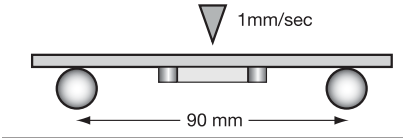


# C0G (NP0) Dielectric

## Specifications and Test Methods



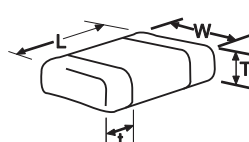
| Parameter/Test                       |                          | NP0 Specification Limits                                                                            | Measuring Conditions                                                                                                                                                                                                                            |                    |
|--------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Operating Temperature Range          |                          | -55°C to +125°C                                                                                     | Temperature Cycle Chamber                                                                                                                                                                                                                       |                    |
| Capacitance                          |                          | Within specified tolerance                                                                          | Freq.: 1.0 MHz $\pm$ 10% for cap $\leq$ 1000 pF<br>1.0 kHz $\pm$ 10% for cap > 1000 pF<br>Voltage: 1.0Vrms $\pm$ .2V                                                                                                                            |                    |
| Q                                    |                          | <30 pF: Q $\geq$ 400+20 x Cap Value<br>$\geq$ 30 pF: Q $\geq$ 1000                                  |                                                                                                                                                                                                                                                 |                    |
| Insulation Resistance                |                          | 100,000M $\Omega$ or 1000M $\Omega$ - $\mu$ F,<br>whichever is less                                 | Charge device with rated voltage for<br>60 $\pm$ 5 secs @ room temp/humidity                                                                                                                                                                    |                    |
| Dielectric Strength                  |                          | No breakdown or visual defects                                                                      | Charge device with 250% of rated voltage for<br>1-5 seconds, w/charge and discharge current<br>limited to 50 mA (max)<br>Note: Charge device with 150% of rated<br>voltage for 500V devices.                                                    |                    |
| Resistance to<br>Flexure<br>Stresses | Appearance               | No defects                                                                                          | Deflection: 2mm<br>Test Time: 30 seconds<br>                                                                                                                 |                    |
|                                      | Capacitance<br>Variation | $\pm$ 5% or $\pm$ 5 pF, whichever is greater                                                        |                                                                                                                                                                                                                                                 |                    |
|                                      | Q                        | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |
|                                      | Insulation<br>Resistance | $\geq$ Initial Value x 0.3                                                                          |                                                                                                                                                                                                                                                 |                    |
| Solderability                        |                          | $\geq$ 95% of each terminal should be covered<br>with fresh solder                                  | Dip device in eutectic solder at 230 $\pm$ 5°C<br>for 5.0 $\pm$ 0.5 seconds                                                                                                                                                                     |                    |
| Resistance to<br>Solder Heat         | Appearance               | No defects, <25% leaching of either end terminal                                                    | Dip device in eutectic solder at 260°C for 60sec-<br>onds. Store at room temperature for 24 $\pm$ 2hours<br>before measuring electrical properties.                                                                                             |                    |
|                                      | Capacitance<br>Variation | $\leq$ $\pm$ 2.5% or $\pm$ .25 pF, whichever is greater                                             |                                                                                                                                                                                                                                                 |                    |
|                                      | Q                        | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |
|                                      | Insulation<br>Resistance | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |
|                                      | Dielectric<br>Strength   | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |
| Thermal<br>Shock                     | Appearance               | No visual defects                                                                                   | Step 1: -55°C $\pm$ 2°                                                                                                                                                                                                                          | 30 $\pm$ 3 minutes |
|                                      | Capacitance<br>Variation | $\leq$ $\pm$ 2.5% or $\pm$ .25 pF, whichever is greater                                             | Step 2: Room Temp                                                                                                                                                                                                                               | $\leq$ 3 minutes   |
|                                      | Q                        | Meets Initial Values (As Above)                                                                     | Step 3: +125°C $\pm$ 2°                                                                                                                                                                                                                         | 30 $\pm$ 3 minutes |
|                                      | Insulation<br>Resistance | Meets Initial Values (As Above)                                                                     | Step 4: Room Temp                                                                                                                                                                                                                               | $\leq$ 3 minutes   |
|                                      | Dielectric<br>Strength   | Meets Initial Values (As Above)                                                                     | Repeat for 5 cycles and measure after<br>24 hours at room temperature                                                                                                                                                                           |                    |
| Load Life                            | Appearance               | No visual defects                                                                                   | Charge device with twice rated voltage in<br>test chamber set at 125°C $\pm$ 2°C<br>for 1000 hours (+48, -0).<br><br>Remove from test chamber and stabilize at<br>room temperature for 24 hours<br>before measuring.                            |                    |
|                                      | Capacitance<br>Variation | $\leq$ $\pm$ 3.0% or $\pm$ .3 pF, whichever is greater                                              |                                                                                                                                                                                                                                                 |                    |
|                                      | Q<br>(C=Nominal Cap)     | $\geq$ 30 pF: Q $\geq$ 350<br>$\geq$ 10 pF, <30 pF: Q $\geq$ 275 +5C/2<br><10 pF: Q $\geq$ 200 +10C |                                                                                                                                                                                                                                                 |                    |
|                                      | Insulation<br>Resistance | $\geq$ Initial Value x 0.3 (See Above)                                                              |                                                                                                                                                                                                                                                 |                    |
|                                      | Dielectric<br>Strength   | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |
| Load<br>Humidity                     | Appearance               | No visual defects                                                                                   | Store in a test chamber set at 85°C $\pm$ 2°C/<br>85% $\pm$ 5% relative humidity for 1000 hours<br>(+48, -0) with rated voltage applied.<br><br>Remove from chamber and stabilize at room<br>temperature for 24 $\pm$ 2 hours before measuring. |                    |
|                                      | Capacitance<br>Variation | $\leq$ $\pm$ 5.0% or $\pm$ .5 pF, whichever is greater                                              |                                                                                                                                                                                                                                                 |                    |
|                                      | Q                        | $\geq$ 30 pF: Q $\geq$ 350<br>$\geq$ 10 pF, <30 pF: Q $\geq$ 275 +5C/2<br><10 pF: Q $\geq$ 200 +10C |                                                                                                                                                                                                                                                 |                    |
|                                      | Insulation<br>Resistance | $\geq$ Initial Value x 0.3 (See Above)                                                              |                                                                                                                                                                                                                                                 |                    |
|                                      | Dielectric<br>Strength   | Meets Initial Values (As Above)                                                                     |                                                                                                                                                                                                                                                 |                    |

# C0G (NP0) Dielectric

## Capacitance Range



### PREFERRED SIZES ARE SHADED

| SIZE           |                                                                                     | 0101*                           |   | 0201                           |    | 0402                           |    | 0603                           |    |                 |    | 0805                           |     |                 |    |                 | 1206                           |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
|----------------|-------------------------------------------------------------------------------------|---------------------------------|---|--------------------------------|----|--------------------------------|----|--------------------------------|----|-----------------|----|--------------------------------|-----|-----------------|----|-----------------|--------------------------------|-----------------|----|-----------------|----|-----------------|-----|-----------------|--|-----------------|--|-----------------|--|
| Soldering      |                                                                                     | Reflow Only                     |   | Reflow Only                    |    | Reflow/Wave                    |    | Reflow/Wave                    |    |                 |    | Reflow/Wave                    |     |                 |    |                 | Reflow/Wave                    |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| Packaging      |                                                                                     | All Paper                       |   | All Paper                      |    | All Paper                      |    | All Paper                      |    |                 |    | Paper/Embossed                 |     |                 |    |                 | Paper/Embossed                 |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| L) Length      | mm<br>(in.)                                                                         | 0.40 ± 0.02<br>(0.016 ± 0.0008) |   | 0.60 ± 0.09<br>(0.024 ± 0.004) |    | 1.00 ± 0.10<br>(0.040 ± 0.004) |    | 1.60 ± 0.15<br>(0.063 ± 0.006) |    |                 |    | 2.01 ± 0.20<br>(0.079 ± 0.008) |     |                 |    |                 | 3.20 ± 0.20<br>(0.126 ± 0.008) |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| W) Width       | mm<br>(in.)                                                                         | 0.20 ± 0.02<br>(0.008 ± 0.0008) |   | 0.30 ± 0.09<br>(0.011 ± 0.004) |    | 0.50 ± 0.10<br>(0.020 ± 0.004) |    | 0.81 ± 0.15<br>(0.032 ± 0.006) |    |                 |    | 1.25 ± 0.20<br>(0.049 ± 0.008) |     |                 |    |                 | 1.60 ± 0.20<br>(0.063 ± 0.008) |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| t) Terminal    | mm<br>(in.)                                                                         | 0.10 ± 0.04<br>(0.004 ± 0.0016) |   | 0.15 ± 0.05<br>(0.006 ± 0.002) |    | 0.25 ± 0.15<br>(0.010 ± 0.006) |    | 0.35 ± 0.15<br>(0.014 ± 0.006) |    |                 |    | 0.50 ± 0.25<br>(0.020 ± 0.010) |     |                 |    |                 | 0.50 ± 0.25<br>(0.020 ± 0.010) |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| WVDC           |                                                                                     | 16                              |   | 25                             | 50 | 16                             | 25 | 50                             | 16 | 25              | 50 | 100                            | 200 | 16              | 25 | 50              | 100                            | 200             | 16 | 25              | 50 | 100             | 200 | 500             |  |                 |  |                 |  |
| Cap<br>(pF)    | 0.5                                                                                 |                                 | A | A                              | C  | C                              | C  | G                              | G  | G               | G  |                                |     | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
|                | 1.0                                                                                 | B                               | A | A                              | C  | C                              | C  | G                              | G  | G               | G  |                                |     | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
|                | 1.2                                                                                 | B                               | A | A                              | C  | C                              | C  | G                              | G  | G               | G  |                                |     | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
|                | 1.5                                                                                 | B                               | A | A                              | C  | C                              | C  | G                              | G  | G               | G  |                                |     | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 1.8            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 2.2            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 2.7            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 3.3            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 3.9            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 4.7            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 5.6            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 6.8            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 8.2            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 10             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 12             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 15             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 18             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 22             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 27             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 33             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 39             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 47             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 56             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 68             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 82             | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 100            | B                                                                                   | A                               | A | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 120            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 150            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 180            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | J               |  |                 |  |                 |  |
| 220            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  | G                              | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 270            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 330            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 390            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 470            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 560            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | M               |  |                 |  |                 |  |
| 680            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | J   | P               |  |                 |  |                 |  |
| 820            |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | M   |                 |  |                 |  |                 |  |
| 1000           |                                                                                     |                                 |   | C                              | C  | C                              | G  | G                              | G  | G               | G  |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | Q   |                 |  |                 |  |                 |  |
| 1200           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | J               | Q   |                 |  |                 |  |                 |  |
| 1500           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | J   | J               | J  | J               | J                              | J               | J  | J               | J  | M               | Q   |                 |  |                 |  |                 |  |
| 1800           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | J   | J               | J  | N               |                                |                 | J  | J               | M  | M               | Q   |                 |  |                 |  |                 |  |
| 2200           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | N   | N               | N  | N               |                                |                 | J  | J               | M  | M               | Q   |                 |  |                 |  |                 |  |
| 2700           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | J   | N               | N  | N               |                                |                 | J  | J               | M  | P               | Q   |                 |  |                 |  |                 |  |
| 3300           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | P   | P               | P  | N               |                                |                 | J  | J               | M  | P               | Q   |                 |  |                 |  |                 |  |
| 3900           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | P   | P               | P  | N               |                                |                 | J  | J               | M  | P               |     |                 |  |                 |  |                 |  |
| 4700           |                                                                                     |                                 |   |                                |    |                                | G  | G                              | G  | G               |    |                                | P   | P               | P  | N               |                                |                 | J  | J               | M  | P               |     |                 |  |                 |  |                 |  |
| 5600           |  |                                 |   |                                |    |                                |    |                                |    |                 |    |                                | P   | P               | P  |                 |                                | J               | J  | M               | P  |                 |     |                 |  |                 |  |                 |  |
| 6800           |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                | P   | P               | P  |                 |                                | M               | M  | M               | P  |                 |     |                 |  |                 |  |                 |  |
| 8200           |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     | P               | P  | P               |                                |                 | M  | M               | M  | P               |     |                 |  |                 |  |                 |  |
| Cap<br>(µF)    |                                                                                     | 0.010                           |   |                                |    |                                |    |                                |    |                 |    |                                |     | P               | P  | P               |                                |                 | P  | P               | P  | P               |     |                 |  |                 |  |                 |  |
| 0.012          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.015          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.018          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.022          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.027          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.033          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.039          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.047          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.068          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.082          |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| 0.1            |                                                                                     |                                 |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    |                 |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| WVDC           |                                                                                     | 16                              |   | 25                             | 50 | 16                             | 25 | 50                             | 16 | 25              | 50 | 100                            | 200 | 16              | 25 | 50              | 100                            | 200             | 16 | 25              | 50 | 100             | 200 | 500             |  |                 |  |                 |  |
| SIZE           |                                                                                     | 0101*                           |   | 0201                           |    | 0402                           |    | 0603                           |    |                 |    | 0805                           |     |                 |    |                 | 1206                           |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |
| Letter         |                                                                                     | A                               |   | B                              |    | C                              |    | E                              |    | G               |    | J                              |     | K               |    | M               |                                | N               |    | P               |    | Q               |     | X               |  | Y               |  | Z               |  |
| Max. Thickness |                                                                                     | 0.33<br>(0.013)                 |   | 0.22<br>(0.009)                |    | 0.56<br>(0.022)                |    | 0.71<br>(0.028)                |    | 0.90<br>(0.035) |    | 0.94<br>(0.037)                |     | 1.02<br>(0.040) |    | 1.27<br>(0.050) |                                | 1.40<br>(0.055) |    | 1.52<br>(0.060) |    | 1.78<br>(0.070) |     | 2.29<br>(0.090) |  | 2.54<br>(0.100) |  | 2.79<br>(0.110) |  |
|                |                                                                                     | PAPER                           |   |                                |    |                                |    |                                |    |                 |    |                                |     |                 |    | EMBOSS          |                                |                 |    |                 |    |                 |     |                 |  |                 |  |                 |  |

PAPER and EMBOSS available for 01005

# C0G (NP0) Dielectric



## Capacitance Range

### PREFERRED SIZES ARE SHADED

| SIZE           |          | 1210            |                 |                 |                 |                 | 1812            |                 |                 |                 |                 | 1825            |                 |                 |                 | 2220            |     |    |     | 2225            |   |   |  |  |  |
|----------------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|----|-----|-----------------|---|---|--|--|--|
| Soldering      |          | Reflow Only     |                 |                 |                 |                 | Reflow Only     |                 |                 |                 |                 | Reflow Only     |                 |                 |                 | Reflow Only     |     |    |     | Reflow Only     |   |   |  |  |  |
| Packaging      |          | Paper/Embossed  |                 |                 |                 |                 | All Embossed    |                 |                 |                 |                 | All Embossed    |                 |                 |                 | All Embossed    |     |    |     | All Embossed    |   |   |  |  |  |
| (L) Length     | mm       | 3.20 ± 0.20     |                 |                 |                 |                 | 4.50 ± 0.30     |                 |                 |                 |                 | 4.50 ± 0.30     |                 |                 |                 | 5.70 ± 0.40     |     |    |     | 5.72 ± 0.25     |   |   |  |  |  |
|                | (in.)    | (0.126 ± 0.008) |                 |                 |                 |                 | (0.177 ± 0.012) |                 |                 |                 |                 | (0.177 ± 0.012) |                 |                 |                 | (0.225 ± 0.016) |     |    |     | (0.225 ± 0.010) |   |   |  |  |  |
| (W) Width      | mm       | 2.50 ± 0.20     |                 |                 |                 |                 | 3.20 ± 0.20     |                 |                 |                 |                 | 6.40 ± 0.40     |                 |                 |                 | 5.00 ± 0.40     |     |    |     | 6.35 ± 0.25     |   |   |  |  |  |
|                | (in.)    | (0.098 ± 0.008) |                 |                 |                 |                 | (0.126 ± 0.008) |                 |                 |                 |                 | (0.252 ± 0.016) |                 |                 |                 | (0.197 ± 0.016) |     |    |     | (0.250 ± 0.010) |   |   |  |  |  |
| (t) Terminal   | mm       | 0.50 ± 0.25     |                 |                 |                 |                 | 0.61 ± 0.36     |                 |                 |                 |                 | 0.61 ± 0.36     |                 |                 |                 | 0.64 ± 0.39     |     |    |     | 0.64 ± 0.39     |   |   |  |  |  |
|                | (in.)    | (0.020 ± 0.010) |                 |                 |                 |                 | (0.024 ± 0.014) |                 |                 |                 |                 | (0.024 ± 0.014) |                 |                 |                 | (0.025 ± 0.015) |     |    |     | (0.025 ± 0.015) |   |   |  |  |  |
| Cap (pF)       | WVDC     | 25              | 50              | 100             | 200             | 500             | 25              | 50              | 100             | 200             | 500             | 50              | 100             | 200             | 50              | 100             | 200 | 50 | 100 | 200             |   |   |  |  |  |
|                | 0.5      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 1.0      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 1.2      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 1.5      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 1.8      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 2.2      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 2.7      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 3.3      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 3.9      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 4.7      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 5.6      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 6.8      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 8.2      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 10       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 12       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 15       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 18       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 22       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 27       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 33       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 39       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 47       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 56       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 68       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 82       |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 100      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 120      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 150      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 180      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 220      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 270      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 330      |                 |                 |                 |                 | J               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 390      |                 |                 |                 |                 | M               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 470      |                 |                 |                 |                 | M               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 560      | J               | J               | J               | J               | M               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 680      | J               | J               | J               | K               | P               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 820      | J               | J               | J               | K               | P               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |
|                | 1000     | J               | J               | P               | P               | P               | K               | K               | N               | N               | M               | M               | M               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 1200     | P               | P               | P               | P               | P               | K               | K               | N               | N               | M               | M               | M               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 1500     | P               | P               | P               | P               | P               | K               | K               | N               | N               | M               | M               | M               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 1800     | P               | P               | P               | P               | P               | K               | K               | N               | N               | M               | M               | M               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 2200     | P               | P               | P               | P               | N               | K               | K               | N               | N               | P               | X               | X               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 2700     | P               | P               | P               | P               |                 | K               | K               | N               | P               | Q               | X               | X               | M               |                 |                 |     |    | M   | M               | P |   |  |  |  |
|                | 3300     | P               | P               | P               | P               |                 | K               | K               | N               | P               | Q               | X               | X               | X               |                 |                 |     | X  | M   | M               | P |   |  |  |  |
|                | 3900     | P               | P               | P               |                 |                 | K               | K               | N               | P               | Q               | X               | X               | X               |                 |                 |     | X  | M   | M               | P |   |  |  |  |
|                | 4700     | P               | P               | P               |                 |                 | K               | K               | N               | P               | Y               | X               | X               | X               | X               | X               |     | X  | M   | M               | P |   |  |  |  |
|                | 5600     | P               | P               | P               |                 |                 | K               | K               | P               | P               | Y               | X               | X               | X               | X               | X               | X   | X  | M   | M               | P |   |  |  |  |
|                | 6800     | P               | P               | P               |                 |                 | K               | K               | Q               | Q               |                 | X               | X               | X               | X               | X               | X   | X  | M   | M               | P |   |  |  |  |
|                | 8200     | P               | P               |                 |                 |                 | K               | M               | Q               | Q               |                 | X               | X               | X               | X               | X               | X   | X  | M   | M               | P |   |  |  |  |
|                | Cap (µF) | 0.010           | N               | N               |                 |                 |                 | K               | M               | Q               | Q               |                 | X               | X               | X               | X               | X   | X  | X   | M               | M | P |  |  |  |
|                | 0.012    | N               | N               |                 |                 |                 | K               | M               | Q               |                 |                 | X               | X               | X               | X               | X               | X   | X  | M   | M               | P |   |  |  |  |
|                | 0.015    |                 |                 |                 |                 |                 | P               | P               | Q               |                 |                 | X               | X               | X               | X               | X               | X   | X  | M   | M               | Y |   |  |  |  |
|                | 0.018    |                 |                 |                 |                 |                 | P               | P               | Q               |                 |                 | X               | X               | X               | X               | X               | X   | X  | M   | M               | Y |   |  |  |  |
|                | 0.022    |                 |                 |                 |                 |                 | P               | P               | Q               |                 |                 | X               | X               | X               | X               | X               | X   |    | M   | Y               | Y |   |  |  |  |
|                | 0.027    |                 |                 |                 |                 |                 | Q               | Q               | X               |                 |                 | X               | X               | Y               | X               | X               |     | P  | Y   | Y               | Y |   |  |  |  |
|                | 0.033    |                 |                 |                 |                 |                 | Q               | Q               | X               |                 |                 | X               | X               |                 | X               | X               |     | X  | Y   | Y               | Y |   |  |  |  |
|                | 0.039    |                 |                 |                 |                 |                 | X               | X               | X               |                 |                 | X               |                 |                 | Y               |                 |     | X  | Y   | Y               | Y |   |  |  |  |
|                | 0.047    |                 |                 |                 |                 |                 | X               | X               | X               |                 |                 | X               |                 |                 | Y               |                 |     | X  | Z   |                 |   |   |  |  |  |
|                | 0.068    |                 |                 |                 |                 |                 | Z               | Z               | Y               |                 |                 |                 |                 |                 |                 |                 |     | X  | Z   |                 |   |   |  |  |  |
|                | 0.082    |                 |                 |                 |                 |                 | Z               | Z               | Y               |                 |                 |                 |                 |                 |                 |                 |     | X  | Z   |                 |   |   |  |  |  |
|                | 0.1      |                 |                 |                 |                 |                 | Z               | Z               | Z               |                 |                 |                 |                 |                 |                 |                 |     | X  | Z   |                 |   |   |  |  |  |
|                | WVDC     | 25              | 50              | 100             | 200             | 500             | 25              | 50              | 100             | 200             | 500             | 50              | 100             | 200             | 50              | 100             | 200 | 50 | 100 | 200             |   |   |  |  |  |
| SIZE           |          | 1210            |                 |                 |                 |                 | 1812            |                 |                 |                 |                 | 1825            |                 |                 |                 | 2220            |     |    |     | 2225            |   |   |  |  |  |
| Letter         |          | A               | B               | C               | E               | G               | J               | K               | M               | N               | P               | Q               | X               | Y               | Z               |                 |     |    |     |                 |   |   |  |  |  |
| Max. Thickness |          | 0.33<br>(0.013) | 0.22<br>(0.009) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.90<br>(0.035) | 0.94<br>(0.037) | 1.02<br>(0.040) | 1.27<br>(0.050) | 1.40<br>(0.055) | 1.52<br>(0.060) | 1.78<br>(0.070) | 2.29<br>(0.090) | 2.54<br>(0.100) | 2.79<br>(0.110) |                 |     |    |     |                 |   |   |  |  |  |
|                |          | PAPER           |                 |                 |                 |                 |                 |                 | EMBOSSED        |                 |                 |                 |                 |                 |                 |                 |     |    |     |                 |   |   |  |  |  |