



# **SPECIFICATION**

- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N :
- CL10A474KQ8NNNC

(Reference sheet)

- · Description :
- CAP, 470nF, 6.3V, ±10%, X5R, 0603

A. Samsung Part Number

		<u>CL</u> ①	<u>10</u> ②	<u>▲</u> ③	<u>474</u> ④	<u>K</u> 5	<mark>Q</mark> 6	<u>8</u> 7	<u>N</u> 8	<u>N</u> 9	<u>N</u> 10	<u>C</u> 11		
1	Series	Samsung Multi-layer Ceramic Capacitor												
2	Size	0603 (inch c	ode)		L:	1.60	± 0.10	mm			W:	0.80 ± 0.10	mm	
3	Dielectric	X5R				(8)	Inner	elect	rode			Ni		
4	Capacitance	470 nF				-	Term	inatio	on			Cu		
5	Capacitance	±10 %					Platir	ıg				Sn 100%	(Pb Free)	
	tolerance					9	Prod	uct				Normal		
6	Rated Voltage	6.3 V			10 Special					Reserved for future use				
1	Thickness	$0.80 \pm 0.10$ mm				1	Packa	aging	I			Cardboard <sup>-</sup>	Type, 7" reel	

## **B. Structure & Dimension**



Samsung P/N	Dimension(mm)								
Samsung F/N	L	W	Т	BW					
CL10A474KQ8NNNC	1.60 ± 0.10	0.80 ± 0.10	0.80 ± 0.10	0.30 ± 0.20					

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

Tan δ (DF)0.05 max.treated at 150 °C +0/-10 °C for 1 hour and maintai ambient air for 24±2 hours.Insulation10,000Mohm or 100Mohm×μFRated Voltage60~120 sec.ResistanceWhichever is smallerMicroscope (×10)WithstandingAppearanceNo abnormal exterior appearanceMicroscope (×10)WithstandingNo dielectric breakdown or250% of the rated voltageVoltagemechanical breakdown250% of the rated voltageTemperatureX5RCharacteristicsCharacteristics(From-55°C to 85°C, Capacitance change should be within ±15%)Adhesive Strength of Terminationterminal electrodeBending StrengthCapacitance change : within ±12.5%Bending StrengthGapacitance change : within ±12.5%SolderabilityMore than 75% of terminal surface is to be soldered newlySnAg3.0Cu0.5 solder 245±5°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)Resistance to Soldering HeatCapacitance change : within ±7.5%Solder pot : 270±5°C, 10±1sec.Vibration TestCapacitance change : within ±5% Tan δ, IR : initial spec.Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)Moisture ResistanceCapacitance change : within ±12.5%With rated voltage 40±2°C, 90~95%RH, 500+12/-0hrsIR : S00Mohm or 25Mohm × μF Whichever is smallerWith 200% of the rated voltage					
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Resistance Whichever is smaller   Appearance No abnormal exterior appearance Microscope (×10)   Withstanding No dielectric breakdown or mechanical breakdown 250% of the rated voltage   Temperature X5R 250% of the rated voltage   Characteristics (From-55 °C to 85 °C, Capacitance change should be within ±15%) Adhesive Strength 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) with 1.0mm/sec.   Solderability More than 75% of terminal surface is to be soldered newly SnAg3.0Cu0.5 solder 245±5°C, 3±0.3sec. (preheating : 80~120°C for 10~30sec.)   Resistance to Capacitance change : within ±7.5% Solder pot : 270±5°C, 10±1sec.   Soldering Heat Tan δ, 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 : 0.075 max IR : 500Mohm or 25Mohm × μ <sup>E</sup> Whichever is smaller With 200% of the rated voltage	*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.				
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Whichever is smaller   High Temperature Capacitance change : within ±12.5% With 200% of the rated voltage					
High Temperature Capacitance change : within ±12.5% With <sup>200%</sup> of the rated voltage					
<b>Resistance</b> Tan $\delta$ : 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					
<b>Cycling</b> Tan $\delta$ , IR : initial spec. Min. operating temperature $\rightarrow 25^{\circ}$ C					
$\rightarrow$ Max. operating temperature $\rightarrow$ 25°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 )

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

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

- Aerospace/Aviation equipment
- 2 Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- ④ 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.