

SPECIFICATION

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

- Samsung P/N : **CL31B333KGHNNNE**
- Description : **CAP, 33nF, 500V, ±10%, X7R, 1206**

A. Samsung Part Number

CL	31	B	333	K	G	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	X7R				⑧ Inner electrode	Ni							
④ Capacitance	33 nF				⑨ Termination	Cu							
⑤ Capacitance tolerance	±10 %				⑩ Plating	Sn 100% (Pb Free)							
⑥ Rated Voltage	500 V				⑪ Product	Normal							
⑦ Thickness	1.25 ± 0.2 mm				⑫ Special	Reserved for future use							
					⑬ Packaging	Embossed Type, 7" reel							

B. Samsung Reliability Test and Judgement condition

	Performance	Test condition	
Capacitance	Within specified tolerance	1kHz±10%	1.0±0.2Vrms
Tan δ (DF)	0.025 max.		
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	150% of the rated voltage	
Temperature Characterisitcs	X7R (From -55 °C to 125 °C, Capacitance change shoud 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 75% of terminal surface is to be soldered newly	1) Sn63Pb37 solder 235±5 °C, 5±0.5sec. 2) SnAg3.0Cu0.5 solder 245±5 °C, 3±0.3sec. (preheating : 80~120 °C for 10~30sec.)	
Resistance to Soldering heat	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5 °C, 10±1sec.	

	Performance	Test condition
Vibration Test	Capacitance change : within $\pm 5\%$ 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 $\pm 12.5\%$ Tan δ : 0.05 max IR : 1000Mohm or $50\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	40 ± 2 °C, 90~95%RH, 500+12/-0hrs
Moisture Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.05 max IR : 500Mohm or $25\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	With rated voltage 40 ± 2 °C, 90~95%RH, 500+12/-0hrs
High Temperature Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.05 max IR : 1000Mohm or $50\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	With 120% of the rated voltage Max. operating temperature 1000+48/-0hrs
Temperature Cycling	Capacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.	1 cycle condition Min. operating temperature \rightarrow 25 °C \rightarrow Max. operating temperature \rightarrow 25 °C 5 cycle test

C. Recommended Soldering method :

Reflow (Reflow Peak Temperature : 260 $\pm 0/-5$ °C, 10sec. Max)

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