

# SPECIFICATION

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

- Part Number : **CL10C2R2CB8NNNC**
- Description : **CAP, 2.2pF, 50V, ± 0.25pF, C0G, 0603**

## A. Samsung Part Number

CL   10   C   2R2   C   B   8   N   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>	0603 (inch code)	L: 1.60 ±0.10 mm	W: 0.80 ±0.10 mm
③ <b>Dielectric</b>	C0G	⑧ <b>Inner electrode</b>	Ni
④ <b>Capacitance</b>	2.2 pF	<b>Termination</b>	Cu
⑤ <b>Capacitance tolerance</b>	± 0.25 pF	<b>Plating</b>	Sn 100% (Pb Free)
⑥ <b>Rated Voltage</b>	50 V	⑨ <b>Product</b>	Normal
⑦ <b>Thickness</b>	0.80 ±0.10 mm	⑩ <b>Special</b>	Reserved for future use
		⑪ <b>Packaging</b>	Cardboard Type, 7" reel

## B. Samsung Reliability Test and Judgement condition

	Performance	Test condition
<b>Capacitance</b>	Within specified tolerance	1MHz±10%      0.5~5Vrms
<b>Q</b>	444 min	
<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	300% of the rated voltage
<b>Temperature Characterisitcs</b>	C0G (From -55℃ to 125℃, Capacitance change should be within ±30PPM/℃)	
<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 ±5% or ±0.5pF whichever is larger	Bending to the limit (1mm) with 1.0mm/sec.
<b>Solderability</b>	More than 75% of terminal surface is to be soldered newly	1) Sn63Pb37 solder 235±5℃, 5±0.5sec. 2) SnAg3.0Cu0.5 solder 245±5℃, 3±0.3sec. (preheating : 80~120℃ for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within ±2.5% or ±0.25pF whichever is larger Tan δ, IR : initial spec.	Solder pot : 270±5℃, 10±1sec.

	Performance	Test condition
<b>Vibration Test</b>	Capacitance change : within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours $\times$ 3 direction (x, y, z)
<b>Humidity</b>	Capacitance change : within $\pm 5\%$ or $\pm 0.5\text{pF}$ whichever is larger Q: 222 min IR : 1000Mohm or 50Mohm $\cdot \mu\text{F}$ Whichever is Smaller	40 $\pm$ 2 $^{\circ}\text{C}$ , 90~95%RH, 500+12/-0hrs
<b>Moisture Resistance</b>	Capacitance change : within $\pm 7.5\%$ or $\pm 0.75\text{pF}$ whichever is larger Q : 107.33 min IR : 500Mohm or 25Mohm $\cdot \mu\text{F}$ 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 $\pm 3\%$ or $\pm 0.3\text{pF}$ whichever is larger Q : 222 min IR : 1000Mohm or 50Mohm $\cdot \mu\text{F}$ Whichever is Smaller	With 200% of the rated voltage Max. operating temperature 1000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger 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 : 250 $\pm$ 5 $^{\circ}\text{C}$ , 6sec. Max )

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