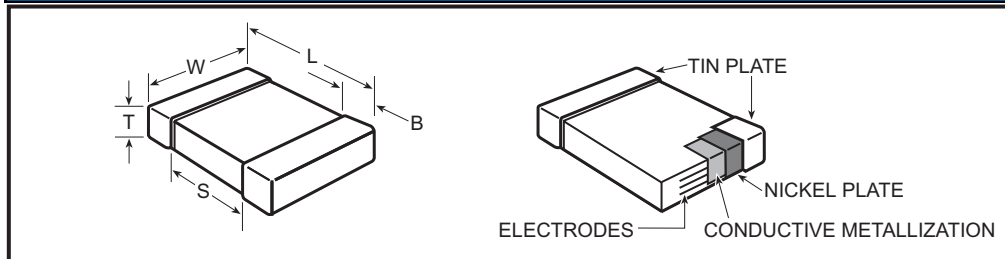


## Surface Mount Ceramic Chip Capacitors – C0G Dielectric

### Outline Drawing



### Dimensions - Millimeters (Inches)

| EIA SIZE CODE | METRIC SIZE CODE | L - LENGTH              | W - WIDTH                | B - BANDWIDTH            | S SEPARATION minimum | MOUNTING TECHNIQUE                   |
|---------------|------------------|-------------------------|--------------------------|--------------------------|----------------------|--------------------------------------|
| 0402          | 1005             | 1.0 (.04) ± .05 (.002)  | 0.5 (.02) ± .05 (.002)   | 0.20 (.008) -.40 (.016)  | 0.3 (.012)           | Solder Reflow                        |
| 0603          | 1608             | 1.6 (.063) ± .15 (.006) | 0.8 (.032) ± .15 (.006)  | 0.35 (.014) ± .15 (.006) | 0.7 (.028)           | Solder Wave +<br>or<br>Solder Reflow |
| 0805          | 2012             | 2.0 (.079) ± .20 (.008) | 1.25 (.049) ± .20 (.008) | 0.50 (.02) ± .25 (.010)  | 0.75 (.030)          |                                      |
| 1206          | 3216             | 3.2 (.126) ± .20 (.008) | 1.6 (.063) ± .20 (.008)  | 0.50 (.02) ± .25 (.010)  | N/A                  |                                      |
| 1210          | 3225             | 3.2 (.126) ± .20 (.008) | 2.5 (.098) ± .20 (.008)  | 0.50 (.02) ± .25 (.010)  | N/A                  |                                      |

See Capacitance Value Chart below for thickness dimension.  
+ For extended values 1210 case sizes - solder reflow only.

### Electrical Parameters

As detailed in the KEMET Surface Mount Catalog F3102 for C0G, with following specific requirements based on room temperature (25°C) parameters:

- Operating Range: -55°C to +125°C, with no-bias capacitance shift limited to ± 30 PPM/°C over that range.
- Insulation Resistance (IR) measured after 2 minutes at rated voltage @ 25°C: Limit is 1000 megohm microfarads or 100GΩ, whichever is less.
- Capacitance and Dissipation Factor (DF) measured at the following conditions.  
Capacitance - 1 kHz and 1 vrms if capacitance >1000 pF  
1 MHz and 1 vrms if capacitance ≤ 1000 pF  
DF Limit is 0.1%.

### Soldering Process

These components are suitable for wave and reflow soldering. All parts incorporate the standard KEMET barrier layer of pure nickel, with an overplate of pure tin to provide excellent solderability as well as resistance to leaching.

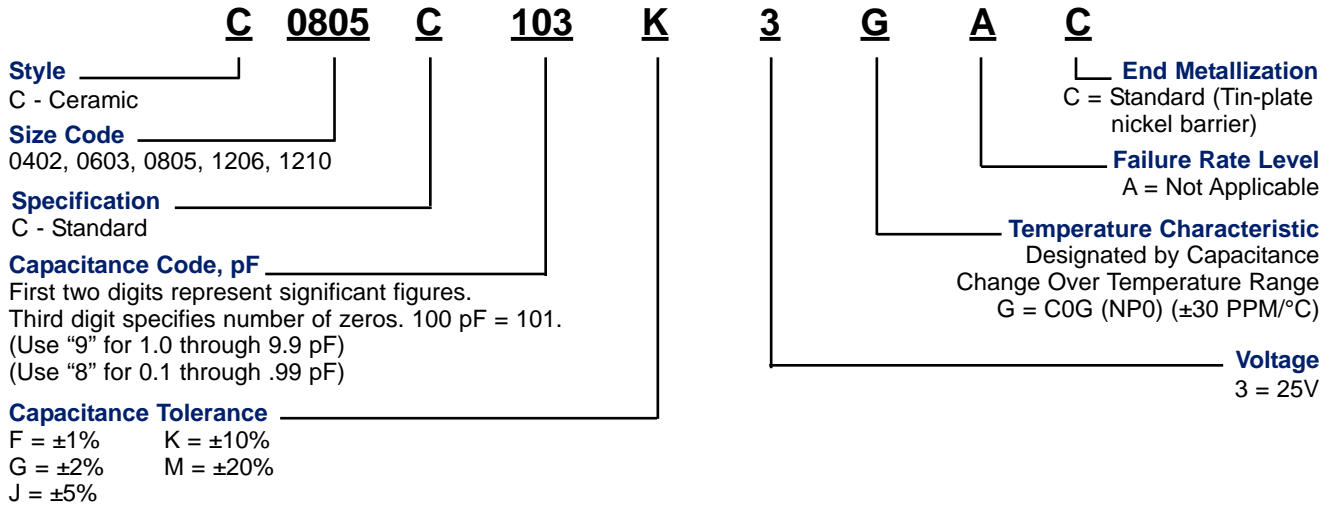
### Marking

These chips will be supplied unmarked. However, marking is available as an extra cost option.

### Qualification/Certification

AEC-Q200 Rev. C - Automotive

RoHS 6 - 100% tin termination



| Capacitance Value       |                   |         |                       |              |             |              |
|-------------------------|-------------------|---------|-----------------------|--------------|-------------|--------------|
| Capacitance Values (pF) | KEMET Part Number | Voltage | Capacitance Tolerance | Thickness mm | Qty 7" Reel | Qty 13" Reel |
| 470                     | C0402C471(1)3GAC  | 25      | F,G,J,K,M             | .50 ± .05    | 10,000      | 50,000       |
| 560                     | C0402C561(1)3GAC  | 25      | F,G,J,K,M             | .50 ± .05    | 10,000      | 50,000       |
| 680                     | C0402C681(1)3GAC  | 25      | F,G,J,K,M             | .50 ± .05    | 10,000      | 50,000       |
| 820                     | C0402C821(1)3GAC  | 25      | F,G,J,K,M             | .50 ± .05    | 10,000      | 50,000       |
| 1000                    | C0402C102(1)3GAC  | 25      | F,G,J,K,M             | .50 ± .05    | 10,000      | 50,000       |
| 2200                    | C0603C222(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 2700                    | C0603C272(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 3300                    | C0603C332(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 3900                    | C0603C392(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 4700                    | C0603C472(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 5600                    | C0603C562(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 6800                    | C0603C682(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 8200                    | C0603C822(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 10,000                  | C0603C103(1)3GAC  | 25      | F,G,J,K,M             | .80 ± .10    | 4,000       | 10,000       |
| 4700                    | C0805C472(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 5600                    | C0805C562(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 6800                    | C0805C682(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 8200                    | C0805C822(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 10,000                  | C0805C103(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 18,000                  | C0805C183(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 22,000                  | C0805C223(1)3GAC  | 25      | F,G,J,K,M             | .90 ± .10    | 4,000       | 10,000       |
| 33,000                  | C0805C333(1)3GAC  | 25      | F,G,J,K,M             | 1.25 ± .20   | 3,000       | 10,000       |
| 18,000                  | C1206C183(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 22,000                  | C1206C223(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 33,000                  | C1206C333(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 47,000                  | C1206C473(1)3GAC  | 25      | F,G,J,K,M             | .90 ± .10    | 4,000       | 10,000       |
| 68,000                  | C1206C683(1)3GAC  | 25      | F,G,J,K,M             | 1.20 ± .15   | 2,500       | 10,000       |
| 100,000                 | C1206C104(1)3GAC  | 25      | F,G,J,K,M             | 1.60 ± .20   | 2,000       | 8,000        |
| 22,000                  | C1210C223(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 27,000                  | C1210C273(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 33,000                  | C1210C333(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 47,000                  | C1210C473(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 68,000                  | C1210C683(1)3GAC  | 25      | F,G,J,K,M             | .78 ± .10    | 4,000       | 10,000       |
| 100,000                 | C1210C104(1)3GAC  | 25      | F,G,J,K,M             | 1.00 ± .10   | 2,500       | 10,000       |
| 220,000                 | C1210C224(1)3GAC  | 25      | F,G,J,K,M             | 2.10 ± .20   | 2,000       | 8,000        |

(1) Insert capacitance tolerance as shown: F = ±1%; G = ±2%; J = ± 5%; K = ±10% or M = ±20%.

In general, the information in the KEMET Surface Mount catalog F3102 applies to these capacitors. The information in this bulletin supplements that in the catalog.