



SPECIFICATION

(Reference sheet)

· Supplier : Samsung electro-mechanics · Samsung P/N : CL21B224KBFNNNF

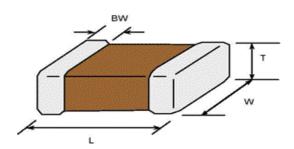
· Product : Multi-layer Ceramic Capacitor · Description : CAP, 220nF, 50V, ±10%, X7R, 0805

A. Samsung Part Number

<u>CL</u> <u>21</u> <u>B</u> <u>224</u> <u>K</u> <u>B</u> <u>F</u> <u>N</u> <u>N</u> <u>N</u> <u>F</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:	$1.25 \pm 0.10 \text{ mm}$	
3	Dielectric	X7R	8	Inner electrode		Ni	
4	Capacitance	220 nF		Termination		Cu	
(5)	Capacitance	±10 %		Plating		Sn 100% (Pb Free)	
	tolerance		9	Product		Normal	
6	Rated Voltage	50 V	10	Special		Reserved for future use	
7	Thickness	1.25 ± 0.10 mm	11)	Packaging		Embossed Type, 13" reel	

B. Structure & Dimension



Samsung P/N	Dimension(mm)					
Samsung F/N	L	W	Т	BW		
CL21B224KBFNNNF	2.00 ± 0.10	1.25 ± 0.10	1.25 ± 0.10	0.50 +0.20/-0.30		

C. Samsung Reliablility Test and Judgement Condition

Tan δ (DF) 0.025 max. *A capacitor prior to measuring the capacitance is heat treated at 150°C+0/-10°C for 1 hour and maintained in ambient air for 24±2 hours. Rated Voltage 60~120 sec. Whichever is smaller Appearance No abnormal exterior appearance Microscope (×10) Withstanding No dielectric breakdown or mechanical breakdown Temperature Characteristics Adhesive Strength of Terminal electrode Bending Strength Capacitance change: within ±12.5% Bending to the limit (1mm) with 1.0mm/sec. Solderability More than 75% of terminal surface is to be soldered newly Soldering Heat Tan δ, IR: initial spec. Within ±12.5% Amplitude: 1.5mm From 10liz to 56liz (return: 1min.) Zhours × 3 direction (x, y, z) Moisture Resistance Capacitance change: within ±12.5% Resistance Tan δ : 0.05 max IR: 500Mohm or 25Mohm × μF Whichever is smaller Temperature Resistance Resistance Capacitance change: within ±12.5% With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. (preheating: 80~120°C for 10~30 sec.) With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. Solder pot: 270±5°C, 10±1 sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. With 1.0mm/sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. With 1.0mm/sec. With 1.0mm/sec. Solder pot: 270±5°C, 10±1 sec. With 1.0m		Judgement	Test condition		
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Resistance Whichever is smaller Appearance No abnormal exterior appearance Microscope (×10)	Tan δ (DF)	0.025 max.	treated at 150 ℃+0/-10 ℃ for 1 hour and maintained in		
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is to be soldered newly 245±5°C, 3±0.3sec. (preheating: 80~120°C for 10~30sec.)	Solderability	More than 75% of terminal surface	SnAg3.0Cu0.5 solder		
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Cycling Tan δ, IR : initial spec. Min. operating temperature → 25°C		Whichever is smaller			
	Temperature	Capacitance change : within ±7.5%	1 cycle condition		
→ Max. operating temperature → 25°C	Cycling	Tan δ, IR : initial spec.	Min. operating temperature → 25°C		
			→ Max. operating temperature → 25°C		
5 cycle test			5 cycle test		

X 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.

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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.