

SPECIFICATION

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

- Samsung P/N : **CL31B333KFESNNE**
- Description : **CAP, 33nF, 350V, ±10%, X7R, 1206**

A. Samsung Part Number

CL 31 B 333 K F E S 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	Termination	Cu/Ag-Epoxy
⑤ Capacitance tolerance	±10 %	Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	350 V	⑨ Product	Normal
⑦ Thickness	1.1 ± 0.15 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	1kHz±10% 1.0±0.2Vrms
Tan δ (DF)	0.025 max.	
Insulation Resistance	More than 100MΩ·μF	Rated Voltage 60±5 sec.
Appearance	No abnormal exterior appearance	Microscope (×10)
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	Apply the 500 voltage for 1~5 sec Cha Charge/ Discharge current : 50mA max
Temperature Characterisitcs	X7R (From -55℃ to 125℃, Capacitance change should be within ±15%)	
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	1000g-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℃, 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 ±10% Tan δ, IR : initial spec.	Solder pot : 260±5℃, 10±1sec.

	Performance	Test condition
Vibration Test	Capacitance: Within the specific tolerance 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 $\pm 15\%$ Tan δ : 0.05 max IR : 10Mohm $\cdot \mu F$	40 ± 2 °C, 90~95%RH, 500+12/-0hrs
Moisture Resistance	Capacitance change : within $\pm 15\%$ Tan δ : 0.05 max IR : 10Mohm $\cdot \mu F$	With rated voltage 40 ± 2 °C, 90~95%RH, 500+12/-0hrs
High Temperature Resistance	Capacitance change : within $\pm 15\%$ Tan δ : 0.05 max IR : 10Mohm $\cdot \mu F$	With rated voltage Max. operating temperature 1000+48/-0hrs Charge/ Discharge current : 50mA max
Temperature Cycling	Capacitance change : within $\pm 7.5\%$ Tan δ : 0.025 max IR : More than 100M $\Omega \cdot \mu F$	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+0/-5°C, 10sec. Max)

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