



SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics - Samsung P/N : CL21C1R5BBANNNC

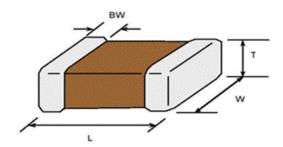
Product : Multi-layer Ceramic Capacitor
 Description : CAP, 1.5pF, 50V, ± 0.1pF, C0G, 0805

A. Samsung Part Number

<u>CL</u> <u>21</u> <u>C</u> <u>1R5</u> <u>B</u> <u>B</u> <u>A</u> <u>N</u> <u>N</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	0805 (inch code)	L: 2.00 ± 0.10 mm	W: 1.25 ± 0.10 mm
3	Dielectric	C0G	8 Inner electrode	Ni
4	Capacitance	1.5 pF	Termination	Cu
(5)	Capacitance	± 0.1pF	Plating	Sn 100% (Pb Free)
	tolerance		9 Product	Normal
6	Rated Voltage	50 V	Special	Reserved for future use
7	Thickness	0.65 ± 0.10 mm	① Packaging	Cardboard Type, 7" reel

B. Structure and dimension



Samsung P/N	Dimension(mm)				
(Lead Free)	L	W	Т	BW	
CL21C1R5BBANNNC	2.00 ± 0.10	1.25 ± 0.10	0.65 ± 0.10	0.50+0.20/-0.30	

C. Samsung Reliability Test and Judgement condition

A30 min nsulation 10,000Mohm or 500Mohm× _i F Resistance Whichever is smaller Whithstanding No dielectric breakdown or Mithstanding No beliete to breakdown COG Characteristics Characteristics Characteristics Characteristics No peeling shall be occur on the of Termination Bending Strength More than 75% of terminal surface is to be soldered newly Colledering heat Whith ±2.5% or ±0.25 F whichever is larger Tan δ, IR: initial spec. Whith ±2.5% or ±0.25 F whichever is larger Resistance Within ±7.5% or ±0.25 F whichever is larger Within ±2.5% or ±0.25 F whichever is larger Tan δ, IR: initial spec. Whosture Resistance Resistance Within ±7.5% or ±0.75 F whichever is larger Tan δ, IR: initial spec. Whosture Resistance Capacitance change: within ±7.5% or ±0.75 F whichever is larger Tan δ, IR: initial spec. Whosture Resistance Capacitance change: within ±7.5% or ±0.75 F whichever is larger Tan δ, IR: initial spec. Whosture Resistance Capacitance change: within ±7.5% or ±0.75 F whichever is larger Q: 105 min IR: 500Mohm or 25Mohm × Whichever is smaller Capacitance change: With 200% of the rated voltage Wax. operating temperature Resistance With 200% of the rated voltage Max. operating temperature Max. operating temperature Max. operating temperature Max. operating temperature 1000+48/-0hrs		Performance	Test condition			
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Appearance Whichever is smaller Appearance No abnormal exterior appearance No dielectric breakdown or mechanical breakdown Mithstanding Voltage Mithstanding Modelectric breakdown or mechanical breakdown Mithstanding Modelectric breakdown Mithstanding Modelectric breakdown COG Characteristics (From -55°C to 125°C, Capacitance change should be within ±30PPM/°C) Adhesive Strength Of Termination Bending Strength More than 75% of terminal surface is to be soldered newly More than 75% of terminal surface is to be soldered newly More than 75% of terminal surface is to be soldered newly Capacitance change: With 1.0mm/sec. SnAg3.0Cu0.5 solder 245±5°C, 3±0.3sec. (preheating: 80~120°C for 10~30sec.) Resistance to Capacitance change: Within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Amplitude: 1.5mm From 10½ to 55½ (return: 1min.) 2hours '3 direction (x, y, z) With rated voltage Max. operating temperature Resistance With 200% of the rated voltage Max. operating temperature Max. operating temperature	Q	430 min				
No abnormal exterior appearance Microscop (X10)	Insulation	10,000Mohm or 500Mohm× <i>μ</i> F	Rated Voltage 60~120 sec.			
No dielectric breakdown or mechanical breakdown 300% of the rated voltage	Resistance	Whichever is smaller				
### Micharce Charge mechanical breakdown	Appearance	No abnormal exterior appearance	Microscop (X10)			
COG Characteristics (From -55°C to 125°C, Capacitance change should be within ±30PPM/°C) Adhesive Strength of Termination Bending Strength Solderability More than 75% of terminal surface is to be soldered newly Capacitance change: within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Capacitance change: within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Capacitance change: within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Capacitance change: within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Capacitance change: within ±2.5% or ±0.25pF whichever is larger Tan δ, IR: initial spec. Capacitance change: within ±2.5% or ±0.75pF whichever is larger Tan δ, IR: initial spec. Will rated voltage With rated voltage	Withstanding	No dielectric breakdown or	300% of the rated voltage			
Characteristics (From -55°C to 125°C, Capacitance change should be within ±30PPM/°C)	Voltage	mechanical breakdown				
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Whichever is smaller High Temperature Resistance Q: 215 min With 200% of the rated voltage Max. operating temperature 1000+48/-0hrs		Q: 105 min				
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within ±3% or ±0.3 pF whichever is larger Q: 215 min Max. operating temperature 1000+48/-0hrs		Whichever is smaller				
Q: 215 min 1000+48/-0hrs	High Temperature	Capacitance change :	With 200% of the rated voltage			
	Resistance	within ±3% or ±0.3pF whichever is larger				
IR: 1,000Mohm or 50Mohm x «F		Q: 215 min	1000+48/-0hrs			
μ . μ . μ		IR: 1,000Mohm or 50Mohm × μ F				
Whichever is smaller		Whichever is smaller				
Temperature Capacitance change : 1 cycle condition	Temperature	Capacitance change :	1 cycle condition			
	Cycling		<u> </u>			
Tan δ , IR : initial spec. \rightarrow Max. operating temperature \rightarrow 25 $^{\circ}$ C	•	-				
		· ·				
5 cycle test			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.