

# SPECIFICATION (Reference sheet)

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

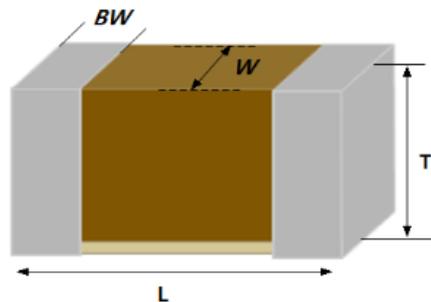
- Samsung P/N: **CL05A475MP7NRB8**
- Description : **CAP, 4.7uF, 10V, ±20%, X5R, 0402**

## A. Samsung Part Number

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

① <b>Series</b>	Samsung Multi-layer Ceramic Capacitor		
② <b>Size</b>	0402 (inch code)	L: 1.00 ± 0.15 mm	W: 0.50 ± 0.15 mm
③ <b>Dielectric</b>	X5R	⑧ <b>Inner electrode</b>	Ni
④ <b>Capacitance</b>	4.7 μF	<b>Termination</b>	Cu
⑤ <b>Capacitance tolerance</b>	±20 %	<b>Plating</b>	Sn 100% (Pb Free)
⑥ <b>Rated Voltage</b>	10 V	⑨ <b>Product</b>	Size Control Code
⑦ <b>Thickness</b>	0.70 ± 0.10 mm	⑩ <b>Special</b>	T-HMC
		⑪ <b>Packaging</b>	Cardboard Type, 7" reel

## B. Structure and dimension



Samsung P/N	Dimension(mm)			
	L	W	T	BW
CL05A475MP7NRB8	1.00 ± 0.15	0.50 ± 0.15	0.70 ± 0.10	0.25 ± 0.10

### C. Samsung Reliability Test and Judgement condition

	Judgement	Test condition
Capacitance	Within specified tolerance	1kHz±10% 0.5±0.1Vrms *A capacitor prior to measuring the capacitance is heat treated at 150°C+0/-10°C for 1hour and maintained in ambient air for 24±2 hours.
Tan δ (DF)	0.125 max.	
Insulation Resistance	10,000Mohm or 50Mohm·μF 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 Characteristics	X5R (From -55°C to 85°C, Capacitance change should 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°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)
Resistance to Soldering heat	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5°C, 10±1sec.
Vibration Test	Capacitance change : within ±5% Tan δ, IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)
Moisture Resistance	Capacitance change : within ±12.5% Tan δ : 0.25 max IR : 500Mohm or 8.8Mohm · μF Whichever is smaller	With rated voltage 40±2°C, 90~95%RH, 500+12/-0 hour.
High Temperature Resistance	Capacitance change : within ±12.5% Tan δ : 0.25 max IR : 1,000Mohm or 17.7Mohm · μF Whichever is smaller	With 100% of the rated voltage Max. operating temperature 1000+48/-0 hour.
Temperature Cycling	Capacitance change : within ±10% Tan δ, IR : initial spec.	1 cycle condition Min. operating temperature → 25°C → Max. operating temperature → 25°C  5 cycles test

※ The reliability test condition can be replaced by the corresponding accelerated test condition.

### D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature :260±5°C, 30sec)



Product specifications included in this catalogue are effective as of March 1, 2013.

Please be advised that they are standard product specifications for reference only.

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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 Any other applications with the same as or similar complexity or reliability to the applications set forth above.