

# SPECIFICATION

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

- Samsung P/N : **CL03C5R1CA3GNNH**
- Description : **CAP, 5.1pF, 25V, ±0.25pF, C0G, 0201**

## A. Samsung Part Number

CL   03   C   5R1   C   A   3   G   N   N   H  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪

① Series	Samsung Multi-layer Ceramic Capacitor		
② Size	0201 (inch code)	L: 0.6 ± 0.03 mm	W: 0.3 ± 0.03 mm
③ Dielectric	C0G	⑧ Inner electrode	Cu
④ Capacitance	5.1 pF	Termination	Cu
⑤ Capacitance tolerance	±0.25 pF	Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	25 V	⑨ Product	Normal
⑦ Thickness	0.3 ± 0.03 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	502 min	
Insulation Resistance	10,000Mohm or 500Mohm·μF 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	C0G (From -55℃ to 125℃, Capacitance change should be within ±30PPM/℃)	
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	200g·F, for 10±1 sec.
Bending Strength	Capacitance change : within ±5% or ±0.5pF whichever is larger	Bending to the limit (1mm) with 1.0mm/sec.
Solderability	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.)
Resistance to Soldering heat	Capacitance change : within ±2.5% or ±0.25pF whichever is larger Tan δ, IR : initial spec.	Solder pot : 270±5℃, 10±1sec.

	<b>Performance</b>	<b>Test condition</b>
<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: 251 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 : 117 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 : 251 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 : 260+0/-5 $^\circ\text{C}$ , 10sec. Max )

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