

SPECIFICATION

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor

- Samsung P/N: **CL05A395MQ5NQDC**
- Description : **CAP, 3.9 μ F, 6.3V, $\pm$ 20%, X5R, 0402**

A. Samsung Part Number

CL **05** **A** **395** **M** **Q** **5** **N** **Q** **D** **C**
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor					
② Size	0402 (inch code)	L: 1.0 ± 0.1	mm	W: 0.5 ± 0.1	mm	
③ Dielectric	X5R		⑧ Inner electrode	Ni		
④ Capacitance	3.9 μF		Termination	Cu		
⑤ Capacitance tolerance	±20 %		Plating	Sn 100% (Pb Free)		
⑥ Rated Voltage	6.3 V		⑨ Product	0402 Size dimension Spec.		
⑦ Thickness	0.5 ± 0.1	mm	⑩ Special	Dc-bias aging		
			⑪ Packaging	Cardboard Type,7"reel(10,000ea)		

B. Samsung Reliability Test and Judgement condition

	Judgement	Test condition
Capacitance	Within specified tolerance	1kHz $\pm$ 10% 0.5 $\pm$ 0.1Vrms
Tan δ (DF)	0.125 max.	
Insulation Resistance	More than 50Mohm $\cdot\mu$ F	Rated Voltage 60~120 sec.
Appearance	No abnormal exterior appearance	Visual inspection
Withstanding Voltage	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
Temperature Characterisitcs	X5R (From -55 $^{\circ}$ C to 85 $^{\circ}$ C, Capacitance change should be within $\pm$ 15%)	
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	500g $\cdot$ F, for 10 $\pm$ 1 sec.
Bending Strength	Capacitance change : within $\pm$ 12.5%	Bending to the limit (1mm) with 1.0mm/sec.
Solderability	More than 75% of terminal surface is to be soldered newly	SnAg3.0Cu0.5 solder 245 $\pm$ 5 $^{\circ}$ C, 3 $\pm$ 0.3sec. (preheating : 80~120 $^{\circ}$ C for 10~30sec.)
Resistance to Soldering heat	Capacitance change : within $\pm$ 7.5% Tan δ , IR : initial spec.	Solder pot : 270 $\pm$ 5 $^{\circ}$ C, 10 $\pm$ 1sec.

	Judgement	Test condition
Vibration Test	Capacitance change : within $\pm 5\%$ Tan δ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours $\times$ 3 direction (x, y, z)
Moisture Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ 0.25 max IR : More than $8.8\text{M}\Omega \cdot \mu\text{F}$	With rated voltage $40 \pm 2^\circ\text{C}$, 90~95%RH, 500 +12/-0 hours
High Temperature Resistance	Capacitance change : within $\pm 12.5\%$ Tan δ 0.25 max IR : More than $17.7\text{M}\Omega \cdot \mu\text{F}$	With 100% of the rated voltage Max. operating temperature 1000+48/-0 hours
Temperature Cycling	Capacitance change : within $\pm 10\%$ Tan δ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow 25^\circ\text{C}$ $\rightarrow$ Max. operating temperature $\rightarrow 25^\circ\text{C}$ 5 cycles test

C. Recommended Soldering method :

Reflow (Reflow Peak Temperature : $260 \pm 0/-5^\circ\text{C}$, 10sec. Max)

* For the more detail Specification, Please refer to the Samsung MLCC catalogue.