



SPECIFICATION

(Reference sheet)

· Supplier : Samsung electro-mechanics · Samsung P/N : CL21B225KPFNNNG

Product : Multi-layer Ceramic Capacitor

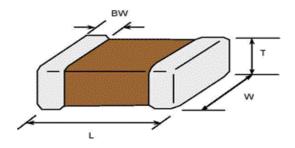
Description : CAP, 2.2uF, 10V, ±10%, X7R, 0805

A. Samsung Part Number

<u>CL</u> <u>21</u> <u>B</u> <u>225</u> <u>K</u> <u>P</u> <u>F</u> <u>N</u> <u>N</u> <u>N</u> <u>O</u> <u>G</u> ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

1	Series	Samsung Multi-layer Ceramic Capacitor						
2	Size	0805 (inch code)	L: $2.00 \pm 0.10 \text{ mm}$		W:	1.25 ± 0.10 mm		
3	Dielectric	X7R	8	Inner electrode		Ni		
4	Capacitance	2.2 uF		Termination		Cu		
(5)	Capacitance	±10 %		Plating		Sn 100% (Pb Free)		
	tolerance		9	Product		Normal		
6	Rated Voltage	10 V	10	Special		Reserved for future use		
7	Thickness	1.25 ± 0.10 mm	11	Packaging		Embossed Type, 7" reel		

B. Structure & Dimension



Samsung P/N	Dimension(mm)					
Samsung F/N	L	W	Т	BW		
CL21B225KPFNNNG	2.00 ± 0.10	1.25 ± 0.10	1.25 ± 0.10	0.50 +0.20/-0.30		

C. Samsung Reliablility Test and Judgement Condition

Capacitance Within specified tolerance 1 kHz ±10% / 1.0±0.2Vrms *A capacitor prior to measuring the capacital treated at 150 °C +0/-10 °C for 1 hour and main ambient air for 24±2 hours. Insulation 10,000Mohm or 100Mohm×μF Rated Voltage 60~120 sec.			
Tan δ (DF) 0.05 max.treated at 150 °C +0/-10 °C for 1 hour and main ambient air for 24 ± 2 hours.Insulation $10,000$ Mohm or 100 Mohm× μ FRated Voltage $60\sim120$ sec.			
Desistance Miles aver is greatles			
Resistance Whichever is smaller			
Appearance No abnormal exterior appearance Microscope (×10)			
Withstanding No dielectric breakdown or 250% of the rated voltage			
Voltage mechanical breakdown			
Temperature X7R			
Characteristics (From-55℃ to 125℃, Capacitance change should be within ±15%)			
Adhesive Strength No peeling shall be occur on the 500g·f, for 10±1 sec.			
of Termination terminal electrode			
Bending Strength Capacitance change: within ±12.5% Bending to the limit (1mm)			
with 1.0mm/sec.			
Solderability More than 75% of terminal surface SnAg3.0Cu0.5 solder			
is to be soldered newly 245±5°C, 3±0.3sec.			
(preheating : 80~120°C for 10~30sec.)			
Resistance to Capacitance change: within ±7.5% Solder pot: 270±5℃, 10±1sec.			
Soldering Heat Tan δ, IR : initial spec.			
Vibration TestCapacitance change : within ± 5%Amplitude : 1.5mmTan δ, IR : initial spec.From 10Hz to 55Hz (return : 1min.)2hours × 3 direction (x, y, z)			
Moisture Capacitance change: within ±12.5% With rated voltage			
Resistance Tan δ : 0.075 max $40\pm2^{\circ}$ C, $90\sim95\%$ RH, $500+12/-0$ hrs			
IR : 500Mohm or 25Mohm × μ F			
Whichever is smaller			
High Temperature Capacitance change: within ±12.5% With 200% of the rated voltage			
Resistance Tan δ : 0.075 max Max. operating temperature			
IR : 1,000Mohm or 50Mohm × <i>μ</i> F 1000+48/-0hrs			
Whichever is smaller			
Temperature Capacitance change: within ±7.5% 1 cycle condition			
Cycling Tan δ, IR : initial spec. Min. operating temperature \rightarrow 25	5℃		
→ Max. operating temperature → 25	5°C		
5 cycle test			

X The reliability test condition can be replaced by the corresponding accelerated test condition.

D. Recommended Soldering method:

Reflow (Reflow Peak Temperature : 260+0/-5°C, 10sec. Max)



A Product specifications included in the specifications are effective as of March 1, 2013.

Please be advised that they are standard product specifications for reference only.

We may change, modify or discontinue the product specifications without notice at any time.

So, you need to approve the product specifications before placing an order.

Should you have any question regarding the product specifications,

please contact our sales personnel or application engineers.

- Disclaimer & Limitation of Use and Application -

The products listed in this Specification sheet are **NOT** designed and manufactured for any use and applications set forth below.

Please note that any misuse of the products deviating from products specifications or information provided in this Spec sheet may cause serious property damages or personal injury.

We will **NOT** be liable for any damages resulting from any misuse of the products, specifically including using the products for high reliability applications as listed below.

If you have any questions regarding this 'Limitation of Use and Application', you should first contact our sales personnel or application engineers.

- ① Aerospace/Aviation equipment
- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- Military equipment
- 5 Disaster prevention/crime prevention equipment
- Any other applications with the same as or similar complexity or reliability to the applications set forth above.