



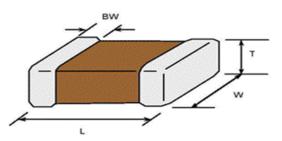
# **SPECIFICATION**

(Reference sheet)

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- Samsung P/N : • Description :
- CL05C2R2CB5NNNC CAP, 2.2pF, 50V, ±0.25pF, C0G, 0402
- A. Samsung Part Number

		<u>CL</u> ①		C 2R2 3 4	<u>C</u> 5	<u>B</u> 6	<u>5</u> 7	<u>N</u> 8	<u>N</u> 9	<u>N</u> 10	<u>C</u> 10		
1	Series	Samsung Multi-la	iyer Cer	amic Cap	acito	or							
2	Size	0402 (inch co	ode)	L:	1.00	± 0.0	5	mm		W:	0.50 ± 0.05	5 mm	
3	Dielectric	C0G			8	Inner	elec	trode	•		Ni		
4	Capacitance	<b>2.2</b> pF				Term	inatio	on			Cu		
5	Capacitance	<b>±0.25</b> pF				Platir	ng				Sn 100%	(Pb Free)	
	tolerance				9	Prod	uct				Normal		
6	Rated Voltage	50 V			10	Spec	ial				Reserved for	r future use	
$\bigcirc$	Thickness	$0.50 \pm 0.05$	mm		1	Pack	aging	9			Cardboard T	ype, 7" reel	

## **B. Structure and dimension**



Samsung P/N	Dimension(mm)							
(Lead Free)	L	W	Т	BW				
CL05C2R2CB5NNNC	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.10				

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

	Performance	Test condition				
Capacitance	Within specified tolerance	1Mt±10% 0.5~5Vrms				
Q	444 min					
Insulation	10,000Mohm or 500Mohm. <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	300% of the rated voltage				
Voltage	mechanical breakdown					
Temperature	C0G					
Characteristics	(From -55℃ to 125℃, Capacitance change s	should be within ±30PPM/℃)				
Adhesive Strength No peeling shall be occur on the		500g·F, for 10±1 sec.				
of Termination terminal electrode						
Bending Strength	Capacitance change :	Bending to the limit (1mm)				
	within $\pm 5\%$ or $\pm 0.5$ pF whichever is larger	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 :	Solder pot : 270±5℃, 10±1sec.				
Soldering heat	within ±2.5% or ±0.25pF whichever is larger					
	Tan δ, IR : initial spec.					
Vibration Test	Capacitance change :	Amplitude : 1.5mm				
	within ±2.5% or ±0.25pF whichever is larger	From 10H₂ to 55H₂ (return : 1min.)				
	Tan δ, IR : initial spec.	2hours $\times$ 3 direction (x, y, z)				
Moisture	Capacitance change :	With rated voltage				
Resistance	within ±7.5% or ±0.75pF whichever is larger	40±2℃, 90~95%RH, 500+12/-0hrs				
	Q : 107.33 min					
	IR : 500Mohm or 25Mohm $\cdot \mu F$					
	Whichever is smaller					
High Temperature	Capacitance change :	With 200% of the rated voltage				
Resistance	within $\pm 3\%$ or $\pm 0.3$ pF whichever is larger	Max. operating temperature				
	Q : 222 min	1000+48/-0hrs				
	IR : 1,000Mohm or 50Mohm · μF					
	Whichever is smaller					
Temperature	Capacitance change :	1 cycle condition				
Cycling	within $\pm 2.5\%$ or $\pm 0.25$ pF whichever is larger	Min. operating temperature $\rightarrow$ 25 °C				
	Tan δ, IR : initial spec.	$\rightarrow$ 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+0/-5°C, 10sec. Max )

A 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.

# Disclaimer & Limitation of Use and Application

The products listed in this Specification sheet 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. We will **NOT** be liable for any damages resulting from any misuse of the products, specifically including using the products for high reliability applications as listed below.

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

- *①* Aerospace/Aviation equipment
- 2 Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- (4) Military equipment
- 5 Disaster prevention/crime prevention equipment
- Ø Power plant control equipment
- ⑦ Atomic energy-related equipment
- Indersea equipment
- Itraffic signal equipment
- Data-processing equipment
- ① Electric heating apparatus, burning equipment
- ② Safety equipment
- 13 Any other applications with the same as or similar complexity or reliability to the applications