

## SPECIFICATION (Reference sheet)

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

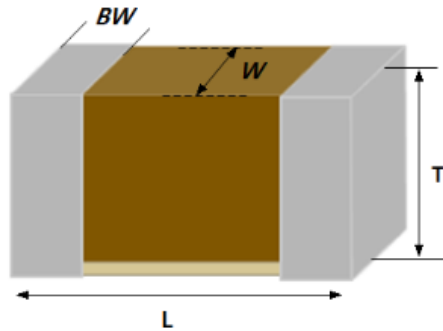
- Samsung P/N : **CL10A106MPNNHBC**
- Description : **CAP, 10 $\mu$ F, 10V,  $\pm$ 20%, X5R, 0603**

### A. Samsung Part Number

**CL**   **10**   **A**   **106**   **M**   **P**   **N**   **N**   **H**   **B**   **C**  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪

① <b>Series</b>	Samsung Multi-layer Ceramic Capacitor			
② <b>Size</b>	0603 (inch code)	L: 1.60 $\pm$ 0.10 mm	W: 0.80 $\pm$ 0.10 mm	
③ <b>Dielectric</b>	X5R	⑧ <b>Inner electrode</b>	Ni	
④ <b>Capacitance</b>	10 $\mu$ F	<b>Termination</b>	Cu	
⑤ <b>Capacitance tolerance</b>	$\pm$ 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>	0.95 $\pm$ 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
CL10A106MPNNHBC	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.95 $\pm$ 0.10	0.30 $\pm$ 0.20

### C. Samsung Reliability Test and Judgement condition

	Performance	Test condition
<b>Capacitance</b>	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, and maintained in ambient air for 24±2 hours.
<b>Tan δ (DF)</b>	0.1 max.	
<b>Insulation Resistance</b>	10,000Mohm or 100Mohm·μF Whichever is smaller	Rated Voltage 60~120 sec.
<b>Appearance</b>	No abnormal exterior appearance	Microscope (×10)
<b>Withstanding Voltage</b>	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
<b>Temperature Characteristics</b>	X5R (From -55°C to 85°C, Capacitance change should be within ±15%)	
<b>Adhesive Strength of Termination</b>	No peeling shall be occur on the terminal electrode	500g·F, for 10±1 sec.
<b>Bending Strength</b>	Capacitance change : within ±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±5°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5°C, 10±1sec.
<b>Vibration Test</b>	Capacitance change : within ±5% Tan δ, IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)
<b>Moisture Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.125 max IR : 500Mohm or 12.5Mohm · μF Whichever is smaller	With rated voltage 40±2°C, 90~95%RH, 500+12/-0hrs
<b>High Temperature Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.125 max IR : 1,000Mohm or 25Mohm · μF Whichever is smaller	With 100% of the rated voltage Max. operating temperature 1,000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	1 cycle condition Min. operating temperature → 25°C → Max. operating temperature → 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±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.