

# SPECIFICATION

(Reference sheet)

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

- Samsung P/N : **CL31B333KHHSFNE**
- Description : **CAP, 33nF, 630V, ±10%, X7R, 1206**

## A. Samsung Part Number

**CL 31 B 333 K H H S F N E**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

|                                |                                       |                          |                               |
|--------------------------------|---------------------------------------|--------------------------|-------------------------------|
| ① <b>Series</b>                | Samsung Multi-layer Ceramic Capacitor |                          |                               |
| ② <b>Size</b>                  | 1206 (inch code)                      | L : 3.20 ± 0.20 mm       | W : 1.60 ± 0.20 mm            |
| ③ <b>Dielectric</b>            | X7R                                   | ⑧ <b>Inner electrode</b> | Ni                            |
| ④ <b>Capacitance</b>           | 33 nF                                 | <b>Termination</b>       | Soft termination              |
| ⑤ <b>Capacitance tolerance</b> | ±10 %                                 | <b>Plating</b>           | Sn 100% (Pb Free)             |
| ⑥ <b>Rated Voltage</b>         | 630 V                                 | ⑨ <b>Product</b>         | Product for POWER application |
| ⑦ <b>Thickness</b>             | 1.60 ± 0.20 mm                        | ⑩ <b>Special</b>         | Reserved for future use       |
|                                |                                       | ⑪ <b>Packaging</b>       | Embossed Type, 7" reel        |

## B. Structure & Dimension



| Samsung P/N     | Dimension(mm) |             |             |             |
|-----------------|---------------|-------------|-------------|-------------|
|                 | L             | W           | T           | BW          |
| CL31B333KHHSFNE | 3.20 ± 0.20   | 1.60 ± 0.20 | 1.60 ± 0.20 | 0.50 ± 0.30 |

### C. Samsung Reliability Test and Judgement Condition

|                                  | Judgement   | Test condition   |
|----------------------------------|---|--|
| Capacitance                      | Within specified tolerance  | 1kHz ±10% / 1.0±0.2Vrms  |
| Tan δ (DF)                       | 0.025 max.  | *A capacitor prior to measuring the capacitance is heat treated at 150 °C+0/-10 °C for 1hour and maintained in ambient air for 24±2 hours. |
| Insulation Resistance            | 10,000Mohm or 500Mohm×μF<br>Whichever is smaller  | 500±50 Vdc 60±5 sec.   |
| Appearance                       | No abnormal exterior appearance   | Microscope (×10)   |
| Withstanding Voltage             | No dielectric breakdown or mechanical breakdown   | 150% of the rated voltage  |
| Temperature Characteristics      | X7R<br>(From -55°C to 125°C, Capacitance change should be within ±15%)  |  |
| Adhesive Strength of Termination | No peeling shall be occur on the terminal electrode   | 500g-f, for 10±1 sec.  |
| Bending Strength                 | Capacitance change : within ±12.5%  | Bending to the limit (1mm) with 1.0mm/sec.   |
| Solderability                    | More than 95% 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 : within ±7.5%<br>Tan δ, IR : initial spec.  | Solder pot : 270±5°C, 10±1sec.   |
| Vibration Test                   | Capacitance change : within ± 5%<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 : within ±12.5%<br>Tan δ : 0.05 max<br>IR : 500Mohm or 25Mohm × μF<br>Whichever is smaller   | With rated voltage<br>40±2°C, 90~95%RH, 500+12/-0hrs   |
| High Temperature Resistance      | Capacitance change : within ±12.5%<br>Tan δ : 0.05 max<br>IR : 1,000Mohm or 50Mohm × μF<br>Whichever is smaller | With 120% of the rated voltage<br>Max. operating temperature<br>1,000+48/-0hrs   |
| Temperature Cycling              | Capacitance change : within ±7.5%<br>Tan δ, 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 :250 °C, 6 sec 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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