



SPECIFICATION

(Reference sheet)

• Supplier : Samsung electro-mechanics • Samsung P/N : CL19A226MR7NWN8

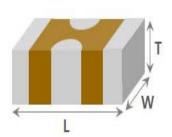
• Product : Multi-layer Ceramic Capacitor • Description : CAP, 22 µF, 4V, ±20%, X5R, 1209

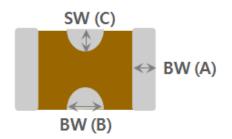
A. Samsung Part Number

<u>CL</u> <u>19</u> <u>A</u> <u>226</u> <u>M</u> <u>R</u> <u>7</u> <u>N</u> <u>W</u> <u>N</u> <u>8</u> ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Series	Samsung Multi-layer Ceramic Capacitor			
② Size	0503 (inch code)	L: 1.20 ± 0.05 mm	W: 0.90 ± 0.05 mm	
3 Dielectric	X5R	8 Inner electrode	Ni	
Capacitance	22 μF	Termination	Cu	
⑤ Capacitance	±20 %	Plating	Sn 100% (Pb Free)	
tolerance		9 Product	3-terminal	
Rated Voltage	4 V	® Special	Reserved for future use	
⑦ Thickness	0.75 ± 0.05 mm	① Packaging	Cardboard Type, 7" reel	

B. Structure and Dimensions





	Dimension(mm)					
Samsung P/N	L W	۱۸/	Т	BW	BW	SW
		VV		А	В	С
CL19A226MR7NWN8	1.20 ± 0.05	0.90 ± 0.05	0.75 ± 0.05	0.15 ± 0.10	0.50 ± 0.10	0.20 ± 0.10

C. Samsung Reliablility Test and Judgement Condition

	Judgement	Test condition			
Capacitance	Within specified tolerance	120Hz ±20% / 0.5±0.1Vrms			
Tan δ (DF)	0.15 max.	*A capacitor prior to measuring the capacitance is heat treated at $150^{\circ}\text{C}+0/-10^{\circ}\text{C}$ for 1hour and maintained in ambient air for 24±2 hours.			
Insulation	10,000Mohm or 10Mohm×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 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℃, 3±0.3sec.			
		(preheating : 80~120 ℃ for 10~30sec.)			
Resistance to	Capacitance change: within ±15%	Solder pot : 270±5℃, 10±1sec.			
Soldering heat	Tan δ, IR : initial spec.				
Vibration Test	Capacitance change : initial spec.	Amplitude : 1.5mm			
	Tan 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 : 0.25 max	40±2℃, 90~95%RH, 500+12/-0hrs			
	IR: 500Mohm or 1Mohm × μ F				
	Whichever is smaller				
High Temperature	Capacitance change: within ±12.5%	With 100% of the rated voltage			
Resistance	Tan δ: 0.25 max	Max. operating temperature			
	IR: 1,000Mohm or 2Mohm × μ F	1,000+48/-0hrs			
	Whichever is smaller				
Temperature	Capacitance change: within ±15%	1 cycle condition			
Cycling	Tan δ, IR : initial spec.	Min. operating temperature → 25°C			
		→ Max. operating temperature → 25°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.



⚠ This MLCC with the test voltage at 100% of the rated voltage in the high temperature resistance test should be applied with the derating voltage and temperature according to 3-1 derating guide