

# SPECIFICATION

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

- Samsung P/N : **CL21F475ZOFNNE**
- Description : **CAP, 4.7 $\mu$ F, -20+80%, 16V, Y5V, 0805**

## A. Samsung Part Number

CL 21 F 475 Z O 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: 2.0 ± 0.1 mm	W: 1.25 ± 0.1 mm
③ Dielectric	Y5V	⑧ Inner electrode	Ni
④ Capacitance	4.7 $\mu$ F	Termination	Cu
⑤ Capacitance tolerance	-20/+80 %	Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	16 V	⑨ Product	Normal
⑦ Thickness	1.25 ± 0.1 mm	⑩ Special	Reserved for future use
		⑪ Packaging	Embossed Type, 7" reel

## B. Samsung Reliability Test and Judgement condition

	Performance	Test condition
Capacitance	Within specified tolerance	1kHz±10%      1.0±0.2Vrms
Tan $\delta$ (DF)	0.09 max.	
Insulation Resistance	10,000Mohm or 100Mohm· $\mu$ F Whichever is Smaller	Rated Voltage      60~120 sec.
Appearance	No abnormal exterior appearance	Microscope (×10)
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
Temperature Characterisitcs	Y5V (From -30℃ to 85℃, Capacitance change should be within -82~+22%)	
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	500g·F, for 10±1 sec.
Bending Strength	Capacitance change : within ±30%	Bending to the limit (1mm) with 1.0mm/sec.
Solderability	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.)
Resistance to Soldering heat	Capacitance change : within ±20% Tan $\delta$ , IR : initial spec.	Solder pot : 270±5℃, 10±1sec.

	<b>Performance</b>	<b>Test condition</b>
<b>Vibration Test</b>	Capacitance change : within $\pm 20\%$ Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours $\times$ 3 direction (x, y, z)
<b>Moisture Resistance</b>	Capacitance change : within $\pm 30\%$ Tan $\delta$ : 0.125 max IR : 500Mohm or 25Mohm $\cdot \mu\text{F}$ Whichever is Smaller	With rated voltage 40 $\pm$ 2 $^{\circ}\text{C}$ , 90~95%RH, 500+12/-0hrs
<b>High Temperature Resistance</b>	Capacitance change : within $\pm 30\%$ Tan $\delta$ : 0.125 max IR : 1000Mohm or 50Mohm $\cdot \mu\text{F}$ Whichever is Smaller	With 200% of the rated voltage Max. operating temperature 1000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within $\pm 20\%$ Tan $\delta$ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow$ 25 $^{\circ}\text{C}$ $\rightarrow$ Max. operating temperature $\rightarrow$ 25 $^{\circ}\text{C}$ 5 cycle test

**C. Recommended Soldering method :**

Reflow ( Reflow Peak Temperature : 260+0/-5 $^{\circ}\text{C}$ , 10sec. Max )

\* For the more detail Specification, Please refer to the Samsung MLCC catalogue.