



# SPECIFICATION

- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N:
- CL05B103KO5NNND

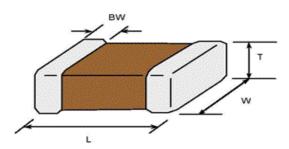
(Reference sheet)

- · Description :
- CAP, 10nF, 16V, ±10%, X7R, 0402

A. Samsung Part Number

		<u>CL</u> ①	<u>05</u> ②	<u>B</u> 3	<u>103</u> ④	<u>K</u> 5	<mark>0</mark> 6	<u>5</u> 7	<u>N</u> 8	<u>N</u> 9	<u>N</u> 10	<b>□</b> ❶	
1	Series	Samsung Multi-layer Ceramic Capacitor											
2	Size	0402 (inch co	ode)		L: ′	1.00	± 0.05	mm			W:	$0.50\pm0.05 \text{ mm}$	
3	Dielectric	X7R				8	Inner	elect	rode			Ni	
4	Capacitance	10 nF					Term	inatic	on			Cu	
5	Capacitance	±10 %					Platir	g				Sn 100% (Pb Free)	
	tolerance					9	Prod	uct				Normal	
6	Rated Voltage	16 V				10	Spec	al				Reserved for future use	
$\bigcirc$	Thickness	0.50 ± 0.05 mm				1	Packa	aging	I			Cardboard Type, 13" reel	

### **B. Structure & Dimension**



Samsung D/N	Dimension(mm)							
Samsung P/N	L	W	т	BW				
CL05B103KO5NNND	1.00 ± 0.05	0.50 ± 0.05	0.50 ± 0.05	0.25 ± 0.10				

#### C. Samsung Reliablility Test and Judgement Condition

	Judgement	Test condition
Capacitance	Within specified tolerance	1 <sup>kHz</sup> ±10% / 1.0±0.2Vrms
Tan δ (DF)	0.035 max.	*A capacitor prior to measuring the capacitance is heat treated at 150°C+0/-10°C for 1 hour and maintained in ambient air for 24±2 hours.
Insulation	10,000Mohm or 100Mohm× <i>µ</i> F	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	X7R	
Characteristics	(From-55℃ to 125℃, Capacitance chang	e should be within ±15%)
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°C, 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 $\pm 5\%$ Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)
Moisture	Capacitance change : within ±12.5%	With rated voltage
Resistance	Tan δ : 0.05 max	40±2℃, 90~95%RH, 500+12/-0hrs
	IR : 500Mohm or 25Mohm × $\mu$ F	
	Whichever is smaller	
High Temperature	Capacitance change : within ±12.5%	With 200% of the rated voltage
Resistance	Tan δ : 0.05 max	Max. operating temperature
	IR : 1,000Mohm or 50Mohm × µF Whichever is smaller	1000+48/-0hrs
Temperature	Capacitance change : within ±7.5%	1 cycle condition
Cycling	Tan δ, IR : initial spec.	Min. operating temperature $\rightarrow 25^{\circ}$ C
_		→ Max. operating temperature → $25^{\circ}$ C
		5 cycle test

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

## D. Recommended Soldering method :

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

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