SAMSUNG ELECTRO-MECHANICS

RoHS+Halogen Compliant ecoparts

SPECIFICATION

- **Supplier : Samsung electro-mechanics**
- **Product : Multi-layer Ceramic Capacitor**
- **Samsung P/N: CL05A475MP5NRNC**
- **Description : CAP, 4.7㎌, 10V, ±20%, X5R, 0402**

A. Samsung Part Number

CL	05	A	475	M	P	5	N	R	N	C
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

① **Series**	Samsung Multi-layer Ceramic Capacitor		
② **Size**	0402 (inch code)	L: 1.0 ± 0.15 mm	W: 0.5 ± 0.15 mm
③ **Dielectric**	X5R	⑧ **Inner electrode**	Ni
④ **Capacitance**	4.7 ㎌	**Termination**	Cu
⑤ **Capacitance tolerance**	±20 %	**Plating**	Sn 100% (Pb Free)
		⑨ **Product**	0402 Size dimension spec
⑥ **Rated Voltage**	10 V	⑩ **Special**	Reserved for future use
⑦ **Thickness**	0.5 ± 0.15 mm	⑪ **Packaging**	Cardboard Type, 7" reel

B. Samsung Reliablility Test and Judgement condition

	Judgement	Test condition
Capacitance	Within specified tolerance	1㎑±10% 0.5±0.1Vrms
Tan δ (DF)	0.125 max.	
Insulation Resistance	10,000Mohm or 50Mohm·㎌ 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	X5R (From -55℃ to 85℃, Capacitance change shoud be within ±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 ±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℃, 3±0.3sec. (preheating : 80~120℃ for 10~30sec.)
Resistance to Soldering heat	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5℃, 10±1sec.

	Judgement	Test condition
Vibration Test	Capacitance change : within ±5% Tan δ, IR : initial spec.	Amplitude : 1.5mm From 10㎐ to 55㎐ (return : 1min.) 2hours × 3 direction (x, y, z)
Moisture Resistance	Capacitance change : within ±12.5% Tan δ 0.25 max IR : 8.8㏁·㎌ or Over	With rated voltage 40±2℃, 90~95%RH, 500+12/-0hrs
High Temperature Resistance	Capacitance change : within ±12.5% Tan δ 0.25 max IR : 17.7㏁·㎌ or Over	With 100% of the rated voltage Max. operating temperature 1000+48/-0hrs
Temperature Cycling	Capacitance change : within ±10% Tan δ, IR : initial spec.	1 cycle condition Min. operating temperatur → 25℃ → Max. operating temperature → 25℃ 5 cycle test

C. Recommended Soldering method :

Reflow (Reflow Peak Temperature : 260+0/-5℃, 10sec. Max)

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