



## MULTILAYER CERAMIC CHIP CAPACITORS

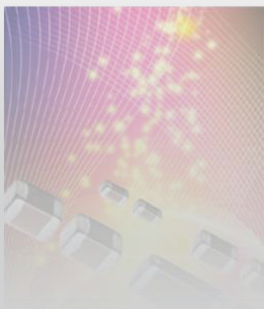


### **CGA Series Automotive Grade General (Up to 50V)**

**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:  
Apr 2014**



## REMINDERS

Please read before using this product

### SAFETY REMINDERS



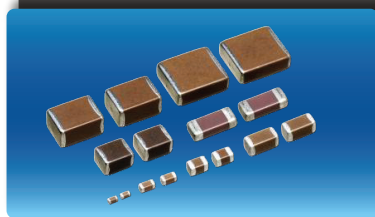
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(Example)

| 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



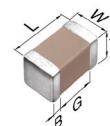
- High capacitance has been achieved through precision technologies that enable the use of multiple thinner ceramic dielectric layers.
- A monolithic structure ensures superior mechanical strength and reliability.
- Low ESL and excellent frequency characteristics allow for a circuit design that closely 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 |



### Catalog Number Construction

**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 of 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" Reel, 4mm Pitch |
| B    | 178" Reel, 2mm Pitch |
| K    | 178" Reel, 8mm 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 ( $0 \pm 30\text{ppm}/^\circ\text{C}$ ), 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<br>(pF) | Code | Tolerance    | C0G         | X5R         |             |             |             |             | X7R         |             |             |             |              | X7S          |             |              |
|---------------------|------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|-------------|--------------|
|                     |      |              | 1H<br>(50V) | 1H<br>(50V) | 1V<br>(35V) | 1E<br>(25V) | 1C<br>(16V) | 1A<br>(10V) | 1H<br>(50V) | 1V<br>(35V) | 1E<br>(25V) | 1C<br>(16V) | 1 A<br>(10V) | 0J<br>(6.3V) | 1C<br>(16V) | 1 A<br>(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<br>1H<br>(50V) |
|------------------|------|----------------------------------------------------------------------------------------------------|--------------------|
| 1                | 010  | C: $\pm 0.25\text{pF}$<br>D: $\pm 0.50\text{pF}$<br>J: $\pm 5\%$<br>K: $\pm 10\%$<br>M: $\pm 20\%$ |                    |
| 1.5              | 1R5  |                                                                                                    |                    |
| 2                | 020  |                                                                                                    |                    |
| 2.2              | 2R2  |                                                                                                    |                    |
| 3                | 030  |                                                                                                    |                    |
| 3.3              | 3R3  |                                                                                                    |                    |
| 4                | 040  |                                                                                                    |                    |
| 4.7              | 4R7  |                                                                                                    |                    |
| 5                | 050  |                                                                                                    |                    |
| 6                | 060  |                                                                                                    |                    |
| 6.8              | 6R8  |                                                                                                    |                    |
| 7                | 070  |                                                                                                    |                    |
| 8                | 080  |                                                                                                    |                    |
| 9                | 090  |                                                                                                    |                    |
| 10               | 100  |                                                                                                    |                    |
| 12               | 120  |                                                                                                    |                    |
| 15               | 150  |                                                                                                    |                    |
| 18               | 180  |                                                                                                    |                    |
| 22               | 220  |                                                                                                    |                    |
| 27               | 270  |                                                                                                    |                    |
| 33               | 330  |                                                                                                    |                    |
| 39               | 390  |                                                                                                    |                    |
| 47               | 470  |                                                                                                    |                    |
| 56               | 560  |                                                                                                    |                    |
| 68               | 680  |                                                                                                    |                    |
| 82               | 820  |                                                                                                    |                    |
| 100              | 101  |                                                                                                    |                    |
| 120              | 121  |                                                                                                    |                    |
| 150              | 151  |                                                                                                    |                    |
| 180              | 181  |                                                                                                    |                    |
| 220              | 221  |                                                                                                    |                    |
| 270              | 271  |                                                                                                    |                    |
| 330              | 331  |                                                                                                    |                    |
| 390              | 391  |                                                                                                    |                    |
| 470              | 471  |                                                                                                    |                    |
| 560              | 561  |                                                                                                    |                    |
| 680              | 681  |                                                                                                    |                    |
| 820              | 821  |                                                                                                    |                    |

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



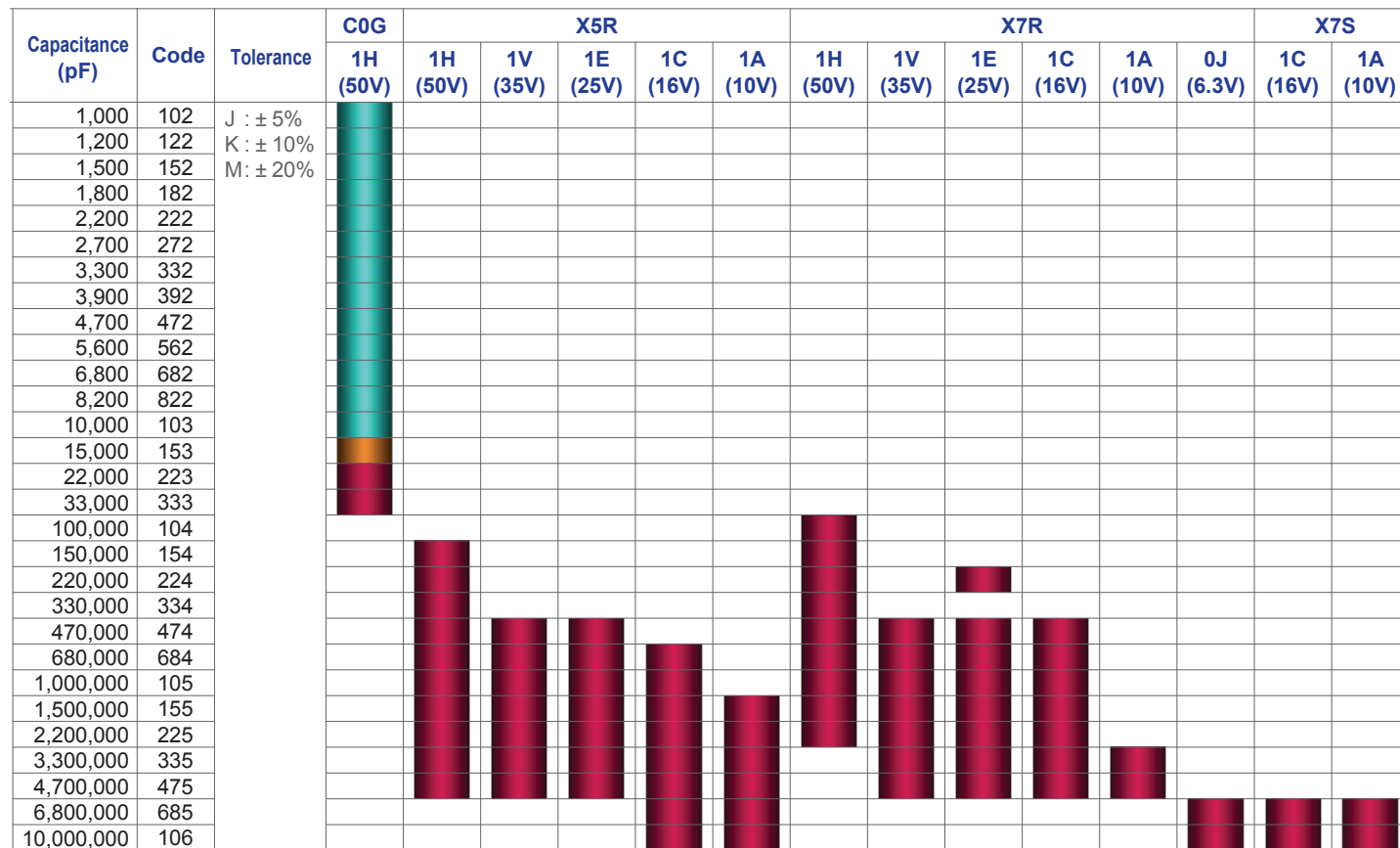
## Capacitance Range Chart

## 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)



Standard Thickness

0.60 mm 0.85 mm 1.25 mm





## Capacitance Range Chart

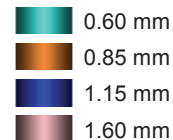
## CGA5(3216) [EIA CC1206]

### 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 (pF) | Code | Tolerance     | C0G      | X5R      |          |          |          | X7R      |          |          |          |           |
|------------------|------|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|                  |      |               | 1H (50V) | 1H (50V) | 1V (35V) | 1E (25V) | 1C (16V) | 1H (50V) | 1V (35V) | 1E (25V) | 1C (16V) | 0J (6.3V) |
| 4,700            | 472  | J: $\pm 5\%$  |          |          |          |          |          |          |          |          |          |           |
| 5,600            | 562  | K: $\pm 10\%$ |          |          |          |          |          |          |          |          |          |           |
| 6,800            | 682  | M: $\pm 20\%$ |          |          |          |          |          |          |          |          |          |           |
| 8,200            | 822  |               |          |          |          |          |          |          |          |          |          |           |
| 10,000           | 103  |               |          |          |          |          |          |          |          |          |          |           |
| 15,000           | 153  |               |          |          |          |          |          |          |          |          |          |           |
| 22,000           | 223  |               |          |          |          |          |          |          |          |          |          |           |
| 33,000           | 333  |               |          |          |          |          |          |          |          |          |          |           |
| 47,000           | 473  |               |          |          |          |          |          |          |          |          |          |           |
| 68,000           | 683  |               |          |          |          |          |          |          |          |          |          |           |
| 100,000          | 104  |               |          |          |          |          |          |          |          |          |          |           |
| 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  |               |          |          |          |          |          |          |          |          |          |           |
| 22,000,000       | 226  |               |          |          |          |          |          |          |          |          |          |           |

Standard Thickness



## Capacitance Range Chart

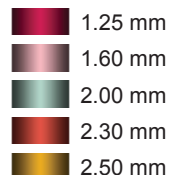
## CGA6(3225) [EIA CC1210]

### 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 (pF) | Code | Tolerance     | C0G      | X7R      |          |          |          | X7S       |  |
|------------------|------|---------------|----------|----------|----------|----------|----------|-----------|--|
|                  |      |               | 1H (50V) | 1H (50V) | 1E (25V) | 1C (16V) | 1H (50V) | 0J (6.3V) |  |
| 22,000           | 223  | J: $\pm 5\%$  |          |          |          |          |          |           |  |
| 33,000           | 333  | K: $\pm 10\%$ |          |          |          |          |          |           |  |
| 47,000           | 473  | M: $\pm 20\%$ |          |          |          |          |          |           |  |
| 68,000           | 683  |               |          |          |          |          |          |           |  |
| 100,000          | 104  |               |          |          |          |          |          |           |  |
| 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  |               |          |          |          |          |          |           |  |
| 22,000,000       | 226  |               |          |          |          |          |          |           |  |
| 33,000,000       | 336  |               |          |          |          |          |          |           |  |
| 47,000,000       | 476  |               |          |          |          |          |          |           |  |

Standard Thickness





## Capacitance Range Chart

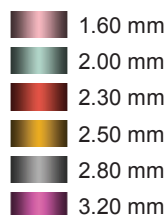
## CGA8(4532) [EIA CC1812]

### 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



## Capacitance Range Chart

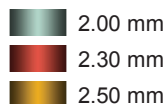
## CGA9(5750) [EIA CC2220]

### 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





## 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   |                        |
| 22 nF       | 2012 | 1.25 ± 0.20    | ± 5%                  | CGA4J2C0G1H223J125AA   |                        |
|             | 3216 | 0.60 ± 0.15    | ± 5%                  | CGA5C2C0G1H223J060AA   |                        |
|             | 3225 | 1.25 ± 0.20    | ± 5%                  | CGA6J2C0G1H223J125AA   |                        |
| 33 nF       | 2012 | 1.25 ± 0.20    | ± 5%                  | CGA4J2C0G1H333J125AA   |                        |
|             | 3216 | 0.85 ± 0.15    | ± 5%                  | CGA5F2C0G1H333J085AA   |                        |
|             | 3225 | 1.60 ± 0.20    | ± 5%                  | CGA6L2C0G1H333J160AA   |                        |
| 47 nF       | 3216 | 1.15 ± 0.15    | ± 5%                  | CGA5H2C0G1H473J115AA   |                        |
|             | 3225 | 2.00 ± 0.20    | ± 5%                  | CGA6M2C0G1H473J200AA   |                        |
|             | 4532 | 1.60 ± 0.20    | ± 5%                  | CGA8L2C0G1H473J160KA   |                        |
| 68 nF       | 3216 | 1.60 ± 0.20    | ± 5%                  | CGA5L2C0G1H683J160AA   |                        |
|             | 3225 | 2.00 ± 0.20    | ± 5%                  | CGA6M2C0G1H683J200AA   |                        |
|             | 4532 | 1.60 ± 0.20    | ± 5%                  | CGA8L2C0G1H683J160KA   |                        |
| 100 nF      | 3216 | 1.60 ± 0.20    | ± 5%                  | CGA5L2C0G1H104J160AA   |                        |
|             | 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   |                        |
| 220 nF      | 2012 | 1.25 ± 0.20    | ± 10%                 | CGA4J2X5R1H154K125AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA4J2X5R1H154M125AA   |                        |                        |                        |
|             | 1005 | 0.50 ± 0.05    | ± 10%                 |                        |                        |                        | CGA2B1X5R1C224K050BC   |
|             |      |                | ± 20%                 |                        |                        |                        | CGA2B1X5R1C224M050BC   |
|             | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E3X5R1H224K080AB   | CGA3E3X5R1V224K080AB   | CGA3E2X5R1E224K080AA   | CGA3E2X5R1C224K080AA   |
|             |      |                | ± 20%                 | CGA3E3X5R1H224M080AB   | CGA3E3X5R1V224M080AB   | CGA3E2X5R1E224M080AA   | CGA3E2X5R1C224M080AA   |
| 330 nF      | 2012 | 1.25 ± 0.20    | ± 10%                 | CGA4J2X5R1H224K125AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA4J2X5R1H224M125AA   |                        |                        |                        |
|             | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E3X5R1H334K080AB   | CGA3E3X5R1V334K080AB   | CGA3E3X5R1E334K080AB   | CGA3E2X5R1C334K080AA   |
|             |      |                | ± 20%                 | CGA3E3X5R1H334M080AB   | CGA3E3X5R1V334M080AB   | CGA3E3X5R1E334M080AB   | CGA3E2X5R1C334M080AA   |
| 330 nF      | 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   |
| 2.2 µF      | 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   |                        |                        |                        |
| 1.5 nF      | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E2X7R1H102K080AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA3E2X7R1H102M080AA   |                        |                        |                        |
|             | 0603 | 0.30 ± 0.03    | ± 10%                 |                        |                        | CGA1A2X7R1E152K030BA   | CGA1A2X7R1C152K030BA   |
|             |      |                | ± 20%                 |                        |                        | CGA1A2X7R1E152M030BA   | CGA1A2X7R1C152M030BA   |
| 2.2 nF      | 1005 | 0.50 ± 0.05    | ± 10%                 | CGA2B2X7R1H152K050BA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA2B2X7R1H152M050BA   |                        |                        |                        |
|             | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E2X7R1H152K080AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA3E2X7R1H152M080AA   |                        |                        |                        |
| 3.3 nF      | 0603 | 0.30 ± 0.03    | ± 10%                 |                        |                        | CGA1A2X7R1E222K030BA   | CGA1A2X7R1C222K030BA   |
|             |      |                | ± 20%                 |                        |                        | CGA1A2X7R1E222M030BA   | CGA1A2X7R1C222M030BA   |
|             | 1005 | 0.50 ± 0.05    | ± 10%                 | CGA2B2X7R1H222K050BA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA2B2X7R1H222M050BA   |                        |                        |                        |
| 4.7 nF      | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E2X7R1H222K080AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA3E2X7R1H222M080AA   |                        |                        |                        |
|             | 0603 | 0.30 ± 0.03    | ± 10%                 |                        |                        | CGA1A2X7R1E332K030BA   | CGA1A2X7R1C332K030BA   |
|             |      |                | ± 20%                 |                        |                        | CGA1A2X7R1E332M030BA   | CGA1A2X7R1C332M030BA   |
| 6.8 nF      | 1005 | 0.50 ± 0.05    | ± 10%                 | CGA2B2X7R1H332K050BA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA2B2X7R1H332M050BA   |                        |                        |                        |
|             | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E2X7R1H332K080AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA3E2X7R1H332M080AA   |                        |                        |                        |
| 10 nF       | 0603 | 0.30 ± 0.03    | ± 10%                 |                        |                        |                        | CGA1A2X7R1C472K030BA   |
|             |      |                | ± 20%                 |                        |                        |                        | CGA1A2X7R1C472M030BA   |
|             | 1005 | 0.50 ± 0.05    | ± 10%                 | CGA2B2X7R1H472K050BA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA2B2X7R1H472M050BA   |                        |                        |                        |
| 10 nF       | 1608 | 0.80 ± 0.10    | ± 10%                 | CGA3E2X7R1H472K080AA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA3E2X7R1H472M080AA   |                        |                        |                        |
| 10 nF       | 0603 | 0.30 ± 0.03    | ± 10%                 |                        |                        |                        | CGA1A2X7R1C682K030BA   |
|             |      |                | ± 20%                 |                        |                        |                        | CGA1A2X7R1C682M030BA   |
|             | 1005 | 0.50 ± 0.05    | ± 10%                 | CGA2B2X7R1H682K050BA   |                        |                        |                        |
|             |      |                | ± 20%                 | CGA2B2X7R1H682M050BA   |                        |                        |                        |
| 10 nF       | 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      | 2012 | 1.25 ± 0.20      | ± 10%                 | CGA4J2X7R1H104K125AA   |                        |                        |                        |
|             |      |                  | ± 20%                 | CGA4J2X7R1H104M125AA   |                        |                        |                        |
|             | 1005 | 0.50 ± 0.05      | ± 10%                 |                        | CGA2B1X7R1V154K050BC   | CGA2B3X7R1E154K050BB   | CGA2B2X7R1C154K050BA   |
|             |      |                  | ± 20%                 |                        | CGA2B1X7R1V154M050BC   | CGA2B3X7R1E154M050BB   | CGA2B2X7R1C154M050BA   |
| 220 nF      | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA3E3X7R1H154K080AB   | CGA3E3X7R1V154K080AB   | CGA3E2X7R1E154K080AA   |                        |
|             |      |                  | ± 20%                 | CGA3E3X7R1H154M080AB   | CGA3E3X7R1V154M080AB   | CGA3E2X7R1E154M080AA   |                        |
|             | 2012 | 1.25 ± 0.20      | ± 10%                 | CGA4J2X7R1H154K125AA   |                        |                        |                        |
|             |      |                  | ± 20%                 | CGA4J2X7R1H154M125AA   |                        |                        |                        |
| 330 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   |
| 470 nF      | 2012 | 1.25 ± 0.20      | ± 10%                 | CGA4J3X7R1H224K125AA   |                        | CGA4J2X7R1E224K125AA   |                        |
|             |      |                  | ± 20%                 | CGA4J3X7R1H224M125AA   |                        |                        |                        |
|             | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA3E3X7R1H334K080AB   | CGA3E1X7R1V334K080AC   | CGA3E3X7R1E334K080AB   | CGA3E1X7R1C334K080AC   |
|             |      |                  | ± 20%                 | CGA3E3X7R1H334M080AB   | CGA3E1X7R1V334M080AC   | CGA3E3X7R1E334M080AB   | CGA3E1X7R1C334M080AC   |
| 680 nF      | 2012 | 1.25 ± 0.20      | ± 10%                 | CGA4J3X7R1H334K125AA   |                        |                        |                        |
|             |      |                  | ± 20%                 | CGA4J3X7R1H334M125AA   |                        |                        |                        |
|             | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA3E3X7R1H474K080AB   | CGA3E1X7R1V474K080AC   | CGA3E3X7R1E474K080AB   | CGA3E1X7R1C474K080AC   |
|             |      |                  | ± 20%                 | CGA3E3X7R1H474M080AB   | CGA3E1X7R1V474M080AC   | CGA3E3X7R1E474M080AB   | CGA3E1X7R1C474M080AC   |
| 1 µF        | 3216 | 1.60 +0.30/-0.10 | ± 10%                 | CGA4J3X7R1H474K125AB   | CGA4J3X7R1V474K125AB   | CGA4J2X7R1E474K125AA   | CGA4J2X7R1C474K125AA   |
|             |      |                  | ± 20%                 | CGA4J3X7R1H474M125AB   | CGA4J3X7R1V474M125AB   | CGA4J2X7R1E474M125AA   |                        |
|             | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA5L2X7R1H474K160AA   |                        |                        |                        |
|             |      |                  | ± 20%                 | CGA5L2X7R1H474M160AA   |                        |                        |                        |
| 3.3 µF      | 2012 | 1.25 ± 0.20      | ± 10%                 | CGA4J3X7R1H684K125AB   | CGA4J3X7R1V684K125AB   | CGA4J3X7R1E684K125AB   | CGA4J2X7R1C684K125AA   |
|             |      |                  | ± 20%                 | CGA4J3X7R1H684M125AB   | CGA4J3X7R1V684M125AB   | CGA4J3X7R1E684M125AB   | CGA4J2X7R1C684M125AA   |
|             | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA3E1X7R1V105K080AC   | CGA3E1X7R1V105K080AC   | CGA3E1X7R1E105K080AC   | CGA3E1X7R1C105K080AC   |
|             |      |                  | ± 20%                 | CGA3E1X7R1V105M080AC   | CGA3E1X7R1V105M080AC   | CGA3E1X7R1E105M080AC   | CGA3E1X7R1C105M080AC   |
| 10 µF       | 3216 | 1.60 +0.30/-0.10 | ± 10%                 | CGA4J3X7R1H105K125AB   | CGA4J3X7R1V105K125AB   | CGA4J3X7R1E105K125AB   | CGA4J2X7R1C105K125AA   |
|             |      |                  | ± 20%                 | CGA4J3X7R1H105M125AB   | CGA4J3X7R1V105M125AB   | CGA4J3X7R1E105M125AB   | CGA4J2X7R1C105M125AA   |
|             | 1608 | 0.80 ± 0.10      | ± 10%                 | CGA5L3X7R1H105K160AB   |                        | CGA5L2X7R1E105K160AA   |                        |
|             |      |                  | ± 20%                 | CGA5L3X7R1H105M160AB   |                        | CGA5L2X7R1E105M160AA   |                        |
| 22 µF       | 3225 | 1.60 ± 0.20      | ± 10%                 | CGA6L2X7R1H105K160AA   |                        |                        |                        |
|             |      |                  | ± 20%                 | CGA6L2X7R1H105M160AA   |                        |                        |                        |



## Capacitance Range Table

### Class 2 (Temperature Stable)

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

| Capacitance | Size             | Thickness<br>(mm) | Capacitance<br>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      | 4532             | 1.60 ± 0.20       | ± 10%                    | CGA8L2X7R1H155K160KA   |                        |                        |                        |
|             | 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   |                        |                        |                        |
|             | 3216             | 1.60 +0.30/-0.10  | ± 10%                    |                        | CGA5L1X7R1V335K160AC   | CGA5L1X7R1E335K160AC   |                        |
|             |                  |                   | ± 20%                    |                        | CGA5L1X7R1V335M160AC   | CGA5L1X7R1E335M160AC   |                        |
| 3225        | 2.50 ± 0.30      | ± 10%             | CGA6P3X7R1H335K250AB     |                        |                        |                        |                        |
|             |                  | ± 20%             | CGA6P3X7R1H335M250AB     |                        |                        |                        |                        |
| 4.7 µF      | 4532             | 2.00 ± 0.20       | ± 10%                    | CGA8M2X7R1H335K200KA   |                        |                        |                        |
|             |                  |                   | ± 20%                    |                        |                        |                        |                        |
|             | 2012             | 1.25 ± 0.20       | ± 10%                    |                        | CGA4J1X7R1V475K125AC   | CGA4J1X7R1E475K125AC   | CGA4J3X7R1C475K125AB   |
|             |                  |                   | ± 20%                    |                        | CGA4J1X7R1V475M125AC   | CGA4J1X7R1E475M125AC   | CGA4J3X7R1C475M125AB   |
|             | 3216             | 1.60 ± 0.20       | ± 10%                    | CGA5L3X7R1H475K160AB   |                        |                        |                        |
|             |                  |                   | ± 20%                    | CGA5L3X7R1H475M160AB   |                        |                        |                        |
| 3216        | 1.60 +0.30/-0.10 | ± 10%             |                          | CGA5L1X7R1V475K160AC   | CGA5L1X7R1E475K160AC   | CGA5L3X7R1C475K160AB   |                        |
|             |                  | ± 20%             |                          | CGA5L1X7R1V475M160AC   | CGA5L1X7R1E475M160AC   | CGA5L3X7R1C475M160AB   |                        |
| 6.8 µF      | 3225             | 2.50 ± 0.30       | ± 10%                    | CGA6P3X7R1H475K250AB   |                        |                        |                        |
|             |                  |                   | ± 20%                    | CGA6P3X7R1H475M250AB   |                        |                        |                        |
|             | 4532             | 1.60 ± 0.20       | ± 10%                    |                        |                        | CGA8L2X7R1E475K160KA   |                        |
|             |                  |                   | ± 20%                    |                        |                        | CGA8L2X7R1E475M160KA   |                        |
|             | 5750             | 2.00 ± 0.20       | ± 10%                    | CGA8M3X7R1H475K200KB   |                        |                        |                        |
|             |                  |                   | ± 20%                    | CGA9M2X7R1H475K200KA   |                        |                        |                        |
| 10 µF       | 3216             | 1.60 ± 0.20       | ± 10%                    |                        | CGA5L1X7R1V685K160AC   |                        |                        |
|             |                  |                   | ± 20%                    |                        | CGA5L1X7R1V685M160AC   |                        |                        |
|             | 3216             | 1.60 +0.30/-0.10  | ± 10%                    |                        |                        | CGA5L1X7R1E685K160AC   | CGA5L1X7R1C685K160AC   |
|             |                  |                   | ± 20%                    |                        |                        | CGA5L1X7R1E685M160AC   | CGA5L1X7R1C685M160AC   |
|             | 3225             | 2.50 ± 0.30       | ± 10%                    |                        |                        | CGA6P3X7R1E685K250AB   |                        |
|             |                  |                   | ± 20%                    |                        |                        | CGA6P3X7R1E685M250AB   |                        |
| 4532        | 2.50 ± 0.20      | ± 10%             | CGA8P3X7R1H685K250KB     |                        |                        |                        |                        |
|             |                  | ± 20%             | CGA9P2X7R1H685K250KA     |                        |                        |                        |                        |
| 15 µF       | 3216             | 1.60 ± 0.20       | ± 10%                    |                        | CGA5L1X7R1V106K160AC   |                        |                        |
|             |                  |                   | ± 20%                    |                        | CGA5L1X7R1V106M160AC   |                        |                        |
|             | 3216             | 1.60 +0.30/-0.10  | ± 10%                    |                        |                        | CGA5L1X7R1E106K160AC   | CGA5L1X7R1C106K160AC   |
|             |                  |                   | ± 20%                    |                        |                        | CGA5L1X7R1E106M160AC   | CGA5L1X7R1C106M160AC   |
|             | 3225             | 2.00 ± 0.20       | ± 10%                    |                        |                        |                        | CGA6M3X7R1C106K200AB   |
|             |                  |                   | ± 20%                    |                        |                        |                        | CGA6M3X7R1C106M200AB   |
| 3225        | 2.50 ± 0.30      | ± 10%             |                          |                        | CGA6P1X7R1E106K250AC   |                        |                        |
|             |                  | ± 20%             |                          |                        | CGA6P1X7R1E106M250AC   |                        |                        |
| 4532        | 2.50 ± 0.20      | ± 10%             |                          | CGA8P2X7R1E106K250KA   |                        |                        |                        |
|             |                  | ± 20%             |                          | CGA9M2X7R1E106M200KA   |                        |                        |                        |
| 22 µF       | 3225             | 2.50 ± 0.30       | ± 10%                    | CGA9N3X7R1H106K230KB   |                        |                        |                        |
|             |                  |                   | ± 20%                    |                        |                        |                        | CGA6P3X7R1C156M250AB   |
|             | 4532             | 2.80 ± 0.30       | ± 20%                    |                        |                        | CGA8Q3X7R1E156M280KB   |                        |
| ± 20%       |                  |                   |                          |                        | CGA9N2X7R1E156M230KA   |                        |                        |
| 33 µF       | 3225             | 2.50 ± 0.30       | ± 20%                    |                        |                        |                        | CGA6P1X7R1C226M250AC   |
|             |                  |                   | ± 20%                    |                        |                        |                        | CGA8N3X7R1C226M230KB   |
|             | 4532             | 2.30 ± 0.20       | ± 20%                    |                        |                        | CGA8P1X7R1E226M250KC   |                        |
| ± 20%       |                  |                   |                          |                        | CGA9P2X7R1E226M250KA   |                        |                        |
| 47 µF       | 5750             | 2.50 ± 0.20       | ± 20%                    |                        |                        |                        | CGA8P1X7R1C336M250KC   |
|             |                  |                   | ± 20%                    |                        |                        |                        | CGA9N3X7R1C476M230KC   |



## 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%                 | <a href="#">CGA1A2X7R1A103K030BA</a> | <a href="#">CGA1A2X7R0J103K030BA</a> |
|             |      |                  | ± 20%                 | <a href="#">CGA1A2X7R1A103M030BA</a> | <a href="#">CGA1A2X7R0J103M030BA</a> |
| 150 nF      | 1005 | 0.50 ± 0.05      | ± 10%                 | <a href="#">CGA2B1X7R1A154K050BC</a> | <a href="#">CGA2B3X7R0J154K050BB</a> |
|             |      |                  | ± 20%                 | <a href="#">CGA2B1X7R1A154M050BC</a> | <a href="#">CGA2B3X7R0J154M050BB</a> |
| 220 nF      | 1005 | 0.50 ± 0.05      | ± 10%                 | <a href="#">CGA2B1X7R1A224K050BC</a> | <a href="#">CGA2B3X7R0J224K050BB</a> |
|             |      |                  | ± 20%                 | <a href="#">CGA2B1X7R1A224M050BC</a> | <a href="#">CGA2B3X7R0J224M050BB</a> |
| 1.5 µF      | 1608 | 0.80 ± 0.10      | ± 10%                 |                                      | <a href="#">CGA3E1X7R0J155K080AC</a> |
|             |      |                  | ± 20%                 |                                      | <a href="#">CGA3E1X7R0J155M080AC</a> |
| 2.2 µF      | 1608 | 0.80 ± 0.10      | ± 10%                 |                                      | <a href="#">CGA3E1X7R0J225K080AC</a> |
|             |      |                  | ± 20%                 |                                      | <a href="#">CGA3E1X7R0J225M080AC</a> |
| 3.3 µF      | 2012 | 1.25 ± 0.20      | ± 10%                 | <a href="#">CGA4J3X7R1A335K125AB</a> |                                      |
| 4.7 µF      | 2012 | 1.25 ± 0.20      | ± 10%                 | <a href="#">CGA4J3X7R1A475K125AB</a> |                                      |
| 6.8 µF      | 2012 | 1.25 ± 0.20      | ± 10%                 |                                      | <a href="#">CGA4J1X7R0J685K125AC</a> |
|             |      |                  | ± 20%                 |                                      | <a href="#">CGA4J1X7R0J685M125AC</a> |
| 10 µF       | 2012 | 1.25 ± 0.20      | ± 10%                 |                                      | <a href="#">CGA4J1X7R0J106K125AC</a> |
|             |      |                  | ± 20%                 |                                      | <a href="#">CGA4J1X7R0J106M125AC</a> |
| 22 µF       | 3216 | 1.60 +0.30/-0.10 | ± 20%                 | <a href="#">CGA5L1X7R0J226M160AC</a> |                                      |

### 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%                 |                                      | <a href="#">CGA2B1X7S1C334K050BC</a> | <a href="#">CGA2B3X7S1A334K050BB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA2B1X7S1C334M050BC</a> | <a href="#">CGA2B3X7S1A334M050BB</a> |                                      |
| 470 nF      | 1005 | 0.50 ± 0.05    | ± 10%                 |                                      | <a href="#">CGA2B1X7S1C474K050BC</a> | <a href="#">CGA2B3X7S1A474K050BB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA2B1X7S1C474M050BC</a> | <a href="#">CGA2B3X7S1A474M050BB</a> |                                      |
| 1.5 µF      | 1608 | 0.80 ± 0.10    | ± 10%                 |                                      | <a href="#">CGA3E1X7S1C155K080AC</a> | <a href="#">CGA3E3X7S1A155K080AB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA3E1X7S1C155M080AC</a> | <a href="#">CGA3E3X7S1A155M080AB</a> |                                      |
| 2.2 µF      | 1608 | 0.80 ± 0.10    | ± 10%                 |                                      | <a href="#">CGA3E1X7S1C225K080AC</a> | <a href="#">CGA3E3X7S1A225K080AB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA3E1X7S1C225M080AC</a> | <a href="#">CGA3E3X7S1A225M080AB</a> |                                      |
| 4.7 µF      | 3225 | 2.30 ± 0.20    | ± 10%                 | <a href="#">CGA6N3X7S1H475K230AB</a> |                                      |                                      |                                      |
| 6.8 µF      | 2012 | 1.25 ± 0.20    | ± 10%                 |                                      | <a href="#">CGA4J1X7S1C685K125AC</a> | <a href="#">CGA4J3X7S1A685K125AB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA4J1X7S1C685M125AC</a> | <a href="#">CGA4J3X7S1A685M125AB</a> |                                      |
|             | 3225 | 2.50 ± 0.30    | ± 10%                 | <a href="#">CGA6P3X7S1H685K250AB</a> |                                      |                                      |                                      |
|             |      |                | ± 20%                 | <a href="#">CGA6P3X7S1H685M250AB</a> |                                      |                                      |                                      |
| 10 µF       | 2012 | 1.25 ± 0.20    | ± 10%                 |                                      | <a href="#">CGA4J1X7S1C106K125AC</a> | <a href="#">CGA4J3X7S1A106K125AB</a> |                                      |
|             |      |                | ± 20%                 |                                      | <a href="#">CGA4J1X7S1C106M125AC</a> | <a href="#">CGA4J3X7S1A106M125AB</a> |                                      |
|             | 3225 | 2.50 ± 0.30    | ± 10%                 | <a href="#">CGA6P3X7S1H106K250AB</a> |                                      |                                      |                                      |
|             |      |                | ± 20%                 | <a href="#">CGA6P3X7S1H106M250AB</a> |                                      |                                      |                                      |
| 33 µF       | 3225 | 2.50 ± 0.30    | ± 20%                 |                                      |                                      |                                      | <a href="#">CGA6P1X7S0J336M250AC</a> |
| 47 µF       | 3225 | 2.50 ± 0.30    | ± 20%                 |                                      |                                      |                                      | <a href="#">CGA6P1X7S0J476M250AC</a> |