

# SPECIFICATION

- **Supplier :** Samsung electro-mechanics
- **Product :** Multi-layer Ceramic Capacitor
- **Part Number :** **CL21A225MQ8NXNC**
- **Discription :** Cap, 2.2uF, 6.3V, ±20%, X5R, 0805

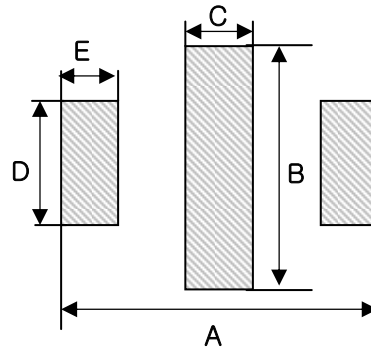
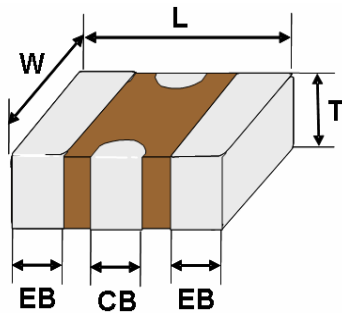
## A. Samsung Part Number

CL  
 21  
 A  
 225  
 M  
 Q  
 8  
 N  
 X  
 N  
 C

①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪

① <b>Series</b>	Samsung Multi-layer Ceramic Capacitor		
② <b>Size</b>	0805 (inch code)	L: 2.0 ±0.15mm	W: 1.25 ±0.15 mm
③ <b>Dielectric</b>	X5R	⑧ <b>Inner electrode</b>	Ni
④ <b>Capacitance</b>	2.2 uF	<b>Termination</b>	Cu
⑤ <b>Capacitance tolerance</b>	±20 %	<b>Plating</b>	Sn 100% (Pb Free)
⑥ <b>Rated Voltage</b>	6.3 V	⑨ <b>Product</b>	X2Y
⑦ <b>Thickness</b>	0.8 ±0.1 mm	⑩ <b>Special</b>	Reserved for future use
		⑪ <b>Packaging</b>	Cardboard Type, 7" reel

## B. Structure and Dimensions:



<Recommended Land pattern design>

	Dimmension(mm)
<b>L</b>	2.0 ± 0.15
<b>W</b>	1.25 ± 0.15
<b>T</b>	0.8 ± 0.1
<b>CB</b>	0.6 ± 0.2
<b>EB</b>	0.3 ± 0.2

	Dimmension(mm)
<b>A</b>	3.05
<b>B</b>	2.03
<b>C</b>	0.56
<b>D</b>	1.27
<b>E</b>	0.89

### C. Samsung Reliability Test and Judgement condition

	Judgement	Test condition
<b>Capacitance</b>	Within specified tolerance	1kHz±10%      1.0±0.2Vrms
<b>Tan δ (DF)</b>	0.10 max.	
<b>Insulation Resistance</b>	100MΩ·μF min.	Rated Voltage      60~120 sec.
<b>Appearance</b>	No abnormal exterior appearance	Microscope (×10)
<b>Withstanding Voltage</b>	No dielectric breakdown or mechanical breakdown	250% of the rated voltage
<b>Temperature Characterisitcs</b>	X5R (From -55℃ to 85℃, Capacitance change should be within ±15%)	
<b>Adhesive Strength of Termination</b>	No peeling shall be occur on the terminal electrode	500g·F, for 10±1 sec.
<b>Bending Strength</b>	Capacitance change : within ±12.5%	Bending to the limit (1mm) for 5 sec. with 1.0mm/sec.
<b>Solderability</b>	More than 75% of terminal surface is to be soldered newly	1) Sn63Pb37 solder 235±5℃, 5±0.5sec. 2) SnAg3.0Cu0.5 solder 245±5℃, 3±0.3sec. (preheating : 80~120℃ for 10~30sec.)
<b>Resistance to Soldering heat</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	Solder pot : 270±5℃, 10±1sec.
<b>Vibration Test</b>	Capacitance change : within ±5% Tan δ, IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)
<b>Humidity</b>	Capacitance change : within ±12.5% Tan δ : 0.125 max. IR : 25MΩ·μF min.	40±2℃, 90~95%RH, 500+12/-0hrs
<b>Moisture Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.125 max. IR : 12.5MΩ·μF min.	With rated voltage 40±2℃, 90~95%RH, 500+12/-0hrs Note : Since the residue of flux may affect resistivity, it is recommended to use proper solder paste and cleaning fluid to remove flux residue thoroughly.
<b>High Temperature Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.125 max. IR : 25MΩ·μF min.	With 150% of the rated voltage Max. operating temperature 1000+48/-0hrs
<b>Temperature Cycling</b>	Capacitance change : within ±7.5% Tan δ, IR : initial spec.	1 cycle condition Min. operating temperature → 25℃ → Max. operating temperature → 25℃ 5 cycle test

### D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260+0/-5℃, 10sec. max. )

# Multi Layer Ceramic Capacitor (MLCC)

## I . Electrical Characteristics Data

1. Model : CL21A225MQ8NXNC

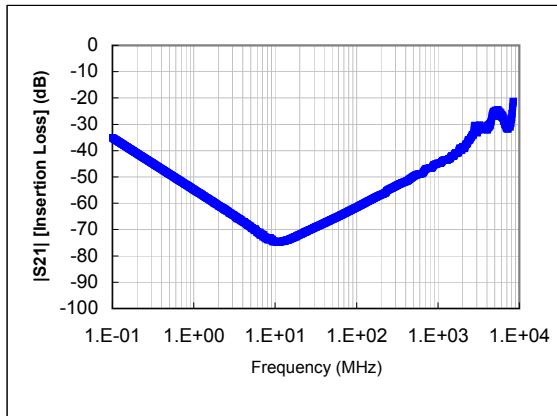
2. Description

Part no.	Size (inch(mm))	Thickness (mm)	Temperature characteristics	Capacitance value(uF)	Capacitance tolerance(%)	Voltage (V)
CL21A225MQ8NXNC	0805/2012	0.8mm	X5R	2.2uF	± 20 %	6.3

3. Characteristics Data

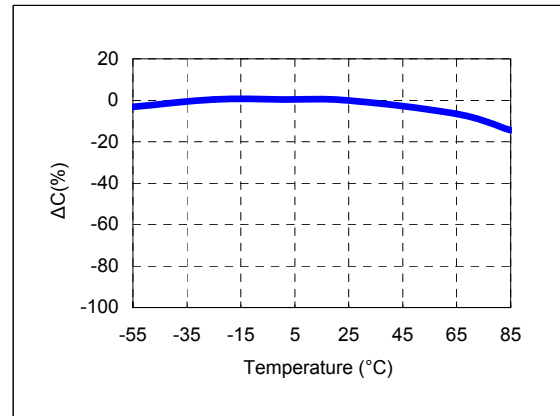
1)Frequency Characteristics

Agilent 5071A , 0.1MHz to 8.5GHz



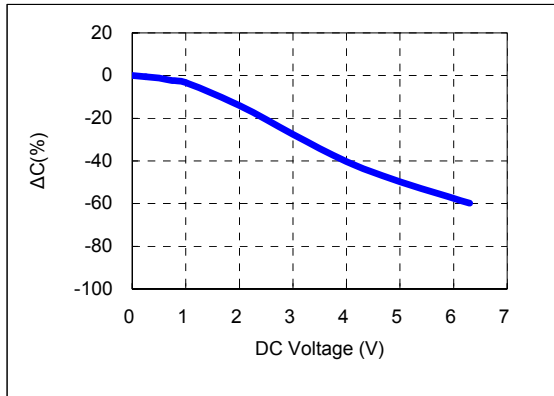
2)Temperature Characteristics (TCC)

Agilent 4284A, 1kHz, 1.0Vrms



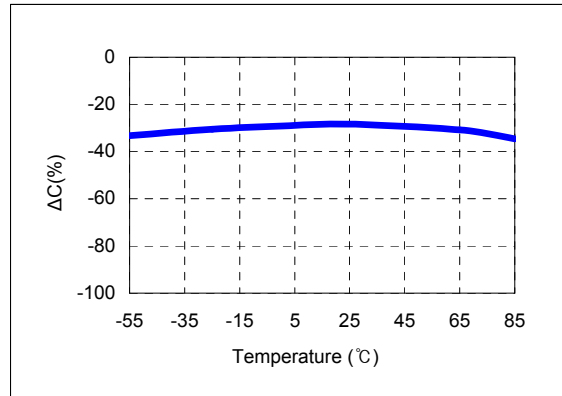
3)DC Bias Characteristics

Agilent 4284A,1kHz, 1.0Vrms



4) Bias TCC characteristics

Agilent 4284A, 1kHz, 1.0Vrms, 3.15Vdc



5)AC Voltage Characteristics

Agilent 4284A,1kHz

