



SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics - Samsung P/N : CL10C221JB8NFNC

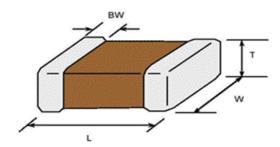
Product : Multi-layer Ceramic Capacitor
 Description : CAP, 220pF, 50V, ± 5%, C0G, 0603

A. Samsung Part Number

<u>CL</u> <u>10</u> <u>C</u> <u>221</u> <u>J</u> <u>B</u> <u>8</u> <u>N</u> <u>F</u> <u>N</u> <u>C</u> ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

1	Series	Samsung Multi-layer Ceramic Capacitor			
2	Size	0603 (inch code)	L: 1.60 ± 0.10 mm	W:	0.80 ± 0.10 mm
3	Dielectric	C0G	8 Inner electrode		Ni
4	Capacitance	220 pF	Termination		Cu
⑤	Capacitance	± 5%	Plating		Sn 100% (Pb Free)
	tolerance		Product		Product for POWER application
6	Rated Voltage	50 V	® Special		Reserved for future use
7	Thickness	0.80 ± 0.10 mm	Packaging		Cardboard Type, 7" reel

B. Structure and dimension



Samsung P/N	Dimension(mm)				
(Lead Free)	L	W	Т	BW	
CL10C221JB8NFNC	1.60 ± 0.10	0.80 ± 0.10	0.80 ± 0.10	0.30 ± 0.20	

C. Samsung Reliability Test and Judgement condition

	Performance	Test condition				
Capacitance	Within specified tolerance	1MHz±10% / 0.5~5Vrms				
Q	1,000 min					
Insulation	10,000Mohm or 500Mohm× <i>μ</i> F	Rated Voltage 60~120 sec.				
Resistance	Whichever is smaller					
Appearance	No abnormal exterior appearance	Microscop (X10)				
Withstanding	No dielectric breakdown or	300% of the rated voltage				
Voltage	mechanical breakdown					
Temperature	COG					
Characteristics	(From -55 ℃ to 125 ℃, Capacitance change should be within ±30PPM/ ℃)					
Adhesive Strength	No peeling shall be occur on the	500g×F, for 10±1 sec.				
of Termination	terminal electrode					
Bending Strength	Capacitance change :	Bending to the limit (1mm)				
	within ±5% or ±0.5pF whichever is larger	with 1.0mm/sec.				
Solderability	More than 75% of terminal surface	SnAg3.0Cu0.5 solder				
	is to be soldered newly	245±5℃, 3±0.3sec.				
		(preheating : 80~120 ℃ for 10~30sec.)				
Resistance to	Capacitance change :	Solder pot : 270±5℃, 10±1sec.				
Soldering heat	within ±2.5% or ±0.25pF whichever is larger					
	Tan δ, IR : initial spec.					
Vibration Test	Capacitance change :	Amplitude : 1.5mm				
	within ±2.5% or ±0.25pF whichever is larger	From 10Hz to 55Hz (return : 1min.)				
	Tan δ, IR : initial spec.	2hours ' 3 direction (x, y, z)				
Moisture	Capacitance change :	With rated voltage				
Resistance	within ±7.5% or ±0.75pF whichever is larger	40±2℃, 90~95%RH, 500+12/-0hrs				
	Q: 200 min					
	IR : 500Mohm or 25Mohm × μ F					
	Whichever is smaller					
High Temperature	Capacitance change :	With 200% of the rated voltage				
Resistance	within ±3% or ±0.3pF whichever is larger	Max. operating temperature				
	Q: 350 min	1000+48/-0hrs				
	IR : 1,000Mohm or 50Mohm × μ F					
	Whichever is smaller					
Temperature	Capacitance change :	1 cycle condition				
Cycling	within ±2.5% or ±0.25pF whichever is larger	Min. operating temperature \rightarrow 25 $^{\circ}$ C				
	Tan δ, IR : initial spec.	$ ightarrow$ Max. operating temperature $ ightarrow$ 25 $^{\circ}$ 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: 260+0/-5°C, 10sec. Max)



A 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.

- Disclaimer & Limitation of Use and Application -

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
- Military equipment
- 5 Disaster prevention/crime prevention equipment
- Any other applications with the same as or similar complexity or reliability to the applications set forth above.