



# **SPECIFICATION**

- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N :
- CL10A226MQ8NRNC

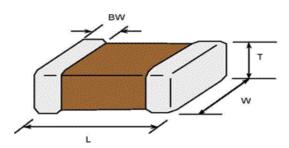
(Reference sheet)

- · Description :
- CAP, 22uF, 6.3V, ±20%, X5R, 0603

A. Samsung Part Number

			<u>CL</u> ①	<u>10</u> ②	<u>▲</u> ③	<u>226</u> ④	<u>M</u> 5	<mark>Q</mark> 6	<u>8</u> 7	<u>N</u> 8	<u>R</u> 9	<u>N</u> 10	<mark>C</mark> 11		
1	Series	Samsung Multi-layer Ceramic Capacitor													
2	Size	0603 (i	nch co	ode)		L:	1.60	± 0.20	mm			W:	0.80 ± 0.20	mm	
3	Dielectric	X5R					8	Inner	elect	rode			Ni		
4	Capacitance	22 u	F					Term	inatio	n			Cu		
5	Capacitance	±20 %	, 0					Platir	ng				Sn 100%	(Pb Free)	
	tolerance						9	Prod	uct				Size control	code	
6	Rated Voltage	6.3 V	'				10	Spec	ial				Reserved for	or future use	
$\bigcirc$	Thickness	0.80 ± 0.2	O mm				1	Pack	aging	I			Cardboard 7	Гуре, 7" reel	

## **B. Structure & Dimension**



Samsung P/N	Dimension(mm)								
Samsung F/N	L	W	Т	BW					
CL10A226MQ8NRNC	1.60 ± 0.20	0.80 ± 0.20	0.80 ± 0.20	0.30 ± 0.20					

#### C. Samsung Reliablility Test and Judgement Condition

	Judgement	Test condition						
Capacitance	Within specified tolerance	120Hz ±20% / 0.5±0.1Vrms						
Tan δ (DF)	0.1 max.	*A capacitor prior to measuring the capacitance is heat treated at 150°C+0/-10°C for 1 hour and maintained in ambient air for 24±2 hours.						
Insulation	10,000Mohm or 50Mohm×µF	Rated Voltage 60~120 sec.						
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	X5R							
Characteristics	(From-55 ℃ to 85 ℃, Capacitance change s	hould 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℃, 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 Test	Capacitance change : within $\pm 5\%$ Tan $\delta$ , IR : initial spec.	Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)						
Moisture	Capacitance change : within ±12.5%	With rated voltage						
Resistance	Tan δ : 0.25 max	40±2℃, 90~95%RH, 500+12/-0hrs						
	IR : 500Mohm or 8.8Mohm × <i>μ</i> F Whichever is smaller							
High Temperature	Capacitance change : within ±12.5%	With <sup>150%</sup> of the rated voltage						
Resistance	Tan δ : 0.25 max	Max. operating temperature						
	IR : 1,000Mohm or 17.7Mohm × µF Whichever is smaller	1,000+48/-0hrs						
Tomporate		1 avela condition						
Temperature Cycling	Capacitance change : within $\pm 10\%$ Tan $\delta$ , IR : initial spec.	1 cycle condition Min. operating temperature $\rightarrow$ 25°C						
Cycling								
		→ Max. operating temperature → $25^{\circ}$ C						
		5 cycle test						

 $\,\%$  The reliability test condition can be replaced by the corresponding accelerated test condition.

## D. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260±5°C, 30sec. )

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.

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- *①* Aerospace/Aviation equipment
- *(2)* Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- *④ Military equipment*
- 5 Disaster prevention/crime prevention equipment
- 6 Power plant control equipment
- ⑦ Atomic energy-related equipment
- Indersea equipment
- Itraffic signal equipment
- Data-processing equipment
- ① Electric heating apparatus, burning equipment
- ② Safety equipment
- 1 Any other applications with the same as or similar complexity or reliability to the applications