

SPECIFICATION

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

- Part Number : **CL31C221JIHNNNE**
- Description : **CAP, 220pF, 1000V, ±5%, C0G, 1206**

A. Samsung Part Number

CL **31** **C** **221** **J** **I** **H** **N** **N** **N** **E**
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor									
② Size	1206 (inch code)	L: 3.2 ± 0.2 mm		W: 1.6 ± 0.2 mm						
③ Dielectric	C0G	⑧ Inner electrode		Ni						
④ Capacitance	220 pF	Termination		Cu						
⑤ Capacitance tolerance	±5 %	Plating		Sn 100% (Pb Free)						
⑥ Rated Voltage	1000 V	⑨ Product		Normal						
⑦ Thickness	1.6 ± 0.2 mm	⑩ Special		Reserved for future use						
		⑪ Packaging		Embossed Type, 7" reel						

B. Samsung Reliability Test and Judgement condition

	Performance	Test condition
Capacitance	Within specified tolerance	1MHz±10% 0.5~5Vrms
Q	1000 min	
Insulation Resistance	10,000Mohm or 500Mohm·μF Whichever is Smaller	500±50 Vdc 60~120 sec.
Appearance	No abnormal exterior appearance	Microscope (×10)
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	120% 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	500g·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.

	Performance	Test condition
Vibration Test	Capacitance change : within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger Tan δ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours $\times$ 3 direction (x, y, z)
Humidity	Capacitance change : within $\pm 5\%$ or $\pm 0.5\text{pF}$ whichever is larger Q: 350 min IR : 1000Mohm or 50Mohm $\cdot \mu\text{F}$ Whichever is Smaller	40 $\pm 2^\circ\text{C}$, 90~95%RH, 500+12/-0hrs
High Temperature Resistance	Capacitance change : within $\pm 3\%$ or $\pm 0.3\text{pF}$ whichever is larger Q : 350 min IR : 1000Mohm or 50Mohm $\cdot \mu\text{F}$ Whichever is Smaller	With 100% of the rated voltage Max. operating temperature 1000+48/-0hrs
Temperature Cycling	Capacitance change : within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger Tan δ , 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 $\pm 0/-5^\circ\text{C}$, 10sec. Max)

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