



# SPECIFICATION

(Reference sheet)

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

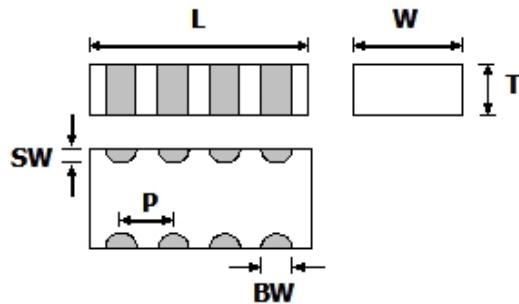
- Samsung P/N : **CL10Y105MR5NJNC**
- Description : **CAP, 1 $\mu$ F, 4V,  $\pm 20\%$ , X7S, 0603**

## A. Samsung Part Number

**CL 10 Y 105 M R 5 N J N C**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor		
② Size	0603 (inch code)	L: 1.60 $\pm$ 0.10 mm	W: 0.80 $\pm$ 0.10 mm
③ Dielectric	X7S	⑧ Inner electrode	Ni
④ Capacitance	1 $\mu$ F	Termination	Cu
⑤ Capacitance tolerance	$\pm 20\%$	Plating	Sn 100% (Pb Free)
⑥ Rated Voltage	4 V	⑨ Product	SLIC
⑦ Thickness	0.50 +0.05/-0.1 mm	⑩ Special	Reserved for future use
		⑪ Packaging	Cardboard Type, 7" reel

## B. Structure and Dimensions



Samsung P/N	Dimension(mm)					
	L	W	T	BW	SW	P
CL10Y105MR5NJNC	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.5 +0.05/-0.1	0.25 $\pm$ 0.10	0.15 $\pm$ 0.10	0.40 $\pm$ 0.10

### C. Samsung Reliability Test and Judgement Condition

	Judgement	Test condition
<b>Capacitance</b>	Within specified tolerance	1kHz $\pm 10\%$ / $0.5 \pm 0.1$ Vrms
<b>Tan <math>\delta</math> (DF)</b>	0.12 max.	
<b>Insulation Resistance</b>	10,000Mohm or $50\text{Mohm} \times \mu\text{F}$ Whichever is smaller	Rated Voltage 60~120 sec.
<b>Appearance</b>	No abnormal exterior appearance	Microscope ( $\times 10$ )
<b>Withstanding Voltage</b>	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
<b>Temperature Characteristics</b>	X7S (From -55°C to 125°C, Capacitance change should be within $\pm 22\%$ )	
<b>Adhesive Strength of Termination</b>	No peeling shall be occur on the terminal electrode	500g·F, for 10 $\pm 1$ sec.
<b>Bending Strength</b>	Capacitance change : within $\pm 12.5\%$	Bending to the limit (1mm) with 1.0mm/sec.
<b>Solderability</b>	More than 75% of terminal surface is to be soldered newly	SnAg3.0Cu0.5 solder 245 $\pm 5$ °C, 3 $\pm 0.3$ sec. (preheating : 80~120 °C for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within $\pm 7.5\%$ Tan $\delta$ , IR : initial spec.	Solder pot : 270 $\pm 5$ °C, 10 $\pm 1$ sec.
<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 $\pm 12.5\%$ Tan $\delta$ : 0.2 max IR : 500Mohm or $12.5\text{Mohm} \times \mu\text{F}$ Whichever is smaller	With rated voltage 40 $\pm 2$ °C, 90~95%RH, 500+12/-0hrs
<b>High Temperature Resistance</b>	Capacitance change : within $\pm 12.5\%$ Tan $\delta$ : 0.2 max IR : 1,000Mohm or $25\text{Mohm} \times \mu\text{F}$ Whichever is smaller	With 150% of the rated voltage Max. operating temperature 1,000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within $\pm 12.5\%$ Tan $\delta$ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow$ 25 °C $\rightarrow$ Max. operating temperature $\rightarrow$ 25 °C  5 cycle test

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

### D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260 $\pm 5$  °C, 30sec. )

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

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

We may change, modify or discontinue the product specifications without notice at any time.

So, you need to approve the product specifications before placing an order.

Should you have any question regarding the product specifications,  
please contact our sales personnel or application engineers.

## **- Caution of Application -**

### **Disclaimer**

The products listed as follows are NOT designed and manufactured for any use and applications set forth below.

Please note that any misuse of the products deviating from products specifications or information provided in this Spec sheet may cause serious property damages or personal injury.

- ① Aerospace/Aviation equipment
- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- ③ Military equipment
- ④ Atomic energy-related equipment
- ⑤ Undersea equipment
- ⑥ Any other applications with the same as or similar complexity or reliability to the applications

### **Limitation**

Please contact us with usage environment information such as voltage, current, temperature, or other special conditions before using our products for the applications listed below. The below application conditions require especially high reliability products to prevent defects that may directly cause damages or loss to third party's life, body or property.

If you have any questions regarding this 'Limitation', you should first contact our sales personnel or application engineers.

- ① Medical equipment
- ② Disaster prevention/crime prevention equipment
- ③ Power plant control equipment
- ④ Traffic signal equipment
- ⑤ Data-processing equipment
- ⑥ Electric heating apparatus, burning equipment
- ⑦ Safety equipment
- ⑧ Any other applications with the same as or similar complexity or reliability to the applications