



# **SPECIFICATION**

(Reference sheet)

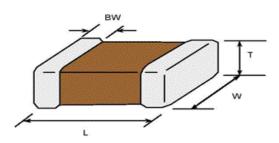
- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N :
- CL21B472KDCNNNC

- · Description :
- CAP, 4.7nF, 200V, ±10%, X7R, 0805

A. Samsung Part Number

			B <u>472</u> K 3 ④ ⑤	<u>D</u> <u>C</u> Ν 6 ⑦ 8	<u>N</u> 9 10	<u>C</u> 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	X7R	8	Inner electrode		Ni	
4	Capacitance	4.7 nF		Termination		Cu	
5	Capacitance	±10 %		Plating		Sn 100% (Pb Free)	
	tolerance		9	Product		Normal	
6	Rated Voltage	200 V	10	Special		Reserved for future use	
$\bigcirc$	Thickness	0.85 ± 0.10 mm	(1)	Packaging		Cardboard Type, 7" reel	

## **B. Structure & Dimension**



Samsung P/N	Dimension(mm)					
Samsung P/N	L	W	Т	BW		
CL21B472KDCNNNC	2.00 ± 0.10	1.25 ± 0.10	0.85 ± 0.10	0.50 +0.20/-0.30		

#### C. Samsung Reliablility Test and Judgement Condition

	Judgement	Test condition			
Capacitance	Within specified tolerance	1 <sup>kHz</sup> ±10% / 1.0±0.2Vrms			
Tan δ (DF)	0.025 max.	*A capacitor prior to measuring the capacitance is heat treated at 150°C+0/-10°C for 1hour and maintained in ambient air for 24±2 hours.			
Insulation 10,000Mohm or 500Mohm×µF		Rated Voltage 60±5 sec.			
Resistance	Whichever is smaller				
Appearance	No abnormal exterior appearance	Microscope (×10)			
Withstanding	No dielectric breakdown or	200% of the rated voltage			
Voltage	mechanical breakdown				
Temperature	X7R				
Characteristics	(From -55 $^\circ C$ to 125 $^\circ C$ , Capacitance change should be within ±15%)				
Adhesive Strength	No peeling shall be occur on the	500g·f, for 10±1 sec.			
of Termination	terminal electrode				
Bending Strength	Capacitance change : within ±12.5%	Bending to the limit (1mm) with 1.0mm/sec.			
Solderability	More than 95% of terminal surface	SnAg3.0Cu0.5 solder			
	is to be soldered newly	245±5°C, 3±0.3sec.			
		(preheating : 80~120℃ for 10~30sec.)			
Resistance to	Capacitance change : within ±7.5%	Solder pot : 270±5℃, 10±1sec.			
Soldering Heat	Tan δ, IR : initial spec.				
Vibration Test	Capacitance change : within ± 5%	Amplitude : 1.5mm			
	Tan δ, IR : initial spec.	From 10Hz to 55Hz (return : 1min.)			
		2hours × 3 direction (x, y, z)			
Moisture	Capacitance change : within ±12.5%	With rated voltage			
Resistance	Tan δ : 0.05 max IR : 500Mohm or 25Mohm × μF Whichever is smaller	40±2℃, 90~95%RH, 500+12/-0hrs			
High Temperature	Capacitance change : within ±12.5%	With 200% of the rated voltage			
Resistance	Tan $\delta$ : 0.05 max	Max. operating temperature			
INESISTATICE	IR : 1.000Mohm or 50Mohm × $\mu$ F	1,000+48/-0hrs			
	Whichever is smaller	1,000 40/0113			
Temperature	Capacitance change : within ±7.5%	1 cycle condition			
Cycling	Tan $\delta$ , IR : initial spec.	Min. operating temperature $\rightarrow 25^{\circ}$ C			
- ,		→ Max. operating temperature → $25^{\circ}$ 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 :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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- Aerospace/Aviation equipment
- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- *④ 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.