



SPECIFICATION

• Supplier : Samsung electro-mechanics • Samsung P/N : CL21A475KAQNNNE

• Product : Multi-layer Ceramic Capacitor • Description : CAP, 4.7 µF, 25V, ±10%, X5R, 0805

A. Samsung Part Number

<u>CL</u> <u>21</u> <u>A</u> <u>475</u> <u>K</u> <u>A</u> <u>Q</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: 2.0 ± 0.15 mm	W: 1.25 ± 0.15 mm
3 Dielectric	X5R	8 Inner electrode	Ni
④ Capacitance	4.7 μF	Termination	Cu
⑤ Capacitance	±10 %	Plating	Sn 100% (Pb Free)
tolerance		9 Product	Normal
Rated Voltage	25 V	Special	Reserved for future use
7 Thickness	1.25 ± 0.15 mm	① Packaging	Embossed Type, 7" reel

B. Samsung Reliablility Test and Judgement condition

	Performance	Test condition	
Capacitance	Within specified tolerance	1kltz±10% 1.0±0.2Vrms	
Tan δ (DF)	0.1 max.		
Insulation	10,000Mohm or 100Mohm⋅µF	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	X5R		
Characterisitcs	(From -55 $^{\circ}$ C to 85 $^{\circ}$ C, Capacitance change shoud 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℃ for 10~30sec.)	
Resistance to	Capacitance change: within ±7.5%	Solder pot : 270±5℃, 10±1sec.	
Soldering heat	Tan δ, IR : initial spec.		

	Performance	Test condition
Vibration Test	Capacitance change : within ±5%	Amplitude : 1.5mm
	Tan δ, IR : initial spec.	From 10Hz to 55Hz (return : 1min.)
		2hours × 3 direction (x, y, z)
Moisture	Capacitance change: within ±12.5%	With rated voltage
Resistance	Tan δ : 0.2 max	40±2℃, 90~95%RH, 500+12/-0hrs
	IR : 12.5MΩ·μF or Over	
High Temperature	Capacitance change: within ±12.5%	With 100% of the rated voltage
Resistance	Tan δ : 0.2 max	Max. operating temperature
	IR : 25MΩ·μF or Over	
		1000+48/-0hrs
Temperature	Capacitance change: within ±7.5%	1 cycle condition
Cycling	Tan δ, IR : initial spec.	Min. operating temperature → 25°C
		$ ightarrow$ Max. operating temperature $ ightarrow$ 25 $^{\circ}$ C
		5 cycle test

C. Recommended Soldering method :

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

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