

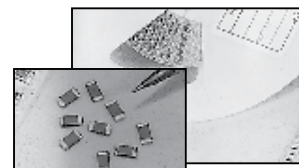
Multilayer Ceramic Chip Capacitors

NMC Series X5R

FEATURES

- CLASS II DIELECTRIC, TEMPERATURE STABLE
- EXCELLENT FREQUENCY CHARACTERISTICS, NON-LINEAR CAPACITANCE CHANGE
- NICKEL BARRIER TERMINATIONS AND EXCELLENT MECHANICAL STRENGTH

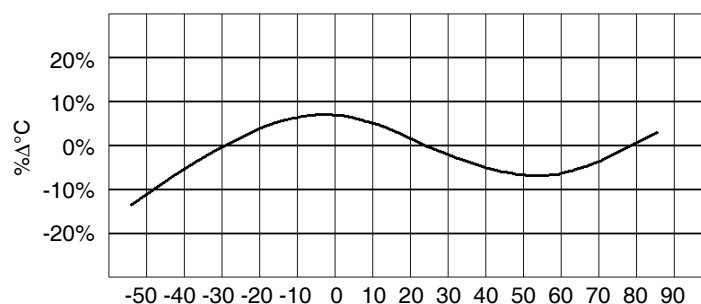
**Expanded
01005
Case Size**



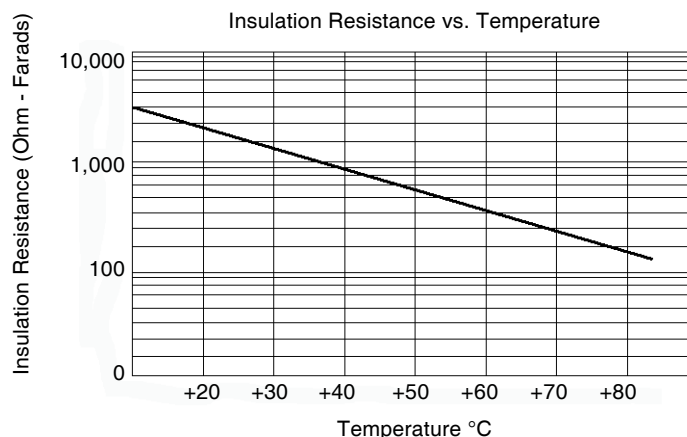
CHARACTERISTICS

Capacitance Range	100pF ~ 0.82μF (see high CV datasheet for higher capacitance values)
Capacitance Tolerance	±10% (K), ±20% (M)
Operating Temperature Range	-55°C ~ +85°C
Temperature Characteristics	±15%Δ max. over temperature range (with 0 Vdc applied)
Rated Voltages	6.3Vdc, 10Vdc, 16Vdc & 25Vdc (see NMC-H Series for higher voltages)
Dissipation Factor	3.5% max. (≤ 0.1μF, 25Vdc), 5% max. (all 16Vdc & >0.1μF, 25Vdc), 7.5% (10Vdc), 10% (6.3Vdc) @ 1.0Vrms and 1KHz, +25°C
Insulation Resistance	10,000Megohms min. or 500Megohm/μF min. whichever is less @ +25°C
Dielectric Withstanding Voltage	250% of Rated Voltage for 5 ±1 seconds, 50mA maximum current
Test Conditions (EIA-198-2E)	1KHz, 1.0V ±0.2Vrms

Typical X5R Temperature Coefficient



Insulation Resistance vs. Temperature



PART NUMBER SYSTEM

NMC 0805 X5R 102 K 50 TRP or TRPLP 3K 7C3 E

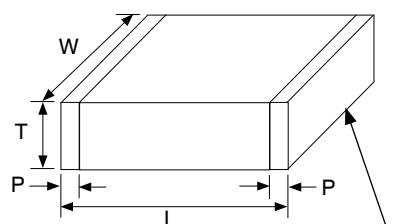
NMC: Series
 0805: Size Code (see chart)
 X5R: Temperature Characteristic
 102: Capacitance Code, expressed in pF, first 2 digits are significant, 3rd digit is no. of zeros, "R" indicates decimal for under 10pF
 K: Capacitance Tolerance Code (see chart)
 50: Voltage (Vdc)
 TRP or TRPLP: Tape & Reel (Punched carrier) or Tape & Reel (Embossed Plastic Carrier)
 3K: Optional Reel Qty (3K=3,000pcs)
 7C3: Optional RoHS 7C-III Exemption Free*
 E: RoHS Compliant

* - Part Number Level Identification of X5R MLCCs that do not take RoHS exemption 7C-III

Multilayer Ceramic Chip Capacitors

NMC Series X5R

EIA Case Size	01005	
Length (L)	0.4±0.02	
Width (W)	0.2±0.02	
Thickness max. (T)	0.22	
Termination Width (P)	0.1±0.03	
Capacitance	Working Voltage (Vdc)	
	6.3	10
100pF		
150pF		
220pF		
330pF		
470pF		
680pF		
1,000pF		
1,500pF		
2,200pF		
3,300pF		
4,700pF		
6,800pF		
10,000pF		



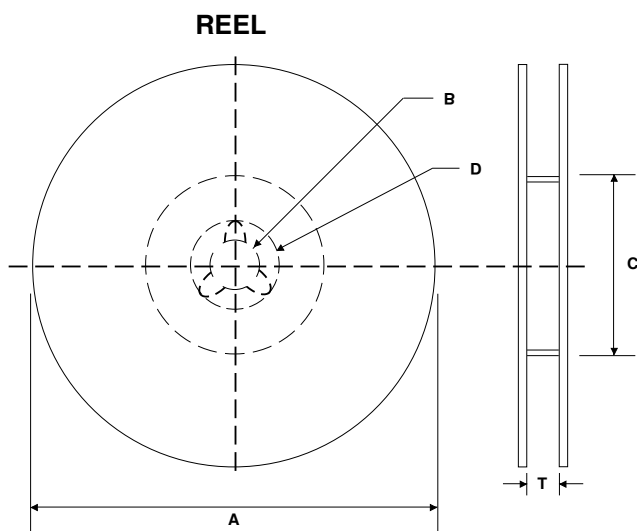
100% Sn over Ni barrier

(CONSULT FACTORY
FOR CAPACITANCE
VALUES NOT LISTED)

EIA Case Size	0201		0402			0603			
Length (L)	0.6 ± 0.05		1.0±0.05			1.6±0.15			
Width (W)	0.3 ± 0.05		0.5±0.05			0.8±0.15			
Thickness max. (T)	0.33		0.6			1.0			
Termination Width (P)	0.10 ~ 0.20		0.2±0.1			0.12 ~ 0.51			
Capacitance	Working Voltage (Vdc)								
	6.3	10	6.3	10	16	6.3	10	16	25
0.0012μF									
0.0015μF									
0.0018μF									
0.0022μF									
0.0027μF									
0.0033μF									
0.0039μF									
0.0047μF									
0.0056μF									
0.0068μF									
0.0075μF									
0.0082μF									
0.01μF									
0.015μF									
0.018μF									
0.022μF									
0.027μF									
0.033μF									
0.036μF									
0.039μF									
0.047μF									
0.056μF									
0.068μF									
0.075μF									
0.082μF									
0.1μF									
0.15μF									
0.18μF									
0.22μF									
0.27μF									
0.33μF									
0.36μF									
0.39μF									
0.47μF									
0.68μF									
0.82μF									

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

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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	1812
Tape Size	8mm	8mm	8mm	8mm	8mm	8mm	8mm	12mm
Min. Qty Per Reel	20,000	20,000	10,000	4,000	4,000	4,000	2,000	1,000
Max. Qty Per Reel	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.

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

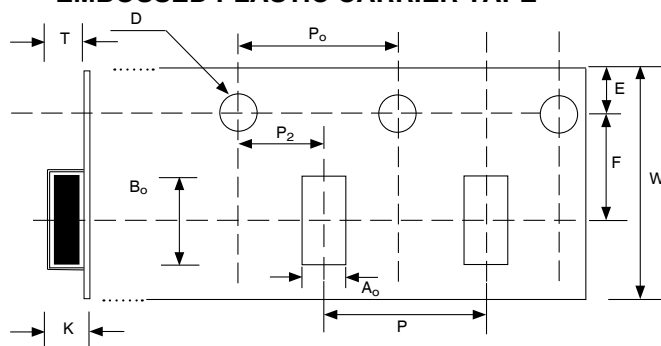
EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

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

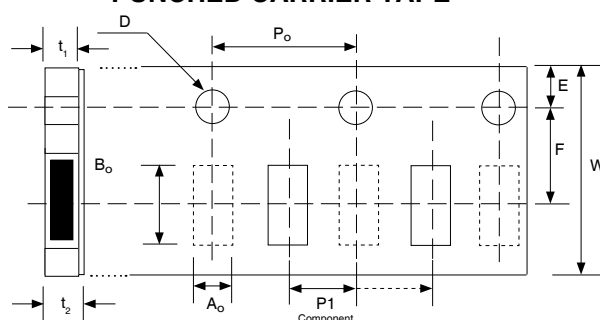


See notes 2 & 3 regarding dimensions
A₀ and B₀

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											
0603	1.1 ± 0.2	1.9 ± 0.2				4.0 ± 0.10			1.1	1.4			
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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