

# Types GE, GH, GM, GP Disc Ceramic Capacitors

## General Purpose Capacitors



Type G general purpose disc ceramic capacitors are an ideal choice for low cost, small size and low to high DC voltage, general purpose, coupling, by-pass and filtering applications.

### Highlights

- Small size
- Conformally coated
- Radial leads
- General purpose
- Long leads

## Specifications

|                                     |   |
|-------------------------------------|---|
| <b>Capacitance Range:</b>           | 5 pF to 22,000 pF                         |
| <b>Voltage Range:</b>               | 50, 100, 500, 1,000 Vdc                   |
| <b>Tolerance:</b>                   | See ratings tables                        |
| <b>Operating Temperature Range:</b> | -30 °C to +85 °C                          |
| <b>Insulation Resistance:</b>       | 10,000 MΩ minimum                         |
| <b>Dissipation Factor:</b>          | 2.5% max. @ 1 kHz; Y5U: 4% @ 1kHz         |
| <b>Breakdown Voltage:</b>           | 2.5 x rated voltage for 5 seconds maximum |
| <b>Lead Length:</b>                 | 1.0 inch minimum                          |

## RoHS Compliant

## Ratings

| Cap<br>(pF)    | Catalog<br>Part Number | Tol.<br>(±) | Temp.<br>Coef. | Size<br>(Inches) |      |      |      | Size<br>(Millimeters) |     |     |    |
|----------------|------------------------|-------------|----------------|------------------|------|------|------|-----------------------|-----|-----|----|
|                |                        |             |                | D                | T    | S    | d    | D                     | T   | S   | d  |
| <b>50 Vdc</b>  |                        |             |                |                  |      |      |      |                       |     |     |    |
| 5              | GE050C *               | .25pF       | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 10             | GE100D *               | .5pF        | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 20             | GE200K *               | 10%         | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 27             | GE270K *               | 10%         | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 33             | GE330K                 | 10%         | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 68             | GE680K *               | 10%         | SL             | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 100            | GE101K                 | 10%         | Y5P            | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 330            | GE331K *               | 10%         | Y5P            | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 470            | GE471K *               | 10%         | Y5P            | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 680            | GE681K *               | 10%         | Y5P            | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 1,000          | GE102K                 | 10%         | Y5P            | .197             | .118 | .098 | .016 | 5.0                   | 3.0 | 2.5 | .4 |
| 1,000          | GE102M *               | 20%         | Y5T            | .157             | .118 | .098 | .016 | 4.0                   | 3.0 | 2.5 | .4 |
| 1,500          | GE152K *               | 10%         | Y5P            | .197             | .118 | .098 | .016 | 5.0                   | 3.0 | 2.5 | .4 |
| 10,000         | GE103K *               | 10%         | Y5P            | .472             | .118 | .197 | .020 | 12.0                  | 3.0 | 5.0 | .5 |
| 10,000         | GE103M *               | 20%         | Y5U            | .315             | .118 | .197 | .020 | 8.0                   | 3.0 | 5.0 | .5 |
| <b>100 Vdc</b> |                        |             |                |                  |      |      |      |                       |     |     |    |
| 2,200          | GH222M *               | 20%         | Y5U            | .236             | .118 | .252 | .025 | 6.0                   | 3.0 | 6.4 | .6 |
| 10,000         | GH103M *               | 20%         | Y5U            | .374             | .118 | .252 | .025 | 9.5                   | 3.0 | 6.4 | .6 |

| Cap<br>(pF)    | Catalog<br>Part Number | Tol.<br>(±) | Temp.<br>Coef. | Size<br>(Inches) |      |      |      | Size<br>(Millimeters) |     |     |    |
|----------------|------------------------|-------------|----------------|------------------|------|------|------|-----------------------|-----|-----|----|
|                |                        |             |                | D                | T    | S    | d    | D                     | T   | S   | d  |
| <b>500 Vdc</b> |                        |             |                |                  |      |      |      |                       |     |     |    |
| 15             | GM150K *               | 10%         | SL             | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 100            | GM101K                 | 10%         | Y5P            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 330            | GM331K                 | 10%         | Y5P            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 470            | GM471K *               | 10%         | Y5P            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 680            | GM681K *               | 10%         | Y5P            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 1,000          | GM102K                 | 10%         | Y5P            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 1,000          | GM102M *               | 20%         | Y5U            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 1,000          | GM102Z *               | -20+80      | Y5U            | .236             | .157 | .252 | .025 | 6.0                   | 4.0 | 6.4 | .6 |
| 2,200          | GM222K *               | 10%         | Y5P            | .339             | .157 | .250 | .025 | 8.6                   | 4.0 | 6.4 | .6 |
| 3,300          | GM332M *               | 20%         | Y5U            | .291             | .157 | .252 | .025 | 7.4                   | 4.0 | 6.4 | .6 |
| 4,700          | GM472K *               | 10%         | Y5P            | .492             | .157 | .252 | .025 | 12.5                  | 4.0 | 6.4 | .6 |
| 4,700          | GM472M *               | 20%         | Y5U            | .339             | .157 | .252 | .025 | 8.6                   | 4.0 | 6.4 | .6 |
| 10,000         | GM103K                 | 10%         | Y5P            | .642             | .157 | .374 | .025 | 16.3                  | 4.0 | 9.5 | .6 |
| 10,000         | GM103M *               | 20%         | Y5U            | .492             | .157 | .252 | .025 | 12.5                  | 4.0 | 6.4 | .6 |
| 10,000         | GM103Z *               | -20+80      | Y5U            | .492             | .157 | .252 | .025 | 12.5                  | 4.0 | 6.4 | .6 |
| 22,000         | GM223M                 | 20%         | Y5U            | .642             | .157 | .374 | .025 | 16.3                  | 4.0 | 9.5 | .6 |
| 22,000         | GM223Z                 | -20+80      | Y5U            | .642             | .157 | .374 | .025 | 16.3                  | 4.0 | 9.5 | .6 |

\* Available only until stock is depleted

# Types GE, GH, GM, GP Disc Ceramic Capacitors

## Ratings

## RoHS Compliant

| Cap (pF)        | Catalog Part Number | Tol. (±) | Temp. Coef. | Size (Inches) |      |      |      | Size (Millimeters) |     |     |    |
|-----------------|---------------------|----------|-------------|---------------|------|------|------|--------------------|-----|-----|----|
| <b>1000 Vdc</b> |                     |          |             |               |      |      |      |                    |     |     |    |
| 22              | GP422               | 10%      | SL          | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 27              | GP427 *             | 10%      | SL          | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 30              | GP430 *             | 10%      | SL          | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 47              | GP447               | 10%      | SL          | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 100             | GP310               | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 220             | GP322               | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 270             | GP327 *             | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 330             | GP333 *             | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |

  

| Cap (pF)        | Catalog Part Number | Tol. (±) | Temp. Coef. | Size (Inches) |      |      |      | Size (Millimeters) |     |     |    |
|-----------------|---------------------|----------|-------------|---------------|------|------|------|--------------------|-----|-----|----|
| <b>1000 Vdc</b> |                     |          |             |               |      |      |      |                    |     |     |    |
| 470             | GP347 *             | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 560             | GP356 *             | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 680             | GP368 *             | 10%      | Y5P         | .236          | .177 | .252 | .025 | 6.0                | 4.5 | 6.4 | .6 |
| 1,000           | GP210               | 10%      | Y5P         | .291          | .177 | .252 | .025 | 7.4                | 4.5 | 6.4 | .6 |
| 2,200           | GP222               | 10%      | Y5P         | .374          | .177 | .252 | .025 | 9.5                | 4.5 | 6.4 | .6 |
| 4,700           | GP247               | 20%      | Y5U         | .433          | .177 | .252 | .025 | 11.0               | 4.5 | 6.4 | .6 |
| 6,800           | GP268P *            | 10%      | Y5P         | .669          | .177 | .374 | .025 | 17.0               | 4.5 | 9.5 | .6 |
| 10,000          | GP110               | 20%      | Y5U         | .591          | .177 | .374 | .025 | 15.0               | 4.5 | 9.5 | .6 |
| 22,000          | GP122 *             | 20%      | Y5U         | .748          | .177 | .374 | .025 | 19.0               | 4.5 | 9.5 | .6 |

\* Available only until stock is depleted

### EIA TEMPERATURE COEFFICIENT CODES

A combination of characters designating capacitance drift over a temperature range.  
Example: Y5E could change ±4.7% over a temperature range of -30°C to +85°C.

| Letter Symbol | Low Temp Requirement | Number Symbol | High Temp Requirement | Letter Symbol | Maximum Capacitance Change Over Temp Rating |
|---------------|----------------------|---------------|-----------------------|---------------|---|
| X             | -55°C                | 2             | +45°C                 | A             | ±1.0%                                       |
| Y             | -30°C                | 4             | +65°C                 | B             | ±1.5%                                       |
| Z             | +10°C                | 5             | +85°C                 | C             | ±2.2%                                       |
|               |                      | 6             | +105°C                | D             | ±3.3%                                       |
|               |                      | 7             | +125°C                | E             | ±4.7%                                       |
|               |                      |               |                       | F             | ±7.5%                                       |
|               |                      |               |                       | P             | ±10.0%                                      |
|               |                      |               |                       | R             | ±15.0%                                      |
|               |                      |               |                       | S             | ±22.0%                                      |
|               |                      |               |                       | T             | +22%, -33%                                  |
|               |                      |               |                       | U             | +22%, -56%                                  |
|               |                      |               |                       | V             | +22%, -82%                                  |

### TEMPERATURE COEFFICIENT CODES

| Temperature Range -55°C +125°C | % Change Per 1°C |
|--------------------------------|------------------|
| NPO-(COG)                      | ±30ppm           |
| N330                           | -330ppm          |
| N470                           | -470ppm          |
| N750                           | -750ppm          |
| N1000                          | -1000ppm         |
| N1500                          | -1500ppm         |
| N2200                          | -2200ppm         |
| N3300                          | -3300ppm         |
| N4700                          | -4700ppm         |
| N5600                          | -5600ppm         |
| SL                             | -750, +100ppm    |

### Physical Specifications

Case: Conformal Coating

Lead material: Tinned copper wire. (Minimum lead content: 5%)

#### Tape and Reel Available upon Request

Leads are formed to .200 (5.0mm) lead spacing  
For D less than .315 (8.0mm) - Quantity/Reel = 2500 pcs  
For D .315 (8.0mm) to .472 (12.0mm) - Quantity/Reel = 2000 pcs  
Tape and Reel not available for D greater than .472 (12mm)

