

# SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor

- Samsung P/N : **CL03C3R9CA3GNNC**
- Description : **CAP, 3.9 $\mu$ F, 25V,  $\pm$ 0.25 $\mu$ F, COG, 0201**

## A. Samsung Part Number

**CL**   **03**   **C**   **3R9**   **C**   **A**   **3**   **G**   **N**   **N**   **C**  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪

|                                |                                       |                          |                         |  |
|--------------------------------|---------------------------------------|--------------------------|-------------------------|--|
| ① <b>Series</b>                | Samsung Multi-layer Ceramic Capacitor |                          |                         |  |
| ② <b>Size</b>                  | 0201 (inch code)                      | L: 0.60 $\pm$ 0.03 mm    | W: 0.30 $\pm$ 0.03 mm   |  |
| ③ <b>Dielectric</b>            | COG                                   | ⑧ <b>Inner electrode</b> | Cu                      |  |
| ④ <b>Capacitance</b>           | 3.9 $\mu$ F                           | <b>Termination</b>       | Cu                      |  |
| ⑤ <b>Capacitance tolerance</b> | $\pm$ 0.25 $\mu$ F                    | <b>Plating</b>           | Sn 100% (Pb Free)       |  |
| ⑥ <b>Rated Voltage</b>         | 25 V                                  | ⑨ <b>Product</b>         | Normal                  |  |
| ⑦ <b>Thickness</b>             | 0.30 $\pm$ 0.03 mm                    | ⑩ <b>Special</b>         | Reserved for future use |  |
|                                |                                       | ⑪ <b>Packaging</b>       | Cardboard Type, 7" reel |  |

## B. Structure and dimension



| Samsung P/N<br>(Lead Free) | Dimension(mm)   |                 |                 |                 |
|----------------------------|-----------------|-----------------|-----------------|-----------------|
|                            | L               | W               | T               | BW              |
| CL03C3R9CA3GNNC            | 0.60 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.15 $\pm$ 0.05 |

### C. Samsung Reliability Test and Judgement condition

|                                  | Performance  | Test condition  |
|----------------------------------|--|---|
| Capacitance                      | Within specified tolerance   | 1MHz±10%<br>0.5~5Vrms   |
| Q                                | 478 min  |   |
| Insulation Resistance            | 10,000Mohm or 500Mohm· $\mu$ F<br>Whichever is smaller   | Rated Voltage<br>60~120 sec.  |
| Appearance                       | No abnormal exterior appearance  | Microscope (×10)  |
| Withstanding Voltage             | No dielectric breakdown or mechanical breakdown  | 300% of the rated voltage   |
| Temperature Characteristics      | C0G<br>(From -55°C to 125°C, Capacitance change should be within ±30PPM/°C)  |   |
| Adhesive Strength of Termination | No peeling shall be occur on the terminal electrode  | 200g·F, for 10±1 sec.   |
| Bending Strength                 | Capacitance change :<br>within ±5% or ±0.5pF whichever is larger   | Bending to the limit (1mm)<br>with 1.0mm/sec.   |
| Solderability                    | More than 75% of terminal surface is to be soldered newly  | SnAg3.0Cu0.5 solder<br>245±5°C, 3±0.3sec.<br>(preheating : 80~120°C for 10~30sec.)                                |
| Resistance to Soldering heat     | Capacitance change :<br>within ±2.5% or ±0.25pF whichever is larger<br>Tan $\delta$ , IR : initial spec.                                       | Solder pot : 270±5°C, 10±1sec.  |
| Vibration Test                   | Capacitance change :<br>within ±2.5% or ±0.25pF whichever is larger<br>Tan $\delta$ , IR : initial spec.                                       | Amplitude : 1.5mm<br>From 10Hz to 55Hz (return : 1min.)<br>2hours × 3 direction (x, y, z)                         |
| Moisture Resistance              | Capacitance change :<br>within ±7.5% or ±0.75pF whichever is larger<br>Q : 113 min<br>IR : 500Mohm or 25Mohm · $\mu$ F<br>Whichever is smaller | With rated voltage<br>40±2°C, 90~95%RH, 500+12/-0hrs  |
| High Temperature Resistance      | Capacitance change :<br>within ±3% or ±0.3pF whichever is larger<br>Q : 239 min<br>IR : 1,000Mohm or 50Mohm · $\mu$ F<br>Whichever is smaller  | With 200% of the rated voltage<br>Max. operating temperature<br>1000+48/-0hrs                                     |
| Temperature Cycling              | Capacitance change :<br>within ±2.5% or ±0.25pF whichever is larger<br>Tan $\delta$ , IR : initial spec.                                       | 1 cycle condition<br>Min. operating temperature → 25°C<br>→ Max. operating temperature → 25°C<br><br>5 cycle test |

※ The reliability test condition can be replaced by the corresponding accelerated test condition.

### D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260+0/-5°C, 10sec. Max )



Product specifications included in the specifications are effective as of March 1, 2013.

Please be advised that they are standard product specifications for reference only.

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