

# C0G (NP0) Dielectric



## General Specifications



C0G (NP0) is the most popular formulation of the “temperature-compensating,” EIA Class I ceramic materials. Modern C0G (NP0) formulations contain neodymium, samarium and other rare earth oxides.

C0G (NP0) ceramics offer one of the most stable capacitor dielectrics available. Capacitance change with temperature is  $0 \pm 30 \text{ ppm}/^\circ\text{C}$  which is less than  $\pm 0.3\% \Delta C$  from  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ . Capacitance drift or hysteresis for C0G (NP0) ceramics is negligible at less than  $\pm 0.05\%$  versus up to  $\pm 2\%$  for films. Typical capacitance change with life is less than  $\pm 0.1\%$  for C0G (NP0), one-fifth that shown by most other dielectrics. C0G (NP0) formulations show no aging characteristics.

## PART NUMBER (see page 2 for complete part number explanation)

**0805**

**Size**  
(L" x W")

**5**

**Voltage**  
6.3V = 6  
10V = Z  
16V = Y  
25V = 3  
50V = 5  
100V = 1  
200V = 2  
500V = 7

**A**

**Dielectric**  
C0G (NP0) = A

**101**

**Capacitance Code (In pF)**  
2 Sig. Digits +  
Number of  
Zeros

**J**

**Capacitance Tolerance**  
B =  $\pm 10 \text{ pF}$  ( $< 10 \text{ pF}$ )  
C =  $\pm 25 \text{ pF}$  ( $< 10 \text{ pF}$ )  
D =  $\pm 50 \text{ pF}$  ( $< 10 \text{ pF}$ )  
F =  $\pm 1\%$  ( $\geq 10 \text{ pF}$ )  
G =  $\pm 2\%$  ( $\geq 10 \text{ pF}$ )  
J =  $\pm 5\%$   
K =  $\pm 10\%$

**A**

**Failure Rate**  
A = Not  
Applicable

**T**

**Terminations**  
T = Plated Ni  
and Sn  
7 = Gold Plated

**2**

**Packaging**  
2 = 7" Reel  
4 = 13" Reel  
7 = Bulk Cass.  
9 = Bulk

**A**

**Special Code**  
A = Std.  
Product

**Contact Factory For**  
1 = Pd/Ag Term

**Contact Factory For**  
Multiples

NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers.  
Contact factory for non-specified capacitance values.

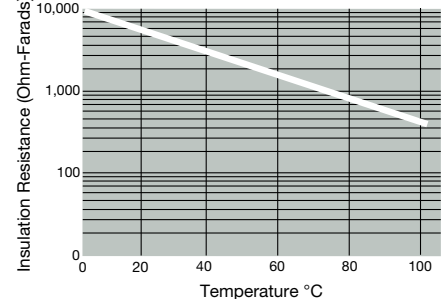
**Temperature Coefficient**



**Δ Capacitance vs. Frequency**



**Insulation Resistance vs Temperature**



**Variation of Impedance with Cap Value**  
Impedance vs. Frequency  
0805 - C0G (NP0)  
10 pF vs. 100 pF vs. 1000 pF



**Variation of Impedance with Chip Size**  
Impedance vs. Frequency  
1000 pF - C0G (NP0)



**Variation of Impedance with Ceramic Formulation**  
Impedance vs. Frequency  
1000 pF - C0G (NP0) vs X7R  
0805



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## Specifications and Test Methods

| Parameter/Test                        |                       | NP0 Specification Limits  | Measuring Conditions   |                |
|---------------------------------------|-----------------------|---|--|----------------|
| <b>Operating Temperature Range</b>    |                       | -55°C to +125°C   | Temperature Cycle Chamber  |                |
| <b>Capacitance</b>                    |                       | Within specified tolerance  | Freq.: 1.0 MHz ± 10% for cap ≤ 1000 pF<br>1.0 kHz ± 10% for cap > 1000 pF<br>Voltage: 1.0Vrms ± .2V  |                |
| <b>Q</b>                              |                       | <30 pF: Q ≥ 400+20 x Cap Value<br>≥30 pF: Q ≥ 1000                        | Charge device with rated voltage for 60 ± 5 secs @ room temp/humidity  |                |
| <b>Insulation Resistance</b>          |                       | 100,000MΩ or 1000MΩ - μF, whichever is less                               | Charge device with 300% of rated voltage for 1-5 seconds, w/charge and discharge current limited to 50 mA (max)<br>Note: Charge device with 150% of rated voltage for 500V devices.  |                |
| <b>Dielectric Strength</b>            |                       | No breakdown or visual defects  | Deflection: 2mm<br>Test Time: 30 seconds<br>1mm/sec<br>   |                |
| <b>Resistance to Flexure Stresses</b> | Appearance            | No defects  |  |                |
|                                       | Capacitance Variation | ±5% or ±.5 pF, whichever is greater                                       |  |                |
|                                       | Q                     | Meets Initial Values (As Above)   |  |                |
|                                       | Insulation Resistance | ≥ Initial Value x 0.3   |  |                |
| <b>Solderability</b>                  |                       | ≥ 95% of each terminal should be covered with fresh solder                | Dip device in eutectic solder at 230 ± 5°C for 5.0 ± 0.5 seconds   |                |
| <b>Resistance to Solder Heat</b>      | Appearance            | No defects, <25% leaching of either end terminal                          | Dip device in eutectic solder at 260°C for 60 seconds. Store at room temperature for 24 ± 2 hours before measuring electrical properties.  |                |
|                                       | Capacitance Variation | ≤ ±2.5% or ±.25 pF, whichever is greater                                  |  |                |
|                                       | Q                     | Meets Initial Values (As Above)   |  |                |
|                                       | Insulation Resistance | Meets Initial Values (As Above)   |  |                |
| <b>Thermal Shock</b>                  | Appearance            | No visual defects   | Step 1: -55°C ± 2°   | 30 ± 3 minutes |
|                                       | Capacitance Variation | ≤ ±2.5% or ±.25 pF, whichever is greater                                  | Step 2: Room Temp  | ≤ 3 minutes    |
|                                       | Q                     | Meets Initial Values (As Above)   | Step 3: +125°C ± 2°  | 30 ± 3 minutes |
|                                       | Insulation Resistance | Meets Initial Values (As Above)   | Step 4: Room Temp  | ≤ 3 minutes    |
|                                       | Dielectric Strength   | Meets Initial Values (As Above)   | Repeat for 5 cycles and measure after 24 hours at room temperature   |                |
| <b>Load Life</b>                      | Appearance            | No visual defects   | Charge device with twice rated voltage in test chamber set at 125°C ± 2°C for 1000 hours (+48, -0).<br><br>Remove from test chamber and stabilize at room temperature for 24 hours before measuring.                       |                |
|                                       | Capacitance Variation | ≤ ±3.0% or ± .3 pF, whichever is greater                                  |  |                |
|                                       | Q (C=Nominal Cap)     | ≥ 30 pF: Q ≥ 350<br>≥10 pF, <30 pF: Q ≥ 275 +5C/2<br><10 pF: Q ≥ 200 +10C |  |                |
|                                       | Insulation Resistance | ≥ Initial Value x 0.3 (See Above)   |  |                |
|                                       | Dielectric Strength   | Meets Initial Values (As Above)   |  |                |
| <b>Load Humidity</b>                  | Appearance            | No visual defects   | Store in a test chamber set at 85°C ± 2°C/ 85% ± 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied.<br><br>Remove from chamber and stabilize at room temperature for 24 ± 2 hours before measuring. |                |
|                                       | Capacitance Variation | ≤ ±5.0% or ± .5 pF, whichever is greater                                  |  |                |
|                                       | Q                     | ≥ 30 pF: Q ≥ 350<br>≥10 pF, <30 pF: Q ≥ 275 +5C/2<br><10 pF: Q ≥ 200 +10C |  |                |
|                                       | Insulation Resistance | ≥ Initial Value x 0.3 (See Above)   |  |                |
|                                       | Dielectric Strength   | Meets Initial Values (As Above)   |  |                |

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## Capacitance Range

### PREFERRED SIZES ARE SHADED

| SIZE           | 01005                           |  |  | 0201                           |  |  | 0402                           |  |  | 0603                           |  |  |  | 0805                           |  |          |  |  | 1206                           |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |     |  |  |  |  |
|----------------|---------------------------------|--|--|--------------------------------|--|--|--------------------------------|--|--|--------------------------------|--|--|--|--------------------------------|--|----------|--|--|--------------------------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|-----------------|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|-----|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-------|--|--|--|--|-----|--|--|--|--|
|                | 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     | 0.40 ± 0.02<br>(0.016 ± 0.0008) |  |  | 0.60 ± 0.03<br>(0.024 ± 0.001) |  |  | 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      | 0.20 ± 0.02<br>(0.008 ± 0.0008) |  |  | 0.30 ± 0.03<br>(0.011 ± 0.001) |  |  | 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   | 0.10 ± 0.04<br>(0.004 ± 0.016)  |  |  | 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                   |  |  |  | 16 25 50 100 200               |  |          |  |  | 16 25 50 100 200 500           |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |     |  |  |  |  |
| Cap (pF)       | 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              |  |  |  |  | 12 |  |  |  |  | 15 |  |  |  |  | 18 |  |  |  |  | 22 |  |  |  |  | 27 |  |  |  |  | 33 |  |  |  |  | 39 |  |  |  |  | 47 |  |  |  |  | 56 |  |  |  |  | 68 |  |  |  |  | 82 |  |  |  |  | 100 |  |  |  |  | 120 |  |  |  |  | 150 |  |  |  |  | 180 |  |  |  |  | 220 |  |  |  |  | 270 |  |  |  |  | 330 |  |  |  |  | 390 |  |  |  |  | 470 |  |  |  |  | 560 |  |  |  |  | 680 |  |  |  |  | 820 |  |  |  |  | 1000 |  |  |  |  | 1200 |  |  |  |  | 1500 |  |  |  |  | 1800 |  |  |  |  | 2200 |  |  |  |  | 2700 |  |  |  |  | 3300 |  |  |  |  | 3900 |  |  |  |  | 4700 |  |  |  |  | 5600 |  |  |  |  | 6800 |  |  |  |  | 8200 |  |  |  |  | 0.010 |  |  |  |  | 0.012 |  |  |  |  | 0.015 |  |  |  |  | 0.018 |  |  |  |  | 0.022 |  |  |  |  | 0.027 |  |  |  |  | 0.033 |  |  |  |  | 0.039 |  |  |  |  | 0.047 |  |  |  |  | 0.068 |  |  |  |  | 0.082 |  |  |  |  | 0.1 |  |  |  |  |
| 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 |  |  |                                |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |                 |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |    |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |     |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |      |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |       |  |  |  |  |     |  |  |  |  |



# COG (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<br>(in.) | 3.20 ± 0.20<br>(0.126 ± 0.008) |                 |                 |                 |                 | 4.50 ± 0.30<br>(0.177 ± 0.012) |                 |                 |                 |                 | 4.50 ± 0.30<br>(0.177 ± 0.012) |                 |                 |    |     | 5.70 ± 0.40<br>(0.225 ± 0.016) |    |     |     |    | 5.72 ± 0.25<br>(0.225 ± 0.010) |     |  |  |  |
| (W) Width      | mm<br>(in.) | 2.50 ± 0.20<br>(0.098 ± 0.008) |                 |                 |                 |                 | 3.20 ± 0.20<br>(0.126 ± 0.008) |                 |                 |                 |                 | 6.40 ± 0.40<br>(0.252 ± 0.016) |                 |                 |    |     | 5.00 ± 0.40<br>(0.197 ± 0.016) |    |     |     |    | 6.35 ± 0.25<br>(0.250 ± 0.010) |     |  |  |  |
| (t) Terminal   | mm<br>(in.) | 0.50 ± 0.25<br>(0.020 ± 0.010) |                 |                 |                 |                 | 0.61 ± 0.36<br>(0.024 ± 0.014) |                 |                 |                 |                 | 0.61 ± 0.36<br>(0.024 ± 0.014) |                 |                 |    |     | 0.64 ± 0.39<br>(0.025 ± 0.015) |    |     |     |    | 0.64 ± 0.39<br>(0.025 ± 0.015) |     |  |  |  |
| WVDC           |             | 25                             | 50              | 100             | 200             | 500             | 25                             | 50              | 100             | 200             | 500             | 50                             | 100             | 200             | 50 | 100 | 200                            | 50 | 100 | 200 | 50 | 100                            | 200 |  |  |  |
| Cap (pF)       | 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               | J               | M               |                                |                 |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     |    |                                |     |  |  |  |
|                | 820         | J                              | J               | J               | J               | M               |                                |                 |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     |    |                                |     |  |  |  |
|                | 1000        | J                              | J               | J               | J               | M               | K                              | K               | K               | K               | M               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 1200        | J                              | J               | J               | M               | M               | K                              | K               | K               | K               | M               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 1500        | J                              | J               | J               | M               | M               | K                              | K               | K               | K               | M               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 1800        | J                              | J               | J               | M               |                 | K                              | K               | K               | K               | M               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 2200        | J                              | J               | J               | Q               |                 | K                              | K               | K               | K               | P               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 2700        | J                              | J               | J               | Q               |                 | K                              | K               | K               | P               | Q               | M                              | M               | M               |    |     |                                |    |     |     | M  | M                              | P   |  |  |  |
|                | 3300        | J                              | J               | J               |                 |                 | K                              | K               | K               | P               | Q               | M                              | M               | M               |    |     |                                | X  |     |     | M  | M                              | P   |  |  |  |
|                | 3900        | J                              | J               | M               |                 |                 | K                              | K               | K               | P               | Q               | M                              | M               | M               |    |     |                                | X  |     |     | M  | M                              | P   |  |  |  |
|                | 4700        | J                              | J               | M               |                 |                 | K                              | K               | K               | P               | Q               | M                              | M               | M               | X  | X   |                                | X  |     |     | M  | M                              | P   |  |  |  |
|                | 5600        | J                              | J               |                 |                 |                 | K                              | K               | M               | P               | X               | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | P   |  |  |  |
|                | 6800        | J                              | J               |                 |                 |                 | K                              | K               | M               | X               |                 | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | P   |  |  |  |
|                | 8200        | J                              | J               |                 |                 |                 | K                              | M               | M               |                 |                 | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | P   |  |  |  |
| Cap (µF)       | 0.010       | J                              | J               |                 |                 |                 | K                              | M               | M               |                 |                 | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | P   |  |  |  |
|                | 0.012       | J                              | J               |                 |                 |                 | K                              | M               |                 |                 |                 | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | P   |  |  |  |
|                | 0.015       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | M                              | M               | M               | X  | X   | X                              | X  |     |     | M  | M                              | Y   |  |  |  |
|                | 0.018       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              | M               |                 | X  | X   | X                              |    |     |     | M  | M                              | Y   |  |  |  |
|                | 0.022       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              |                 |                 | X  | X   |                                |    |     |     | M  | Y                              | Y   |  |  |  |
|                | 0.027       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              |                 |                 | X  | X   |                                |    |     |     | P  | Y                              | Y   |  |  |  |
|                | 0.033       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              |                 |                 | X  | X   |                                |    |     |     | P  |                                |     |  |  |  |
|                | 0.039       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              |                 |                 | Y  |     |                                |    |     |     | P  |                                |     |  |  |  |
|                | 0.047       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 | P                              |                 |                 | Y  |     |                                |    |     |     | P  |                                |     |  |  |  |
|                | 0.068       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     | P  |                                |     |  |  |  |
|                | 0.082       |                                |                 |                 |                 |                 | M                              | M               |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     | Q  |                                |     |  |  |  |
|                | 0.1         |                                |                 |                 |                 |                 |                                |                 |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     | Q  |                                |     |  |  |  |
| WVDC           |             | 25                             | 50              | 100             | 200             | 500             | 25                             | 50              | 100             | 200             | 500             | 50                             | 100             | 200             | 50 | 100 | 200                            | 50 | 100 | 200 | 50 | 100                            | 200 |  |  |  |
| SIZE           |             | 1210                           |                 |                 |                 |                 | 1812                           |                 |                 |                 |                 | 1825                           |                 |                 |    |     | 2220                           |    |     |     |    | 2225                           |     |  |  |  |
| Letter         |             | A                              | C               | E               | G               | J               | K                              | M               | N               | P               | Q               | X                              | Y               | Z               |    |     |                                |    |     |     |    |                                |     |  |  |  |
| Max. Thickness |             | 0.33<br>(0.013)                | 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                          |                 |                 |                 |                 | EMBOSSSED                      |                 |                 |                 |                 |                                |                 |                 |    |     |                                |    |     |     |    |                                |     |  |  |  |



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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