

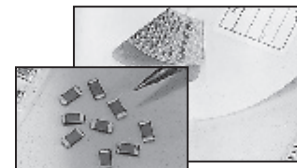
FEATURES

- HIGH VOLTAGE 200Vdc ~ 5KVdc
- NPO AND X7R DIELECTRICS
- CASE SIZES FROM 0402 ~ 2225
- NICKEL BARRIER TERMINATION AND EXCELLENT MECHANICAL STRENGTH

RoHS Compliant

Includes all homogeneous materials

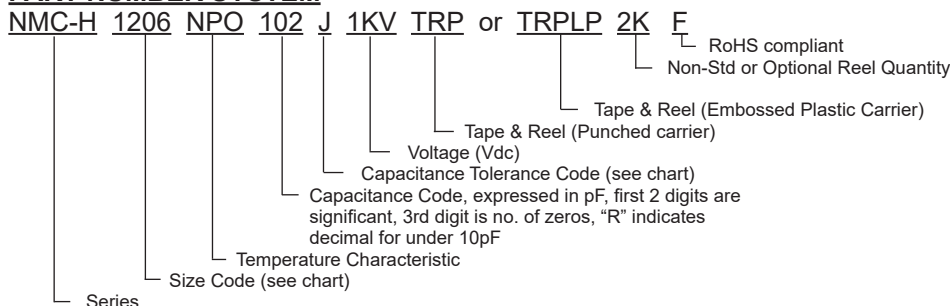
*See Part Number System for Details



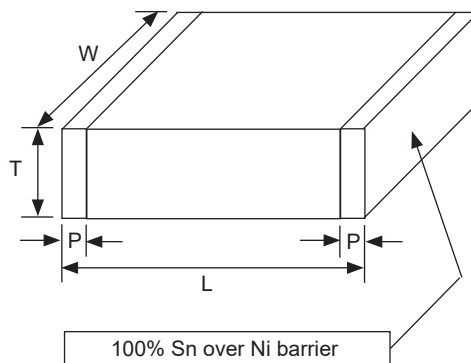
SPECIFICATIONS	NPO	X7R
Operating Temperature Range	-55°C ~ +125°C	-55°C ~ +125°C
Temperature Characteristic	±30ppm	±15%
Dissipation Factor	≤ 0.1%	≤ 2.5%
Insulation Resistance	≥ 500MegΩ or 500MegΩ-μF whichever is less Test Method: Voltage rating ≤ 500V measured after 1 minute at rated voltage, Voltage rating > 500V measured after 1 minute at 500V	
Capacitance Range	0.1pF ~ 0.039μF	100pF ~ 2.2μF
Capacitance Tolerance	±0.1pF(B), ±0.25pF(C), ±0.5pF(D) ±1%(F), ±2%(G), ±5%(J), ±10%(K), ±20(M) Contact NIC for Available Tolerances on Specific Capacitance Values	±5%(J), ±10%(K), ±20(M)
Rated Voltage	200Vdc ~ 5KVdc	200Vdc ~ 4KVdc
Dielectric Withstanding Voltage	Working Voltage 200 & 250Vdc x 1.5 + 100Vdc for 5 seconds Working Voltage 500Vdc x 1.5 for 5 seconds Working Voltage greater than 500Vdc x 1.2 for 5 seconds	
Test Conditions (C & DF)	C ≤ 1000pF = 1MHz, 1Vrms @ 25°C C > 1000pF = 1KHz, 1Vrms @ 25°C	1KHz, 1Vrms @ 25°C

Note: Reflow soldering allowed for all case sizes. Contact NIC for wave soldering restrictions.

PART NUMBER SYSTEM



CONSTRUCTION



NPO-HIGH VOLTAGE SIZE CHART (mm)

EIA Case Size	0402		0603		0805				1206						1210						
Length (L)	1.0 ± 0.05		1.6 ± 0.15		2.0 ± 0.20				3.2 ± 0.30						3.2 ± 0.30						
Width (W)	0.5 ± 0.05		0.80 ± 0.15		1.25 ± 0.20				1.6 ± 0.20						2.5 ± 0.20						
Thickness (T)	0.55 max.		0.95 max.		1.45 max.				1.80 max.						2.60 max.						
Termination Width (P)	0.15 ~ 0.30		0.25 ~ 0.65		0.25 ~ 0.75				0.25 ~ 0.80						0.25 ~ 1.00						
Capacitance	Working Voltage (Vdc)																				
	200	250	200	250	200	250	500	630	1KV	200	250	500	630	1K	2K	3K	200	250	500	1KV	2KV
0.1pF ~ 0.39pF																					
0.47																					
0.5pF ~ 1.0pF																					
1.5pF																					
2.0pF ~ 2.7pF																					
3.3pF ~ 8.2pF																					
10																					
12																					
15																					
18																					
22																					
27																					
33																					
39																					
47																					
56																					
68																					
82																					
100																					
120																					
150																					
180																					
220																					
270																					
330																					
390																					
470																					
560																					
680																					
820																					
0.001μF																					
0.0012																					
0.0015																					
0.0018																					
0.0022																					
0.0027																					
0.0033																					
0.0039																					
0.0047																					
0.0068																					
0.0082																					
0.01																					
0.012																					
0.015																					
0.018																					
0.022																					

NPO-HIGH VOLTAGE SIZE CHART (mm)

EIA Case Size	1808						1812						1825			2220		2225		
Length (L)	4.6 ± 0.50						4.6 ± 0.30						4.6 ± 0.30			5.7 ±0.40		5.70 ± 0.40		
Width (W)	2.0 ± 0.30						3.2 ± 0.30						6.35 ± 0.40			5.00 ± 0.40		6.35 ± 0.40		
Thickness (T)	2.20 max.						3.00 max.						3.00 max.			3.00 max.		3.00 max.		
Termination Width (P)	0.25 ~ 0.75						0.25 ~ 0.75						0.3 ~ 1.05			0.30 ~ 1.10		0.30 ~ 1.10		
Capacitance	Working Voltage (Vdc)																			
	250	500	630	1K	2K	3K	200	250	500	630	1K	2K	3K	250	500	1K	5K	250	500	1K
1.8pF																				
2.0pF ~ 8.2pF																				
10																				
12																				
15																				
18																				
22																				
27																				
33																				
39																				
47																				
56																				
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0.0082																				
0.01μF																				
0.012																				
0.015																				
0.018																				
0.022																				
0.027																				
0.033																				
0.039																				

X7R-HIGH VOLTAGE SIZE CHART (mm)

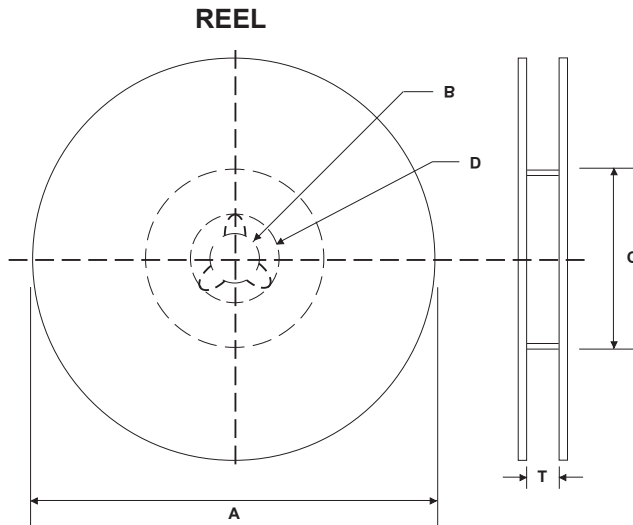
EIA Case Size	0603		0805				1206									
Length (L)	1.60 ± 0.15		2.0 ± 0.20				3.2 ± 0.30									
Width (W)	0.80 ± 0.15		1.25 ± 0.20				1.6 ± 0.20									
Thickness (T)	0.80 ± 0.15		1.45 max.				1.80 max.									
Termination Width (P)	0.20 min.		0.25 ~ 0.75				0.25 ~ 0.75									
Capacitance	Working Voltage (Vdc)															
	200	250	200	250	500	630	200	250	400	450	500	630	1K	1.5K	2K	2.5K
100pF																
150																
180																
220																
270																
330																
390																
470																
560																
680																
820																
0.001μF																
0.0012																
0.0015																
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0.0039																
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0.0068																
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0.01μF																
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0.015																
0.018																
0.022																
0.027																
0.033																
0.039																
0.047																
0.056																
0.068																
0.082																
0.1μF																
0.12																
0.15																
0.18																
0.22																

X7R-HIGH VOLTAGE SIZE CHART (mm)

EIA Case Size	1210									1808							
Length (L)	3.2 ± 0.20									4.6 ± 0.5							
Width (W)	2.5 ± 0.20									2.0 ± 0.3							
Thickness (T)	2.20 max.									2.20 max.							
Termination Width (P)	0.25 ~ 0.75									0.25 min.							
Capacitance	Working Voltage (Vdc)																
	200	250	400	450	500	630	1K	1.5K	2K	250	500	630	1K	1.5K	2K	3K	4K
100pF																	
150																	
180																	
220																	
270																	
330																	
390																	
470																	
560																	
680																	
820																	
0.001μF																	
0.0012																	
0.0015																	
0.0018																	
0.0022																	
0.0027																	
0.0033																	
0.0039																	
0.0047																	
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0.0068																	
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0.033																	
0.039																	
0.047																	
0.056																	
0.068																	
0.082																	
0.1μF																	
0.12																	
0.15																	
0.18																	
0.22																	
0.27																	
0.33																	
0.47																	
0.56																	
0.68																	

X7R-HIGH VOLTAGE SIZE CHART (mm)

EIA Case Size	1812										1825	2220					2225				
Length (L)	4.6 ± 0.5										4.6 ± 0.5		5.7 ±0.40					5.70 ± 0.40			
Width (W)	3.2 ± 0.4										6.3 ± 0.4		5.00 ± 0.40					6.35 ± 0.40			
Thickness (T)	3.10 max.										2.20 max.		3.00 max.					3.00 max.			
Termination Width (P)	0.30 min.										0.25 min.		0.30 ~ 1.10					0.30 ~ 1.10			
Capacitance	Working Voltage (Vdc)																				
	200	250	450	500	630	1K	1.5K	2K	3K	4K	250	500	250	500	630	1K	2K	250	500	1K	
270pF																					
330																					
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560																					
680																					
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0.001μF																					
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0.47																					
0.56																					
0.68																					
0.82																					
1.0μF																					
1.5																					
2.2																					



REEL DIMENSIONS (mm)

Reel Diameter (A)	B	C	D	T max.
7" (178 ± 2.0)	13 ± 0.5	50 min.	21 ± 1.0	8.4 +1.0/-0 (1812 case size 12.4 +2.0/-0)
10" (250 ± 2.0)		100 ± 1.0		
13" (330 ± 2.0)		100 ± 1.0		

7 INCH REEL QUANTITIES*

Size	01005	0201	0402	0603	0805	1206	1210	1808	1812
Tape Size	8mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm	12mm
Min. Qty Per Reel	20,000	20,000	10,000	4,000	4,000	3,000	2,000	1,000	1,000
Max. Qty Per Reel	20,000	20,000	10,000	4,000	5,000	5,000	5,000	3,000	2,000

*Quantity dependent on chip thickness. Contact NIC for reel quantities on larger diameter reels.

CARRIER TAPE MATERIAL

Parts with a thickness of $\geq 1\text{mm}$ will be taped on embossed plastic carrier. Parts with a thickness of less than 1mm will be taped on paper carrier

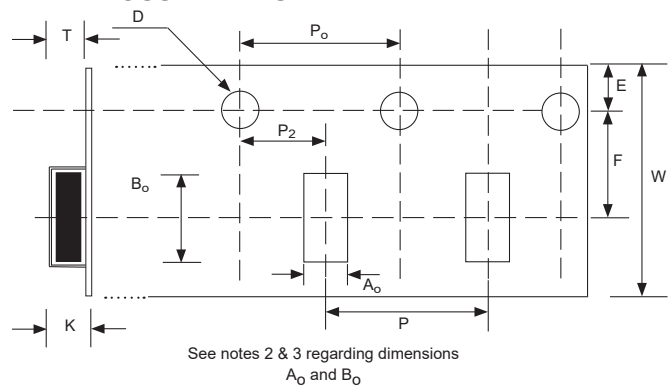
EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

Tape Size	W	F	E	P ₀	P ₂	D	K max.	T max.	P
8mm	8.0 ± 0.2	3.5 ± 0.05	1.75 ± 0.10	4.0 ± 0.1	2.0 ± 0.5	1.5 ^{+0.1} _{-0.0}	3.0	2.0	4.0 ± 0.1
12mm	12 ± 0.2	5.5 ± 0.05						4.5	8.0 ± 0.1

Notes:

- Specifications are in compliance with EIA RS481-1-A
"Taping of surface Mount Components for Automatic Placement"
- Dimensions A₀ (max.) equals component width dimension plus 0.5mm
- Dimension B₀ (max.) equals component length dimension plus 0.5mm

EMBOSSED PLASTIC CARRIER TAPE



See notes 2 & 3 regarding dimensions A₀ and B₀

PUNCHED CARRIER TAPE DIMENSIONS (mm)

Type	A ₀	B ₀	W	F	E	P1	P0	D0	T1 max.	T2 max.	Mounting Hole			
01005	0.25 ± 0.04	0.45 ± 0.04	8.0 ± 0.3	3.5 ± 0.05	1.75 ± 0.1	2.0 ± 0.05	4.0 ± 0.1	1.5 +0.1/-0.0	0.27	0.36	Angular Punch Hole			
0201	0.37 ± 0.03	0.67 ± 0.05							0.45	0.80				
0402	0.65 ± 0.05	1.15 ± 0.05				4.0 ± 0.10			1.1	1.4				
0603	1.1 ± 0.2	1.9 ± 0.2												
0805	1.65 ± 0.2	2.4 ± 0.2												
1206	2.0 ± 0.2	3.6 ± 0.2												

PUNCHED CARRIER TAPE

