

# SPECIFICATION

(Reference sheet)

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

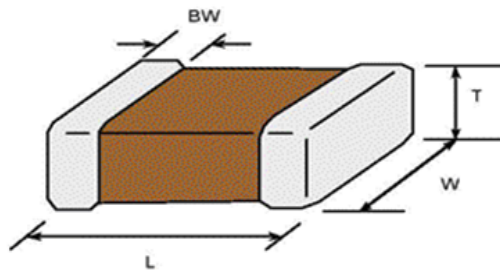
- Samsung P/N : **CL21C330JECNNWC**
- Description : **CAP, 33pF, 250V, ± 5%, COG, 0805**

## A. Samsung Part Number

**CL** **21** **C** **330** **J** **E** **C** **N** **N** **W** **C**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor		
② Size	0805 (inch code)	L: 2.00 ± 0.10 mm	W: 1.25 ± 0.10 mm
③ Dielectric	COG	⑧ Inner electrode	Ni
④ Capacitance	33 pF	Termination	Cu
⑤ Capacitance tolerance	± 5%	⑨ Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	250 V	⑩ Product	Normal
⑦ Thickness	0.85 ± 0.10 mm	⑪ Special	Industrial (Network, Power, etc.)
		⑪ Packaging	Cardboard Type, 7" reel

## B. Structure and dimension



Samsung P/N	Dimension(mm)			
	L	W	T	BW
CL21C330JECNNWC	2.00 ± 0.10	1.25 ± 0.10	0.85 ± 0.10	0.50+0.20/-0.30

### C. Samsung Reliability Test and Judgement condition

	Judgement	Test condition
Capacitance	Within specified tolerance	1MHz±10% / 0.5~5Vrms
Q	1,000 min	
Insulation Resistance	10,000Mohm or 500Mohm × $\mu\text{F}$ Whichever is smaller	Rated Voltage 60~120 sec.
Appearance	No abnormal exterior appearance	Microscope (X10)
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	200% of the rated voltage
Temperature Characteristics	COG (From -55°C to 125°C, Capacitance change should be within ±30PPM/°C)	
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 95% of terminal surface is to be soldered newly	SnAg3.0Cu0.5 solder 245±5°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)
Resistance to Soldering heat	Capacitance change : within ±2.5% or ±0.25pF whichever is larger Tan $\delta$ , IR : initial spec.	Solder pot : 270±5°C, 10±1sec.
Vibration Test	Capacitance change : within ±2.5% or ±0.25pF whichever is larger Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours ´ 3 direction (x, y, z)
Moisture Resistance	Capacitance change : within ±7.5% or ±0.75pF whichever is larger Q : 200 min IR : 500Mohm or 25Mohm × $\mu\text{F}$ Whichever is smaller	With rated voltage 40±2°C, 90~95%RH, 500+12/-0hrs
High Temperature Resistance	Capacitance change : within ±3% or ±0.3pF whichever is larger Q : 350 min IR : 1,000Mohm or 50Mohm × $\mu\text{F}$ Whichever is smaller	With 150% of the rated voltage Max. operating temperature 1,000+48/-0hrs
Temperature Cycling	Capacitance change : within ±2.5% or ±0.25pF whichever is larger Tan $\delta$ , IR : initial spec.	1 cycle condition Min. operating temperature → 25°C → Max. operating temperature → 25°C  5 cycle test

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

### D. Recommended Soldering method :

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



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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- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- ③ Medical equipment
- ④ Military equipment
- ⑤ Disaster prevention/crime prevention equipment
- ⑥ Power plant control equipment
- ⑦ Atomic energy-related equipment
- ⑧ Undersea equipment
- ⑨ Traffic signal equipment
- ⑩ Data-processing equipment
- ⑪ Electric heating apparatus, burning equipment
- ⑫ Safety equipment
- ⑬ Any other applications with the same as or similar complexity or reliability to the applications