



## SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- Samsung P/N :
  Description :
- CL10C3R9CB8NNNC CAP, 3.9pF, 50V, ± 0.25pF, C0G, 0603

A. Samsung Part Number

			<u>CL</u>	<u>10</u>	<u>C</u>	<u>3R9</u>	<u>C</u>	<u>B</u>	<u>8</u>	N	<u>N</u>	N	<u>C</u>	
			1	2	3	4	5	6	1	8	9	10	1	
1	Series	Samsung	Multi-lay	er Ce	rami	с Сара	acitor							
2	Size	0603	(inch co	de)		L:	1.60	± 0.10	mm			W:	0.80 ± 0.10 mm	
3	Dielectric	C0G					8	Inner	elect	rode			Ni	
4	Capacitance	3.9	рF					Term	inatic	on			Cu	
5	Capacitance	± 0.2	5pF					Platir	ng				Sn 100%	(Pb Free)
	tolerance						9	Prod	uct				Normal	
6	Rated Voltage	50	V				10	Spec	ial				Reserved for fut	ure use
$\bigcirc$	Thickness	0.80 ± 0.1	0 mm				1	Pack	aging				Cardboard Type	e, 7" reel

## B. Structure and dimension



Samsung P/N	Dimension(mm)								
(Lead Free)	L	W	Т	BW					
CL10C3R9CB8NNNC	1.60 ± 0.10	0.80 ± 0.10	0.80 ± 0.10	0.30 ± 0.20					

## C. Samsung Reliability Test and Judgement condition

Q    Insulation    10      Insulation    10      Resistance    M      Appearance    No      Withstanding    No      Voltage    mm      Temperature    C0      Characteristics    (F      Adhesive Strength    No      of Termination    termination      Bending Strength    Ca      Solderability    Mo      Resistance to    Ca      Soldering heat    wi	Vithin specified tolerance 478 min 0,000Mohm or 500Mohm×µF Whichever is smaller lo abnormal exterior appearance lo dielectric breakdown or nechanical breakdown 0G From -55 ℃ to 125 ℃, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change : rithin ±5% or ±0.5pF whichever is larger	1 <sup>Mb</sup> ±10% / 0.5~5Vrms      Rated Voltage    60~120 sec.      Microscop (X10)      300% of the rated voltage      nould be within ±30PPM/°C)      500g×F, for 10±1 sec.      Bending to the limit (1mm)
Insulation10ResistanceWAppearanceNoWithstandingNoVoltagemodelTemperatureCOCharacteristics(FAdhesive StrengthNoof TerminationtelBending StrengthCaSolderabilityModelResistance toCaSoldering heatwi	0,000Mohm or 500Mohm×⊭F Whichever is smaller lo abnormal exterior appearance lo dielectric breakdown or hechanical breakdown COG From -55 ℃ to 125 ℃, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change :	Microscop (X10) 300% of the rated voltage hould be within ±30PPM/℃) 500g×F, for 10±1 sec.
ResistanceWAppearanceNoAppearanceNoWithstandingNoVoltagemoTemperatureCOCharacteristics(FAdhesive StrengthNoof TerminationterBending StrengthCaSolderabilityMoResistance toCaSoldering heatwi	Whichever is smaller lo abnormal exterior appearance lo dielectric breakdown or hechanical breakdown COG From -55 °C to 125 °C, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change :	Microscop (X10) 300% of the rated voltage hould be within ±30PPM/℃) 500g×F, for 10±1 sec.
AppearanceNoWithstandingNoVoltageminTemperatureCoCharacteristics(FAdhesive StrengthNoof TerminationterBending StrengthCaSolderabilityMaResistance toCaSoldering heatwi	lo abnormal exterior appearance lo dielectric breakdown or nechanical breakdown 50G From -55°C to 125°C, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change :	300% of the rated voltage nould be within ±30PPM/℃) 500g×F, for 10±1 sec.
Withstanding    No      Voltage    min      Temperature    CC      Characteristics    (F      Adhesive Strength    No      of Termination    ter      Bending Strength    Ca      wii    Solderability    Mo      Resistance to    Ca      Soldering heat    wii	lo dielectric breakdown or nechanical breakdown :0G From -55℃ to 125℃, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change :	300% of the rated voltage nould be within ±30PPM/℃) 500g×F, for 10±1 sec.
VoltageminTemperatureCOCharacteristics(FAdhesive StrengthNoof TerminationterBending StrengthCaSolderabilityMaResistance toCaSoldering heatwi	nechanical breakdown COG From -55°C to 125°C, Capacitance change sh to peeling shall be occur on the erminal electrode capacitance change :	nould be within ±30PPM/℃) 500g×F, for 10±1 sec.
Temperature    CG      Characteristics    (F      Adhesive Strength    No      of Termination    tel      Bending Strength    Ca      Solderability    Ma      Resistance to    Ca      Soldering heat    wi	30G From -55°C to 125°C, Capacitance change shall be occur on the erminal electrode apacitance change :	500g×F, for 10±1 sec.
Characteristics    (F      Adhesive Strength    No      of Termination    ter      Bending Strength    Ca      Solderability    Ma      Resistance to    Ca      Soldering heat    wi	From -55°C to 125°C, Capacitance change sh lo peeling shall be occur on the erminal electrode capacitance change :	500g×F, for 10±1 sec.
Adhesive Strength    No      of Termination    termination      Bending Strength    Ca      Solderability    Ma      Resistance to    Ca      Soldering heat    wi	lo peeling shall be occur on the erminal electrode capacitance change :	500g×F, for 10±1 sec.
of TerminationterBending StrengthCaWiSolderabilityMaSolderabilityMaResistance toCaSoldering heatwi	erminal electrode apacitance change :	
Bending Strength    Ca      Solderability    Ma      Solderability    Ma      Resistance to    Ca      Soldering heat    wi	apacitance change :	Bending to the limit (1mm)
wi      Solderability    Main      is      Resistance to    Cain      Soldering heat    wi		Bending to the limit (1mm)
SolderabilityMisResistance toCaSoldering heatwi	rithin ±5% or ±0.5pF whichever is larger	
Resistance to Ca Soldering heat wi		with 1.0mm/sec.
Resistance to Ca Soldering heat wi	lore than 75% of terminal surface	SnAg3.0Cu0.5 solder
Soldering heat wi	to be soldered newly	245±5℃, 3±0.3sec.
Soldering heat wi		(preheating : 80~120 ℃ for 10~30sec.)
Soldering heat wi	apacitance change :	Solder pot : 270±5℃, 10±1sec.
	vithin $\pm 2.5\%$ or $\pm 0.25$ pF whichever is larger	
	an $\delta$ , IR : initial spec.	
	apacitance change :	Amplitude : 1.5mm
	vithin $\pm 2.5\%$ or $\pm 0.25$ pF whichever is larger	From 10Hz to 55Hz (return : 1min.)
	an $\delta$ , IR : initial spec.	2hours ´ 3 direction (x, y, z)
	apacitance change :	With rated voltage
	vithin $\pm 7.5\%$ or $\pm 0.75$ pF whichever is larger	40±2°C, 90~95%RH, 500+12/-0hrs
Q	-	
	R: 500Mohm or 25Mohm × $\mu$ F	
	Whichever is smaller	
High Temperature Ca	apacitance change :	With 200% of the rated voltage
	vithin $\pm 3\%$ or $\pm 0.3$ pF whichever is larger	Max. operating temperature
Q		1000+48/-0hrs
	R: 1,000Mohm or 50Mohm × $\mu$ F	
	Whichever is smaller	
Temperature Ca	apacitance change :	1 cycle condition
•	which $\pm 2.5\%$ or $\pm 0.25 \text{ pF}$ which ever is larger	Min. operating temperature $\rightarrow 25^{\circ}$
	an $\delta$ , IR : initial spec.	$\rightarrow$ Max. operating temperature $\rightarrow$ 25°C

\* 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 )

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.