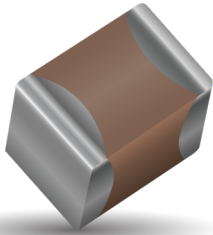


# C0G (NP0) Dielectric, KGM Series

## 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  $\pm 0.3\%$  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.

### HOW TO ORDER

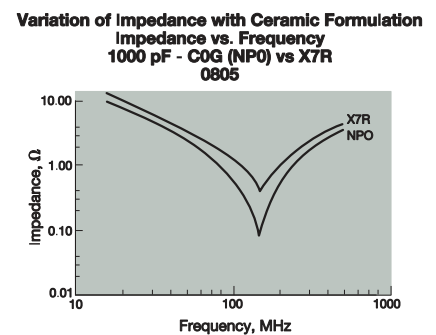
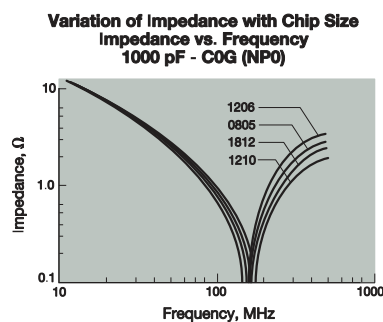
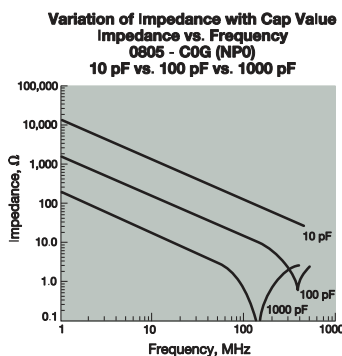
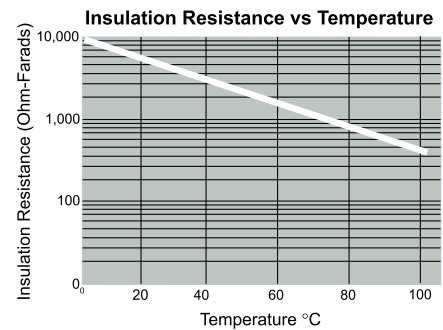
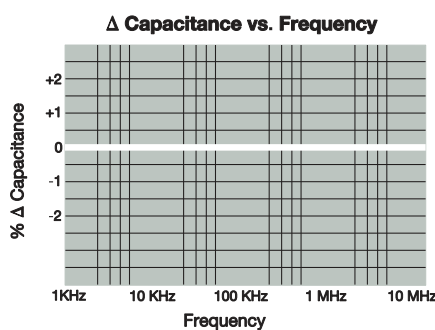
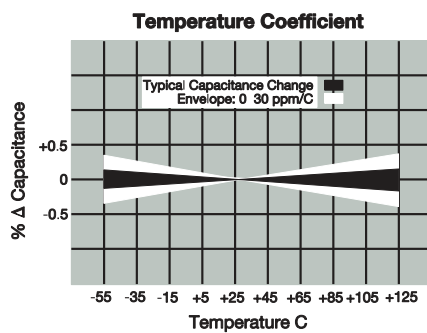
| KGM                                  | 21                                                                                                                           | A             | CG       | 2J                                                                                                          | 102                                                                                                                 | F                                                                                                                                                                                                                                                                                                                          | L               |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------|----------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| General Purpose<br>Tin/Nickel Finish | Size                                                                                                                         | See Cap Chart | CG = C0G | Voltage                                                                                                     | Capacitance<br>Code Code (in pF)                                                                                    | Capacitance<br>Tolerance                                                                                                                                                                                                                                                                                                   | See Table Below |
|                                      | 02 = 0101 32 = 1210<br>03 = 0201 43 = 1812<br>05 = 0402 44 = 1825<br>15 = 0603 55 = 2220<br>21 = 0805 56 = 2225<br>31 = 1206 |               |          | 0G = 4.0V 1H = 50V<br>0J = 6.3V 2A = 100V<br>1A = 10V 2D = 200V<br>1C = 16V 2E = 250V<br>1E = 25V 2H = 500V | 2 Significant Digits<br>+Number of zeros<br>eg. $10\mu\text{F} = 106$<br>$10\text{nF} = 103$<br>$47\text{pF} = 470$ | B = $\pm 10\text{pF}$ ( $<10\text{pF}$ )*<br>C = $\pm 25\text{pF}$ ( $<10\text{pF}$ )*<br>D = $\pm 50\text{pF}$ ( $<10\text{pF}$ )*<br>F = $\pm 1\%$ ( $\geq 10\text{pF}$ )*<br>G = $\pm 2\%$ ( $\geq 10\text{pF}$ )*<br>J = $\pm 5\%$ ( $\geq 10\text{pF}$ )*<br>K = $\pm 10\%$ ( $\geq 10\text{pF}$ )*<br>M = $\pm 20\%$ |                 |



### PACKAGING CODES

| Code | EIA (inch) | IEC(mm) | 7" Paper | 7" Embossed | 13" Paper | 13" Embossed |
|------|------------|---------|----------|-------------|-----------|--------------|
| 02   | 0101       | 0402    | H        |             | n/a       |              |
| 03   | 0201       | 0603    | H        |             | N         |              |
| 05   | 0402       | 1005    | H        |             | N         |              |
| 15   | 0603       | 1608    | T        |             | M         |              |
| 21   | 0805       | 2012    | T        | U           | M         | L            |
| 31   | 1206       | 3216    | T        | U           | M         | L            |
| 32   | 1210       | 3225    |          | U           |           | L            |
| 43   | 1812       | 4532    |          | V           |           | S            |
| 44   | 1825       | 4564    |          | V           |           | S            |
| 55   | 2220       | 5750    |          | V           |           | S            |
| 56   | 2225       | 5763    |          | V           |           | S            |

\*thickness determines paper or plastic embossed packaging

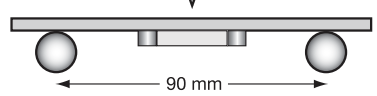


The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at [www.kyocera-avx.com/disclaimer/](http://www.kyocera-avx.com/disclaimer/) by reference and should be reviewed in full before placing any order.

TDS-SMDMLCC-0036 | Rev 4

# C0G (NP0) Dielectric, KGM Series

## Specifications and Test Methods

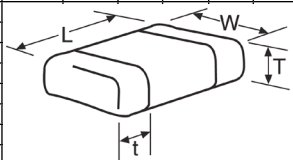
| Parameter/Test                 |                       | NP0 Specification Limits                                                                            | Measuring Conditions                                                                                                                       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

# C0G (NP0) Dielectric, KGM Series

## Capacitance Range



| 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    | 0.4 ± 0.02     |  | 0.60± 0.03     |    | 1.0± 0.10     |    | 1.60± 0.15     |    |    |    | 2.01±0.20      |     |    |    |    |     | 3.20±0.20      |     |    |    |    |     |     |     |     |
|              | (in.) | (0.016±0.0008) |  | (0.024± 0.001) |    | (0.040±0.004) |    | (0.063± 0.006) |    |    |    | (0.079±0.008)  |     |    |    |    |     | (0.126±0.008)  |     |    |    |    |     |     |     |     |
| (W) Width    | mm    | 0.20±0.02      |  | 0.30±0.03      |    | 0.50±0.10     |    | 0.81±0.15      |    |    |    | 1.25±0.20      |     |    |    |    |     | 1.60±0.20      |     |    |    |    |     |     |     |     |
|              | (in.) | (0.008±0.0008) |  | (0.011±0.001)  |    | (0.020±0.004) |    | (0.032±0.006)  |    |    |    | (0.049±0.008)  |     |    |    |    |     | (0.063±0.008)  |     |    |    |    |     |     |     |     |
| (t) Terminal | mm    | 0.10±0.04      |  | 0.15±0.05      |    | 0.25±0.15     |    | 0.35±0.15      |    |    |    | 0.50±0.25      |     |    |    |    |     | 0.50±0.25      |     |    |    |    |     |     |     |     |
|              | (in.) | (0.004±0.0016) |  | (0.006±0.002)  |    | (0.010±0.006) |    | (0.014±0.006)  |    |    |    | (0.02±0.010)   |     |    |    |    |     | (0.020±0.010)  |     |    |    |    |     |     |     |     |
| WVDC         |       | 16             |  | 25             | 50 | 16            | 25 | 50             | 16 | 25 | 50 | 100            | 200 | 16 | 25 | 50 | 100 | 200            | 250 | 16 | 25 | 50 | 100 | 200 | 250 | 500 |
| Cap 0.5      |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| (pF) 1.0     |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 1.2          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 1.5          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 1.8          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 2.2          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 2.7          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 3.3          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 3.9          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 4.7          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 5.6          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 6.8          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 8.2          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 10           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 12           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 15           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 18           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 22           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 27           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 33           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 39           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 47           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 56           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 68           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 82           |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 100          |       | A              |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 120          |       |                |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | B  | B  | B  | B   | B   | B   |     |
| 150          |       |                |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | E  | B  | B  | B   | B   | B   |     |
| 180          |       |                |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | B   | E  | B  | B  | B   | B   | B   |     |
| 220          |       |                |  | A              | A  | A             | A  | A              | A  | A  | A  | A              | A   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | B   |     |
| 270          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | V   |     |
| 330          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | V   |     |
| 390          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | V   |     |
| 470          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | V   |     |
| 560          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | T   |     |
| 680          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | T   |     |
| 820          |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | A   |     |
| 1000         |       |                |  |                |    |               | A  | A              | A  | A  | A  | A              | B   | B  | B  | B  | B   | B              | E   | E  | B  | B  | B   | B   | A   |     |
| 1200         |       |                |  |                |    |               |    |                |    | B  | B  | B              | B   |    | B  | B  | B   | B              | A   | A  | B  | B  | B   | B   | A   |     |
| 1500         |       |                |  |                |    |               |    |                |    | B  | B  | B              | B   |    | B  | B  | B   | B              | A   | A  | B  | B  | B   | B   | A   |     |
| 1800         |       |                |  |                |    |               |    |                |    | B  | B  | B              | B   | B  | B  | B  | B   | B              | A   | A  | B  | B  | B   | B   | A   |     |
| 2200         |       |                |  |                |    |               |    |                |    | B  | B  | B              |     |    | A  | A  | A   | A              | A   | A  | B  | B  | B   | V   | A   |     |
| 2700         |       |                |  |                |    |               |    |                |    | B  | B  | B              |     |    | A  | A  | A   | A              | A   | A  | B  | B  | B   | V   | A   |     |
| 3300         |       |                |  |                |    |               |    |                |    | B  | B  | B              |     |    | A  | A  | A   | A              | A   | A  | B  | V  | V   | T   | A   |     |
| 3900         |       |                |  |                |    |               |    |                |    | B  | B  | B              |     |    | A  | A  | A   | A              | A   | A  | B  | V  | V   | T   | A   |     |
| 4700         |       |                |  |                |    |               |    |                |    | B  | B  | B              |     |    | A  | A  | A   | A              | A   | A  | B  | T  | T   | T   | A   |     |
| 5600         |       |                |  |                |    |               |    |                |    |    |    |                |     |    | A  | A  | A   | A              |     | B  | T  | T  | T   | A   |     |     |
| 6800         |       |                |  |                |    |               |    |                |    |    |    |                |     |    | A  | A  | A   | A              |     | V  | T  | T  | T   | A   |     |     |
| 8200         |       |                |  |                |    |               |    |                |    |    |    |                |     |    | A  | A  | A   | A              |     | D  | A  | A  | A   | A   |     |     |
| 0.010        |       |                |  |                |    |               |    |                |    |    |    |                |     |    | A  | A  | A   | A              |     | D  | A  | A  | A   | A   |     |     |
| (μF) 0.012   |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.015        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.018        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.022        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.027        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.033        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.039        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.047        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.068        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.082        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| 0.100        |       |                |  |                |    |               |    |                |    |    |    |                |     |    |    |    |     |                |     | H  | H  | H  | H   |     |     |     |
| WVDC         |       | 16             |  | 25             | 50 | 16            | 25 | 50             | 16 | 25 | 50 | 100            | 200 | 16 | 25 | 50 | 100 | 200            | 250 | 16 | 25 | 50 | 100 | 200 | 250 | 500 |
| SIZE         |       | 0101*          |  | 0201           |    | 0402          |    | 0603           |    |    |    | 0805           |     |    |    |    |     | 1206           |     |    |    |    |     |     |     |     |



| Case Size              | 0101 (KGM 02) | 0201 (KGM03) | 0402 (KGM05) | 0603 (KGM15) |       | 0805 (KGM21) |      |      | 1206 (KGM31) |      |      |      |      |      |
|------------------------|---------------|--------------|--------------|--------------|-------|--------------|------|------|--------------|------|------|------|------|------|
| Thickness Letter       | A             | A            | A            | A            | B     | B            | E    | A    | B            | V    | T    | D    | A    | H    |
| Max Thickness (mm)     | 0.22          | 0.33         | 0.56         | 0.90         | 0.95  | 0.94         | 1.35 | 1.45 | 0.94         | 1.22 | 1.35 | 1.45 | 1.80 | 1.90 |
| Carrier Tape           | PAPER         | PAPER        | PAPER        | PAPER        | PAPER | PAPER        | EMB  | EMB  | PAPER        | EMB  | EMB  | EMB  | EMB  | EMB  |
| Packaging Code 7"reel  | H             | H            | H            | T            | T     | T            | U    | U    | T            | U    | U    | U    | U    | U    |
| Packaging Code 13"reel | n/a           | N            | N            | M            | M     | M            | L    | L    | M            | L    | L    | L    | L    | L    |
|                        | PAPER         |              |              |              |       | EMBOSS (EMB) |      |      |              |      |      |      |      |      |

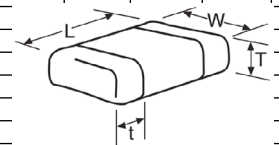
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# C0G (NP0) Dielectric, KGM Series

## Capacitance Range



| SIZE       |       | 1210            |    |     |     |     | 1812            |    |     |     |     | 1825            |     |     | 2220            |     |     | 2225            |     |     |
|------------|-------|-----------------|----|-----|-----|-----|-----------------|----|-----|-----|-----|-----------------|-----|-----|-----------------|-----|-----|-----------------|-----|-----|
| Soldering  |       | Reflow Only     |    |     |     |     | Reflow Only     |    |     |     |     | Reflow Only     |     |     | Reflow Only     |     |     | Reflow Only     |     |     |
| Packaging  |       | All Embossed    |    |     |     |     | All Embossed    |    |     |     |     | All Embossed    |     |     | All Embossed    |     |     | All Embossed    |     |     |
| (L)        | mm    | 3.20 ± 0.20     |    |     |     |     | 4.50 ± 0.30     |    |     |     |     | 4.50 ± 0.30     |     |     | 5.70 ± 0.40     |     |     | 5.72 ± 0.25     |     |     |
| Length     | (in.) | (0.126 ± 0.008) |    |     |     |     | (0.177 ± 0.012) |    |     |     |     | (0.177 ± 0.012) |     |     | (0.225 ± 0.016) |     |     | (0.225 ± 0.010) |     |     |
| (W)        | mm    | 2.50 ± 0.20     |    |     |     |     | 3.20 ± 0.20     |    |     |     |     | 6.40 ± 0.40     |     |     | 5.00 ± 0.40     |     |     | 6.35 ± 0.25     |     |     |
| Width      | (in.) | (0.098 ± 0.008) |    |     |     |     | (0.126 ± 0.008) |    |     |     |     | (0.252 ± 0.016) |     |     | (0.197 ± 0.016) |     |     | (0.250 ± 0.010) |     |     |
| (t)        | mm    | 0.50 ± 0.25     |    |     |     |     | 0.61 ± 0.36     |    |     |     |     | 0.61 ± 0.36     |     |     | 0.64 ± 0.39     |     |     | 0.64 ± 0.39     |     |     |
| Terminal   | (in.) | (0.020 ± 0.010) |    |     |     |     | (0.024 ± 0.014) |    |     |     |     | (0.024 ± 0.014) |     |     | (0.025 ± 0.015) |     |     | (0.025 ± 0.015) |     |     |
| WVDC       | WVDC  | 25              | 50 | 100 | 200 | 500 | 25              | 50 | 100 | 200 | 500 | 50              | 100 | 200 | 50              | 100 | 200 | 50              | 100 | 200 |
| Cap 3.9    |       |                 |    |     |     |     |                 |    |     |     |     |                 |     |     |                 |     |     |                 |     |     |
| (pF) 4.7   |       |                 |    |     |     |     |                 |    |     |     |     |                 |     |     |                 |     |     |                 |     |     |
| 5.6        |       |                 |    |     |     |     |                 |    |     |     |     |                 |     |     |                 |     |     |                 |     |     |
| 6.8        |       |                 |    |     |     |     |                 |    |     |     |     |                 |     |     |                 |     |     |                 |     |     |
| 8.2        |       |                 |    |     |     |     |                 |    |     |     |     |                 |     |     |                 |     |     |                 |     |     |
| 10         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 12         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 15         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 18         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 22         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 27         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 33         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 39         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 47         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 56         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 68         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 82         |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 100        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 120        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 150        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 180        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 220        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 270        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 330        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 390        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 470        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 560        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 680        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 820        |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   |                 |     |     |                 |     |     |                 |     |     |
| 1,000      |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 1200       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 1500       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 1800       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 2200       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 2700       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 3300       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 3900       |       | E               | E  | E   | E   | E   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 4700       |       | E               | E  | E   | H   | H   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 5600       |       | E               | E  | E   | H   | H   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 6800       |       | E               | E  | E   | H   | H   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 8200       |       | E               | E  | E   | H   | H   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| Cap 0.010  |       | E               | E  | H   | J   | J   | B               | B  | B   | B   | B   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| (μF) 0.012 |       | H               | H  | H   | J   | J   | B               | B  | B   | E   | E   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.015      |       | H               | H  | J   | L   | L   | B               | B  | B   | E   | E   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.018      |       | J               | J  | L   | L   |     | B               | B  | E   | F   | F   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.022      |       | J               | J  | L   | L   |     | B               | B  | E   | F   | F   | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.027      |       | L               | L  | L   | L   |     | E               | E  | F   | J   |     | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.033      |       | L               | L  | L   | L   |     | E               | E  | F   |     |     | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.039      |       | L               | L  | L   |     |     | J               | J  | J   |     |     | C               | C   | C   | Z               | Z   | Z   | D               | D   | D   |
| 0.047      |       | L               | L  | L   |     |     | J               | J  | J   |     |     | C               | C   | C   | Z               | Z   | C   | D               | D   | D   |
| 0.068      |       |                 |    |     |     |     | J               | J  | J   |     |     | C               | C   | F   | Z               | Z   | C   | D               | D   | G   |
| 0.082      |       |                 |    |     |     |     | J               | J  | J   |     |     | C               | F   |     | Z               | C   |     | D               | D   | G   |
| 0.100      |       |                 |    |     |     |     | J               | J  | J   |     |     | F               | F   |     | C               | C   |     | D               | G   | G   |
| 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            |     |     |



| Case Size              | 1210 (KGM 32) |     |      |      |  | 1812 (KGM 43) |     |      |      |      | 1825 (KGM 44) |      | 2220 (KGM 55) |      |      | 2225 (KGM 56) |      |
|------------------------|---------------|-----|------|------|--|---------------|-----|------|------|------|---------------|------|---------------|------|------|---------------|------|
| Thickness Letter       | E             | H   | J    | L    |  | B             | E   | F    | J    | C    | F             | Z    | C             | D    | G    | E             | G    |
| Max Thickness (mm)     | 1.45          | 1.8 | 2.21 | 2.80 |  | 1.45          | 1.8 | 2.21 | 2.80 | 2.21 | 2.80          | 2.21 | 2.80          | 2.21 | 2.80 | 2.29          | 2.80 |
| Carrier Tape           | EMB           | EMB | EMB  | EMB  |  | EMB           | EMB | EMB  | EMB  | EMB  | EMB           | EMB  | EMB           | EMB  | EMB  | EMB           | EMB  |
| Packaging Code 7"reel  | U             | U   | U    | U    |  | V             | V   | V    | V    | V    | V             | V    | V             | V    | V    | V             | V    |
| Packaging Code 13"reel | L             | L   | L    | L    |  | S             | S   | S    | S    | S    | S             | S    | S             | S    | S    | S             | S    |
| EMBOSS (EMB)           |               |     |      |      |  |               |     |      |      |      |               |      |               |      |      |               |      |