

SPECIFICATION

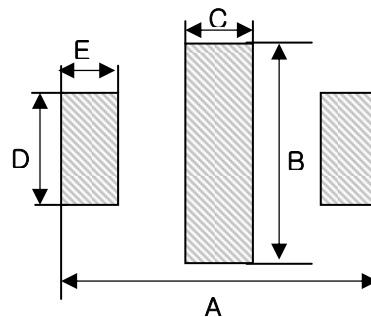
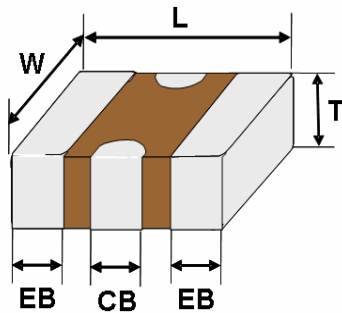
- **Supplier :** Samsung electro-mechanics
- **Product :** Multi-layer Ceramic Capacitor
- **Part Number :** **CL10B223MB6NXNC**
- **Discription :** Cap, 22nF, 50V, ±20%, X7R, 0603

A. Samsung Part Number

CL 10 B 223 M B 6 N X N C
 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 ±0.1mm	W: 0.8 ±0.1 mm
③ Dielectric	X7R	⑧ Inner electrode	Ni
④ Capacitance	22 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)	0.025 max.	
Insulation Resistance	10,000Mohm 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 : 0.05 max. IR : 1,000Mohm min.	40±2℃, 90~95%RH, 500+12/-0hrs
Moisture Resistance	Capacitance change : within ±12.5% Tan δ : 0.05 max. IR : 500Mohm 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 : 0.05 max. IR : 1,000Mohm min.	With 200% 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 : CL10B223MB6NXNC

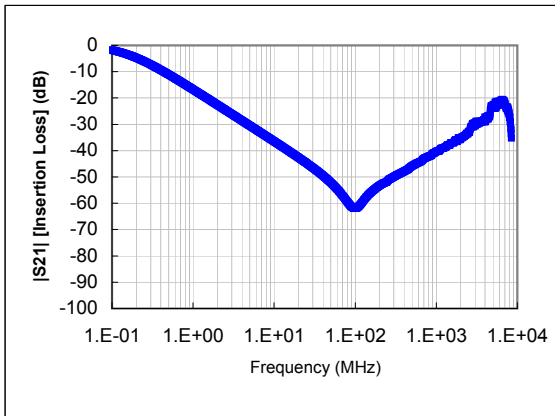
2. Description

Part no.	Size (inch(mm))	Thickness (mm)	Temperature characteristics	Capacitance value(nF)	Capacitance tolerance(%)	Voltage (V)
CL10B223MB6NXNC	0603/1608	0.6mm	X7R	22nF	± 20 %	50

3. Characteristics Data

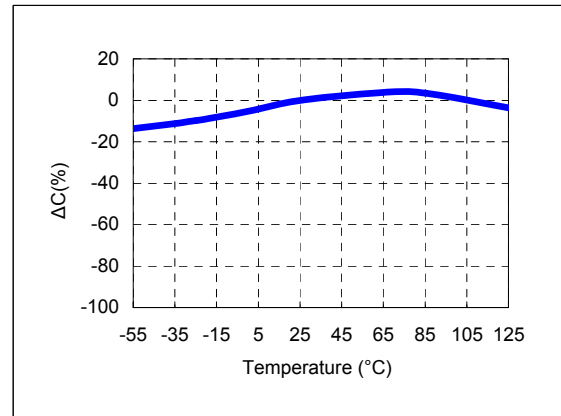
1) Frequency Characteristics

Agilent 5071A , 0.1MHz to 8.5GHz



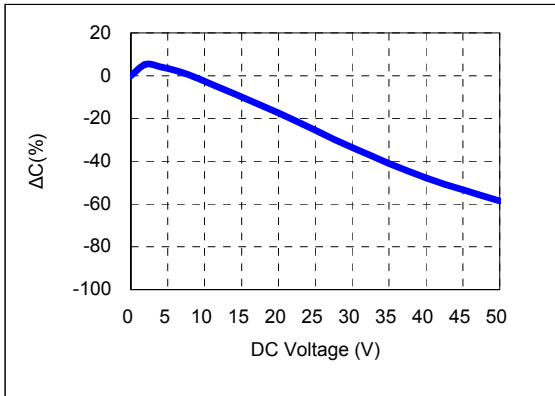
2) Temperature Characteristics (TCC)

Agilent 4284A, 1kHz, 1.0Vrms



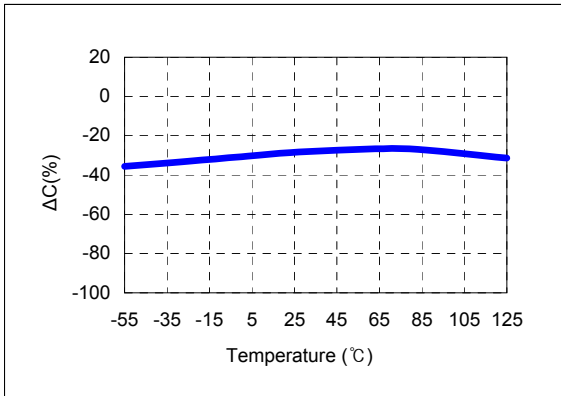
3) DC Bias Characteristics

Quadtech 7600, 1kHz, 1Vrms



4) Bias TCC characteristics

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



5) AC Voltage Characteristics

Agilent 4284A, 1kHz

