



SPECIFICATION

• Samsung P/N :

• Description :

(Reference sheet)

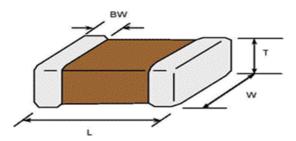
CL31B333KEHNNNE

CAP, 33nF, 250V, ±10%, X7R, 1206

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- A. Samsung Part Number

		<u>CL</u> 31 <u>B</u> ① ② ③		<u>N N E</u> 9 10 11
1	Series	Samsung Multi-layer Ceramic Capacitor		
2	Size	1206 (inch code)	L: 3.20 ± 0.20 mm	W: 1.60 ± 0.20 mm
3	Dielectric	X7R	Inner electrode	Ni
4	Capacitance	33 nF	Termination	Cu
5	Capacitance	±10 %	Plating	Sn 100% (Pb Free)
	tolerance		9 Product	Normal
6	Rated Voltage	250 V	10 Special	Reserved for future use
\bigcirc	Thickness	1.60 ± 0.20 mm	1 Packaging	Embossed Type, 7"reel

B. Structure and dimension



Samouna D/N	Dimension(mm)				
Samsung P/N	L	W	Т	BW	
CL31B333KEHNNNE	3.20 ± 0.20	1.60 ± 0.20	1.60 ± 0.20	0.50 ± 0.30	

C. Samsung Reliability Test and Judgement condition

CapacitanceWithin specified tolerance $1 \text{kl}\pm 10\%$ $1.0\pm 0.2 \text{Vrms}$ *A capacitor prior to measuring the capacitance is heat treated at $150 \text{ °C} + 0/ \cdot 10 \text{ °C}$ for thour and maintained in ambient air for 24 ± 2 hours.Insulation10.000 Mohm or $500 \text{Mohm-}_{a}\text{f}$ Rated Voltage $60 - 120 \text{ sec.}$ ResistanceWhichever is smallerRated Voltage $60 - 120 \text{ sec.}$ AppearanceNo abnormal exterior appearanceVisual inspectionWithstandingNo dielectric breakdown or mechanical breakdown 200% of the rated voltageTemperatureX7R Characteristics(From -55 °C to $125 ^\circ$ °, Capacitance change should be within $\pm 15\%$)Adhesive StrengthNo peeling shall be occur on the terminal electrode500g.F, for $10\pm 1 \text{ sec.}$ Bending StrengthCapacitance change : within $\pm 12.5\%$ Bending to the limit (1mm) with 1.0mm/sec. SolderabilityMore than 95% of terminal surface is to be soldered newlySolder pot : $270\pm5°$ C, $10\pm1\text{ sec.}$ Vibration TestCapacitance change : within $\pm 7.5\%$ Solder pot : $270\pm5°$ C, $10\pm1\text{ sec.}$ Soldering heatTan δ , IR : initial spec.Amplitude : 1.5 mm Vibration TestCapacitance change : capacitance change : within $\pm 12.5\%$ Amplitude : 1.5 mm ResistanceTan δ , IR : initial spec.Within $\pm 12.5\%$ Mith ated voltageVibration TestCapacitance change : capacitance change : mathem of $\pm 12.5\%$ Amplitude : 1.5 mm ResistanceTan δ , IR : initial spec.Within $\pm 12.5\%$ Mith ated voltage </th <th></th> <th>Performance</th> <th>Test condition</th>		Performance	Test condition		
Tan δ (DF)0.025 max.ambient air for 24±2 hours.Insulation10,000Mohm or 500Mohm: μ FRated Voltage60~120 sec.ResistanceWhichever is smallerAppearanceVisual inspectionAppearanceNo abnormal exterior appearanceVisual inspectionWithstandingNo dielectric breakdown or200% of the rated voltageVoltagemechanical breakdown200% of the rated voltageCharacteristics(From -55°C to 125°C, Capacitance change should be within ±15%)Adhesive StrengthNo peeling shall be occur on the terminal electrode500g·F, for 10±1 sec.Bending StrengthCapacitance change : within ±12.5%Bending to the limit (1mm) with 1.0mm/sec.SolderabilityMore than 95% of terminal surface is to be soldered newlySnAg3.0Cu0.5 solder 245±5°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)Resistance to Soldering heatCapacitance change : within ±7.5% Tan δ , IR : initial spec.Solder pot : 270±5°C, 10±1sec.Vibration TestCapacitance change : within ±5% Tan δ , IR : initial spec.Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)Moisture ResistanceCapacitance change : within ±12.5% Tan δ : 0.05 max IR : 500Mohm or 25Mohm · μ FWith rated voltage	Capacitance	Within specified tolerance	*A capacitor prior to measuring the capacitance is heat		
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Resistance Tan δ : 0.05 max 40±2℃, 90~95%RH, 500 +12/-0 hours IR : 500Mohm or 25Mohm · μF 40±2℃, 90~95%RH, 500 +12/-0 hours			2hours \times 3 direction (x, y, z)		
IR : 500Mohm or 25Mohm $\cdot \mu F$	Moisture	Capacitance change : within ±12.5%	With rated voltage		
	Resistance	Tan δ:0.05 max	40±2℃, 90~95%RH, 500 +12/-0 hours		
Whichever is smaller		IR : 500Mohm or 25Mohm $\cdot \mu F$			
		Whichever is smaller			
High Temperature Capacitance change : within ±12.5% With 150% of the rated voltage	High Temperature	Capacitance change : within ±12.5%	With 150% of the rated voltage		
ResistanceTan δ : 0.05 maxMax. operating temperature	Resistance	Tan δ:0.05 max	Max. operating temperature		
IR : 1,000Mohm or 50Mohm · μF		IR : 1,000Mohm or 50Mohm $\cdot \mu F$			
Whichever is smaller 1000+48/-0 hours		Whichever is smaller	1000+48/-0 hours		
Temperature Capacitance change : within ±7.5% 1 cycle condition	Temperature	Capacitance change : within ±7.5%	1 cycle condition		
CyclingTan δ , IR : initial spec.Min. operating temperature \rightarrow 25 °C	Cycling	Tan δ, IR : initial spec.	Min. operating temperature \rightarrow 25 °C		
\rightarrow Max. operating temperature \rightarrow 25 °C			$ ightarrow$ Max. operating temperature $ ightarrow$ 25 $^\circ \!$		
5 cycles test			5 cycles test		

X The reliability test condition can be replaced by the corresponding accelerated test condition.

D. Recommended Soldering method :

Reflow (Reflow Peak Temperature : 250°C, 6sec.)

Product specifications included in the specifications are effective as of March 1, 2013. Please be advised that they are standard product specifications for reference only. We may change, modify or discontinue the product specifications without notice at any time. So, you need to approve the product specifications before placing an order. Should you have any question regarding the product specifications, please contact our sales personnel or application engineers.

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The products listed in this Specification sheet are **NOT** designed and manufactured for any use and applications set forth below.

Please note that any misuse of the products deviating from products specifications or information provided in this Spec sheet may cause serious property damages or personal injury. We will **NOT** be liable for any damages resulting from any misuse of the products, specifically including using the products for high reliability applications as listed below.

If you have any questions regarding this 'Limitation of Use and Application', you should first contact our sales personnel or application engineers.

- *①* Aerospace/Aviation equipment
- 2 Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- (4) Military equipment
- 5 Disaster prevention/crime prevention equipment
- Ø Power plant control equipment
- ⑦ Atomic energy-related equipment
- Indersea equipment
- Itraffic signal equipment
- Data-processing equipment
- ① Electric heating apparatus, burning equipment
- ② Safety equipment
- 13 Any other applications with the same as or similar complexity or reliability to the applications