



SPECIFICATION

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

- Samsung P/N : [CL10A226MQ8NUNE](#)
- Description : CAP, 22 μ F, 6.3V, $\pm 20\%$, X5R, 0603

A. Samsung Part Number

CL 10 A 226 M Q 8 N U N E
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor													
② Size	0603 (inch code)			L: 1.6 \pm 0.25 mm			W: 0.8 \pm 0.25 mm							
③ Dielectric	X5R				⑧ Inner electrode	Ni								
④ Capacitance	22 μ F				Termination	Cu								
⑤ Capacitance tolerance	$\pm 20\%$				Plating	Sn 100% (Pb Free)								
⑥ Rated Voltage	6.3 V				⑨ Product	0603 Size dimension spec								
⑦ Thickness	0.8 \pm 0.25 mm				⑩ Special	Reserved for future use								
					⑪ Packaging	Embossed Type, 7"reel(3,000ea)								

B. Samsung Reliability Test and Judgement condition

	Performance	Test condition	
Capacitance	Within specified tolerance	120Hz $\pm 20\%$	0.5 ± 0.1 Vrms
Tan δ (DF)	0.10 max.		
Insulation Resistance	More than 50Mohm- μ 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 Characteristics	X5R (From -55 °C to 85 °C, Capacitance change should be within $\pm 15\%$)		
Adhesive Strength of Termination	No peeling shall be occur on the terminal electrode	500g·F, for 10 ± 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 ± 5 °C, 3 ± 0.3 sec. (preheating : 80~120 °C for 10~30sec.)	
Resistance to Soldering heat	Capacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.	Solder pot : 270 ± 5 °C, 10 ± 1 sec.	

	Performance	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.