

Multilayer Ceramic Chip Capacitors

NMC Series X7R

FEATURES

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

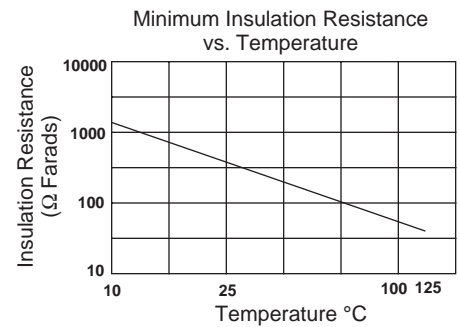
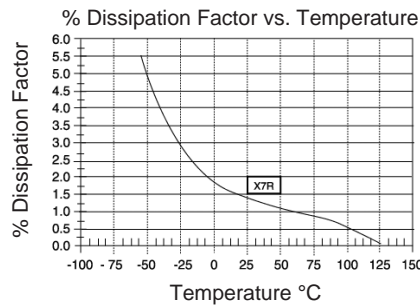
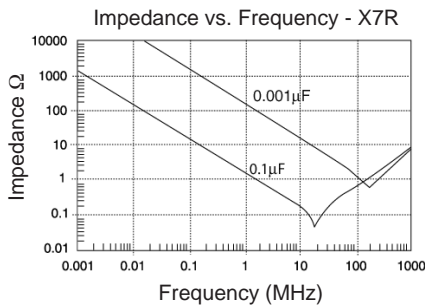
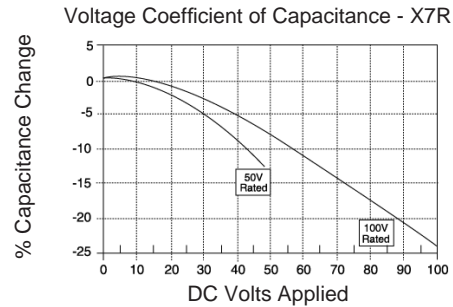
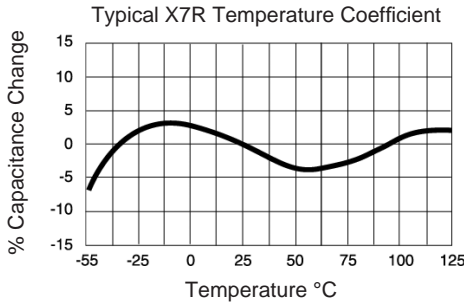
**RoHS
Compliant**

Includes all homogeneous materials

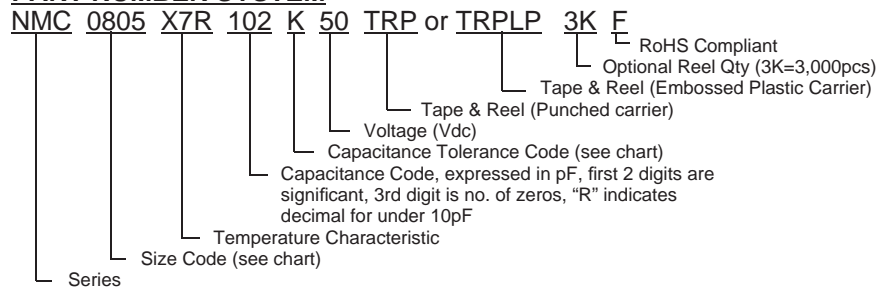
*See Part Number System for Details



| | |
|---------------------------------|---|
| Capacitance Range | 470pF ~ 0.82μF (see high CV datasheet for higher capacitance values) |
| Capacitance Tolerance | ±5% (J), ±10% (K), ±20% (M) |
| Operating Temperature Range | -55°C ~ +125°C |
| Temperature Characteristics | ±15%Δ max. over temperature range (with 0 Vdc applied) |
| Rated Voltages | 6.3Vdc, 10Vdc, 16Vdc, 25Vdc, 35Vdc, 50Vdc (see NMC-H Series for higher voltages) |
| Dissipation Factor | 2.5% max. (50Vdc, 100Vdc); 3.5% max. (16Vdc, 25Vdc) 5% max. (10Vdc) @ 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 |



PART NUMBER SYSTEM



Multilayer Ceramic Chip Capacitors

NMC Series X7R

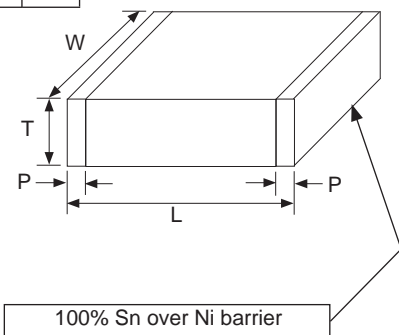
X7R CAPACITOR SIZE CHART (mm)

| EIA Case Size | 0201 | | | 0402 | | | 0603 | | | | 0805 | | | | | | |
|-----------------------|-----------------------|----|----|----------|----|----|-------------|----|----|----|-------------|-----|----|----|----|----|-----|
| Length (L) | 0.6±0.03 | | | 1.0±0.05 | | | 1.6±0.15 | | | | 2.0±0.2 | | | | | | |
| Width (W) | 0.3±0.03 | | | 0.5±0.05 | | | 0.8±0.15 | | | | 1.25±0.2 | | | | | | |
| Thickness max. (T) | 0.3±0.03 | | | 0.6 | | | 1.0 | | | | 1.35 | | | | | | |
| Termination Width (P) | 0.15±0.05 | | | 0.2±0.1 | | | 0.12 ~ 0.51 | | | | 0.25 ~ 0.71 | | | | | | |
| Capacitance | Working Voltage (Vdc) | | | | | | | | | | | | | | | | |
| | 16 | 25 | 50 | 10 | 16 | 25 | 50 | 10 | 16 | 25 | 50 | 100 | 10 | 16 | 25 | 50 | 100 |
| 47pF ~ 91pF | | | | | | | | | | | | | | | | | |
| 100pF ~ 470pF | | | | | | | | | | | | | | | | | |
| 510pF | | | | | | | | | | | | | | | | | |
| 560pF | | | | | | | | | | | | | | | | | |
| 620pF | | | | | | | | | | | | | | | | | |
| 680pF | | | | | | | | | | | | | | | | | |
| 750pF | | | | | | | | | | | | | | | | | |
| 820pF | | | | | | | | | | | | | | | | | |
| 910pF | | | | | | | | | | | | | | | | | |
| 0.001µF | | | | | | | | | | | | | | | | | |
| 0.0012µF | | | | | | | | | | | | | | | | | |
| 0.0015µF | | | | | | | | | | | | | | | | | |
| 0.0018µF | | | | | | | | | | | | | | | | | |
| 0.0022µF | | | | | | | | | | | | | | | | | |
| 0.0027µF | | | | | | | | | | | | | | | | | |
| 0.0030µF | | | | | | | | | | | | | | | | | |
| 0.0033µF | | | | | | | | | | | | | | | | | |
| 0.0039µF | | | | | | | | | | | | | | | | | |
| 0.0047µF | | | | | | | | | | | | | | | | | |
| 0.0056µF | | | | | | | | | | | | | | | | | |
| 0.0068µF | | | | | | | | | | | | | | | | | |
| 0.0075µF | | | | | | | | | | | | | | | | | |
| 0.0082µF | | | | | | | | | | | | | | | | | |
| 0.01µF | | | | | | | | | | | | | | | | | |
| 0.012µF | | | | | | | | | | | | | | | | | |
| 0.015µF | | | | | | | | | | | | | | | | | |
| 0.018µF | | | | | | | | | | | | | | | | | |
| 0.022µF | | | | | | | | | | | | | | | | | |
| 0.033µF | | | | | | | | | | | | | | | | | |
| 0.039µF | | | | | | | | | | | | | | | | | |
| 0.047µF | | | | | | | | | | | | | | | | | |
| 0.056µF | | | | | | | | | | | | | | | | | |
| 0.068µF | | | | | | | | | | | | | | | | | |
| 0.082µF | | | | | | | | | | | | | | | | | |
| 0.1µF | | | | | | | | | | | | | | | | | * |
| 0.15µF | | | | | | | | | | | | | | * | * | * | |
| 0.18µF | | | | | | | | | | | | | | * | * | * | |
| 0.22µF | | | | | | | | | | | | | | * | * | * | |
| 0.33µF | | | | | | | | | | | | | | * | * | * | |
| 0.39µF | | | | | | | | | | | | | | * | * | * | * |
| 0.47µF | | | | | | | | | | | | | | * | * | * | * |
| 0.56µF | | | | | | | | | | | | | | * | * | * | |
| 0.68µF | | | | | | | | | | | | | | * | * | * | |
| 0.82µF | | | | | | | | | | | | | | * | * | * | |

*1.45mm maximum thickness

See NMC High CV series for values above 0.82µF

(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)



X7R CAPACITOR SIZE CHART (mm)

| EIA Case Size | 1206 | | | | | 1210 | | | | | 1812 | | | | | 2225 | | | |
|-----------------------|-----------------------|----|----|----|-----|-----------|----|----|----|----|-------------|----|----|----|----|-------------|----|----|-----|
| Length (L) | 3.2±0.2 | | | | | 3.2±0.2 | | | | | 4.5±0.3 | | | | | 5.7±0.4 | | | |
| Width (W) | 1.6±0.2 | | | | | 2.5±0.2 | | | | | 3.2±0.25 | | | | | 6.35±0.25 | | | |
| Thickness max. (T) | 1.80 | | | | | 1.80 | | | | | 1.8 | | | | | 1.80 | | | |
| Termination Width (P) | 0.25 ~ 0.71 | | | | | 0.25~0.75 | | | | | 0.25 ~ 0.75 | | | | | 0.25 ~ 1.02 | | | |
| Capacitance | Working Voltage (Vdc) | | | | | | | | | | | | | | | | | | |
| | 10 | 16 | 25 | 50 | 100 | 10 | 16 | 25 | 35 | 50 | 100 | 10 | 16 | 25 | 50 | 100 | 25 | 50 | 100 |
| 150pF ~ 910pF | | | | | | | | | | | | | | | | | | | |
| 0.001 | | | | | | | | | | | | | | | | | | | |
| 0.0012μF | | | | | | | | | | | | | | | | | | | |
| 0.0015μF | | | | | | | | | | | | | | | | | | | |
| 0.0018μF | | | | | | | | | | | | | | | | | | | |
| 0.0022μF | | | | | | | | | | | | | | | | | | | |
| 0.0027μF | | | | | | | | | | | | | | | | | | | |
| 0.0033μF | | | | | | | | | | | | | | | | | | | |
| 0.0036μF | | | | | | | | | | | | | | | | | | | |
| 0.0039μF | | | | | | | | | | | | | | | | | | | |
| 0.0043μF | | | | | | | | | | | | | | | | | | | |
| 0.0047μF | | | | | | | | | | | | | | | | | | | |
| 0.0056μF | | | | | | | | | | | | | | | | | | | |
| 0.0068μF | | | | | | | | | | | | | | | | | | | |
| 0.0075μF | | | | | | | | | | | | | | | | | | | |
| 0.0082μF | | | | | | | | | | | | | | | | | | | |
| 0.01μF | | | | | | | | | | | | | | | | | | | |
| 0.012μF | | | | | | | | | | | | | | | | | | | |
| 0.015μF | | | | | | | | | | | | | | | | | | | |
| 0.018μF | | | | | | | | | | | | | | | | | | | |
| 0.022μF | | | | | | | | | | | | | | | | | | | |
| 0.027μF | | | | | | | | | | | | | | | | | | | |
| 0.033μF | | | | | | | | | | | | | | | | | | | |
| 0.036μF | | | | | | | | | | | | | | | | | | | |
| 0.039μF | | | | | | | | | | | | | | | | | | | |
| 0.043μF | | | | | | | | | | | | | | | | | | | |
| 0.047μF | | | | | | | | | | | | | | | | | | | |
| 0.056μF | | | | | | | | | | | | | | | | | | | |
| 0.068μF | | | | | | | | | | | | | | | | | | | |
| 0.082μF | | | | | | | | | | | | | | | | | | | |
| 0.1μF | | | | | | | | | | | | | | | | | | | |
| 0.12μF | | | | | | | | | | | | | | | | | | | |
| 0.15μF | | | | | | | | | | | | | | | | | | | |
| 0.18μF | | | | | | | | | | | | | | | | | | | |
| 0.22μF | | | | | | | | | | | | | | | | | | | |
| 0.27μF | | | | | | | | | | | | | | | | | | | |
| 0.33μF | | | | | | | | | | | | | | | | | | | |
| 0.39μF | | | | | | | | | | | | | | | | | | | |
| 0.47μF | | | | | | | | | | | | | | | | | | | |
| 0.56μF | | | | | | | | | | | | | | | | | | | |
| 0.68μF | | | | | | | | | | | | | | | | | | | |
| 0.82μF | | | | | | | | | | | | | | | | | * | * | |

* 2.20mm maximum thickness

See NMC High CV series for values above 0.82μF

