



# SPECIFICATION

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

- Samsung P/N : [CL21B123JBANNNC](#)
- Description : CAP, 12nF, 50V, ±5%, X7R, 0805

## A. Samsung Part Number

<b>CL</b>	<b>21</b>	<b>B</b>	<b>123</b>	<b>J</b>	<b>B</b>	<b>A</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>C</b>
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

① <b>Series</b>	Samsung Multi-layer Ceramic Capacitor													
② <b>Size</b>	0805 (inch code)			L: 2.0 ± 0.1 mm			W: 1.25 ± 0.1 mm							
③ <b>Dielectric</b>	X7R				⑧ <b>Inner electrode</b>	Ni								
④ <b>Capacitance</b>	12 nF				⑨ <b>Termination</b>	Cu								
⑤ <b>Capacitance tolerance</b>	±5 %				⑩ <b>Plating</b>	Sn 100% (Pb Free)								
⑥ <b>Rated Voltage</b>	50 V				⑪ <b>Product</b>	Normal								
⑦ <b>Thickness</b>	0.65 ± 0.1 mm				⑫ <b>Special</b>	Reserved for future use								
					⑬ <b>Packaging</b>	Cardboard Type, 7" reel								

## B. Samsung Reliability Test and Judgement condition

	Performance	Test condition
<b>Capacitance</b>	Within specified tolerance	1kHz±10% 1.0±0.2Vrms
<b>Tan δ (DF)</b>	0.025 max.	
<b>Insulation Resistance</b>	10,000Mohm or 500Mohm·μF Whichever is Smaller	Rated Voltage 60~120 sec.
<b>Appearance</b>	No abnormal exterior appearance	Microscope (×10)
<b>Withstanding Voltage</b>	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
<b>Temperature Characterisitcs</b>	X7R (From -55 °C to 125 °C, Capacitance change shoud be within ±15%)	
<b>Adhesive Strength of Termination</b>	No peeling shall be occur on the terminal electrode	500g·F, for 10±1 sec.
<b>Bending Strength</b>	Capacitance change : within ±12.5%	Bending to the limit (1mm) with 1.0mm/sec.
<b>Solderability</b>	More than 75% of terminal surface is to be soldered newly	SnAg3.0Cu0.5 solder 245±5 °C, 3±0.3sec. (preheating : 80~120 °C for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5 °C, 10±1sec.

	Performance	Test condition
<b>Vibration Test</b>	Capacitance change : within $\pm 5\%$ Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours $\times$ 3 direction (x, y, z)
<b>Moisture Resistance</b>	Capacitance change : within $\pm 12.5\%$ Tan $\delta$ : 0.05 max IR : 500Mohm or $25\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	With rated voltage 40 $\pm 2^\circ\text{C}$ , 90~95%RH, 500+12/-0hrs
<b>High Temperature Resistance</b>	Capacitance change : within $\pm 12.5\%$ Tan $\delta$ : 0.05 max IR : 1000Mohm or $50\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	With 200% of the rated voltage Max. operating temperature 1000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within $\pm 7.5\%$ Tan $\delta$ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow 25^\circ\text{C}$ $\rightarrow$ Max. operating temperature $\rightarrow 25^\circ\text{C}$ 5 cycle test

**C. Recommended Soldering method :**

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

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