



SPECIFICATION

- · Supplier : Samsung electro-mechanics
- · Product : Multi-layer Ceramic Capacitor
- Samsung P/N :
 Description :
- CL21F225ZAFNNNE
 - ion : CAP, 2.2uF, 25V, -20/+80%, Y5V, 0805

(Reference sheet)

A. Samsung Part Number

			<u>CL</u> ①	<mark>21</mark> ②	<u>Е</u> З	<u>225</u> ④	Z 5	<mark>4</mark> 6	<mark>Е</mark> ⑦	<u>N</u> 8	<u>N</u> 9	<u>N</u> 10	<u>Е</u> Ш		
1	Series	Samsung	Multi-	layer	Cerai	nic Ca	pacito	or							
2	Size	0805	(inch c	ode)		L:	2.00	± 0.10	mm			W:	1.25 ± 0.10	mm	
3	Dielectric	Y5V					8	Inner	elect	rode			Ni		
4	Capacitance	2.2	uF					Term	inatio	n			Cu		
5	Capacitance	-20/+80	%					Platir	ng				Sn 100%	(Pb Free)	
	tolerance						9	Prod	uct				Normal		
6	Rated Voltage	25 \	V				10	Spec	ial				Reserved fo	r future use	
1	Thickness	1.25 ± 0.1	10 mm				1	Pack	aging				Embossed 7	ype, 7" reel	

B. Structure & Dimension



Samsung P/N	Dimension(mm)								
Samsung F/N	L	W	Т	BW					
CL21F225ZAFNNNE	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

		Judgement	Test condition
Tan δ (DF) 0.09 max. treated at 150°C+0/-10°C for 1 hour and maintained ambient air for 24±2 hours. Insulation 10,000Mohm or 100Mohm×μ ^E Rated Voltage 60~120 sec. Resistance Whichever is smaller Microscope (×10) Withstanding No dielectric breakdown or 250% of the rated voltage Voltage mechanical breakdown 500g f, for 10±1 sec. Characteristics (From-30°C to 85°C, Capacitance change should be within -82-+22%) Adhesive Strength No peeling shall be occur on the terminal electrode 500g f, for 10±1 sec. Bending Strength Capacitance change : within ±30% Bending to the limit (1mm) with 1.0mm/sec. Solderability More than 75% of terminal surface is to be soldered newly 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 ±30% Tan δ : 0.125 max With rated voltage Resistance Capacitance change : within ±30% Tan δ : 0.125 max With 200% of the rated voltage Resistance Tan δ : 0.125 max Max. operating temperature High Temperature Capacitance change : within ±30% Tan δ : 0.125 max Max. operating temperature <td>Capacitance</td> <td>Within specified tolerance</td> <td>1^{kHz} ±10% / 1.0±0.2Vrms</td>	Capacitance	Within specified tolerance	1 ^{kHz} ±10% / 1.0±0.2Vrms
Resistance Whichever is smaller Appearance No abnormal exterior appearance Microscope (×10) Withstanding No dielectric breakdown or 250% of the rated voltage Voltage mechanical breakdown 250% of the rated voltage Temperature Y5V Characteristics (From-30 ℃ to 85 ℃, Capacitance change should be within -82~+22%) Adhesive Strength No peeling shall be occur on the terminal electrode 500g·f, for 10±1 sec. Garacteristics (From-30 ℃ to 85 ℃, Capacitance change should be within -82~+22%) Adhesive Strength No peeling shall be occur on the terminal electrode 500g·f, for 10±1 sec. Solderability More than 75% of terminal surface is to be solder Solder 2454.5 ⁺ ℃, 3±0.3sec. Soldering Heat Tan δ, IR : initial spec. Solder pot : 270±5 ⁺ ℃, 10±1sec. Solder Soldering Heat Tan δ, IR : initial spec. Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) Vibration Test Capacitance change : within ±20% X direction (x, y, z) With rated voltage Moisture Capacitance change : within ±30% With rated voltage Ma±2°, 0.95%/RH, 500+12/-0hrs	Tan δ (DF)	0.09 max.	*A capacitor prior to measuring the capacitance is heat treated at $150^{\circ}C+0/-10^{\circ}C$ for 1 hour and maintained in ambient air for 24±2 hours.
AppearanceNo abnormal exterior appearanceMicroscope (×10)WithstandingNo dielectric breakdown or mechanical breakdown250% of the rated voltageYoutagemechanical breakdown250% of the rated voltageTemperatureYSVCharacteristics(From-30°C to 85°C, Capacitance change should be within -82~+22%)Adhesive StrengthNo peeling shall be occur on the terminal electrodeBending StrengthCapacitance change : is to be soldered newlyBending to the limit (1mm) with 1.0mm/sec.SolderabilityMore than 75% of terminal surface is to be soldered newlySolder pot : 270±5°C, 10±1sec.Soldering HeatTan ō, IR : initial spec.Solder pot : 270±5°C, 10±1sec.Vibration TestCapacitance change : Capacitance change : within ±20%Amplitude : 1.5mm From 10Hz to 55Hz (return : 1min.) 2hours × 3 direction (x, y, z)MoistureCapacitance change : within ±30%With rated voltage 40±2°C, 90~95%RH, 500+12/-0hrs IR : Tan ō : 0.125 max IR : 1,000Mohm or 25Mohm × µF Whichever is smallerWith 200% of the rated voltage Max. operating temperature 1000+48/-0hrsHigh Temperature Capacitance change : ResistanceCapacitance change : max IR : 1,000Mohm or 25Mohm × µF Whichever is smallerWith 200% of the rated voltage Max. operating temperature 1000+48/-0hrsHigh Temperature Capacitance change : Whichever is smaller1 cycle condition Min. operating temperature 1000+48/-0hrs	Insulation	10,000Mohm or 100Mohm× <i>µ</i> F	Rated Voltage 60~120 sec.
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CyclingTan δ , IR : initial spec.Min. operating temperature \rightarrow 25°C	Temperature	Capacitance change : within ±20%	1 cycle condition
\rightarrow Max. operating temperature \rightarrow 25°C	-	Tan δ, IR : initial spec.	Min. operating temperature \rightarrow 25°C
			\rightarrow Max. operating temperature \rightarrow 25°C
5 cycle test			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.

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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.

- 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.