



SPECIFICATION

- · Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- · Samsung P/N :
- CL32A106KLULNNE

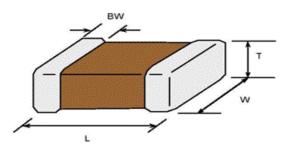
(Reference sheet)

- · Description :
- CAP, 10uF, 35V, ±10%, X5R, 1210

A. Samsung Part Number

			<u>CL</u> ①	<u>32</u> ②	<u>▲</u> ③	<u>106</u> ④	<u>K</u> 5	<u>L</u> 6	<u>U</u> ⑦	<u>∟</u> ⑧	<u>N</u> 9	<u>N</u> 10	<u>Е</u> 11)		
1	Series	Samsung	g Multi-	layer	Cerai	nic Ca	pacito	or							
2	Size	1210	(inch c	ode)		L :	3.20	± 0.30	mm			W :	2.50 ± 0.20 r	mm	
							8	Thick	ness	divis	ion		Low profile		
3	Dielectric	X5R						Inner	elect	rode			Ni		
4	Capacitance	10	uF					Term	inatic	n			Cu		
5	Capacitance	±10	%					Platir	ıg				Sn 100%	(Pb Free)	
	tolerance						9	Prod	uct				Normal		
6	Rated Voltage	35	V				10	Spec	ial				Reserved for	r future use	
\bigcirc	Thickness	1.80 ± 0.	20 mm				1	Packa	aging				Embossed T	ype, 7" reel	

B. Structure & Dimension



Samsung P/N	Dimension(mm)							
Samsung F/N	L	W	Т	BW				
CL32A106KLULNNE	3.20 ± 0.30	2.50 ± 0.20	1.80 ± 0.20	0.60 ± 0.30				

C. Samsung Reliablility Test and Judgement Condition

CapacitanceWithin specified tolerance14½ ±10% / 1.0±0.2VrmsTan 5 (DF)0.1 max.*A capacitor prior to measuring the capacitance is heat trated at 150 ° +0/-10° for 1 hour and maintained in ambient air for 24±2 hours.Insulation10,000 Mohm or 100 Mohm× μ^{f} Rated Voltage60~120 sec.ResistanceWhichever is smallerMo abnormal exterior appearanceMicroscope (×10)WithstandingNo dielectric breakdown or mechanical breakdown250% of the rated voltageTemperatureXSRCharacteristics(From-55° to 85°C, Capacitance change should be within ±15%)Adhesive StrengthNo peeling shall be occur on the terminal electrodeBending StrengthCapacitance change : within ±12.5%Bending StrengthCapacitance change : within ±12.5%SolderabilityMore than 75% of terminal surface is to be soldered newlySoldering HeatTan 5, IR : initial spec.Vibration TestCapacitance change : acapacitance change : within ±12.5%Kibration TestCapacitance change : acapacitance change : within ±12.5%MoistureCapacitance change : acapacitance change : within ±12.5%ResistanceTan 5 : 0.125 max Whichever is smallerHigh Temperature ResistanceCapacitance change : within ±12.5%ResistanceTan 5 : 0.125 max Whichever is smallerHigh Temperature ResistanceCapacitance change : within ±12.5%ResistanceTan 5 : 0.125 max Whichever is smallerHigh Temperature ResistanceCapacitance change : within		Judgement	Test condition			
Tan 5 (DF) 0.1 max. treated at 150°C+0/-10°C for 1hour and maintained in ambient air for 24±2 hours.Insulation10,000Mohm or 100Mohm×//FRated Voltage $60\sim120 \text{ sec.}$ ResistanceWhichever is smallerMicroscope (×10)AppearanceNo abnormal exterior appearanceMicroscope (×10)WithstandingNo dielectric breakdown or temperature 250% of the rated voltageCharacteristics(From-55°C to 85°C, Capacitance change should be within ±15%)Adhesive StrengthNo peeling shall be occur on the terminal electrodeof Terminationterminal electrodeBending StrengthCapacitance change : within ±12.5%Bending StrengthCapacitance change : within ±12.5%SolderabilityMore than 75% of terminal surface is to be soldered newlySoldering HeatTan δ , IR : initial spec.Vibration TestCapacitance change : within ±5%Vibration TestCapacitance change : within ±12.5%MoistureCapacitance change : within ±12.5%Resistance Tan δ : 0.125 max Wichever is smallerHigh Temperature Capacitance change : Within ±12.5%High Temperature ResistanceCapacitance change : within ±12.5%High Temperature Capacitance change : Within ±12.5%Resistance Tan δ : 0.125 max With red voltageResistanceTan δ : 0.125 max Within ±12.5%ResistanceTan δ : 0.125 max Within ±12.5%ResistanceTan δ : 0.125 max Within ±12.5%High Temperature Within ever is smalle	Capacitance	Within specified tolerance	1 ^{kHz} ±10% / 1.0±0.2Vrms			
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$\begin{tabular}{ c c c c c c c } \hline Tan \delta, IR: initial spec. & From 10Hz to 55Hz (return : 1min.) \\ 2hours \times 3 \ direction (x, y, z) \\ \hline \end{tabular} \$	Soldering Heat					
$ \begin{array}{c} \mbox{Moisture} \\ \mbox{Resistance} \\ \mbox{Resistance} \\ \mbox{In} \delta : 0.125 \mbox{ max} \\ \mbox{IR} : 500 \mbox{Mohm or } 12.5 \mbox{Mohm } \times \mbox{\sc P}^F \\ \mbox{Whichever is smaller} \\ \mbox{High Temperature} \\ \mbox{Resistance} \\ \mbox{Resistance} \\ \mbox{Tan } \delta : 0.125 \mbox{ max} \\ \mbox{In} 12.5 \mbox{\sc P} \\ \mbox{Tan } \delta : 0.125 \mbox{ max} \\ \mbox{In} 12.5 \mbox{\sc P} \\ \mbox{Tan } \delta : 0.125 \mbox{\sc max} \\ \mbox{IR} : 1,000 \mbox{Mohm or } 25 \mbox{\sc Mohm } \times \mbox{\sc P}^F \\ \mbox{\sc Mhichever is smaller} \\ \mbox{\sc P} \ \mbox{\sc P} \\ \mbox{\sc P} \ \mbox{\sc P} \ \mbox{\sc P} \\ \mbox{\sc P} \ \mb$	Vibration Test		From 10Hz to 55Hz (return : 1min.)			
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Whichever is smallerWith150%of the rated voltageHigh Temperature ResistanceCapacitance change :within $\pm 12.5\%$ Tan δ :With150%of the rated voltageResistanceTan δ :0.125 max 0.125 max IR :Max. operating temperature 1,000+48/-0hrsMax. operating temperature 1,000+48/-0hrsTemperature CyclingCapacitance change :within $\pm 7.5\%$ Tan δ , IR : initial spec.1 cycle condition Min. operating temperature Min. operating temperature	Resistance	Tan δ : 0.125 max	40±2℃, 90~95%RH, 500+12/-0hrs			
ResistanceTan δ :0.125 maxMax. operating temperatureIR:1,000Mohm or 25Mohm × μ^{F} 1,000+48/-0hrsWhichever is smaller1 cycle conditionTemperature CyclingCapacitance change :within ±7.5%Tan δ , IR : initial spec.1 cycle condition						
ResistanceTan δ :0.125 maxMax. operating temperatureIR:1,000Mohm or 25Mohm × μ F1,000+48/-0hrsWhichever is smallerMax. operating temperatureTemperature CyclingCapacitance change :within $\pm 7.5\%$ 1 cycle conditionMin. operating temperature $\rightarrow 25^{\circ}$ C	High Temperature	Capacitance change : within ±12.5%	With ^{150%} of the rated voltage			
Whichever is smallerWhichever is smallerTemperature CyclingCapacitance change : within $\pm 7.5\%$ Tan δ , IR : initial spec.1 cycle condition Min. operating temperature $\rightarrow 25^{\circ}C$		-	Max. operating temperature			
CyclingTan δ , IR : initial spec.Min. operating temperature \rightarrow 25°C			1,000+48/-0hrs			
	Temperature	Capacitance change : within ±7.5%	1 cycle condition			
\rightarrow Max. operating temperature \rightarrow 25°C	Cycling	Tan δ, IR : initial spec.	Min. operating temperature \rightarrow 25°C			
			\rightarrow Max. operating temperature \rightarrow 25°C			
5 cycle test			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.