

# SPECIFICATION

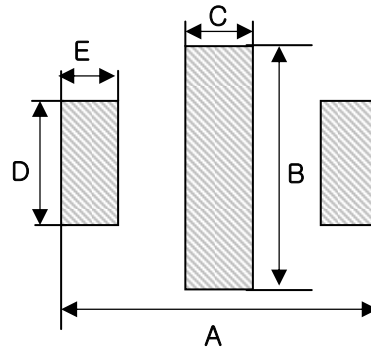
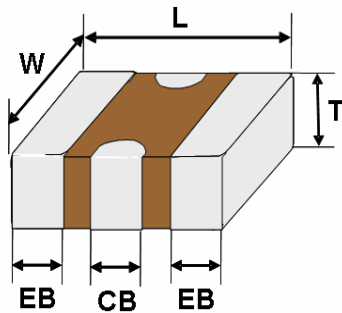
- **Supplier :** Samsung electro-mechanics
- **Product :** Multi-layer Ceramic Capacitor
- **Part Number :** **CL21B474MA8NXNC**
- **Discription :** Cap, 470nF, 25V, ±20%, X7R, 0805

## A. Samsung Part Number

CL
21
B
474
M
A
8
N
X
N
C

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>	X7R	⑧ <b>Inner electrode</b>	Ni
④ <b>Capacitance</b>	470 nF	<b>Termination</b>	Cu
⑤ <b>Capacitance tolerance</b>	±20 %	<b>Plating</b>	Sn 100% (Pb Free)
⑥ <b>Rated Voltage</b>	25 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>	0.05 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 : 0.075 max IR : 25MΩ·μF min.	40±2℃, 90~95%RH, 500+12/-0hrs
<b>Moisture Resistance</b>	Capacitance change : within ±12.5% Tan δ : 0.075 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 : 0.075 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 : CL21B474MA8NXNC

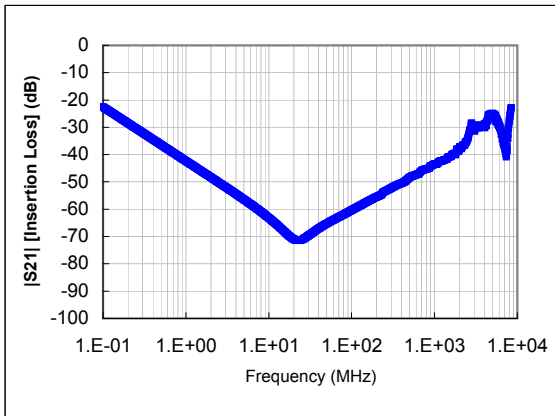
2. Description

Part no.	Size (inch(mm))	Thickness (mm)	Temperature characteristics	Capacitance value(nF)	Capacitance tolerance(%)	Voltage (V)
CL21B474MA8NXNC	0805/2012	0.8mm	X7R	470nF	± 20 %	25

3. Characteristics Data

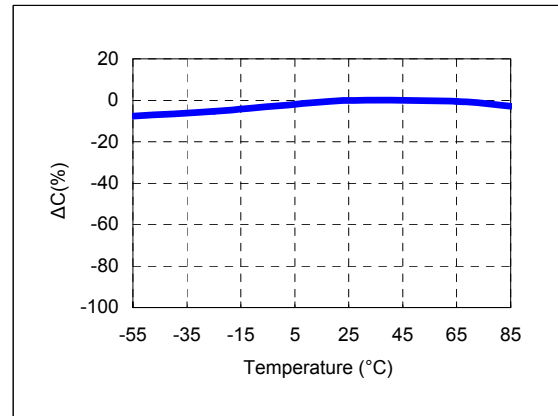
1) Frequency Characteristics

Agilent 5071A , 0.3MHz to 8.5GHz



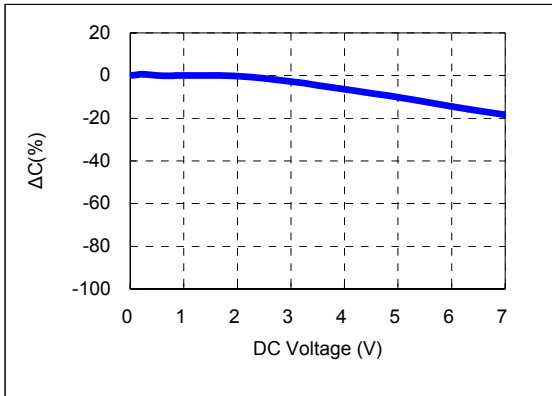
2) Temperature Characteristics (TCC)

Agilent 4284A, 1kHz, 1.0Vrms



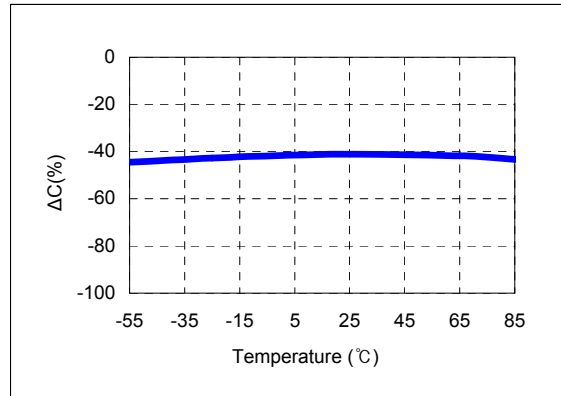
3) DC Bias Characteristics

Agilent 4284A, 1kHz, 1.0Vrms



4) Bias TCC characteristics

Agilent 4284A, 1kHz, 1.0Vrms, 12.5Vdc



5) AC Voltage Characteristics

Agilent 4284A, 1kHz

