



MULTILAYER CERAMIC CHIP CAPACITORS



CGA Series Automotive Grade General (Up to 50V)

Type:

**CGA1 [EIA CC0201]
CGA2 [EIA CC0402]
CGA3 [EIA CC0603]
CGA4 [EIA CC0805]
CGA5 [EIA CC1206]
CGA6 [EIA CC1210]
CGA8 [EIA CC1812]
CGA9 [EIA CC2220]**

**Issue date:
Dec 2014**



REMINDERS

Please read before using this product

SAFETY REMINDERS



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(Example)

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



CGA Series General (Up to 50V)

Type: CGA1 [EIA CC0201], CGA2 [EIA CC0402], CGA3 [EIA CC0603],
CGA4 [EIA CC0805], CGA5 [EIA CC1206], CGA6 [EIA CC1210], CGA8 [EIA CC1812],
CGA9 [EIA CC2220]



Features



- High capacitance has been achieved through precision technologies that enable the use of multiple thinner ceramic dielectric layers.
- A monolithic structure ensures superior mechanical strength and reliability.
- Low 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.
- AEC-Q200 compliant.

Applications



- Automotive engine control units
- Automotive sensor modules
- Automotive battery line smoothing
- Applications requiring higher reliability
- Switching power supply smoothing

Shape & Dimensions



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

CGA • 6 • P • 1 • X7S • 0J • 476 • M • 250 • A • C

Series Name

Dimensions L x W (mm)

| Code | Length | Width | Terminal |
|------|-------------|-------------|-----------|
| 1 | 0.60 ± 0.03 | 0.30 ± 0.03 | 0.10 min. |
| 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 |
|------|-----------|
| A | 0.30 mm |
| B | 0.50 mm |
| C | 0.60 mm |
| E | 0.80 mm |
| F | 0.85 mm |
| H | 1.15 mm |
| J | 1.25 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 |

Voltage Condition for Life Test

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

Temperature Characteristics

| Temperature Characteristics | Temperature Coefficient or Capacitance Change | Temperature Range |
|-----------------------------|---|-------------------|
| C0G | 0±30 ppm/°C | -55 to +125°C |
| X5R | ±15% | -55 to + 85°C |
| X7R | ±15% | -55 to +125°C |
| X7S | ±22% | -55 to +125°C |

Rated Voltage (DC)

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

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 |
|------|-----------|
| 030 | 0.30 mm |
| 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 mm Reel, 4 mm Pitch |
| B | 178 mm Reel, 2 mm Pitch |
| K | 178 mm Reel, 8 mm Pitch |

Special Reserved Code

| Code | Description |
|------|-------------------|
| A, B | TDK Internal Code |



Capacitance Range Chart

CGA1(0603) [EIA CC0201]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

| Capacitance (pF) | Code | Tolerance | C0G | | X7R | | | | |
|------------------|------|------------------------|----------|----------|----------|----------|----------|----------|-----------|
| | | | 1H (50V) | 1E (25V) | 1H (50V) | 1E (25V) | 1C (16V) | 1A (10V) | 0J (6.3V) |
| 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 | | █ | █ | █ | █ | █ | | |
| 150 | 151 | | | | █ | █ | █ | | |
| 220 | 221 | | | | | █ | █ | | |
| 330 | 331 | | | | | | █ | | |
| 470 | 471 | | | | | | | █ | |
| 680 | 681 | | | | | | | | █ |
| 1000 | 102 | | | | | | | | █ |
| 1500 | 152 | | | | | | | | █ |
| 2200 | 222 | | | | | | | | █ |
| 3300 | 332 | | | | | | | | █ |
| 4700 | 472 | | | | | | | | █ |
| 6800 | 682 | | | | | | | | █ |
| 10000 | 103 | | | | | | | | █ |

Standard Thickness
 0.30 mm



Capacitance Range Chart

CGA2(1005) [EIA CC0402]

Capacitance Range Chart

Temperature Characteristics: C0G (0 ± 30ppm/°C), X5R (±15%), X7R (±15%), X7S (±22%)

Rated Voltage: 50V (1H), 35V (1V), 25V (1E), 16V (1C), 10V (1A), 6.3 (0J)

| Capacitance (pF) | Code | Tolerance | C0G | | X5R | | | | X7R | | | | | X7S | | |
|------------------|------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|
| | | | 1H (50V) | 1H (50V) | 1V (35V) | 1E (25V) | 1C (16V) | 1A (10V) | 1H (50V) | 1V (35V) | 1E (25V) | 1C (16V) | 1 A (10V) | 0J (6.3V) | 1C (16V) | 1 A (10V) |
| 1 | 010 | C : ± 0.25pF | █ | | | | | | | | | | | | | |
| 1.5 | 1R5 | D : ± 0.50pF | █ | | | | | | | | | | | | | |
| 2 | 020 | J : ± 5% | █ | | | | | | | | | | | | | |
| 2.2 | 2R2 | K : ± 10% | █ | | | | | | | | | | | | | |
| 3 | 030 | M : ± 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 | | █ | █ | | | | | | █ | | | | | | |
| 1,500 | 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 | | █ | █ | █ | | | | | █ | █ | | | | | |
| 150,000 | 154 | | █ | █ | █ | | | | | █ | █ | | | | | |
| 220,000 | 224 | | █ | █ | █ | | | | | █ | █ | | | | | |
| 330,000 | 334 | | █ | █ | █ | | | | | █ | █ | | | | | |
| 470,000 | 474 | | █ | █ | █ | | | | | █ | █ | | | █ | █ | |

Standard Thickness

█ 0.50 mm



Capacitance Range Chart

CGA3(1608) [EIA CC0603]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$)

Rated Voltage: 50V (1H)

| Capacitance (pF) | Code | Tolerance | C0G |
|------------------|------|------------------------|----------|
| | | | 1H (50V) |
| 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 | | |

Standard Thickness

 0.80 mm



Capacitance Range Chart

CGA3(1608) [EIA CC0603]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X5R ($\pm 15\%$), X7R ($\pm 15\%$), X7S ($\pm 22\%$)

Rated Voltage: 50V (1H), 35V (1V), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

| Capacitance (pF) | Code | Tolerance | C0G | | X5R | | | | | X7R | | | | | X7S | |
|------------------|------|----------------|----------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|-----------|----------|----------|
| | | | 1H (50V) | 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) |
| 1,000 | 102 | J : $\pm 5\%$ | ■ | ■ | | | | | | | ■ | | | | | |
| 1,200 | 122 | K : $\pm 10\%$ | ■ | ■ | | | | | | | ■ | | | | | |
| 1,500 | 152 | M : $\pm 20\%$ | ■ | ■ | | | | | | | ■ | | | | | |
| 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 | | | ■ | | | | | | | ■ | | | | | |

Standard Thickness

■ 0.80 mm



Capacitance Range Chart

CGA4(2012) [EIA CC0805]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X5R ($\pm 15\%$), X7R ($\pm 15\%$), X7S ($\pm 22\%$)
 Rated Voltage: 50V (1H), 35V (1V), 25V (1E), 16V (1C), 10V (1A), 6.3V (0J)

| Capacitance (pF) | Code | Tolerance | C0G | X5R | | | | | X7R | | | | | X7S | | |
|------------------|------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|----------|
| | | | 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) | 1A (10V) |
| 1,000 | 102 | J : $\pm 5\%$ | █ | | | | | | | | | | | | | |
| 1,200 | 122 | K : $\pm 10\%$ | █ | | | | | | | | | | | | | |
| 1,500 | 152 | M : $\pm 20\%$ | █ | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | █ | █ |

Standard Thickness

0.60 mm
 0.85 mm
 1.25 mm

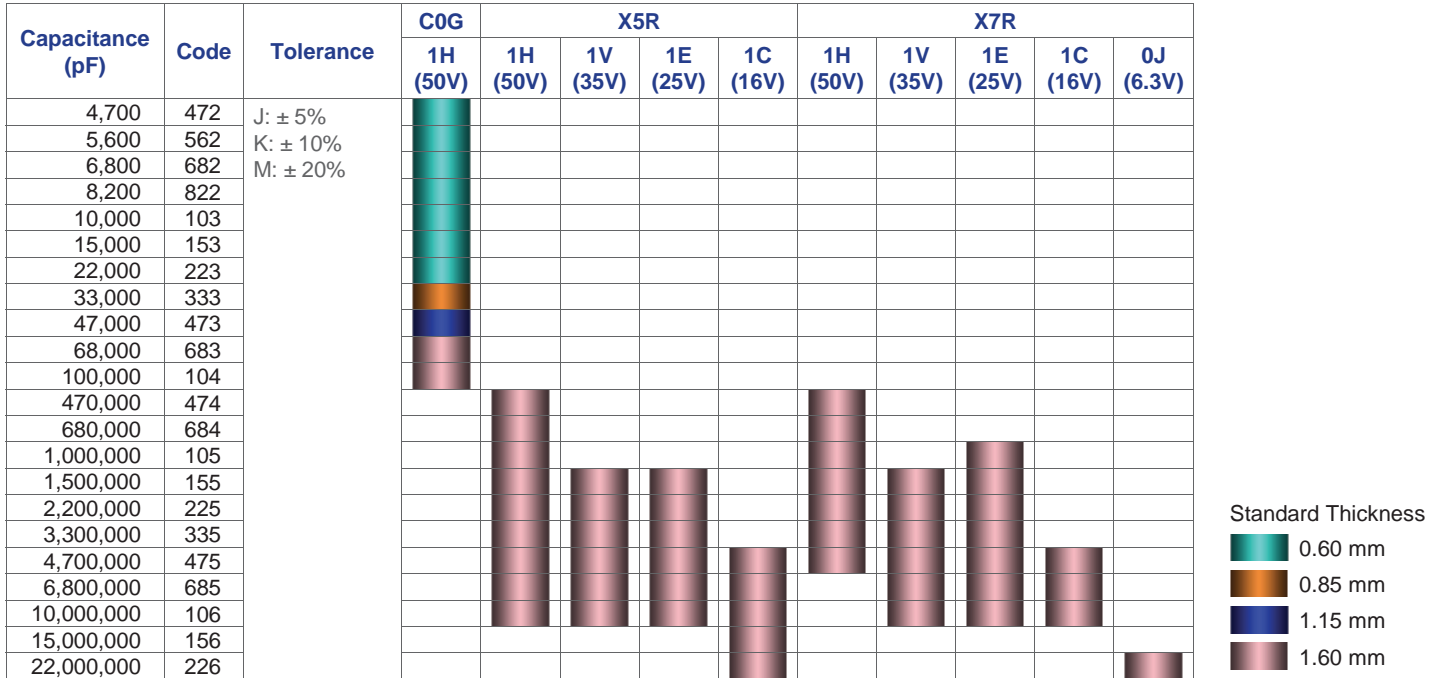


Capacitance Range Chart

CGA5(3216) [EIA CC1206]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X5R ($\pm 15\%$), X7R ($\pm 15\%$)
 Rated Voltage: 50V (1H), 35V (1V), 25V (1E), 16V (1C), 6.3V (0J)



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 ($\pm 22\%$)
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C), 6.3V (0J)





Capacitance Range Chart

CGA8(4532) [EIA CC1812]

Capacitance Range Chart

Temperature Characteristics: C0G ($0 \pm 30\text{ppm}/^\circ\text{C}$), X7R ($\pm 15\%$)
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C)

| Capacitance (pF) | Code | Tolerance | C0G | | X7R | |
|------------------|------|---------------|----------|----------|----------|----------|
| | | | 1H (50V) | 1H (50V) | 1E (25V) | 1C (16V) |
| 47,000 | 473 | J: $\pm 5\%$ | █ | | | |
| 68,000 | 683 | K: $\pm 10\%$ | █ | | | |
| 100,000 | 104 | M: $\pm 20\%$ | █ | | | |
| 150,000 | 154 | | █ | | | |
| 220,000 | 224 | | █ | | | |
| 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 | | | | █ | |
| 22,000,000 | 226 | | | | █ | █ |
| 33,000,000 | 336 | | | | █ | █ |

Standard Thickness

- █ 1.60 mm
- █ 2.00 mm
- █ 2.30 mm
- █ 2.50 mm
- █ 2.80 mm
- █ 3.20 mm



Capacitance Range Chart

CGA9(5750) [EIA CC2220]

Capacitance Range Chart

Temperature Characteristics: X7R ($\pm 15\%$)
 Rated Voltage: 50V (1H), 25V (1E), 16V (1C)

| Capacitance (pF) | Code | Tolerance | X7R | | |
|------------------|------|---------------|----------|----------|----------|
| | | | 1H (50V) | 1E (25V) | 1C (16V) |
| 4,700,000 | 475 | K: $\pm 10\%$ | █ | | |
| 6,800,000 | 685 | M: $\pm 20\%$ | █ | | |
| 10,000,000 | 106 | | █ | █ | |
| 15,000,000 | 156 | | | █ | |
| 22,000,000 | 226 | | | █ | |
| 47,000,000 | 476 | | | | █ |

Standard Thickness

- █ 2.00 mm
- █ 2.30 mm
- █ 2.50 mm



Capacitance Range Table

Class 1 (Temperature Compensating)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | |
|-------------|------|----------------|-----------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 25V |
| 1 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H010C030BA | CGA1A2C0G1E010C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H010C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H010C080AA | |
| 1.5 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H1R5C030BA | CGA1A2C0G1E1R5C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H1R5C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H1R5C080AA | |
| 2 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H020C030BA | CGA1A2C0G1E020C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H020C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H020C080AA | |
| 2.2 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H2R2C030BA | CGA1A2C0G1E2R2C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H2R2C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H2R2C080AA | |
| 3 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H030C030BA | CGA1A2C0G1E030C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H030C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H030C080AA | |
| 3.3 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H3R3C030BA | CGA1A2C0G1E3R3C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H3R3C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H3R3C080AA | |
| 4 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H040C030BA | CGA1A2C0G1E040C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H040C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H040C080AA | |
| 4.7 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H4R7C030BA | CGA1A2C0G1E4R7C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H4R7C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H4R7C080AA | |
| 5 pF | 0603 | 0.30 ± 0.03 | ± 0.25pF | CGA1A2C0G1H050C030BA | CGA1A2C0G1E050C030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.25pF | CGA2B2C0G1H050C050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.25pF | CGA3E2C0G1H050C080AA | |
| 6 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H060D030BA | CGA1A2C0G1E060D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H060D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H060D080AA | |
| 6.8 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H6R8D030BA | CGA1A2C0G1E6R8D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H6R8D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H6R8D080AA | |
| 7 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H070D030BA | CGA1A2C0G1E070D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H070D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H070D080AA | |
| 8 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H080D030BA | CGA1A2C0G1E080D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H080D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H080D080AA | |
| 9 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H090D030BA | CGA1A2C0G1E090D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H090D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H090D080AA | |
| 10 pF | 0603 | 0.30 ± 0.03 | ± 0.50pF | CGA1A2C0G1H100D030BA | CGA1A2C0G1E100D030BA |
| | 1005 | 0.50 ± 0.05 | ± 0.50pF | CGA2B2C0G1H100D050BA | |
| | 1608 | 0.80 ± 0.10 | ± 0.50pF | CGA3E2C0G1H100D080AA | |
| 12 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H120J030BA | CGA1A2C0G1E120J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H120J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H120J080AA | |
| 15 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H150J030BA | CGA1A2C0G1E150J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H150J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H150J080AA | |
| 18 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H180J030BA | CGA1A2C0G1E180J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H180J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H180J080AA | |
| 22 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H220J030BA | CGA1A2C0G1E220J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H220J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H220J080AA | |
| 27 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H270J030BA | CGA1A2C0G1E270J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H270J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H270J080AA | |



Capacitance Range Table

Class 1 (Temperature Compensating)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | |
|-------------|------|----------------|-----------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 25V |
| 33 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H330J030BA | CGA1A2C0G1E330J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H330J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H330J080AA | |
| 39 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H390J030BA | CGA1A2C0G1E390J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H390J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H390J080AA | |
| 47 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H470J030BA | CGA1A2C0G1E470J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H470J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H470J080AA | |
| 56 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H560J030BA | CGA1A2C0G1E560J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H560J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H560J080AA | |
| 68 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H680J030BA | CGA1A2C0G1E680J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H680J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H680J080AA | |
| 82 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H820J030BA | CGA1A2C0G1E820J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H820J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H820J080AA | |
| 100 pF | 0603 | 0.30 ± 0.03 | ± 5% | CGA1A2C0G1H101J030BA | CGA1A2C0G1E101J030BA |
| | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H101J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H101J080AA | |
| 120 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H121J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H121J080AA | |
| 150 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H151J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H151J080AA | |
| 180 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H181J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H181J080AA | |
| 220 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H221J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H221J080AA | |
| 270 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H271J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H271J080AA | |
| 330 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H331J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H331J080AA | |
| 390 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H391J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H391J080AA | |
| 470 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H471J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H471J080AA | |
| 560 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H561J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H561J080AA | |
| 680 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H681J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H681J080AA | |
| 820 pF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H821J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H821J080AA | |
| 1 nF | 1005 | 0.50 ± 0.05 | ± 5% | CGA2B2C0G1H102J050BA | |
| | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H102J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H102J060AA | |
| 1.2 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H122J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H122J060AA | |
| 1.5 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H152J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H152J060AA | |
| 1.8 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H182J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H182J060AA | |
| 2.2 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H222J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H222J060AA | |
| 2.7 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H272J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H272J060AA | |
| 3.3 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H332J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H332J060AA | |
| 3.9 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H392J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H392J060AA | |



Capacitance Range Table

Class 1 (Temperature Compensating)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | |
|-------------|--------|----------------|-----------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 25V |
| 4.7 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H472J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H472J060AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H472J060AA | |
| 5.6 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H562J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H562J060AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H562J060AA | |
| 6.8 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H682J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H682J060AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H682J060AA | |
| 8.2 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H822J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H822J060AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H822J060AA | |
| 10 nF | 1608 | 0.80 ± 0.10 | ± 5% | CGA3E2C0G1H103J080AA | |
| | 2012 | 0.60 ± 0.15 | ± 5% | CGA4C2C0G1H103J060AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H103J060AA | |
| 15 nF | 2012 | 0.85 ± 0.15 | ± 5% | CGA4F2C0G1H153J085AA | |
| | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H153J060AA | |
| | 2012 | 1.25 ± 0.20 | ± 5% | CGA4J2C0G1H223J125AA | |
| 22 nF | 3216 | 0.60 ± 0.15 | ± 5% | CGA5C2C0G1H223J060AA | |
| | 3225 | 1.25 ± 0.20 | ± 5% | CGA6J2C0G1H223J125AA | |
| | 2012 | 1.25 ± 0.20 | ± 5% | CGA4J2C0G1H333J125AA | |
| 33 nF | 3216 | 0.85 ± 0.15 | ± 5% | CGA5F2C0G1H333J085AA | |
| | 3225 | 1.60 ± 0.20 | ± 5% | CGA6L2C0G1H333J160AA | |
| | 3216 | 1.15 ± 0.15 | ± 5% | CGA5H2C0G1H473J115AA | |
| 47 nF | 3225 | 2.00 ± 0.20 | ± 5% | CGA6M2C0G1H473J200AA | |
| | 4532 | 1.60 ± 0.20 | ± 5% | CGA8L2C0G1H473J160KA | |
| | 3216 | 1.60 ± 0.20 | ± 5% | CGA5L2C0G1H683J160AA | |
| 68 nF | 3225 | 2.00 ± 0.20 | ± 5% | CGA6M2C0G1H683J200AA | |
| | 4532 | 1.60 ± 0.20 | ± 5% | CGA8L2C0G1H683J160KA | |
| | 3216 | 1.60 ± 0.20 | ± 5% | CGA5L2C0G1H104J160AA | |
| 100 nF | 3225 | 2.50 ± 0.30 | ± 5% | CGA6P2C0G1H104J250AA | |
| | 4532 | 2.00 ± 0.20 | ± 5% | CGA8M2C0G1H104J200KA | |
| | 150 nF | 4532 | 2.50 ± 0.30 | ± 5% | CGA8P2C0G1H154J250KA |
| 220 nF | 4532 | 3.20 ± 0.30 | ± 5% | CGA8R2C0G1H224J320KA | |

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|------|----------------|-----------------------|------------------------|------------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V |
| 220 pF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H221K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H221M050BA | | | |
| 330 pF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H331K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H331M050BA | | | |
| 470 pF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H471K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H471M050BA | | | |
| 680 pF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H681K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H681M050BA | | | |
| 1 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H102K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H102M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H102K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H102M080AA | | | |
| 1.5 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H152K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H152M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H152K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H152M080AA | | | |
| 2.2 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H222K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H222M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H222K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H222M080AA | | | |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|-------------|----------------|-----------------------|------------------------|------------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V |
| 3.3 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H332K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H332M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H332K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H332M080AA | | | |
| 4.7 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H472K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H472M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H472K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H472M080AA | | | |
| 6.8 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1H682K050BA | | | |
| | | | ± 20% | CGA2B2X5R1H682M050BA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H682K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H682M080AA | | | |
| 10 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H103K050BB | CGA2B3X5R1V103K050BB | CGA2B2X5R1E103K050BA | |
| | | | ± 20% | CGA2B3X5R1H103M050BB | CGA2B3X5R1V103M050BB | CGA2B2X5R1E103M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H103K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H103M080AA | | | |
| 15 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H153K050BB | CGA2B3X5R1V153K050BB | CGA2B2X5R1E153K050BA | |
| | | | ± 20% | CGA2B3X5R1H153M050BB | CGA2B3X5R1V153M050BB | CGA2B2X5R1E153M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H153K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H153M080AA | | | |
| 22 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H223K050BB | CGA2B3X5R1V223K050BB | CGA2B2X5R1E223K050BA | |
| | | | ± 20% | CGA2B3X5R1H223M050BB | CGA2B3X5R1V223M050BB | CGA2B2X5R1E223M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H223K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H223M080AA | | | |
| 33 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H333K050BB | CGA2B3X5R1V333K050BB | CGA2B2X5R1E333K050BA | CGA2B2X5R1C333K050BA |
| | | | ± 20% | CGA2B3X5R1H333M050BB | CGA2B3X5R1V333M050BB | CGA2B2X5R1E333M050BA | CGA2B2X5R1C333M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H333K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H333M080AA | | | |
| 47 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H473K050BB | CGA2B3X5R1V473K050BB | CGA2B2X5R1E473K050BA | CGA2B2X5R1C473K050BA |
| | | | ± 20% | CGA2B3X5R1H473M050BB | CGA2B3X5R1V473M050BB | CGA2B2X5R1E473M050BA | CGA2B2X5R1C473M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H473K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H473M080AA | | | |
| 68 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H683K050BB | CGA2B3X5R1V683K050BB | CGA2B3X5R1E683K050BB | CGA2B2X5R1C683K050BA |
| | | | ± 20% | CGA2B3X5R1H683M050BB | CGA2B3X5R1V683M050BB | CGA2B3X5R1E683M050BB | CGA2B2X5R1C683M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H683K080AA | | | |
| | | | ± 20% | CGA3E2X5R1H683M080AA | | | |
| 100 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1H104K050BB | CGA2B3X5R1V104K050BB | CGA2B3X5R1E104K050BB | CGA2B2X5R1C104K050BA |
| | | | ± 20% | CGA2B3X5R1H104M050BB | CGA2B3X5R1V104M050BB | CGA2B3X5R1E104M050BB | CGA2B2X5R1C104M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1H104K080AA | | CGA3E2X5R1E104K080AA | |
| | | | ± 20% | CGA3E2X5R1H104M080AA | | CGA3E2X5R1E104M080AA | |
| 150 nF | 1005 | 0.50 ± 0.05 | ± 10% | | | | CGA2B1X5R1C154K050BC |
| | | | ± 20% | | | | CGA2B1X5R1C154M050BC |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1H154K080AB | CGA3E3X5R1V154K080AB | CGA3E2X5R1E154K080AA | |
| | | | ± 20% | CGA3E3X5R1H154M080AB | CGA3E3X5R1V154M080AB | CGA3E2X5R1E154M080AA | |
| 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1H154K125AA | | | | |
| | | ± 20% | CGA4J2X5R1H154M125AA | | | | |
| 220 nF | 1005 | 0.50 ± 0.05 | ± 10% | | | | CGA2B1X5R1C224K050BC |
| | | | ± 20% | | | | CGA2B1X5R1C224M050BC |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1H224K080AB | CGA3E3X5R1V224K080AB | CGA3E2X5R1E224K080AA | CGA3E2X5R1C224K080AA |
| | | | ± 20% | CGA3E3X5R1H224M080AB | CGA3E3X5R1V224M080AB | CGA3E2X5R1E224M080AA | CGA3E2X5R1C224M080AA |
| 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1H224K125AA | | | | |
| | | ± 20% | CGA4J2X5R1H224M125AA | | | | |
| 330 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1H334K080AB | CGA3E3X5R1V334K080AB | CGA3E3X5R1E334K080AB | CGA3E2X5R1C334K080AA |
| | | | ± 20% | CGA3E3X5R1H334M080AB | CGA3E3X5R1V334M080AB | CGA3E3X5R1E334M080AB | CGA3E2X5R1C334M080AA |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1H334K125AA | | | |
| | | | ± 20% | CGA4J2X5R1H334M125AA | | | |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | | |
|-------------|------------------|------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|----------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V | |
| 470 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1H474K080AB | CGA3E3X5R1V474K080AB | CGA3E3X5R1E474K080AB | CGA3E2X5R1C474K080AA | |
| | | | ± 20% | CGA3E3X5R1H474M080AB | CGA3E3X5R1V474M080AB | CGA3E3X5R1E474M080AB | CGA3E2X5R1C474M080AA | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H474K125AB | CGA4J3X5R1V474K125AB | CGA4J2X5R1E474K125AA | | |
| | | | ± 20% | CGA4J3X5R1H474M125AB | CGA4J3X5R1V474M125AB | CGA4J2X5R1E474M125AA | | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L2X5R1H474K160AA | | | | |
| | | | ± 20% | CGA5L2X5R1H474M160AA | | | | |
| 680 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1V684K080AB | CGA3E3X5R1H684K080AB | CGA3E3X5R1E684K080AB | CGA3E2X5R1C684K080AA | |
| | | | ± 20% | CGA3E3X5R1H684M080AB | CGA3E3X5R1V684M080AB | CGA3E3X5R1E684M080AB | CGA3E2X5R1C684M080AA | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H684K125AB | CGA4J3X5R1V684K125AB | CGA4J2X5R1E684K125AA | CGA4J2X5R1C684K125AA | |
| | | | ± 20% | CGA4J3X5R1H684M125AB | CGA4J3X5R1V684M125AB | CGA4J2X5R1E684M125AA | CGA4J2X5R1C684M125AA | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L2X5R1H684K160AA | | | | |
| | | | ± 20% | CGA5L2X5R1H684M160AA | | | | |
| 1 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1H105K080AB | CGA3E3X5R1V105K080AB | CGA3E3X5R1E105K080AB | CGA3E1X5R1C105K080AC | |
| | | | ± 20% | CGA3E3X5R1H105M080AB | CGA3E3X5R1V105M080AB | CGA3E3X5R1E105M080AB | CGA3E1X5R1C105M080AC | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H105K125AB | CGA4J3X5R1V105K125AB | CGA4J2X5R1E105K125AA | CGA4J2X5R1C105K125AA | |
| | | | ± 20% | CGA4J3X5R1H105M125AB | CGA4J3X5R1V105M125AB | CGA4J2X5R1E105M125AA | CGA4J2X5R1C105M125AA | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L2X5R1H105K160AA | | | | |
| | | | ± 20% | CGA5L2X5R1H105M160AA | | | | |
| 1.5 µF | 1608 | 0.80 ± 0.10 | ± 10% | | | | CGA3E1X5R1C155K080AC | |
| | | | ± 20% | | | | CGA3E1X5R1C155M080AC | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H155K125AB | CGA4J3X5R1V155K125AB | CGA4J3X5R1E155K125AB | CGA4J2X5R1C155K125AA | |
| | | | ± 20% | CGA4J3X5R1H155M125AB | CGA4J3X5R1V155M125AB | CGA4J3X5R1E155M125AB | CGA4J2X5R1C155M125AA | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H155K160AB | CGA5L3X5R1V155K160AB | CGA5L2X5R1E155K160AA | | |
| | | | ± 20% | CGA5L3X5R1H155M160AB | CGA5L3X5R1V155M160AB | CGA5L2X5R1E155M160AA | | |
| 2.2 µF | 1608 | 0.80 ± 0.10 | ± 10% | | | | CGA3E1X5R1C225K080AC | |
| | | | ± 20% | | | | CGA3E1X5R1C225M080AC | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H225K125AB | CGA4J3X5R1V225K125AB | CGA4J3X5R1E225K125AB | CGA4J2X5R1C225K125AA | |
| | | | ± 20% | CGA4J3X5R1H225M125AB | CGA4J3X5R1V225M125AB | CGA4J3X5R1E225M125AB | CGA4J2X5R1C225M125AA | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H225K160AB | CGA5L3X5R1V225K160AB | CGA5L2X5R1E225K160AA | | |
| | | | ± 20% | CGA5L3X5R1H225M160AB | CGA5L3X5R1V225M160AB | CGA5L2X5R1E225M160AA | | |
| 3.3 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H335K125AB | CGA4J3X5R1V335K125AB | CGA4J3X5R1E335K125AB | CGA4J3X5R1C335K125AB | |
| | | | ± 20% | CGA4J3X5R1H335M125AB | CGA4J3X5R1V335M125AB | CGA4J3X5R1E335M125AB | CGA4J3X5R1C335M125AB | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H335K160AB | CGA5L3X5R1V335K160AB | CGA5L2X5R1E335K160AA | | |
| | | | ± 20% | CGA5L3X5R1H335M160AB | CGA5L3X5R1V335M160AB | CGA5L2X5R1E335M160AA | | |
| | 4.7 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1H475K125AB | CGA4J3X5R1V475K125AB | CGA4J3X5R1E475K125AB | CGA4J3X5R1C475K125AB |
| | | | | ± 20% | CGA4J3X5R1H475M125AB | CGA4J3X5R1V475M125AB | CGA4J3X5R1E475M125AB | CGA4J3X5R1C475M125AB |
| 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H475K160AB | CGA5L3X5R1V475K160AB | CGA5L2X5R1E475K160AA | CGA5L2X5R1C475K160AA | | |
| | | ± 20% | CGA5L3X5R1H475M160AB | CGA5L3X5R1V475M160AB | CGA5L2X5R1E475M160AA | CGA5L2X5R1C475M160AA | | |
| 6.8 µF | 2012 | 1.25 ± 0.20 | ± 10% | | | | CGA4J1X5R1C685K125AC | |
| | | | ± 20% | | | | CGA4J1X5R1C685M125AC | |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H685K160AB | CGA5L3X5R1V685K160AB | CGA5L3X5R1E685K160AB | CGA5L2X5R1C685K160AA | |
| | | | ± 20% | CGA5L3X5R1H685M160AB | CGA5L3X5R1V685M160AB | CGA5L3X5R1E685M160AB | CGA5L2X5R1C685M160AA | |
| 10 µF | 2012 | 1.25 ± 0.20 | ± 10% | | | | CGA4J1X5R1C106K125AC | |
| | | | ± 20% | | | | CGA4J1X5R1C106M125AC | |
| 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X5R1H106K160AB | CGA5L3X5R1V106K160AB | CGA5L3X5R1E106K160AB | CGA5L1X5R1C106K160AC | | |
| | | ± 20% | CGA5L3X5R1H106M160AB | CGA5L3X5R1V106M160AB | CGA5L3X5R1E106M160AB | CGA5L1X5R1C106M160AC | | |
| 15 µF | 3216 | 1.60 +0.30/-0.10 | ± 20% | | | | CGA5L1X5R1C156M160AC | |
| 22 µF | 3216 | 1.60 +0.30/-0.10 | ± 20% | | | | CGA5L1X5R1C226M160AC | |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | |
|-------------|------|----------------|-----------------------|------------------------|-------------------------|
| | | | | Rated Voltage Edc: 10V | Rated Voltage Edc: 6.3V |
| 100 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X5R1A104K050BA | |
| | | | ± 20% | CGA2B2X5R1A104M050BA | |
| 150 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1A154K050BB | |
| | | | ± 20% | CGA2B3X5R1A154M050BB | |
| 220 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X5R1A224K050BB | |
| | | | ± 20% | CGA2B3X5R1A224M050BB | |
| 330 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1A334K080AA | |
| | | | ± 20% | CGA3E2X5R1A334M080AA | |
| 470 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1A474K080AA | |
| | | | ± 20% | CGA3E2X5R1A474M080AA | |
| 680 nF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1A684K080AA | |
| | | | ± 20% | CGA3E2X5R1A684M080AA | |
| 1 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X5R1A105K080AA | |
| | | | ± 20% | CGA3E2X5R1A105M080AA | |
| 1.5 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1A155K080AB | |
| | | | ± 20% | CGA3E3X5R1A155M080AB | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1A155K125AA | |
| | | | ± 20% | CGA4J2X5R1A155M125AA | |
| 2.2 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X5R1A225K080AB | |
| | | | ± 20% | CGA3E3X5R1A225M080AB | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1A225K125AA | |
| | | | ± 20% | CGA4J2X5R1A225M125AA | |
| 3.3 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E1X5R1A335K080AC | CGA3E3X5R0J335K080AB |
| | | | ± 20% | CGA3E1X5R1A335M080AC | CGA3E3X5R0J335M080AB |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1A335K125AA | |
| | | | ± 20% | CGA4J2X5R1A335M125AA | |
| 4.7 µF | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E1X5R0J475K080AC | |
| | | | ± 20% | CGA3E1X5R0J475M080AC | |
| | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J2X5R1A475K125AA | |
| | | | ± 20% | CGA4J2X5R1A475M125AA | |
| 6.8 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1A685K125AB | |
| | | | ± 20% | CGA4J3X5R1A685M125AB | |
| 10 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X5R1A106K125AB | |
| | | | ± 20% | CGA4J3X5R1A106M125AB | |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|-------------|----------------|-----------------------|------------------------|------------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V |
| 100 pF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1H101K030BA | | CGA1A2X7R1E101K030BA | CGA1A2X7R1C101K030BA |
| | | | ± 20% | CGA1A2X7R1H101M030BA | | CGA1A2X7R1E101M030BA | CGA1A2X7R1C101M030BA |
| 150 pF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1H151K030BA | | CGA1A2X7R1E151K030BA | CGA1A2X7R1C151K030BA |
| | | | ± 20% | CGA1A2X7R1H151M030BA | | CGA1A2X7R1E151M030BA | CGA1A2X7R1C151M030BA |
| 220 pF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1H221K030BA | | CGA1A2X7R1E221K030BA | CGA1A2X7R1C221K030BA |
| | | | ± 20% | CGA1A2X7R1H221M030BA | | CGA1A2X7R1E221M030BA | CGA1A2X7R1C221M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H221K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H221M050BA | | | |
| 330 pF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1H331K030BA | | CGA1A2X7R1E331K030BA | CGA1A2X7R1C331K030BA |
| | | | ± 20% | CGA1A2X7R1H331M030BA | | CGA1A2X7R1E331M030BA | CGA1A2X7R1C331M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H331K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H331M050BA | | | |
| 470 pF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1H471K030BA | | CGA1A2X7R1E471K030BA | CGA1A2X7R1C471K030BA |
| | | | ± 20% | CGA1A2X7R1H471M030BA | | CGA1A2X7R1E471M030BA | CGA1A2X7R1C471M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H471K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H471M050BA | | | |
| 680 pF | 0603 | 0.30 ± 0.03 | ± 10% | | | CGA1A2X7R1E681K030BA | CGA1A2X7R1C681K030BA |
| | | | ± 20% | | | CGA1A2X7R1E681M030BA | CGA1A2X7R1C681M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H681K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H681M050BA | | | |
| 1 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | CGA1A2X7R1E102K030BA | CGA1A2X7R1C102K030BA |
| | | | ± 20% | | | CGA1A2X7R1E102M030BA | CGA1A2X7R1C102M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H102K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H102M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H102K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H102M080AA | | | | |
| 1.5 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | CGA1A2X7R1E152K030BA | CGA1A2X7R1C152K030BA |
| | | | ± 20% | | | CGA1A2X7R1E152M030BA | CGA1A2X7R1C152M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H152K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H152M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H152K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H152M080AA | | | | |
| 2.2 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | CGA1A2X7R1E222K030BA | CGA1A2X7R1C222K030BA |
| | | | ± 20% | | | CGA1A2X7R1E222M030BA | CGA1A2X7R1C222M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H222K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H222M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H222K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H222M080AA | | | | |
| 3.3 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | CGA1A2X7R1E332K030BA | CGA1A2X7R1C332K030BA |
| | | | ± 20% | | | CGA1A2X7R1E332M030BA | CGA1A2X7R1C332M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H332K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H332M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H332K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H332M080AA | | | | |
| 4.7 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | | CGA1A2X7R1C472K030BA |
| | | | ± 20% | | | | CGA1A2X7R1C472M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H472K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H472M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H472K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H472M080AA | | | | |
| 6.8 nF | 0603 | 0.30 ± 0.03 | ± 10% | | | | CGA1A2X7R1C682K030BA |
| | | | ± 20% | | | | CGA1A2X7R1C682M030BA |
| | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B2X7R1H682K050BA | | | |
| | | | ± 20% | CGA2B2X7R1H682M050BA | | | |
| 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H682K080AA | | | | |
| | | ± 20% | CGA3E2X7R1H682M080AA | | | | |
| 10 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H103K050BB | CGA2B3X7R1V103K050BB | CGA2B2X7R1E103K050BA | |
| | | | ± 20% | CGA2B3X7R1H103M050BB | CGA2B3X7R1V103M050BB | CGA2B2X7R1E103M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H103K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H103M080AA | | | |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|------|----------------|-----------------------|------------------------|------------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V |
| 15 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H153K050BB | CGA2B3X7R1V153K050BB | CGA2B2X7R1E153K050BA | |
| | | | ± 20% | CGA2B3X7R1H153M050BB | CGA2B3X7R1V153M050BB | CGA2B2X7R1E153M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H153K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H153M080AA | | | |
| 22 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H223K050BB | CGA2B3X7R1V223K050BB | CGA2B2X7R1E223K050BA | |
| | | | ± 20% | CGA2B3X7R1H223M050BB | CGA2B3X7R1V223M050BB | CGA2B2X7R1E223M050BA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H223K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H223M080AA | | | |
| 33 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H333K050BB | CGA2B3X7R1V333K050BB | CGA2B1X7R1E333K050BC | CGA2B2X7R1C333K050BA |
| | | | ± 20% | CGA2B3X7R1H333M050BB | CGA2B3X7R1V333M050BB | CGA2B1X7R1E333M050BC | CGA2B2X7R1C333M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H333K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H333M080AA | | | |
| 47 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H473K050BB | CGA2B3X7R1V473K050BB | CGA2B1X7R1E473K050BC | CGA2B2X7R1C473K050BA |
| | | | ± 20% | CGA2B3X7R1H473M050BB | CGA2B3X7R1V473M050BB | CGA2B1X7R1E473M050BC | CGA2B2X7R1C473M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H473K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H473M080AA | | | |
| 68 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H683K050BB | CGA2B3X7R1V683K050BB | CGA2B3X7R1E683K050BB | CGA2B1X7R1C683K050BC |
| | | | ± 20% | CGA2B3X7R1H683M050BB | CGA2B3X7R1V683M050BB | CGA2B3X7R1E683M050BB | CGA2B1X7R1C683M050BC |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H683K080AA | | | |
| | | | ± 20% | CGA3E2X7R1H683M080AA | | | |
| 100 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B3X7R1H104K050BB | CGA2B3X7R1V104K050BB | CGA2B3X7R1E104K050BB | CGA2B1X7R1C104K050BC |
| | | | ± 20% | CGA2B3X7R1H104M050BB | CGA2B3X7R1V104M050BB | CGA2B3X7R1E104M050BB | CGA2B1X7R1C104M050BC |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E2X7R1H104K080AA | | CGA3E2X7R1E104K080AA | |
| | | | ± 20% | CGA3E2X7R1H104M080AA | | CGA3E2X7R1E104M080AA | |
| 150 nF | 1005 | 0.50 ± 0.05 | ± 10% | | CGA2B1X7R1V154K050BC | CGA2B3X7R1E154K050BB | CGA2B2X7R1C154K050BA |
| | | | ± 20% | | CGA2B1X7R1V154M050BC | CGA2B3X7R1E154M050BB | CGA2B2X7R1C154M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X7R1H154K080AB | CGA3E3X7R1V154K080AB | CGA3E2X7R1E154K080AA | |
| | | | ± 20% | CGA3E3X7R1H154M080AB | CGA3E3X7R1V154M080AB | CGA3E2X7R1E154M080AA | |
| 220 nF | 1005 | 0.50 ± 0.05 | ± 10% | | CGA2B1X7R1V224K050BC | CGA2B3X7R1E224K050BB | CGA2B2X7R1C224K050BA |
| | | | ± 20% | | CGA2B1X7R1V224M050BC | CGA2B3X7R1E224M050BB | CGA2B2X7R1C224M050BA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X7R1H224K080AB | CGA3E3X7R1V224K080AB | CGA3E1X7R1E224K080AC | CGA3E2X7R1C224K080AA |
| | | | ± 20% | CGA3E3X7R1H224M080AB | CGA3E3X7R1V224M080AB | CGA3E1X7R1E224M080AC | CGA3E2X7R1C224M080AA |
| 330 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA4J2X7R1H125AA | | CGA4J2X7R1E224K125AA | |
| | | | ± 20% | CGA4J2X7R1H125AA | | CGA4J2X7R1E224M125AA | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X7R1H334K080AB | CGA3E1X7R1V334K080AC | CGA3E3X7R1E334K080AB | CGA3E1X7R1C334K080AC |
| | | | ± 20% | CGA3E3X7R1H334M080AB | CGA3E1X7R1V334M080AC | CGA3E3X7R1E334M080AB | CGA3E1X7R1C334M080AC |
| 470 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA4J2X7R1H334M125AA | | | |
| | | | ± 20% | CGA4J2X7R1H334M125AA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA3E3X7R1H474K080AB | CGA3E1X7R1V474K080AC | CGA3E3X7R1E474K080AB | CGA3E1X7R1C474K080AC |
| | | | ± 20% | CGA3E3X7R1H474M080AB | CGA3E1X7R1V474M080AC | CGA3E3X7R1E474M080AB | CGA3E1X7R1C474M080AC |
| 680 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA4J3X7R1H474M125AB | CGA4J3X7R1V474M125AB | CGA4J2X7R1E474K125AA | CGA4J2X7R1C474K125AA |
| | | | ± 20% | CGA4J3X7R1H474M125AB | CGA4J3X7R1V474M125AB | CGA4J2X7R1E474M125AA | CGA4J2X7R1C474M125AA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA5L2X7R1H474M160AA | | | |
| | | | ± 20% | CGA5L2X7R1H474M160AA | | | |
| 1 µF | 1005 | 0.50 ± 0.05 | ± 10% | | CGA3E1X7R1V684K080AC | CGA3E1X7R1E684K080AC | CGA3E1X7R1C684K080AC |
| | | | ± 20% | | CGA3E1X7R1V684M080AC | CGA3E1X7R1E684M080AC | CGA3E1X7R1C684M080AC |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA4J3X7R1H684K125AB | CGA4J3X7R1V684K125AB | CGA4J3X7R1E684K125AB | CGA4J2X7R1C684K125AA |
| | | | ± 20% | CGA4J3X7R1H684M125AB | CGA4J3X7R1V684M125AB | CGA4J3X7R1E684M125AB | CGA4J2X7R1C684M125AA |
| 3225 | 1005 | 0.50 ± 0.05 | ± 10% | CGA5L2X7R1H684K160AA | | | |
| | | | ± 20% | CGA5L2X7R1H684M160AA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7R1V105K080AC | CGA3E1X7R1E105K080AC | CGA3E1X7R1C105K080AC |
| | | | ± 20% | | CGA3E1X7R1V105M080AC | CGA3E1X7R1E105M080AC | CGA3E1X7R1C105M080AC |
| 3225 | 1005 | 0.50 ± 0.05 | ± 10% | CGA4J3X7R1H105K125AB | CGA4J3X7R1V105K125AB | CGA4J3X7R1E105K125AB | CGA4J2X7R1C105K125AA |
| | | | ± 20% | CGA4J3X7R1H105M125AB | CGA4J3X7R1V105M125AB | CGA4J3X7R1E105M125AB | CGA4J2X7R1C105M125AA |
| | 1608 | 0.80 ± 0.10 | ± 10% | CGA5L3X7R1H105K160AB | | CGA5L2X7R1E105K160AA | |
| | | | ± 20% | CGA5L3X7R1H105M160AB | | CGA5L2X7R1E105M160AA | |
| 3225 | 1005 | 0.50 ± 0.05 | ± 10% | CGA6L2X7R1H105K160AA | | | |
| | | | ± 20% | CGA6L2X7R1H105M160AA | | | |
| | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7R1V105K080AC | CGA3E1X7R1E105K080AC | CGA3E1X7R1C105K080AC |
| | | | ± 20% | | CGA3E1X7R1V105M080AC | CGA3E1X7R1E105M080AC | CGA3E1X7R1C105M080AC |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|-------------|------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 35V | Rated Voltage Edc: 25V | Rated Voltage Edc: 16V |
| 1.5 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X7R1H155K125AB | CGA4J1X7R1V155K125AC | CGA4J3X7R1E155K125AB | CGA4J3X7R1C155K125AB |
| | | | ± 20% | CGA4J3X7R1H155M125AB | CGA4J1X7R1V155M125AC | CGA4J3X7R1E155M125AB | CGA4J3X7R1C155M125AB |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X7R1H155K160AB | CGA5L3X7R1V155K160AB | CGA5L2X7R1E155K160AA | |
| | | | ± 20% | CGA5L3X7R1H155M160AB | CGA5L3X7R1V155M160AB | CGA5L2X7R1E155M160AA | |
| | 3225 | 2.00 ± 0.20 | ± 10% | CGA6M2X7R1H155K200AA | | | |
| | | ± 20% | CGA6M2X7R1H155M200AA | | | | |
| 2.2 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X7R1H225K125AB | CGA4J1X7R1V225K125AC | CGA4J3X7R1E225K125AB | CGA4J3X7R1C225K125AB |
| | | | ± 20% | CGA4J3X7R1H225M125AB | CGA4J1X7R1V225M125AC | CGA4J3X7R1E225M125AB | CGA4J3X7R1C225M125AB |
| | 3216 | 1.60 +0.30/-0.10 | ± 10% | CGA5L3X7R1H225K160AB | CGA5L3X7R1V225K160AB | CGA5L2X7R1E225K160AA | |
| | | | ± 20% | CGA5L3X7R1H225M160AB | CGA5L3X7R1V225M160AB | CGA5L2X7R1E225M160AA | |
| | 3225 | 2.00 ± 0.20 | ± 10% | CGA6M3X7R1H225K200AB | | | |
| | | ± 20% | CGA6M3X7R1H225M200AB | | | | |
| 3.3 µF | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7R1V335K125AC | CGA4J1X7R1E335K125AC | CGA4J3X7R1C335K125AB |
| | | | ± 20% | | CGA4J1X7R1V335M125AC | CGA4J1X7R1E335M125AC | CGA4J3X7R1C335M125AB |
| | 3216 | 1.60 ± 0.20 | ± 10% | CGA5L3X7R1H335K160AB | | | |
| | | | ± 20% | CGA5L3X7R1H335M160AB | | | |
| | | 1.60 +0.30/-0.10 | ± 10% | | CGA5L1X7R1V335K160AC | CGA5L1X7R1E335K160AC | |
| | | ± 20% | | CGA5L1X7R1V335M160AC | CGA5L1X7R1E335M160AC | | |
| 4.7 µF | 3225 | 2.50 ± 0.30 | ± 10% | CGA6P3X7R1H335K250AB | | | |
| | | | ± 20% | CGA6P3X7R1H335M250AB | | | |
| | 4532 | 2.00 ± 0.20 | ± 10% | CGA8M2X7R1H335K200KA | | | |
| | | | ± 20% | | | | |
| | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7R1V475K125AC | CGA4J1X7R1E475K125AC | CGA4J3X7R1C475K125AB |
| ± 20% | | | | CGA4J1X7R1V475M125AC | CGA4J1X7R1E475M125AC | CGA4J3X7R1C475M125AB | |
| 6.8 µF | 3216 | 1.60 ± 0.20 | ± 10% | CGA5L3X7R1H475K160AB | | | |
| | | | ± 20% | CGA5L3X7R1H475M160AB | | | |
| | | 1.60 +0.30/-0.10 | ± 10% | | CGA5L1X7R1V475K160AC | CGA5L1X7R1E475K160AC | CGA5L3X7R1C475K160AB |
| | | | ± 20% | | CGA5L1X7R1V475M160AC | CGA5L1X7R1E475M160AC | CGA5L3X7R1C475M160AB |
| | 3225 | 2.50 ± 0.30 | ± 10% | CGA6P3X7R1H475K250AB | | | |
| | | ± 20% | CGA6P3X7R1H475M250AB | | | | |
| 10 µF | 4532 | 1.60 ± 0.20 | ± 10% | | | CGA8L2X7R1E475K160KA | |
| | | | ± 20% | | | CGA8L2X7R1E475M160KA | |
| | 5750 | 2.00 ± 0.20 | ± 10% | CGA8M3X7R1H475K200KB | | | |
| | | | ± 20% | CGA9M2X7R1H475K200KA | | | |
| | 3216 | 1.60 ± 0.20 | ± 10% | | CGA5L1X7R1V685K160AC | | |
| ± 20% | | | | CGA5L1X7R1V685M160AC | | | |
| 15 µF | 3225 | 2.50 ± 0.30 | ± 10% | | | CGA5L1X7R1E685K160AC | CGA5L1X7R1C685K160AC |
| | | | ± 20% | | | CGA5L1X7R1E685M160AC | CGA5L1X7R1C685M160AC |
| | 4532 | 2.50 ± 0.30 | ± 10% | CGA6P3X7R1E685K250AB | | | |
| | | | ± 20% | CGA6P3X7R1E685M250AB | | | |
| | 5750 | 2.50 ± 0.30 | ± 10% | CGA8P3X7R1H685K250KB | | | |
| | | ± 20% | CGA9P2X7R1H685K250KA | | | | |
| 22 µF | 3216 | 1.60 ± 0.20 | ± 10% | | CGA5L1X7R1V106K160AC | | |
| | | | ± 20% | | CGA5L1X7R1V106M160AC | | |
| | | 1.60 +0.30/-0.10 | ± 10% | | | CGA5L1X7R1E106K160AC | CGA5L1X7R1C106K160AC |
| | | | ± 20% | | | CGA5L1X7R1E106M160AC | CGA5L1X7R1C106M160AC |
| | 3225 | 2.00 ± 0.20 | ± 10% | | | | CGA6M3X7R1C106K200AB |
| | | ± 20% | | | | CGA6M3X7R1C106M200AB | |
| 33 µF | 4532 | 2.50 ± 0.30 | ± 10% | | | CGA6P1X7R1E106K250AC | |
| | | | ± 20% | | | CGA6P1X7R1E106M250AC | |
| | 5750 | 2.00 ± 0.20 | ± 10% | | | CGA8P2X7R1E106K250KA | |
| | | | ± 20% | | | CGA9M2X7R1E106M200KA | |
| | 3225 | 2.50 ± 0.30 | ± 10% | CGA9N3X7R1H106K230KB | | | |
| 47 µF | 3225 | 2.50 ± 0.30 | ± 20% | | | | CGA6P3X7R1C156M250AB |
| | | | ± 20% | | | | |
| | 4532 | 2.80 ± 0.30 | ± 20% | | | CGA8Q3X7R1E156M280KB | |
| | | | ± 20% | | | CGA9N2X7R1E156M230KA | |
| | 5750 | 2.30 ± 0.20 | ± 20% | | | | CGA6P1X7R1C226M250AC |
| 22 µF | 4532 | 2.50 ± 0.20 | ± 20% | | | | CGA8N3X7R1C226M230KB |
| | | | ± 20% | | | CGA8P1X7R1E226M250KC | |
| 5750 | 2.50 ± 0.30 | ± 20% | | | CGA9P2X7R1E226M250KA | | |
| 33 µF | 4532 | 2.50 ± 0.20 | ± 20% | | | | CGA8P1X7R1C336M250KC |
| 47 µF | 5750 | 2.30 ± 0.20 | ± 20% | | | | CGA9N3X7R1C476M230KB |



Capacitance Range Table

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | |
|-------------|------|------------------|-----------------------|------------------------|-------------------------|
| | | | | Rated Voltage Edc: 10V | Rated Voltage Edc: 6.3V |
| 10 nF | 0603 | 0.30 ± 0.03 | ± 10% | CGA1A2X7R1A103K030BA | CGA1A2X7R0J103K030BA |
| | | | ± 20% | CGA1A2X7R1A103M030BA | CGA1A2X7R0J103M030BA |
| 150 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B1X7R1A154K050BC | CGA2B3X7R0J154K050BB |
| | | | ± 20% | CGA2B1X7R1A154M050BC | CGA2B3X7R0J154M050BB |
| 220 nF | 1005 | 0.50 ± 0.05 | ± 10% | CGA2B1X7R1A224K050BC | CGA2B3X7R0J224K050BB |
| | | | ± 20% | CGA2B1X7R1A224M050BC | CGA2B3X7R0J224M050BB |
| 1.5 µF | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7R0J155K080AC |
| | | | ± 20% | | CGA3E1X7R0J155M080AC |
| 2.2 µF | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7R0J225K080AC |
| | | | ± 20% | | CGA3E1X7R0J225M080AC |
| 3.3 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X7R1A335K125AB | |
| 4.7 µF | 2012 | 1.25 ± 0.20 | ± 10% | CGA4J3X7R1A475K125AB | |
| 6.8 µF | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7R0J685K125AC |
| | | | ± 20% | | CGA4J1X7R0J685M125AC |
| 10 µF | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7R0J106K125AC |
| | | | ± 20% | | CGA4J1X7R0J106M125AC |
| 22 µF | 3216 | 1.60 +0.30/-0.10 | ± 20% | CGA5L1X7R0J226M160AC | |

Class 2 (Temperature Stable)

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

| Capacitance | Size | Thickness (mm) | Capacitance Tolerance | Catalog Number | | | |
|-------------|------|----------------|-----------------------|------------------------|------------------------|------------------------|-------------------------|
| | | | | Rated Voltage Edc: 50V | Rated Voltage Edc: 16V | Rated Voltage Edc: 10V | Rated Voltage Edc: 6.3V |
| 330 nF | 1005 | 0.50 ± 0.05 | ± 10% | | CGA2B1X7S1C334K050BC | CGA2B3X7S1A334K050BB | |
| | | | ± 20% | | CGA2B1X7S1C334M050BC | CGA2B3X7S1A334M050BB | |
| 470nF | 1005 | 0.50 ± 0.05 | ± 10% | | CGA2B1X7S1C474K050BC | CGA2B3X7S1A474K050BB | |
| | | | ± 20% | | CGA2B1X7S1C474M050BC | CGA2B3X7S1A474M050BB | |
| 1.5 µF | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7S1C155K080AC | CGA3E3X7S1A155K080AB | |
| | | | ± 20% | | CGA3E1X7S1C155M080AC | CGA3E3X7S1A155M080AB | |
| 2.2 µF | 1608 | 0.80 ± 0.10 | ± 10% | | CGA3E1X7S1C225K080AC | CGA3E3X7S1A225K080AB | |
| | | | ± 20% | | CGA3E1X7S1C225M080AC | CGA3E3X7S1A225M080AB | |
| 4.7 µF | 3225 | 2.30 ± 0.20 | ± 10% | CGA6N3X7S1H475K230AB | | | |
| | | | ± 20% | | | | |
| 6.8 µF | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7S1C685K125AC | CGA4J3X7S1A685K125AB | |
| | | | ± 20% | | CGA4J1X7S1C685M125AC | CGA4J3X7S1A685M125AB | |
| 10 µF | 3225 | 2.50 ± 0.30 | ± 10% | CGA6P3X7S1H685K250AB | | | |
| | | | ± 20% | CGA6P3X7S1H685M250AB | | | |
| 33 µF | 2012 | 1.25 ± 0.20 | ± 10% | | CGA4J1X7S1C106K125AC | CGA4J3X7S1A106K125AB | |
| | | | ± 20% | | CGA4J1X7S1C106M125AC | CGA4J3X7S1A106M125AB | |
| 47 µF | 3225 | 2.50 ± 0.30 | ± 10% | CGA6P3X7S1H106K250AB | | | |
| | | | ± 20% | CGA6P3X7S1H106M250AB | | | |
| | | | | | | | CGA6P1X7S0J336M250AC |
| | | | | | | | CGA6P1X7S0J476M250AC |