



# SPECIFICATION

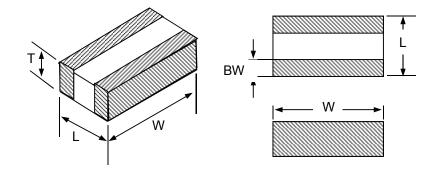
(Reference sheet)

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- Samsung P/N : CL01Y105MR5NLNC
- Description : CAP, 1µF, 4V, ±20%, X7S, 0306

A. Sa	msung	Part	Number
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	<u>CL</u> 01Y ① ② ③	105 M R 5 N L   4 5 6 7 8 9	<u>▶</u> <u>C</u> ⑩ ①	
1 Series	Samsung Multi-layer Ceramic Capacitor			
② Size	0306 (inch code)	L: 0.8 ± 0.15 mm	W: 1.6 ± 0.2 mm	
③ Dielectric	X7S	Inner electrode	Ni	
④ Capacitance	<b>1</b> µF	Termination	Cu	
<b>5</b> Capacitance	±20 %	Plating	Sn 100% (Pb Free)	
tolerance		9 Product	LICC	
6 Rated Voltage	4 V	10 Special	Reserved for future use	
⑦ Thickness	0.5 +0.05/-0.1 mm	① Packaging	Cardboard Type, 7" reel	

### **B. Structure and Dimensions**



Samsung P/N	Dimension(mm)			
(Lead Free)	L	W	т	BW
CL01Y105MR5NLNC	0.8±0.15	1.6±0.2	0.5+0.05/-0.1	0.25±0.15

#### C. Samsung Reliability Test and Judgement condition

	Performance	Test condition	
Capacitance	Within specified tolerance	1k <sup>ll</sup> ±10% 0.5±0.1Vrms *A capacitor prior to measuring the capacitance is heat treated at 150℃+0/-10℃ for 1hour and maintained in	
Tan δ (DF)	0.12 max.	ambient air for 24±2 hours.	
Insulation	10,000Mohm or 50Mohm · 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	X7S		
Characteristics	(From -55℃ to 125℃, Capacitance cha	nge should be within ±22%)	
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.		
Vibration Test	Capacitance change : within ±10%	Amplitude : 1.5mm	
	Tan δ, IR : initial spec.	From 10Hz to 55Hz (return : 1min.)	
		2hours $\times$ 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 : 500Mohm or 12.5Mohm · <i>µ</i> F Whichever is smaller		
High Temperature	Capacitance change : within ±12.5%	With 100% of the rated voltage	
Resistance	Tan δ : 0.2 max	Max. operating temperature	
	IR : 1,000Mohm or 25Mohm · μF		
	Whichever is smaller	1000+48/-0hrs	
Temperature	Capacitance change : within ±12.5%	1 cycle condition	
Cycling	Tan δ, IR : initial spec.	Min. operating temperature $\rightarrow 25^{\circ}$ C	
		$\rightarrow$ Max. operating temperature $\rightarrow$ 25 °C	
		5 cycle test	

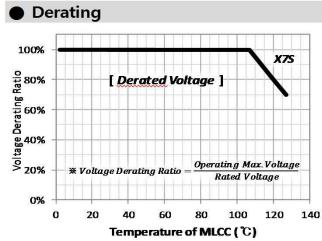
\* The reliability test condition can be replaced by the corresponding accelerated test condition.

#### D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260±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.

This MLCC with the test voltage at 100% of the rated voltage in the high temperature resistance test should be applied with the derating voltage and temperature according to 3-1 derating guide



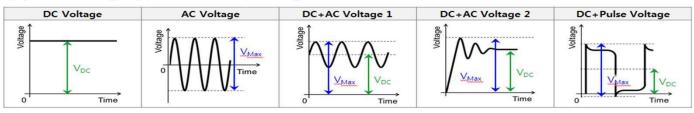
This product , which guarantees High Temperature Reliability Test with 100% of rated voltage at the maximum temperature, is recommended to be used in the circuit with derated voltage compared to the rated voltage of the capacitor for long lifetime.

Max. voltage( $V_{Max}$ ) and DC voltage( $V_{DC}$ ) applied to this product shown in the table below are recommended to be used under the following conditions for long lifetime, respectively.

[Recommendations for long lifetime] · V<sub>Max</sub> ≤ (Derated Voltage on the left graph)

\* Temperature of MLCC : Surface temperature of MLCC in the circuit.

## [Types of voltage applied to the capacitor]



## 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.

- Aerospace/Aviation equipment
- 2 Automotive of 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.

- 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
- (2) Any other applications with the same as or similar complexity or reliability to the applications