



SPECIFICATION

(Reference sheet)

· Supplier : Samsung electro-mechanics · Samsung P/N : CL21B474KOFNNNE

Product : Multi-layer Ceramic Capacitor

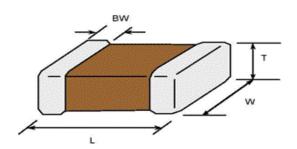
Description : CAP, 470nF, 16V, ±10%, X7R, 0805

A. Samsung Part Number

<u>CL</u> <u>21</u> <u>B</u> <u>474</u> <u>K</u> <u>O</u> <u>F</u> <u>N</u> <u>N</u> <u>N</u> <u>E</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: $2.00 \pm 0.10 \text{ mm}$	W:	$1.25 \pm 0.10 \; \text{mm}$	
(3)	Dielectric	X7R	Inner electrode		Ni	
၂ ಄	Dielectric	A/K	8 Inner electrode		INI	
4	Capacitance	470 nF	Termination		Cu	
(5)	Capacitance	±10 %	Plating		Sn 100% (Pb Free)	
	tolerance		9 Product		Normal	
6	Rated Voltage	16 V	Special		Reserved for future use	
7	Thickness	1.25 ± 0.10 mm	11) Packaging		Embossed Type, 7" reel	

B. Structure & Dimension



Sameung D/N	Dimension(mm)				
Samsung P/N	L	W	Т	BW	
CL21B474KOFNNNE	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

	Judgement	Test condition		
Capacitance	Within specified tolerance	1 kHz ±10% / 1.0±0.2Vrms		
Tan δ (DF)	0.035 max.	*A capacitor prior to measuring the capacitance is heat treated at $150^{\circ}\text{C} + 0/-10^{\circ}\text{C}$ for 1 hour and maintained in ambient air for 24±2 hours.		
Insulation	10,000Mohm or 100Mohm× <i>μ</i> F	Rated Voltage 60~120 sec.		
Resistance	Whichever is smaller			
Appearance	No abnormal exterior appearance	Microscope (×10)		
Withstanding	No dielectric breakdown or	250% of the rated voltage		
Voltage	mechanical breakdown			
Temperature	X7R			
Characteristics	(From-55℃ to 125℃, 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 75% of terminal surface	SnAg3.0Cu0.5 solder		
,	is to be soldered newly	245±5℃, 3±0.3sec.		
	·	(preheating: 80~120°C for 10~30sec.)		
Resistance to	Capacitance change : within ±7.5%	Solder pot : 270±5°C, 10±1sec.		
Soldering Heat	Tan δ, IR : initial spec.			
Vibration Test	Capacitance change : within \pm 5% Tan δ , IR : initial spec.	Amplitude: 1.5mm From 10Hz to 55Hz (return: 1min.) 2hours × 3 direction (x, y, z)		
Moisture Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.05 max IR : 500Mohm or 25Mohm × μ F	With rated voltage 40±2°C, 90∼95%RH, 500+12/-0hrs		
High Tames and to	Whichever is smaller	With 200% of the rated voltage		
High Temperature Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.05 max	or the rates vertage		
Resistance	4.000Malana an 50Malana an 45	Max. operating temperature 1000+48/-0hrs		
	Whichever is smaller	1000 - 40/-01115		
Temperature Cycling	Capacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.	1 cycle condition Min. operating temperature → 25°C → Max. operating temperature → 25°C		
		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.

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.