



SPECIFICATION

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

- Samsung P/N : [CL31B333KHHNFNE](#)
- Description : CAP, 33nF, 630V, ±10%, X7R, 1206

A. Samsung Part Number

CL 31 B 333 K H H N F 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	630 V	⑪ Product	Product for POWER application
⑦ Thickness	1.6 ± 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	$1\text{kHz} \pm 10\%$	$1.0 \pm 0.2\text{Vrms}$
Tan δ (DF)	0.025 max.		
Insulation Resistance	10,000Mohm or $500\text{Mohm} \cdot \mu\text{F}$ Whichever is Smaller	$500 \pm 50\text{ Vdc}$	60~120 sec.
Appearance	No abnormal exterior appearance	Microscope ($\times 10$)	
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	$500\text{g}\cdot\text{F}$, 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	SnAg3.0Cu0.5 solder $245 \pm 5^\circ\text{C}$, 3 ± 0.3 sec. (preheating : $80 \sim 120^\circ\text{C}$ for 10~30sec.)	
Resistance to Soldering heat	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : $270 \pm 5^\circ\text{C}$, 10 ± 1 sec.	

	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)
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 $40 \pm 2^\circ\text{C}$, 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 $\rightarrow 25^\circ\text{C}$ \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.