

# SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor

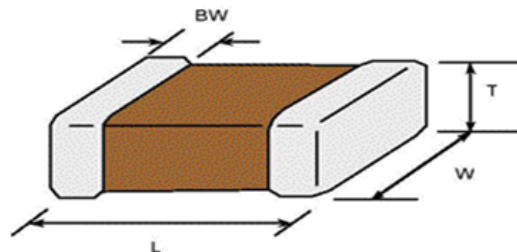
- Samsung P/N : **CL21B473KCFNNNE**
- Description : **CAP, 47nF, 100V, ±10%, X7R, 0805**

## A. Samsung Part Number

**CL** **21** **B** **473** **K** **C** **F** **N** **N** **N** **E**  
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	X7R	⑧ Inner electrode	Ni		
④ Capacitance	47 nF	Termination	Cu		
⑤ Capacitance tolerance	±10 %	Plating	Sn 100% (Pb Free)		
⑥ Rated Voltage	100 V	⑨ Product	Normal		
⑦ Thickness	1.25 ± 0.10 mm	⑩ Special	Reserved for future use		
		⑪ Packaging	Embossed Type, 7" reel		

## B. Structure and dimension



Samsung P/N	Dimension(mm)			
	L	W	T	BW
CL21B473KCFNNNE	2.00±0.10	1.25±0.10	1.25±0.10	0.50+0.2/-0.3

### C. Samsung Reliability Test and Judgement condition

	Performance	Test condition
<b>Capacitance</b>	Within specified tolerance	1kHz±10% 1.0±0.2Vrms  *A capacitor prior to measuring the capacitance is heat treated at 150℃+0/-10℃ for 1hour and maintained in ambient air for 24±2 hours.
<b>Tan δ (DF)</b>	0.025 max.	
<b>Insulation Resistance</b>	10,000Mohm or 500Mohm·μF Whichever is smaller	Rated Voltage 60~120 sec.
<b>Appearance</b>	No abnormal exterior appearance	Microscope (×10)
<b>Withstanding Voltage</b>	No dielectric breakdown or mechanical breakdown	200% of the rated voltage
<b>Temperature Characterisitcs</b>	X7R (From -55℃ to 125℃, Capacitance change should be within ±15%)	
<b>Adhesive Strength of Termination</b>	No peeling shall be occur on the terminal electrode	500g·F, for 10±1 sec.
<b>Bending Strength</b>	Capacitance change : within ±12.5%	Bending to the limit (1mm) with 1.0mm/sec.
<b>Solderability</b>	More than 75% of terminal surface is to be soldered newly	SnAg3.0Cu0.5 solder 245±5℃, 3±0.3sec. (preheating : 80~120℃ for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5℃, 10±1sec.
<b>Vibration Test</b>	Capacitance change : within ±5% Tan δ, IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)
<b>Moisture Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.05 max IR : 500Mohm or 25Mohm · μF Whichever is smaller	With rated voltage 40±2℃, 90~95%RH, 500+12/-0hrs
<b>High Temperature Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.05 max IR : 1000Mohm or 50Mohm · μF Whichever is smaller	With 200% of the rated voltage Max. operating temperature  1000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	1 cycle condition Min. operating temperatur → 25℃ → Max. operating temperature → 25℃  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℃, 10sec. 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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*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.*

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- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- ③ Medical equipment
- ④ Military equipment
- ⑤ Disaster prevention/crime prevention equipment
- ⑥ Power plant control equipment
- ⑦ Atomic energy-related equipment
- ⑧ Undersea equipment
- ⑨ Traffic signal equipment
- ⑩ Data-processing equipment
- ⑪ Electric heating apparatus, burning equipment
- ⑫ Safety equipment
- ⑬ Any other applications with the same as or similar complexity or reliability to the applications