



SPECIFICATION

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

- Samsung P/N : [CL21B475KAFNNNE](#)
- Description : CAP, 4.7 μ F, 25V, $\pm 10\%$, X7R, 0805

A. Samsung Part Number

CL 21 B 475 K A 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 ± 0.10 mm	W: 1.25 ± 0.10 mm
③ Dielectric	X7R	⑧ Inner electrode	Ni
④ Capacitance	4.7 μ F	Termination	Cu
⑤ Capacitance tolerance	$\pm 10\%$	Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	25 V	⑨ Product	Normal
⑦ Thickness	1.25 ± 0.10 mm	⑩ Special	Reserved for future use
		⑪ Packaging	Embossed Type, 7"reel(2,000ea)

B. Samsung Reliability Test and Judgement condition

	Performance	Test condition
Capacitance	Within specified tolerance	1kHz $\pm 10\%$ 1.0 ± 0.2 VRms
Tan δ (DF)	0.1 max.	
Insulation Resistance	More than 100Mohm $\cdot\mu$ F	Rated Voltage 60~120 sec.
Appearance	No abnormal exterior appearance	Visual inspection
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
Temperature Characteristics	X7R (From -55°C to 125°C, Capacitance change should be within $\pm 15\%$)	
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	500g-F, for 10 ± 1 sec.
Bending Strength	Capacitance change : within $\pm 12.5\%$	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 °C, 3 ± 0.3 sec. (preheating : 80~120 °C for 10~30sec.)
Resistance to Soldering heat	Capacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.	Solder pot : 270 ± 5 °C, 10 ± 1 sec.

	Performance	Test condition
Vibration Test	Capacitance change : within $\pm 5\%$ Tan δ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours \times 3 direction (x, y, z)
Moisture Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.125 max IR : More than $12.5\text{M}\Omega \cdot \mu\text{F}$	With rated voltage $40 \pm 2^\circ\text{C}$, 90~95%RH, 500+12/-0 hours
High Temperature Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ : 0.125 max IR : More than $25\text{M}\Omega \cdot \mu\text{F}$	With 150% of the rated voltage Max. operating temperature 1000+48/-0 hours
Temperature Cycling	Capacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow 25^\circ\text{C}$ \rightarrow Max. operating temperature $\rightarrow 25^\circ\text{C}$ 5 cycles test

C. Recommended Soldering method :

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

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