

# SPECIFICATION

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

- Samsung P/N : **CL05C121JB5NNNC**
- Description : **CAP, 120pF, 50V, ±5%, COG, 0402**

## A. Samsung Part Number

CL   05   C   121   J   B   5   N   N   N   C  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪

|                         |                                       |                   |                         |
|-------------------------|---------------------------------------|-------------------|-------------------------|
| ① Series                | Samsung Multi-layer Ceramic Capacitor |                   |                         |
| ② Size                  | 0402 (inch code)                      | L: 1.0 ± 0.05 mm  | W: 0.5 ± 0.05 mm        |
| ③ Dielectric            | COG                                   | ⑧ Inner electrode | Ni                      |
| ④ Capacitance           | 120 pF                                | Termination       | Cu                      |
| ⑤ Capacitance tolerance | ±5 %                                  | Plating           | Sn 100% (Pb Free)       |
| ⑥ Rated Voltage         | 50 V                                  | ⑨ Product         | Normal                  |
| ⑦ Thickness             | 0.5 ± 0.05 mm                         | ⑩ Special         | Reserved for future use |
|                         |                                       | ⑪ Packaging       | Cardboard Type, 7" reel |

## B. Samsung Reliability Test and Judgement condition

|                                  | Performance  | Test condition   |
|----------------------------------|--|--|
| Capacitance                      | Within specified tolerance   | 1MHz±10%      0.5~5Vrms  |
| Q                                | 1000 min   |  |
| Insulation Resistance            | 10,000Mohm or 500Mohm·μF<br>Whichever is Smaller   | Rated Voltage      60~120 sec.   |
| Appearance                       | No abnormal exterior appearance  | Microscope (×10)   |
| Withstanding Voltage             | No dielectric breakdown or mechanical breakdown  | 300% of the rated voltage  |
| Temperature Characterisitcs      | COG<br>(From -55℃ to 125℃, Capacitance change should be within ±30PPM/℃)                         |  |
| Adhesive Strength of Termination | No peeling shall be occur on the terminal electrode  | 500g·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℃, 3±0.3sec.<br>(preheating : 80~120℃ for 10~30sec.) |
| Resistance to Soldering heat     | Capacitance change :<br>within ±2.5% or ±0.25pF whichever is larger<br>Tan δ, IR : initial spec. | Solder pot : 270±5℃, 10±1sec.  |

|                                    | <b>Performance</b>  | <b>Test condition</b>   |
|------------------------------------|---|---|
| <b>Vibration Test</b>              | Capacitance change :<br>within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger<br>Tan $\delta$ , IR : initial spec.  | Amplitude : 1.5mm<br>From 10Hz to 55Hz (return : 1min.)<br>2hours $\times$ 3 direction (x, y, z)  |
| <b>Moisture Resistance</b>         | Capacitance change :<br>within $\pm 7.5\%$ or $\pm 0.75\text{pF}$ whichever is larger<br>Q : 200 min<br>IR : 500Mohm or $25\text{Mohm} \cdot \mu\text{F}$<br>Whichever is Smaller | With rated voltage<br>$40\pm 2^\circ\text{C}$ , 90~95%RH, 500+12/-0hrs  |
| <b>High Temperature Resistance</b> | Capacitance change :<br>within $\pm 3\%$ or $\pm 0.3\text{pF}$ whichever is larger<br>Q : 350 min<br>IR : 1000Mohm or $50\text{Mohm} \cdot \mu\text{F}$<br>Whichever is Smaller   | With 200% of the rated voltage<br>Max. operating temperature<br>1000+48/-0hrs   |
| <b>Temperature Cycling</b>         | Capacitance change :<br>within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger<br>Tan $\delta$ , IR : initial spec.  | 1 cycle condition<br>Min. operating temperature $\rightarrow 25^\circ\text{C}$<br>$\rightarrow$ Max. operating temperature $\rightarrow 25^\circ\text{C}$<br><br>5 cycle test |

### C. Recommended Soldering method :

Reflow ( Reflow Peak Temperature :  $260\pm 0/-5^\circ\text{C}$ , 10sec. Max )

\* For the more detail Specification, Please refer to the Samsung MLCC catalogue.