

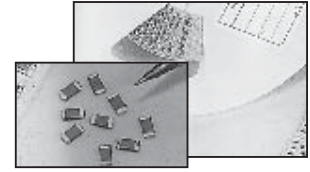
## FEATURES

- CRACK RESISTANT TERMINATION
- SOFT TERMINATION, OPEN MODE FAILURE
- WIDE VOLTAGE RANGE (16V TO 5KV)
- HIGH CAPACITANCE (UP TO 10μF)
- RoHS COMPLIANT
- SAC SOLDER COMPATIBLE\*\*

## RoHS Compliant

Includes all homogeneous materials

\*See Part Number System for Details

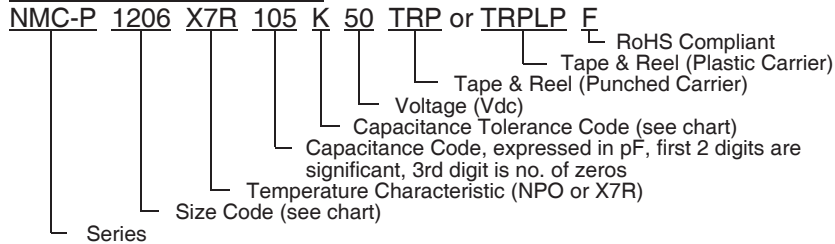


Temperature Coefficient	NPO	X7R
Capacitance Range	5pF ~ 0.22μF	180pF ~ 10μF
Capacitance Tolerance	For 2.2pF ~ 10pF: ±0.1pF (B), ±0.25pF (C), ±0.5pF (D), ±1pF (F) Above 10pF: ±1% (F), ±2% (G), ±5% (J), ±10% (K)	±10% (K) & ±20% (M)
Operating Temperature Range	-55°C ~ +125°C	
Temperature Characteristics	±30ppm/°C	±15% Δ Cap.
Rated Voltages	16Vdc, 25Vdc, 50Vdc, 100Vdc, 200Vdc, 250Vdc, 500Vdc, 630Vdc, 1KVdc, 2Kvdc, 3Kvdc & 5Kvdc	
Q or Dissipation Factor	Q = ≥ 1000 (more than 30pF)* Q = ≥ 400 + 20 x C in pF (30pF and below)*	2.5% max. @ 1KHz, 1.0V ± 0.2Vrms
Insulation Resistance	10,000Megohm or 500Megohm/μF whichever is less @ +25°C	
Dielectric Withstanding Voltage	200% of rated voltage for 5 seconds, 50mA max. (16V ~ 250V) 150% of rated voltage for 5 seconds, 50mA max. (500V ~ 630V) 120% of rated voltage for 5 seconds, 50mA max. (1KV ~ 5KV)	

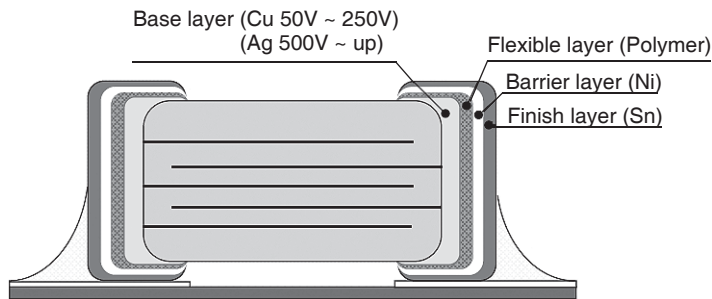
\*Test Frequency & Voltage: Up to 100pF 1MHz/1.0Vrms, Above 100pF 1KHz/1.0Vrms

\*\*Reflow soldering is recommended. Contact NIC regarding the use of other soldering methods.

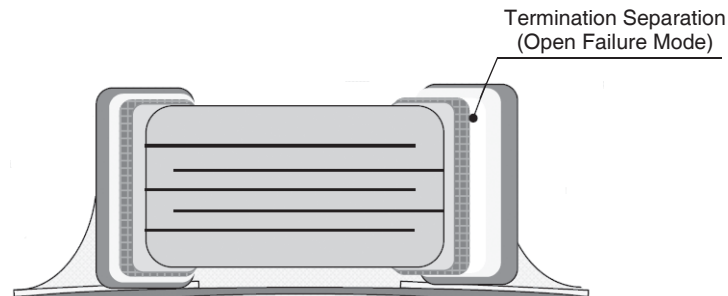
## PART NUMBER SYSTEM



## CONSTRUCTION



## OPEN MODE FAILURE AS A RESULT OF BENDING STRESS



## NPO VALUES AND SIZES (mm)

EIA Case Size	0603			0805			1206						1210											
Length (L)	1.60 ± 0.1			2.00 ± 0.2			3.20 ± 0.3						3.20 ± 0.30											
Width (W)	0.80 ± 0.1			1.25 ± 0.25			1.60 ± 0.2						2.50 ± 0.20											
Thickness max. (T)	0.90 max.			1.45 max.			1.80 max.						2.60 max.											
Termination Width (P)	0.15 min.			0.20 min.			0.30 min.						0.30 min.											
Capacitance	Working Voltage (Vdc)																							
	200	16	25	50	200	250	500	16	25	50	200	250	500	1K	2K	3K	16	25	50	200	250	500		
5.0																								
8.2																								
10																								
12																								
15																								
18																								
22																								
27																								
33																								
39																								
47																								
56																								
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150																								
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0.033																								
0.039																								
0.047																								
0.056																								
0.068																								
0.1µF																								



## NPO VALUES AND SIZES (mm)

EIA Case Size	1808				1812				1825				2220		
Length (L)	4.60 ± 0.3				4.60 ± 0.3				4.60 ± 0.3				5.70 ± 0.4		
Width (W)	2.00 ± 0.2				3.20 ± 0.3				6.35 ± 0.4				5.00 ± 0.4		
Thickness max. (T)	2.20 max.				3.00 max.				2.60 max.				3.00 max.		
Termination Width (P)	0.30 min.				0.30 min.				0.30 min.				0.30 min.		
Capacitance	Working Voltage (Vdc)														
	1K	2K	3K	5K	16	25	50	1K	2K	3K	250	500	1K	1K	5K
5.0															
8.2															
10															
12															
15															
18															
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680															
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0.001µF															
0.0012															
0.0015															
0.0018															
0.0022															
0.0027															
0.0033															
0.0039															
0.0047															
0.0056															
0.0068															
0.0082															
0.01µF															
0.012															
0.015															
0.018															
0.022															
0.027															
0.033															
0.039															
0.047															
0.056															
0.068															
0.1µF															
0.12															
0.15															
0.22															



## X7R LOW VOLTAGE VALUES AND SIZES (mm)

EIA Case Size	0805		1206		1210		1812		1825		2220		2225	
Length (L)	2.00 ± 0.2		3.20 ± 0.3		3.20 ± 0.3		4.60 ± 0.3		4.60 ± 0.3		5.70 ± 0.4		5.70 ± 0.4	
Width (W)	1.25 ± 0.25		1.60 ± 0.2		2.50 ± 0.2		3.20 ± 0.3		6.35 ± 0.4		5.00 ± 0.4		6.35 ± 0.4	
Thickness max. (T)	1.45 max.		1.80 max.		2.60 max.		3.00 max.		2.60 max.		3.00 max.		3.00 max.	
Termination Width (P)	0.20 min.		0.30 min.		0.30 min.		0.30 min.		0.30 min.		0.30 min.		0.30 min.	
Capacitance	Working Voltage (Vdc)													
	50	100	50	100	50	100	50	100	50	100	50	100	50	100
0.1µF														
0.15														
0.22														
0.33														
0.47														
0.68														
1.0µF														
1.5														
2.2														
3.3														
4.7														
6.8														
10µF														

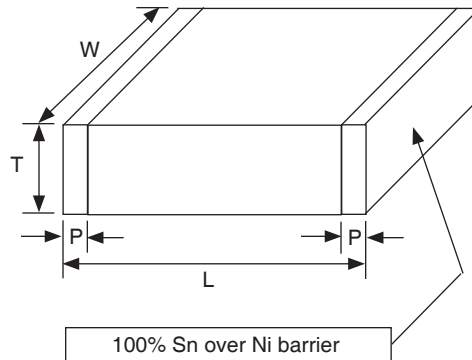
## X7R HIGH VOLTAGE VALUES AND SIZES (mm)

EIA Case Size	0805			1206				1210				
Length (L)	2.00 ± 0.2			3.20 ± 0.3				3.20 ± 0.3				
Width (W)	1.25 ± 0.25			1.60 ± 0.2				2.50 ± 0.2				
Thickness max. (T)	1.45 max.			1.80 max.				2.60 max.				
Termination Width (P)	0.20 min.			0.30 min.				0.30 min.				
Capacitance	Working Voltage (Vdc)											
	200	250	500	200	250	500	630	1K	200	250	500	1K
180pF												
220												
270												
330												
390												
470												
560												
680												
0.001µF												
0.0015µF												
0.0022µF												
0.0027µF												
0.0033µF												
0.0039µF												
0.0047µF												
0.0056µF												
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0.033µF												
0.039µF												
0.047µF												
0.056µF												
0.068µF												
0.1µF												
0.12µF												
0.15µF												
0.18µF												
0.22µF												



## X7R HIGH VOLTAGE VALUES AND SIZES (mm)

EIA Case Size	1808				1812				1825				2220				2225			
Length (L)	4.60 ± 0.3				4.60 ± 0.3				4.60 ± 0.3				5.70 ± 0.4				5.70 ± 0.4			
Width (W)	2.0 ± 0.2				3.2 ± 0.3				6.35 ± 0.4				5.00 ± 0.4				6.35 ± 0.4			
Thickness max. (T)	2.20 max.				3.00 max.				2.60 max.				3.00 max.				3.00 max.			
Termination Width (P)	0.30 min.				0.30 min.				0.30 min.				0.30 min.				0.30 min.			
Capacitance	Working Voltage (Vdc)																			
	500	1K	2K	3K	200	250	500	1K	2K	3K	250	500	1K	250	500	1K	2K	250	500	1K
150pF																				
180																				
220																				
270																				
330																				
390																				
470																				
560																				
680																				
0.001µF																				
0.0015																				
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0.56																				
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1.0µF																				
1.5																				
2.2																				



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