGA5K4X7T2W683K130AA		
			± 20%		CGA5K4X7T2W683M130AA		
100 nF	2012	1.25 ± 0.20	± 10%			CGA4J3X7T2E104K125AA	
			± 20%			CGA4J3X7T2E104M125AA	
	3216	1.60 ± 0.20	± 10%		CGA5L4X7T2W104K160AA		
			± 20%		CGA5L4X7T2W104M160AA		
	3225	1.60 ± 0.20	± 10%	CGA6L1X7T2J104K160AC			
			± 20%	CGA6L1X7T2J104M160AC			
150 nF	3216	1.30 ± 0.20	± 10%			CGA5K3X7T2E154K130AA	
			± 20%			CGA5K3X7T2E154M130AA	
	3225	2.00 ± 0.20	± 10%	CGA6M1X7T2J154K200AC			
			± 20%	CGA6M1X7T2J154M200AC			
	4532	1.60 ± 0.20	± 10%	CGA8L1X7T2J154K160KC			
			± 20%	CGA8L1X7T2J154M160KC			
220 nF	3216	1.60 ± 0.20	± 10%			CGA5L3X7T2E224K160AA	
			± 20%			CGA5L3X7T2E224M160AA	
	3225	2.00 ± 0.20	± 10%		CGA6M4X7T2W224K200AA		
			± 20%		CGA6M4X7T2W224M200AA		
	4532	2.00 ± 0.20	± 10%	CGA8M1X7T2J224K200KC			
			± 20%	CGA8M1X7T2J224M200KC			
330 nF	3225	2.00 ± 0.20	± 10%			CGA6M3X7T2E334K200AA	
			± 20%			CGA6M3X7T2E334M200AA	
	4532	1.60 ± 0.20	± 10%		CGA8L4X7T2W334K160KA		
			± 20%		CGA8L4X7T2W334M160KA		
	5750	2.00 ± 0.20	± 10%	CGA9M1X7T2J334K200KC			
			± 20%	CGA9M1X7T2J334M200KC			
470 nF	4532	2.30 ± 0.20	± 10%		CGA8N4X7T2W474K230KA		
			± 20%		CGA8N4X7T2W474M230KA		
	5750	2.50 ± 0.30	± 10%	CGA9P1X7T2J474K250KC			
			± 20%	CGA9P1X7T2J474M250KC			
680 nF	4532	1.60 ± 0.20	± 10%			CGA8L3X7T2E684K160KA	
			± 20%			CGA8L3X7T2E684M160KA	
	5750	2.00 ± 0.20	± 10%		CGA9M4X7T2W684K200KA		
			± 20%		CGA9M4X7T2W684M200KA		
1 µF	4532	2.50 ± 0.30	± 10%			CGA8P3X7T2E105K250KA	
			± 20%			CGA8P3X7T2E105M250KA	
	5750	2.50 ± 0.30	± 10%		CGA9P4X7T2W105K250KA		
			± 20%		CGA9P4X7T2W105M250KA		
1.5 µF	5750	2.00 ± 0.20	± 10%			CGA9M3X7T2E155K200KA	
			± 20%			CGA9M3X7T2E155M200KA	
2.2 µF	5750	2.50 ± 0.30	± 10%			CGA9P3X7T2E225K250KA	
			± 20%			CGA9P3X7T2E225M250KA	