

# SPECIFICATION

(Reference sheet)

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

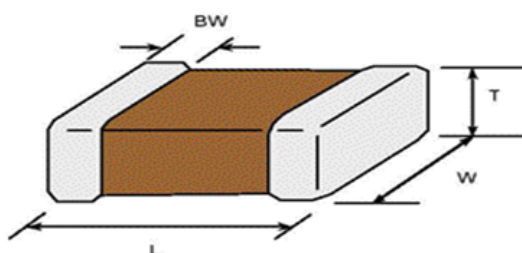
- Samsung P/N : **CL05C200JB5NNNC**
- Description : **CAP, 20pF, 50V, ±5%, C0G, 0402**

## A. Samsung Part Number

**CL** **05** **C** **200** **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: 1.00 ± 0.05 mm |  | W: 0.50 ± 0.05 mm       |  |  |  |  |  |  |
| ③ Dielectric            | C0G                                   | ⑧ Inner electrode |  | Ni                      |  |  |  |  |  |  |
| ④ Capacitance           | 20 pF                                 | Termination       |  | Cu                      |  |  |  |  |  |  |
| ⑤ Capacitance tolerance | ±5 %                                  | Plating           |  | Sn 100% (Pb Free)       |  |  |  |  |  |  |
| ⑥ Rated Voltage         | 50 V                                  | ⑨ Product         |  | Normal                  |  |  |  |  |  |  |
| ⑦ Thickness             | 0.50 ± 0.05 mm                        | ⑩ Special         |  | Reserved for future use |  |  |  |  |  |  |
|                         |                                       | ⑪ Packaging       |  | Cardboard Type, 7" reel |  |  |  |  |  |  |

## B. Structure and dimension



| Samsung P/N<br>(Lead Free) | Dimension(mm) |           |           |           |
|----------------------------|---------------|-----------|-----------|-----------|
|                            | L             | W         | T         | BW        |
| CL05C200JB5NNNC            | 1.00±0.05     | 0.50±0.05 | 0.50±0.05 | 0.25±0.10 |

### C. Samsung Reliability Test and Judgement condition

|                                  | Performance                                                                                                                                            | Test condition                                                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Capacitance                      | Within specified tolerance                                                                                                                             | 1MHz±10%      0.5~5Vrms                                                                                                             |
| Q                                | 800 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 Characteristics      | C0G<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.                                                                                                       |
| Vibration Test                   | Capacitance change :<br>within ±2.5% or ±0.25pF whichever is larger<br>Tan δ, 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 :      166.67 min<br>IR :      500Mohm or 25Mohm · μF<br>Whichever is smaller | With rated voltage<br>40±2℃, 90~95%RH, 500+12/-0hrs                                                                                 |
| High Temperature Resistance      | Capacitance change :<br>within ±3% or ±0.3pF whichever is larger<br>Q :      325 min<br>IR :      1,000Mohm or 50Mohm · μF<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 δ, IR : initial spec.                                                       | 1 cycle condition<br>Min. operating temperature      →      25℃<br>→      Max. operating temperature →      25℃<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℃, 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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So, you need to approve the product specifications before placing an order.

Should you have any question regarding the product specifications,  
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- ② Automotive or Transportation equipment (vehicles , trains , ships , etc)
- ③ Medical equipment
- ④ Military equipment
- ⑤ Disaster prevention/crime prevention equipment
- ⑥ Any other applications with the same as or similar complexity or reliability to the applications set forth above.