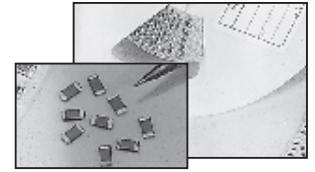


### FEATURES

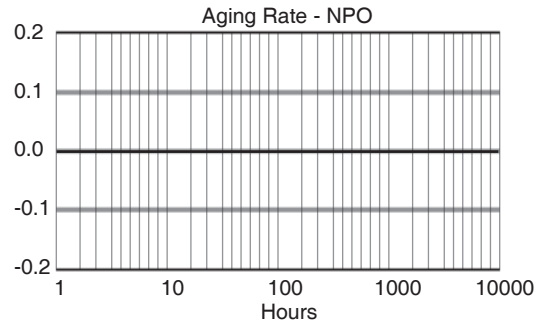
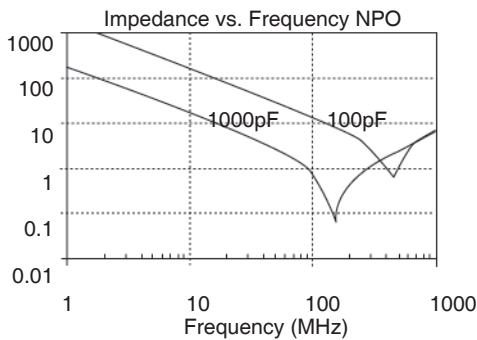
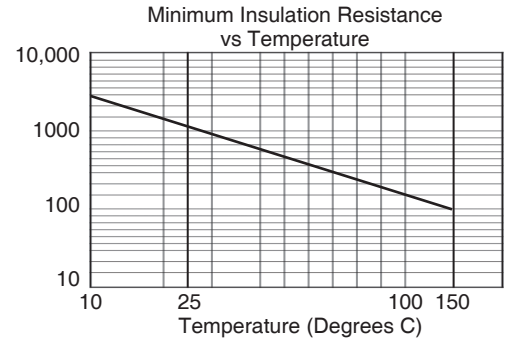
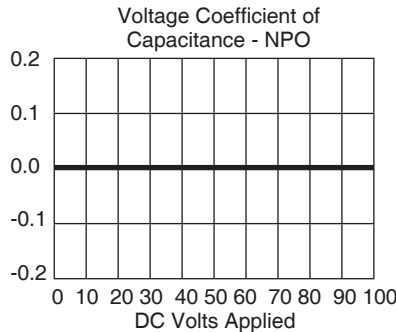
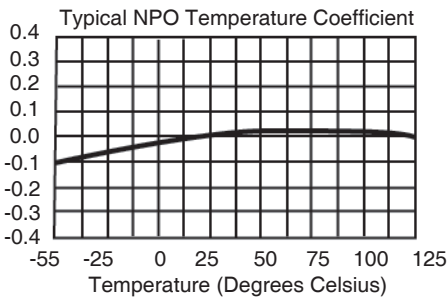
- CLASS I DIELECTRIC, TEMPERATURE COMPENSATING
- HIGH STABILITY OVER TIME, VOLTAGE AND TEMPERATURE CHANGES
- LOW DIELECTRIC LOSS
- NICKEL BARRIER TERMINATIONS AND EXCELLENT MECHANICAL STRENGTH

**Expanded Value Range Up to 0.1 $\mu$ F**

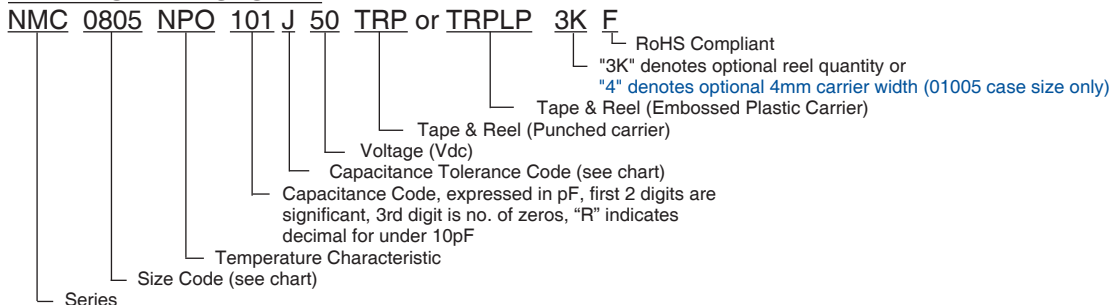


### SPECIFICATIONS NPO

Capacitance Range	0.3pF to 0.1 $\mu$ F
Capacitance Tolerance	<5pF: $\pm 0.1$ pF(B), $\pm 0.25$ pF(C) $\geq 5$ pF to <10pF: $\pm 0.1$ pF(B), $\pm 0.25$ pF(C), $\pm 0.5$ pF(D) 10pF and above: $\pm 1\%$ (F), $\pm 2\%$ (G), $\pm 5\%$ (J)
Operating Temperature Range	-55 $^{\circ}$ C ~ +125 $^{\circ}$ C
Temperature Characteristics	0 $\pm$ 30ppm/ $^{\circ}$ C
Rated Voltages	10Vdc, 16Vdc, 25Vdc, 35Vdc, 50Vdc, 100Vdc (see NMC-H Series for higher voltages)
Dissipation Factor	For values >30pF 0.1% @ 25 $^{\circ}$ C; For values $\leq$ 30pF Q=400+20 x C (C in pF)
Insulation Resistance	10,000Megohms min. or 500Megohm/ $\mu$ F (min.), whichever is less @ +25 $^{\circ}$ C
Dielectric Withstanding Voltage	250% of Rated Voltage for 1 ~ 5 seconds, 50mA maximum current
Test Conditions (EIA-198-2E)	$\leq 1000$ pF; 1MHz, 1.2Vrms max. or >1000pF; 1KHz, 1.2Vrms max.



### PART NUMBER SYSTEM



# Multilayer Ceramic Chip Capacitors

NMC Series NPO

EIA Case Size	01005	EIA Case Size	0201	0402	0603	0805												
Length (L)	0.4±0.02	Length (L)	0.6±0.03	1.0±0.05	1.6±0.15	2.0±0.2												
Width (W)	0.2±0.02	Width (W)	0.3±0.03	0.5±0.05	0.8±0.15	1.25±0.2												
Thickness max. (T)	0.22	Thickness max. (T)	0.33	0.6	1.0	1.35												
Termination Width (P)	0.10 +0.04/-0.03	Termination Width (P)	0.15±0.05	0.2±0.1	0.12 ~ 0.51	0.25 ~ 0.71												
Capacitance	Working Voltage (Vdc)	Capacitance	Working Voltage (Vdc)															
	16		10	16	25	50	16	25	50	100	16	25	50	100	16	25	50	100
0.5pF		0.3pF & 0.4pF																
0.6pF		0.47pF ~ 22pF																
0.7pF		24pF																
0.8pF		27pF																
0.9pF		30pF																
1.0pF		33pF																
1.1pF		36pF																
1.2pF		39pF																
1.3pF		43pF																
1.5pF		47pF																
1.6pF		51pF																
1.8pF		56pF																
2.0pF		62pF																
2.2pF		68pF																
2.4pF		75pF																
2.5pF		82pF																
2.7pF		91pF																
3.0pF		100pF																
3.3pF		110pF																
3.6pF		120pF																
3.9pF		130pF																
4.0pF		150pF																
4.7pF		160pF																
5.0pF		180pF																
5.6pF		200pF																
6.0pF		220pF																
6.2pF		240pF																
6.8pF		270pF																
7.0pF		300pF																
7.5pF		330pF																
8.0pF		360pF																
8.2pF		390pF																
9.0pF		430pF																
9.1pF		470pF																
10pF		510pF																
12pF		560pF																
15pF		620pF																
18pF		680pF																
22pF		750pF																
27pF		820pF																
33pF		910pF																
39pF		0.001µF																
47pF		0.0012µF																
56pF		0.0015µF																
68pF		0.0018µF																
82pF		0.0022µF																
100pF		0.0027µF																*
		0.0033µF																*
		0.0039µF															*	*
		0.0047µF															*	
		0.0056µF														*	*	
		0.0068µF													*	*	*	
		0.0082µF													*	*	*	
		0.01µF												*	*	*	*	

Highlighted values available on 4mm carrier, 40K pieces per reel.

(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)

\*1.45mm maximum thickness

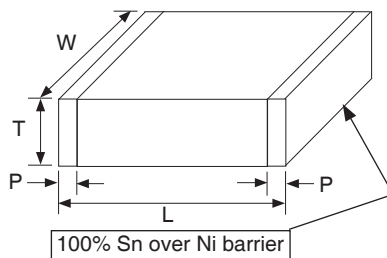


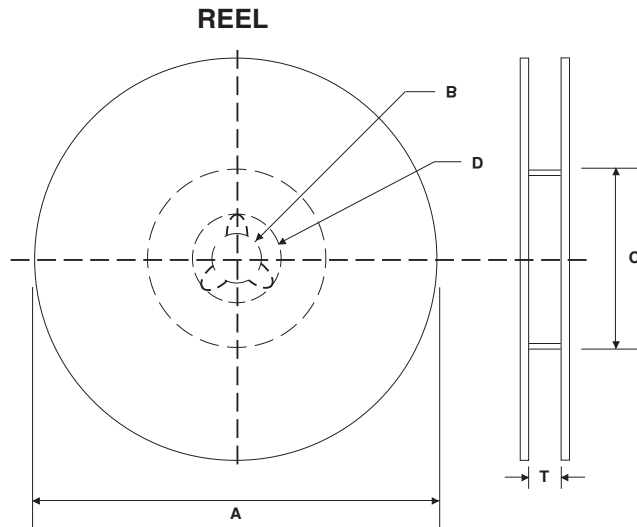
EIA Case Size	0805	1206	1210	1812	2225															
Length (L)	2.0±0.2	3.2±0.2	3.2±0.2	4.5±0.3	5.70±0.4															
Width (W)	1.25±0.2	1.6±0.2	2.5±0.2	3.2±0.25	6.35±0.25															
Thickness max. (T)	1.45	1.80	1.80	1.80	1.80															
Termination Width (P)	0.25 ~ 0.71	0.25 ~ 0.71	0.25 ~ 0.71	0.25 ~ 0.76	0.25 ~ 1.02															
Capacitance	Working Voltage (Vdc)																			
	16	25	50	100	10	16	25	50	100	10	16	25	50	100	25	50	100	50	100	
0.47pF ~ 9.1pF																				
10pF ~ 22pF																				
24pF ~ 0.001µF																				
0.0012µF																				
0.0015µF																				
0.0018µF																				
0.0022µF																				
0.0027µF																				
0.0033µF																				
0.0039µF																				
0.0047µF																				
0.0056µF																				
0.0068µF																				
0.0075µF																				
0.0082µF																				
0.0091µF																				
0.01µF																				
0.012µF																				
0.015µF																				
0.018µF																				
0.022µF																				**
0.027µF																				**
0.033µF																				**
0.039µF																				**
0.047µF																				
0.056µF																				
0.068µF																				
0.082µF																				
0.1µF																		***		

See the previous page

\*1.90mm maximum thickness, \*\*2.60mm maximum thickness, \*\*\*4.5mm ± 0.40 x 3.2mm ± 0.40 x 2.80mm maximum thickness

**See NMC High Capacitance datasheet for higher capacitance values  
or NMC-H High Voltage datasheet for higher voltage ratings**





### REEL DIMENSIONS (mm)

Reel Diameter (A)	B	C	D	T max.
7" (178 ± 2.0)	13.0 ± 0.5	50 min.	21.0 ± 1.0	4mm Carrier: 5.0 ± 1.5 8mm Carrier: 8.4 ± 1.0 12mm Carrier: 12.8 ± 0.5
10" (250 ± 2.0)		100 ± 1.0		
13" (330 ± 2.0)		100 ± 1.0		

### 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

### 7 INCH REEL QUANTITIES\*

Size	01005	0201	0402	0603	0805	1206	1210	1812	2225
Tape Size	4mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm	12mm
Min. Qty Per Reel	40,000	20,000	20,000	10,000	4,000	4,000	4,000	2,000	1,000
Max. Qty Per Reel	40,000	20,000	20,000	10,000	4,000	5,000	5,000	5,000	2,000

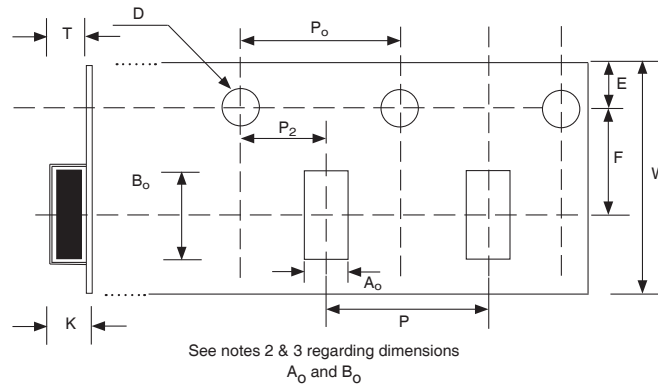
\*Quantity dependent on chip thickness. Contact NIC for reel quantities on larger diameter reels.

### 8MM & 12MM EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

Carrier Width	W	F	E	P <sub>0</sub>	P <sub>2</sub>	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 <sup>+0.1</sup> <sub>-0.0</sub>	3.0	2.0	4.0 ± 0.1
12mm	12 ± 0.2	5.5 ± 0.05						4.5	8.0 ± 0.1

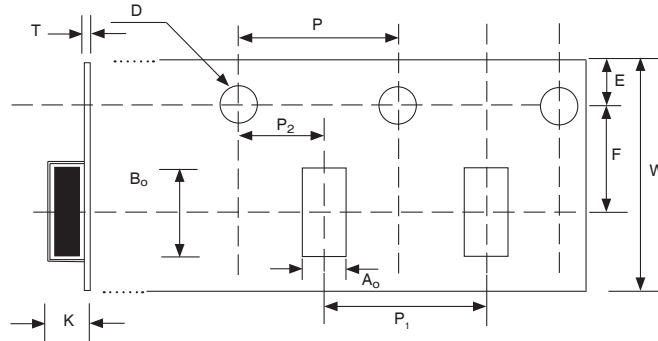
#### Notes:

- Specifications are in compliance with EIA RS481-1-A "Taping of surface Mount Components for Automatic Placement"
- Dimensions A<sub>0</sub> (max.) equals component width dimension plus 0.5mm
- Dimension B<sub>0</sub> (max.) equals component length dimension plus 0.5mm



## 4MM (01005 CASE SIZE) EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

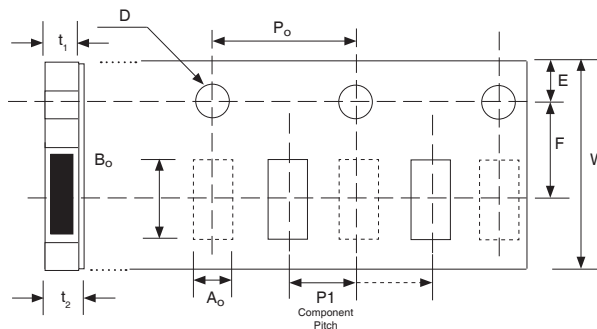
Carrier Width	A <sub>0</sub>	B <sub>0</sub>	W	F	E	P	P <sub>1</sub>	P <sub>2</sub>	D	K max.	T max.
4mm	0.23 ± 0.02	0.43 ± 0.02	4.0 ± 0.05	1.8 ± 0.02	0.90 ± 0.05	2.0 ± 0.04	1.0 ± 0.02	1.0 ± 0.02	1.5 <sup>+0.1</sup> <sub>-0.0</sub>	0.50	0.15 ~ 0.40



## PUNCHED CARRIER TAPE DIMENSIONS (mm)

Type	A <sub>0</sub>	B <sub>0</sub>	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 <sup>+0.1</sup> <sub>-0.0</sub>	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				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



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