

SPECIFICATION

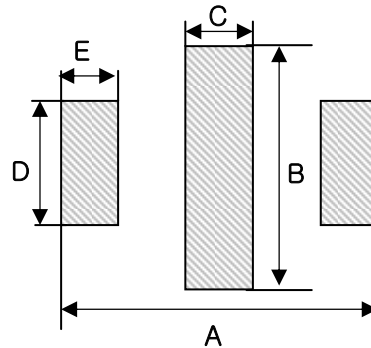
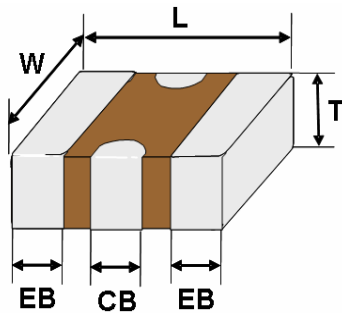
- **Supplier :** Samsung electro-mechanics
- **Product :** Multi-layer Ceramic Capacitor
- **Part Number :** **CL10B473MB6NXNC**
- **Discription :** Cap, 47nF, 50V, ±20%, X7R, 0603

A. Samsung Part Number

CL
10
B
473
M
B
6
N
X
N
C

| | | | |
|--------------------------------|---------------------------------------|--------------------------|-------------------------|
| ① Series | Samsung Multi-layer Ceramic Capacitor | | |
| ② Size | 0603 (inch code) | L: 1.6 ±0.1mm | W: 0.8 ±0.1 mm |
| ③ Dielectric | X7R | ⑧ Inner electrode | Ni |
| ④ Capacitance | 47 nF | Termination | Cu |
| ⑤ Capacitance tolerance | ±20 % | Plating | Sn 100% (Pb Free) |
| ⑥ Rated Voltage | 50 V | ⑨ Product | X2Y |
| ⑦ Thickness | 0.6 ±0.1 mm | ⑩ Special | Reserved for future use |
| | | ⑪ Packaging | Cardboard Type, 7" reel |

B. Structure and Dimensions:



<Recommended Land pattern design>

| | Dimmension(mm) |
|-----------|----------------|
| L | 1.6 ± 0.15 |
| W | 0.8 ± 0.1 |
| T | 0.6 ± 0.1 |
| CB | 0.45 ± 0.15 |
| EB | 0.25 ± 0.15 |

| | Dimmension(mm) |
|----------|----------------|
| A | 2.30 |
| B | 1.52 |
| C | 0.51 |
| D | 0.89 |
| E | 0.64 |

C. Samsung Reliability Test and Judgement condition

| | Judgement | Test condition |
|---|--|--|
| Capacitance | Within specified tolerance | 1kHz±10% 1.0±0.2Vrms |
| Tan δ (DF) | 0.05 max. | |
| Insulation Resistance | 100Mohm*uF min. | Rated Voltage 60~120 sec. |
| Appearance | No abnormal exterior appearance | Microscope (×10) |
| Withstanding Voltage | No dielectric breakdown or mechanical breakdown | 250% of the rated voltage |
| Temperature Characterisitcs | X7R (From -55℃ to 125℃, Capacitance change should be within ±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 ±12.5% | Bending to the limit (1mm) for 5 sec. with 1.0mm/sec. |
| Solderability | 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.) |
| Resistance to Soldering heat | Capacitance change : within ±7.5% Tan δ, IR : initial spec. | Solder pot : 270±5℃, 10±1sec. |
| Vibration Test | Capacitance change : within ±5% Tan δ, IR : initial spec. | Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z) |
| Humidity | Capacitance change : within ±12.5% Tan δ : 0.075 max. IR : 50MohmuF min. | 40±2℃, 90~95%RH, 500+12/-0hrs |
| Moisture Resistance | Capacitance change : within ±12.5% Tan δ : 0.075 max. IR : 25Mohm 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. |
| High Temperature Resistance | Capacitance change : within ±12.5% Tan δ : 0.075 max. IR : 50MohmuF min. | With 150% of the rated voltage Max. operating temperature 1000+48/-0hrs |
| Temperature Cycling | Capacitance change : within ±7.5% Tan δ, IR : initial spec. 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 : CL10B473MB6NXNC

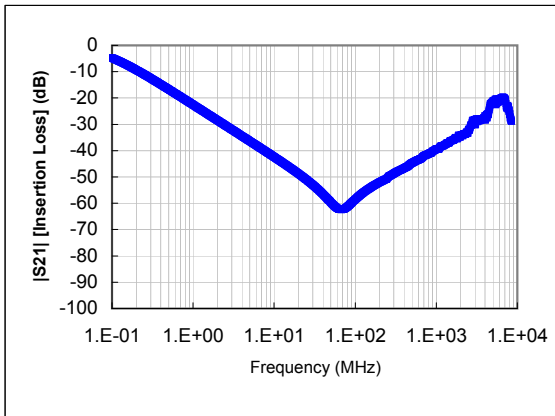
2. Description

| Part no. | Size (inch(mm)) | Thickness (mm) | Temperature characteristics | Capacitance value(nF) | Capacitance tolerance(%) | Voltage (V) |
|-----------------|-----------------|----------------|-----------------------------|-----------------------|--------------------------|-------------|
| CL10B473MB6NXNC | 0603/1608 | 0.6mm | X7R | 47nF | ± 20 % | 50 |

3. Characteristics Data

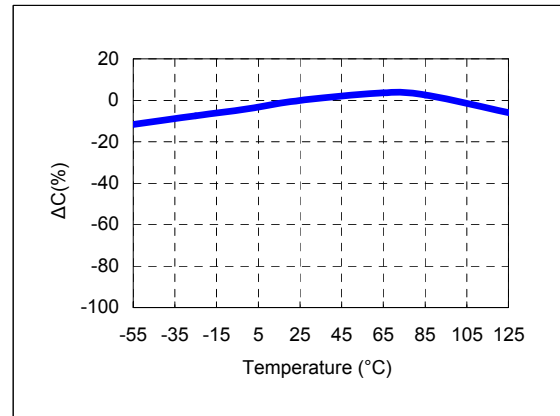
1) Frequency Characteristics

Agilent 5071A , 0.1MHz to 8.5GHz



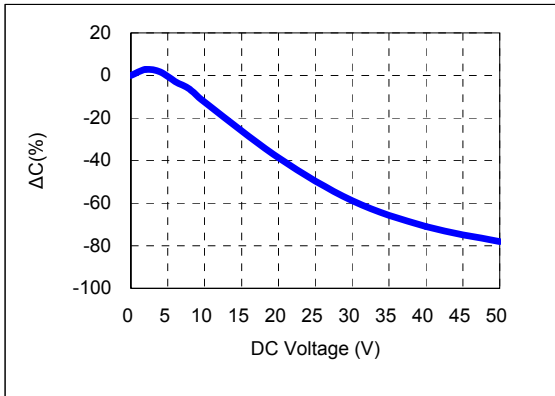
2) Temperature Characteristics (TCC)

Agilent 4284A, 1kHz, 1.0Vrms



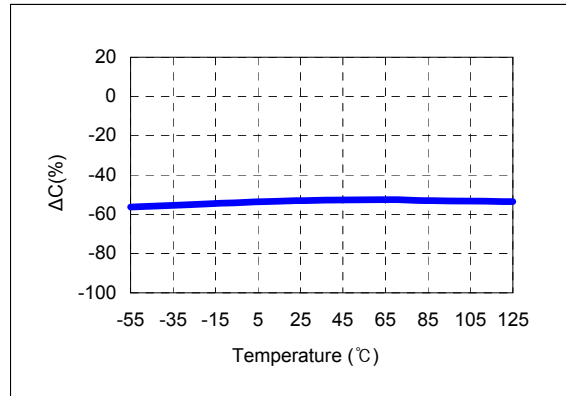
3) DC Bias Characteristics

Quadtech 7600, 1kHz, 1Vrms



4) Bias TCC characteristics

Agilent 4284A, 1kHz, 1.0Vrms, 25Vdc



5) AC Voltage Characteristics

Agilent 4284A, 1kHz

