



# **SPECIFICATION**

- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N :
- CL03X104KR3NNNC

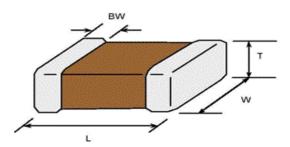
(Reference sheet)

- · Description :
- CAP, 100nF, 4V, ±10%, X6S, 0201

A. Samsung Part Number

		<u>CL</u> ①	<u>03</u> ②	<u>Х</u> Э	<u>104</u> ④	<u>K</u> 5	<u>R</u> 6	<u>3</u> 7	<u>N</u> 8	<u>N</u> 9	<u>N</u> 10	<mark>C</mark> 11
1	Series	Samsung Multi-layer Ceramic Capacitor										
2	Size	0201 (inch c	ode)		L:	0.60	± 0.03	mm			W:	$0.30 \pm 0.03$ mm
3	Dielectric	X6S				8	Inner	elect	rode			Ni
4	Capacitance	100 nF					Term	inatio	n			Cu
5	Capacitance	±10 %					Platir	g				Sn 100% (Pb Free)
	tolerance					9	Produ	uct				Normal
6	Rated Voltage	4 V				10	Spec	al				Reserved for future use
$\bigcirc$	Thickness	$0.30\pm0.03~\text{mm}$				1	Packa	aging				Cardboard Type, 7" reel

## **B. Structure & Dimension**



Samsung P/N	Dimension(mm)							
Samsung F/N	L	W	Т	BW				
CL03X104KR3NNNC	0.60 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05				

#### 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)	0.1 max.	*A capacitor prior to measuring the capacitance is heat treated at $150^{\circ}C+0/-10^{\circ}C$ for 1hour and maintained in ambient air for 24±2 hours.					
Insulation	10,000Mohm or 100Mohm×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	X6S						
Characteristics	(From-55 ℃ to 105 ℃, Capacitance change	hould be within ±22%)					
Adhesive Strength	No peeling shall be occur on the	200g·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°C, 10±1sec.					
Soldering Heat	Tan δ, IR : initial spec.						
Vibration Test	Capacitance change : within $\pm$ 10% 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 : 0.125 max	40±2°C, 90~95%RH, 500+12/-0hrs					
	IR : 500Mohm or 12.5Mohm × $\mu$ F Whichever is smaller						
High Temperature	Capacitance change : within ±12.5%	With <sup>100%</sup> of the rated voltage					
Resistance	Tan δ : 0.125 max	Max. operating temperature					
	IR : 1,000Mohm or 25Mohm × μF	1,000+48/-0hrs					
	Whichever is smaller						
Temperature	Capacitance change : within ±15%	1 cycle condition					
Cycling	Tan δ, IR : initial spec.	Min. operating temperature $\rightarrow$ 25°C					
		→ Max. operating temperature → $25^{\circ}$ 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.

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