

MULTILAYER CERAMIC CHIP CAPACITORS

Automotive grade, mid voltage (100 to 630V)

CGA series

CGA2	1005 [CC0402]
CGA3	1608 [CC0603]
CGA4	2012 [CC0805]
CGA5	3216 [CC1206]
CGA6	3225 [CC1210]
CGA8	4532 [CC1812]
CGA9	5750 [CC2220]

Dimensions code: JIS [EIA]



REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using this products.

REMINDERS

1. The products listed in this specification are intended for use in automotive applications under normal operation and usage conditions. The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality requires a more stringent level of safety or reliability, or whose failure, malfunction or defect could cause serious damage to society, person or property.

Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet. If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in this specification, please contact us.

- | | |
|---|--|
| (1) Aerospace/aviation equipment | (8) Public information-processing equipment |
| (2) Transportation equipment (electric trains, ships, etc.) | (9) Military equipment |
| (3) Medical equipment (excepting Pharmaceutical Affairs | (10) Electric heating apparatus, burning equipment |
| (4) Power-generation control equipment | (11) Disaster prevention/crime prevention equipment |
| (5) Atomic energy-related equipment | (12) Safety equipment |
| (6) Seabed equipment | (13) Other applications that are not considered general-purpose applications |
| (7) Transportation control equipment | |

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

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.

- 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.

CGA series

mid voltage (100 to 630V)

Type CGA1:0603[CC0201], CGA2:1005[CC0402], CGA3:1608[CC0603], CGA4:2012[CC0805], CGA5:3216[CC1206], CGA6:3225[CC1210], CGA8:4532[CC1812], CGA9:5750[CC2220]



SERIES OVERVIEW

The rated voltage of the medium voltage CGA series in the automotive grade is from 100 to 630V, and the products are designed for circuits where high voltage is applied. The maximum capacitance value is 15μF.

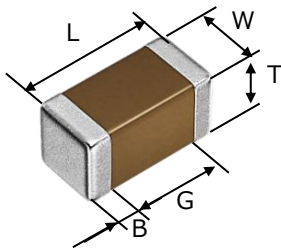
FEATURES

- Voltage rating of 100V, 250V, 450V and 630V
- COG type having excellent stable temperature and DC-bias characteristics is also available.
- Qualified based on AEC-Q200

APPLICATIONS

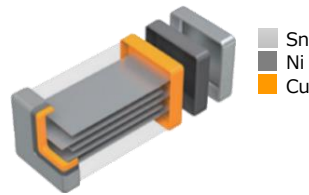
- Wireless charging units, DC-DC converters, inverters, on board chargers, etc.
- High voltage circuits decoupling, smoothing, and snubber, resonant circuits, etc.

SHAPE & DIMENSIONS



L	Product length
W	Product width
T	Product thickness
B	Terminal width
G	Terminal spacing

PRODUCT STRUCTURE



The structure which multilayer dielectrics and inner electrodes are stacked alternately.

The monolithic and simple structure contributes to superior mechanical strength and excellent frequency characteristics.

Dimensions in mm

Type	L	W	T	B	G
CGA2	1.00±0.05	0.50±0.05	0.50±0.05	0.10 min.	0.30 min.
CGA3	1.60±0.10	0.80±0.10	0.80±0.10		0.50 min.
CGA4	2.00±0.20	1.25±0.20	1.25±0.20		1.00 min.
CGA5	3.20±0.20	1.60±0.20	1.60±0.20	0.20 min.	
CGA6	3.20±0.40	2.50±0.30	2.50±0.30		
CGA8	4.50±0.40	3.20±0.40	2.50±0.30		---
CGA9	5.70±0.40	5.00±0.40	2.50±0.30		

Dimensional tolerances are typical values. Please check the actual values on the product page of the website.

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MULTILAYER CERAMIC CHIP CAPACITORS



■ CATALOG NUMBER CONSTRUCTION

CGA	9	P	3	X7S	2A	156	M	250	K	B
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

(1) Series

(2) Dimensions code

Dimensions code	EIA	Length (mm)	Width (mm)	Terminal width (mm)
2	CC0402	1.00	0.50	0.10 min.
3	CC0603	1.60	0.80	
4	CC0805	2.00	1.25	
5	CC1206	3.20	1.60	
6	CC1210	3.20	2.50	0.20 min.
8	CC1812	4.50	3.20	
9	CC2220	5.70	5.00	

Dimensions are typical values.

(3) Thickness code

Code	Nominal 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
Q	2.80 mm
R	3.20 mm

(4) Voltage condition for life test

Code	Condition
1	1 x R.V.
2	2 x R.V.
3	1.5 x R.V.
4	1.2 x R.V.

(5) Temperature characteristics

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

(6) Rated voltage (DC)

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

(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 = 0.5 pF
 101 = 100 pF
 225 = 2,200,000 pF = 2.2 μF

(8) Capacitance tolerance

Code	Tolerance
C	±0.25 pF
D	±0.50 pF
G	±2 %
J	±5 %
K	±10 %
M	±20 %

(9) Nominal thickness

Code	Nominal thickness
050	0.50 mm
060	0.60 mm
080	0.80 mm
085	0.85 mm
115	1.15 mm
125	1.25 mm
130	1.30 mm
160	1.60 mm
200	2.00 mm
230	2.30 mm
250	2.50 mm
280	2.80 mm
320	3.20 mm

(10) Packaging style

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

(11) Special reserved code

Code	Description
A,B,C,N	TDK internal code

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Capacitance range chart

CGA2: 1005 [CC0402]

Capacitance		C0G	X7S
(pF)	Code	2A (100V)	2A (100V)
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		

Nominal thickness  0.50 mm

- Background gray: NRND (Not Recommended for New Designs)
- Click the charts for details.
- For details such as the catalog numbers, please refer to the capacitance range table on page 11 and after.

Capacitance range chart

CGA3: 1608 [CC0603]

Capacitance		C0G		X7R	X7S
(pF)	Code	2E (250V)	2A (100V)	2A (100V)	2A (100V)
1	010				
2	020				
3	030				
4	040				
5	050				
6	060				
7	070				
8	080				
9	090				
10	100				
15	150				
22	220				
33	330				
47	470				
68	680				
100	101				
150	151				
220	221				
330	331				
470	471				
680	681				
1,000	102				
1,200	122				
1,500	152				
1,800	182				
2,200	222				
2,700	272				
3,300	332				
3,900	392				
4,700	472				
5,600	562				
6,800	682				
8,200	822				
10,000	103				
15,000	153				
22,000	223				
33,000	333				
47,000	473				
68,000	683				
100,000	104				

Nominal thickness 0.80 mm

- Background gray: NRND (Not Recommended for New Designs)
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Capacitance range chart

CGA4: 2012 [CC0805]

Capacitance		C0G			X7R		X7S	X7T	
(pF)	Code	2W (450V)	2E (250V)	2A (100V)	2E (250V)	2A (100V)	2A (100V)	2W (450V)	2E (250V)
100	101								
150	151								
220	221								
330	331								
470	471								
680	681								
1,000	102								
1,200	122								
1,500	152								
1,800	182								
2,200	222								
2,700	272								
3,300	332								
3,900	392								
4,700	472								
5,600	562								
6,800	682								
8,200	822								
10,000	103								
15,000	153								
22,000	223								
33,000	333								
47,000	473								
68,000	683								
100,000	104								
330,000	334								
470,000	474								
680,000	684								
1,000,000	105								
2,200,000	225								

Nominal thickness 0.60 mm 0.85 mm 1.25 mm

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Capacitance range chart

CGA5: 3216 [CC1206]

Capacitance		C0G				X7R			X7S	X7T		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
100	101											
150	151											
220	221											
330	331											
470	471											
680	681											
1,000	102											
1,200	122											
1,500	152											
1,800	182											
2,200	222											
2,700	272											
3,300	332											
3,900	392											
4,700	472											
5,600	562											
6,800	682											
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											

Nominal thickness 0.60 mm 0.85 mm 1.15 mm 1.30 mm 1.60 mm

•Background gray: NRND (Not Recommended for New Designs)

•Click the charts for details.

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

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Capacitance range chart

CGA6: 3225 [CC1210]

Capacitance		C0G				X7R			X7S	X7T		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
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											
3,300,000	335											
4,700,000	475											
10,000,000	106											

Nominal thickness ■ 1.25 mm ■ 1.60 mm ■ 2.00 mm ■ 2.30 mm ■ 2.50 mm

•Background gray: NRND (Not Recommended for New Designs)

•Click the charts for details.

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Capacitance range chart

CGA8: 4532 [CC1812]

Capacitance		C0G				X7R			X7S	X7T		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
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											

Nominal thickness 1.60 mm 2.00 mm 2.30 mm 2.50 mm 3.20 mm

Capacitance range chart

CGA9: 5750 [CC2220]

Capacitance		C0G				X7R			X7S	X7T		
(pF)	Code	2J (630V)	2W (450V)	2E (250V)	2A (100V)	2J (630V)	2E (250V)	2A (100V)	2A (100V)	2J (630V)	2W (450V)	2E (250V)
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											
6,800,000	685											
10,000,000	106											
15,000,000	156											

Nominal thickness 1.60 mm 2.00 mm 2.30 mm 2.50 mm 2.80 mm

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Capacitance range table

C0G (-55 to +125°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers			
				Rated voltage: DC630V	Rated voltage: DC450V	Rated voltage: DC250V	Rated voltage: DC100V
1 pF	1608	0.80±0.10	±0.25pF				CGA3E2C0G2A010C080AA
2 pF	1608	0.80±0.10	±0.25pF				CGA3E2C0G2A020C080AA
3 pF	1608	0.80±0.10	±0.25pF				CGA3E2C0G2A030C080AA
4 pF	1608	0.80±0.10	±0.25pF				CGA3E2C0G2A040C080AA
5 pF	1608	0.80±0.10	±0.25pF				CGA3E2C0G2A050C080AA
6 pF	1608	0.80±0.10	±0.50pF				CGA3E2C0G2A060D080AA
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
15 pF	1608	0.80±0.10	±5%				CGA3E2C0G2A150J080AA
22 pF	1608	0.80±0.10	±5%				CGA3E2C0G2A220J080AA
33 pF	1608	0.80±0.10	±5%				CGA3E2C0G2A330J080AA
47 pF	1608	0.80±0.10	±5%				CGA3E2C0G2A470J080AA
68 pF	1608	0.80±0.10	±5%				CGA3E2C0G2A680J080AA
100 pF	1005	0.50±0.05	±5%				CGA2B2C0G2A101J050BA
	1608	0.80±0.10	±5%			CGA3E3C0G2E101J080AA	CGA3E2C0G2A101J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W101J060AA		CGA4C2C0G2A101J060AA
	3216	0.60±0.15	±2%	CGA5C4C0G2J101G060AA			
			±5%	CGA5C4C0G2J101J060AA			
150 pF	1005	0.50±0.05	±5%				CGA2B2C0G2A151J050BA
	1608	0.80±0.10	±5%			CGA3E3C0G2E151J080AA	CGA3E2C0G2A151J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W151J060AA		
	3216	0.60±0.15	±2%	CGA5C4C0G2J151G060AA			
			±5%	CGA5C4C0G2J151J060AA			
220 pF	1005	0.50±0.05	±5%				CGA2B2C0G2A221J050BA
	1608	0.80±0.10	±5%			CGA3E3C0G2E221J080AA	CGA3E2C0G2A221J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W221J060AA		CGA4C2C0G2A221J060AA
	3216	0.60±0.15	±2%	CGA5C4C0G2J221G060AA			
			±5%	CGA5C4C0G2J221J060AA			
330 pF	1005	0.50±0.05	±5%				CGA2B2C0G2A331J050BA
	1608	0.80±0.10	±5%			CGA3E3C0G2E331J080AA	CGA3E2C0G2A331J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W331J060AA		
	3216	0.60±0.15	±2%	CGA5C4C0G2J331G060AA			
			±5%	CGA5C4C0G2J331J060AA			
470 pF	1005	0.50±0.10	±5%				CGA2B2C0G2A471J050BA
	1608	0.80±0.10	±5%			CGA3E3C0G2E471J080AA	CGA3E2C0G2A471J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W471J060AA		CGA4C2C0G2A471J060AA
	3216	0.85±0.15	±2%	CGA5F4C0G2J471G085AA			
			±5%	CGA5F4C0G2J471J085AA			
680 pF	1005	0.50±0.05	±5%				CGA2B1C0G2A681J050BC
	1608	0.80±0.10	±5%			CGA3E3C0G2E681J080AA	CGA3E2C0G2A681J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W681J060AA		
	3216	0.85±0.15	±2%	CGA5F4C0G2J681G085AA			
			±5%	CGA5F4C0G2J681J085AA			
1 nF	1005	0.50±0.05	±5%				CGA2B1C0G2A102J050BC
	1608	0.80±0.10	±5%			CGA3E3C0G2E102J080AA	CGA3E2C0G2A102J080AA
	2012	0.60±0.15	±5%		CGA4C4C0G2W102J060AA		CGA4C2C0G2A102J060AA
	3216	0.85±0.15	±5%			CGA4F3C0G2E102J085AA	
			±2%	CGA5F4C0G2J102G085AA			
1.2 nF	1608	0.80±0.10	±5%			CGA3E3C0G2E122J080AA	CGA3E2C0G2A122J080AA
		0.60±0.15	±5%		CGA4C4C0G2W122J060AA		CGA4C2C0G2A122J060AA
	3216	0.85±0.15	±5%			CGA4F3C0G2E122J085AA	
		0.85±0.15	±2%	CGA5F4C0G2J122G085AA			
			±5%	CGA5F4C0G2J122J085AA			
1.5 nF	1608	0.80±0.10	±5%			CGA3E3C0G2E152J080AA	CGA3E2C0G2A152J080AA
	2012	0.60±0.15	±5%				CGA4C2C0G2A152J060AA
		0.85±0.15	±5%		CGA4F4C0G2W152J085AA	CGA4F3C0G2E152J085AA	
	3216	1.15±0.15	±2%	CGA5H4C0G2J152G115AA			
			±5%	CGA5H4C0G2J152J115AA			

•Gray: NRND (Not Recommended for New Designs)

•Click the catalog numbers for details.

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Capacitance range table

C0G (-55 to +125°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers			
				Rated voltage: DC630V	Rated voltage: DC450V	Rated voltage: DC250V	Rated voltage: DC100V
1.8 nF	1608	0.80±0.10	±5%			CGA3E3C0G2E182J080AA	CGA3E2C0G2A182J080AA
	2012	0.85±0.15	±5%		CGA4F4C0G2W182J085AA		CGA4F2C0G2A182J085AA
		1.25±0.20	±5%			CGA4J3C0G2E182J125AA	
	3216	1.15±0.15	±2% ±5%	CGA5H4C0G2J182G115AA CGA5H4C0G2J182J115AA			
2.2 nF	1608	0.80±0.10	±5%				CGA3E2C0G2A222J080AA
		0.80±0.20	±5%			CGA3E3C0G2E222J080AA	
	2012	0.85±0.15	±5%		CGA4F4C0G2W222J085AA		CGA4F2C0G2A222J085AA
		1.25±0.20	±5%			CGA4J3C0G2E222J125AA	
	3216	1.15±0.15	±2% ±5%	CGA5H4C0G2J222G115AA CGA5H4C0G2J222J115AA			
2.7 nF	1608	0.80±0.20	±5%				CGA3E2C0G2A272J080AA
	2012	1.25±0.20	±5%		CGA4J4C0G2W272J125AA	CGA4J3C0G2E272J125AA	CGA4J2C0G2A272J125AA
			±2%	CGA5L4C0G2J272G160AA			
	3216	1.60±0.20	±5%	CGA5L4C0G2J272J160AA			
3.3 nF	1608	0.80±0.20	±5%				CGA3E2C0G2A332J080AA
	2012	0.85±0.15	±5%			CGA4F3C0G2E332J085AA	
		1.25±0.20	±5%		CGA4J4C0G2W332J125AA		CGA4J2C0G2A332J125AA
		0.85±0.15	±5%			CGA5F3C0G2E332J085AA	
	3216	1.60±0.20	±2% ±5%	CGA5L4C0G2J332G160AA CGA5L4C0G2J332J160AA			
3.9 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A392J080AC
	2012	1.25±0.20	±5%		CGA4J4C0G2W392J125AA	CGA4J3C0G2E392J125AA	CGA4J2C0G2A392J125AA
		0.60±0.15	±5%				CGA5C2C0G2A392J060AA
	3216	0.85±0.15	±2% ±5%	CGA5F4C0G2J392G085AA CGA5F4C0G2J392J085AA			
		1.15±0.15	±5%		CGA5H3C0G2E392J115AA		
	3225	1.25±0.20	±2% ±5%	CGA6J4C0G2J392G125AA CGA6J4C0G2J392J125AA			
4.7 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A472J080AC
	2012	1.25±0.20	±5%		CGA4J4C0G2W472J125AA	CGA4J3C0G2E472J125AA	CGA4J2C0G2A472J125AA
			±2%	CGA5F4C0G2J472G085AA			
	3216	0.85±0.15	±5%	CGA5F4C0G2J472J085AA			CGA5F2C0G2A472J085AA
		1.15±0.15	±5%		CGA5H3C0G2E472J115AA		
	3225	1.60±0.20	±2% ±5%	CGA6L4C0G2J472G160AA CGA6L4C0G2J472J160AA			
5.6 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A562J080AC
	2012	1.25±0.20	±5%		CGA4J4C0G2W562J125AA	CGA4J3C0G2E562J125AA	CGA4J2C0G2A562J125AA
		0.85±0.15	±5%				CGA5F2C0G2A562J085AA
	3216	1.15±0.15	±2% ±5%	CGA5H4C0G2J562G115AA CGA5H4C0G2J562J115AA		CGA5H3C0G2E562J115AA	
6.8 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A682J080AC
		1.25±0.20	±5%			CGA4J3C0G2E682J125AA	CGA4J2C0G2A682J125AA
	3216	1.15±0.15	±2% ±5%	CGA5H4C0G2J682G115AA CGA5H4C0G2J682J115AA	CGA5H4C0G2W682J115AA		CGA5H2C0G2A682J115AA
		1.60±0.20	±5%			CGA5L3C0G2E682J160AA	
	3225	2.00±0.20	±2% ±5%	CGA6M4C0G2J682G200AA CGA6M4C0G2J682J200AA			
8.2 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A822J080AC
	2012	1.25±0.20	±5%			CGA4J3C0G2E822J125AA	CGA4J2C0G2A822J125AA
		1.15±0.15	±5%		CGA5H4C0G2W822J115AA		CGA5H2C0G2A822J115AA
	3216	1.60±0.20	±2% ±5%	CGA5L4C0G2J822G160AA CGA5L4C0G2J822J160AA		CGA5L3C0G2E822J160AA	
	3225	1.25±0.20	±2% ±5%	CGA6J4C0G2J822G125AA CGA6J4C0G2J822J125AA			
	4532	1.60±0.20	±5%	CGA8L4C0G2J822J160KA			

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Capacitance range table

C0G (-55 to +125°C, 0±30 ppm/°C)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers			
				Rated voltage: DC630V	Rated voltage: DC450V	Rated voltage: DC250V	Rated voltage: DC100V
10 nF	1608	0.80±0.10	±5%				CGA3E1C0G2A103J080AC
	2012	1.25±0.20	±5%			CGA4J3C0G2E103J125AA	CGA4J2C0G2A103J125AA
		1.15±0.15	±5%			CGA5H3C0G2E103J115AA	CGA5H2C0G2A103J115AA
	3216	1.60±0.20	±2%	CGA5L4C0G2J103G160AA			
			±5%	CGA5L4C0G2J103J160AA	CGA5L4C0G2W103J160AA		
	3225	1.25±0.20	±2%	CGA6J4C0G2J103G125AA			
			±5%	CGA6J4C0G2J103J125AA			
		1.60±0.20	±5%			CGA6L3C0G2E103J160AA	
15 nF	4532	1.60±0.20	±5%	CGA8L4C0G2J103J160KA			
	2012	0.85±0.15	±5%				CGA4F1C0G2A153J085AC
		1.15±0.15	±5%				CGA5H2C0G2A153J115AA
	3216	1.60+0.30,-0.10	±5%		CGA5L4C0G2W153J160AA		
		1.60±0.20	±5%			CGA5L3C0G2E153J160AA	
		1.25±0.20	±5%				CGA6J2C0G2A153J125AA
	3225	1.60±0.20	±2%	CGA6L4C0G2J153G160AA			
			±5%	CGA6L4C0G2J153J160AA			
22 nF		2.00±0.20	±5%			CGA6M3C0G2E153J200AA	
	4532	2.50±0.30	±5%	CGA8P4C0G2J153J250KA			
	2012	1.25±0.20	±5%				CGA4J1C0G2A223J125AC
	3216	1.60+0.30,-0.10	±5%			CGA5L3C0G2E223J160AA	
		1.60±0.20	±5%				CGA5L2C0G2A223J160AA
		1.60±0.20	±5%			CGA6L3C0G2E223J160AA	CGA6L2C0G2A223J160AA
	3225	2.30±0.20	±2%	CGA6N4C0G2J223G230AA			
			±5%	CGA6N4C0G2J223J230AA	CGA6N4C0G2W223J230AA		
33 nF	4532	1.60±0.20	±5%			CGA8L3C0G2E223J160KA	
		3.20±0.30	±5%	CGA8R4C0G2J223J320KA			
	2012	1.25±0.20	±5%				CGA4J1C0G2A333J125AC
	3216	1.60+0.30,-0.10	±5%				CGA5L2C0G2A333J160AA
		2.00±0.20	±5%				CGA6M2C0G2A333J200AA
	3225	2.30±0.20	±5%			CGA6N3C0G2E333J230AA	
		2.50±0.30	±2%	CGA6P4C0G2J333G250AA			
			±5%	CGA6P4C0G2J333J250AA	CGA6P4C0G2W333J250AA		
47 nF	4532	2.00±0.20	±5%	CGA8M4C0G2J333J200KA		CGA8M3C0G2E333J200KA	
	3216	1.15±0.15	±5%				CGA5H1C0G2A473J115AC
	3225	2.30±0.20	±5%				CGA6N2C0G2A473J230AA
		2.50±0.30	±5%			CGA6P3C0G2E473J250AA	
		2.00±0.20	±5%				CGA8M2C0G2A473J200KA
	4532	2.30±0.20	±5%		CGA8N4C0G2W473J230KA		
		3.20±0.30	±5%	CGA8R4C0G2J473J320KA		CGA8R3C0G2E473J320KA	
	3216	1.60±0.20	±5%				CGA5L1C0G2A683J160AC
68 nF	3225	2.30±0.20	±5%				CGA6N2C0G2A683J230AA
		2.30±0.20	±5%			CGA8N4C0G2E683J230KN	
	4532	2.50±0.30	±5%				CGA8P2C0G2A683J250KA
		3.20±0.30	±5%		CGA8R4C0G2W683J320KA		
		2.30±0.20	±2%	CGA9N1C0G2J683G230KC			
			±5%	CGA9N1C0G2J683J230KC			
	3216	1.60±0.20	±5%				CGA5L1C0G2A104J160AC
	4532	3.20±0.30	±5%			CGA8R4C0G2E104J320KN	CGA8R2C0G2A104J320KA
100 nF	5750	2.80±0.30	±2%	CGA9Q1C0G2J104G280KC			
			±5%	CGA9Q1C0G2J104J280KC	CGA9Q4C0G2W104J280KA		
150 nF	5750	2.30±0.20	±5%			CGA9N4C0G2E154J230KN	CGA9N2C0G2A154J230KA

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MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

X7R (-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers		
				Rated voltage: DC630V	Rated voltage: DC250V	Rated voltage: DC100V
1 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A102K080AA
			±20%			CGA3E2X7R2A102M080AA
	3216	1.15±0.15	±10%	CGA5H4X7R2J102K115AA		
			±20%	CGA5H4X7R2J102M115AA		
1.5 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A152K080AA
			±20%			CGA3E2X7R2A152M080AA
	3216	1.15±0.15	±10%	CGA5H4X7R2J152K115AA		
			±20%	CGA5H4X7R2J152M115AA		
2.2 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A222K080AA
			±20%			CGA3E2X7R2A222M080AA
	3216	1.15±0.15	±10%	CGA5H4X7R2J222K115AA		
			±20%	CGA5H4X7R2J222M115AA		
3.3 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A332K080AA
			±20%			CGA3E2X7R2A332M080AA
	3216	1.15±0.15	±10%	CGA5H4X7R2J332K115AA		
			±20%	CGA5H4X7R2J332M115AA		
4.7 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A472K080AA
			±20%			CGA3E2X7R2A472M080AA
	3216	1.15±0.15	±10%	CGA5H4X7R2J472K115AA		
			±20%	CGA5H4X7R2J472M115AA		
6.8 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A682K080AA
			±20%			CGA3E2X7R2A682M080AA
	2012	1.25±0.20	±10%		CGA4J3X7R2E682K125AA	
			±20%		CGA4J3X7R2E682M125AA	
10 nF	3216	1.15±0.15	±10%	CGA5H4X7R2J682K115AA		
			±20%	CGA5H4X7R2J682M115AA		
	1608	0.80±0.10	±10%			CGA3E2X7R2A103K080AA
			±20%			CGA3E2X7R2A103M080AA
15 nF	2012	1.25±0.20	±10%		CGA4J3X7R2E103K125AA	
			±20%		CGA4J3X7R2E103M125AA	
	3216	1.15±0.15	±10%	CGA5H4X7R2J103K115AA		
			±20%	CGA5H4X7R2J103M115AA		
22 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A153K080AA
			±20%			CGA3E2X7R2A153M080AA
	2012	1.25±0.20	±10%		CGA4J3X7R2E153K125AA	CGA4J2X7R2A153K125AA
			±20%		CGA4J3X7R2E153M125AA	CGA4J2X7R2A153M125AA
33 nF	3216	1.15±0.15	±10%		CGA5H3X7R2E153K115AA	
			±20%		CGA5H3X7R2E153M115AA	
	1608	0.80±0.10	±10%	CGA5K4X7R2J153K130AA		
			±20%	CGA5K4X7R2J153M130AA		
47 nF	1608	0.80±0.10	±10%			CGA3E2X7R2A223K080AA
			±20%			CGA3E2X7R2A223M080AA
	2012	1.25±0.20	±10%		CGA4J3X7R2E223K125AA	CGA4J2X7R2A223K125AA
			±20%		CGA4J3X7R2E223M125AA	CGA4J2X7R2A223M125AA
68 nF	3216	1.15±0.15	±10%		CGA5H3X7R2E223K115AA	
			±20%		CGA5H3X7R2E223M115AA	
	1608	0.80±0.10	±10%	CGA5K4X7R2J223K130AA		
			±20%	CGA5K4X7R2J223M130AA		

•Gray: NRND (Not Recommended for New Designs)

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MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

X7R (-55 to +125°C, ±15%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers		
				Rated voltage: DC630V	Rated voltage: DC250V	Rated voltage: DC100V
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	
68 nF	3225	2.00±0.20	±10%	CGA6M4X7R2J473K200AA		
			±20%	CGA6M4X7R2J473M200AA		
	3216	1.60±0.20	±10%		CGA5L3X7R2E683K160AA	CGA5L2X7R2A683K160AA
			±20%		CGA5L3X7R2E683M160AA	CGA5L2X7R2A683M160AA
	3225	2.00±0.20	±10%	CGA6M4X7R2J683K200AA		
			±20%	CGA6M4X7R2J683M200AA		
100 nF	4532	1.60±0.20	±10%	CGA8L4X7R2J683K160KA		
			±20%	CGA8L4X7R2J683M160KA		
	2012	1.25±0.20	±10%			CGA4J2X7R2A104K125AA
			±20%			CGA4J2X7R2A104M125AA
	3216	1.60±0.20	±10%		CGA5L3X7R2E104K160AA	CGA5L2X7R2A104K160AA
			±20%		CGA5L3X7R2E104M160AA	CGA5L2X7R2A104M160AA
150 nF	3225	2.00±0.20	±10%		CGA6M3X7R2E104K200AA	
			±20%		CGA6M3X7R2E104M200AA	
	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	
220 nF	5750	2.30±0.20	±10%	CGA9N4X7R2J224K230KA		
			±20%	CGA9N4X7R2J224M230KA		

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Capacitance range table

X7R (-55 to +125°C, ±15%)

Capaci- tance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers	
				Rated voltage: DC250V	Rated voltage: DC100V
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	
470 nF	3216	1.60±0.20	±10%		CGA5L2X7R2A474K160AA
			±20%		CGA5L2X7R2A474M160AA
	3225	2.00±0.20	±10%		CGA6M2X7R2A474K200AA
			±20%		CGA6M2X7R2A474M200AA
	4532	2.30±0.20	±10%	CGA8N3X7R2E474K230KA	
			±20%	CGA8N3X7R2E474M230KA	
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
1 µF	5750	1.60±0.20	±10%		CGA9L2X7R2A684K160KA
			±20%		CGA9L2X7R2A684M160KA
	5750	2.30±0.20	±10%	CGA9N3X7R2E684K230KA	
			±20%	CGA9N3X7R2E684M230KA	
	3216	1.60±0.20	±10%		CGA5L2X7R2A105K160AA
			±20%		CGA5L2X7R2A105M160AA
1.5 µF	3225	2.00±0.20	±10%		CGA6M2X7R2A105K200AA
			±20%		CGA6M2X7R2A105M200AA
	4532	2.30±0.20	±10%		CGA8N2X7R2A105K230KA
			±20%		CGA8N2X7R2A105M230KA
	5750	2.30±0.20	±10%	CGA9N3X7R2E105K230KA	CGA9N2X7R2A105K230KA
			±20%	CGA9N3X7R2E105M230KA	CGA9N2X7R2A105M230KA
2.2 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
3.3 µF	2012	1.25+0.25,-0.15	±10%		CGA4J1X7R2A225K125AC
			±10%		CGA6N3X7R2A225K230AB
	3225	2.30±0.20	±20%		CGA6N3X7R2A225M230AB
			±10%		CGA8N2X7R2A225K230KA
	4532	2.30±0.20	±20%		CGA8N2X7R2A225M230KA
			±10%		CGA9N2X7R2A225K230KA
4.7 µF	5750	2.30±0.20	±20%		CGA9N2X7R2A225M230KA
			±10%		CGA9N2X7R2A335K230KA
	3216	1.60+0.30,-0.10	±20%		CGA9N2X7R2A335M230KA
			±10%		CGA5L1X7R2A475K160AC
	5750	2.30±0.20	±10%		CGA9N2X7R2A475K230KA
			±20%		CGA9N2X7R2A475M230KA
10 µF	3225	2.50±0.30	±10%		CGA6P1X7R2A106K250AC

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Capacitance range table

X7S (-55 to +125°C, ±22%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers
				Rated voltage: DC100V
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
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
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	3216	1.60+0.30,-0.10	±10%	CGA5L3X7S2A335K160AB
			±20%	CGA5L3X7S2A335M160AB
	3225	2.00±0.20	±10%	CGA6M3X7S2A335K200AB
			±20%	CGA6M3X7S2A335M200AB
4.7 µF	4532	2.00±0.20	±10%	CGA8M3X7S2A335K200KB
			±20%	CGA8M3X7S2A335M200KB
	3225	2.00±0.20	±10%	CGA6M3X7S2A475K200AB
			±20%	CGA6M3X7S2A475M200AB
6.8 µF	5750	2.00±0.20	±10%	CGA8N3X7S2A475K230KB
			±20%	CGA8N3X7S2A475M230KB
10 µF	5750	2.30±0.20	±10%	CGA9M3X7S2A685K200KB
			±20%	CGA9M3X7S2A685M200KB
15 µF	5750	2.50±0.30	±10%	CGA9N3X7S2A106K230KB
			±20%	CGA9N3X7S2A106M230KB
			±10%	CGA9P3X7S2A156M250KB
			±20%	CGA9P3X7S2A156M250KB

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MULTILAYER CERAMIC CHIP CAPACITORS



Capacitance range table

X7T (-55 to +125°C, +22,-33%)

Capacitance	Size	Thickness (mm)	Cap Tolerance	Catalog numbers		
				Rated voltage: DC630V	Rated voltage: DC450V	Rated voltage: DC250V
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		
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

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