

Multilayer Ceramic Chip Capacitors

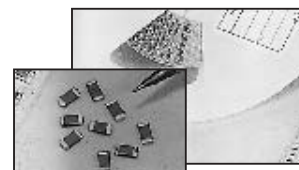
NMC High CV Series

FEATURES

- X7R, X5R AND Y5V DIELECTRICS
- HIGH CAPACITANCE DENSITY
- ULTRA LOW ESR & ESL
- EXCELLENT MECHANICAL STRENGTH
- NICKEL BARRIER TERMINATIONS
- RoHS COMPLIANT
- SAC SOLDER COMPATIBLE*

**RoHS
Compliant**
includes all homogeneous materials

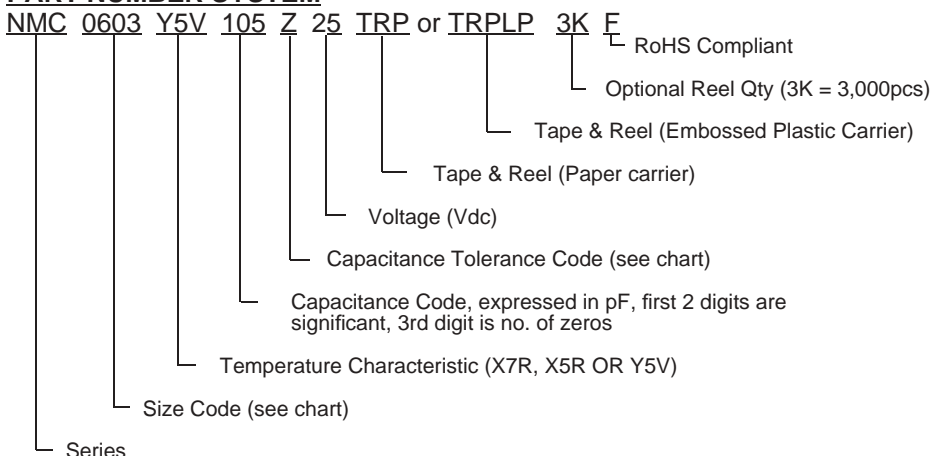
*See Part Number System for Details



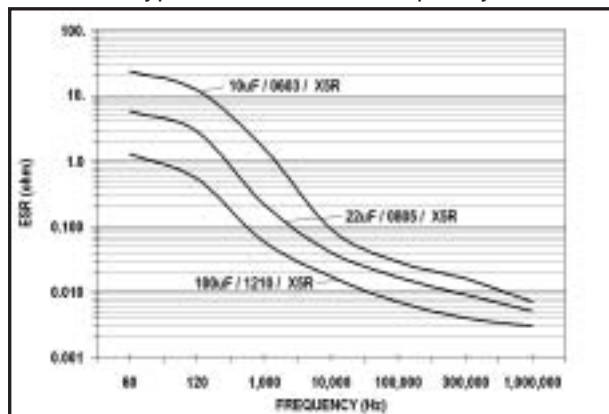
Temperature Coefficient	X7R	X5R	Y5V
Capacitance Range	1.0 μ F ~ 22 μ F	1.0 μ F ~ 100 μ F	1.0 μ F ~ 100 μ F
Capacitance Tolerance	10% (K) & 20% (M)	10% (K) & 20% (M)	+80%/-20% (Z)
Operating Temperature Range	-55°C ~ +125°C	-55°C ~ +85°C	-30°C ~ +85°C
Temperature Characteristics	$\pm 15\%$ Δ Cap.	$\pm 15\%$ Δ Cap.	+22%, -82% Δ Cap.
Rated Voltages	4Vdc, 6.3Vdc, 16Vdc, 25Vdc, 50Vdc & 100Vdc		
Dissipation Factor	See Sizes & Values Tables		
Insulation Resistance	100Megohm/ μ F minimum @ +25°C		
Dielectric Withstanding Voltage	250% of Rated Voltage for 5 \pm 1 sec., 50mA max.		150% of Rated Voltage for 5 \pm 1 sec., 50mA max.
Test Conditions (EIA-198-2E)	1KHz, 0.5V \pm 0.2Vrms (ALC on)		1KHz, 1.0V \pm 0.2Vrms (ALC on)

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

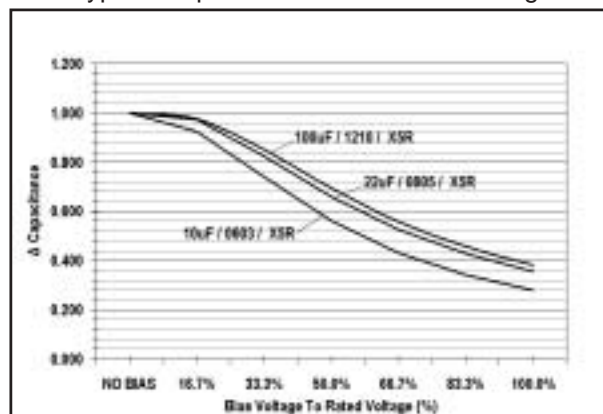
PART NUMBER SYSTEM



Typical ESR versus Frequency



Typical Capacitance versus Bias Voltage



X7R HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	0603			0805			1206						
Length (L)	1.6 ± 0.15			2.0 ± 0.2			3.2±0.2						
Width (W)	0.8 ± 0.15			1.25 ± 0.2			1.6±0.2						
Thickness max. (T)	1.0			1.35			1.90						
Termination Width (P)	0.1 ~ 0.65			0.25 ~ 0.75			0.25 ~ 0.85						
Capacitance	Working Voltage (V)												
	6.3V	10	16	6.3	10	16	25	6.3	10	16	25	35	50
1.0µF		5%	5%		5%	3.5%	5%		5%	5%	3.5%		3%
1.5µF													
2.2µF	10%			10%*	5%*	5%*			5%	5%	3.5%		
3.3µF				10%*					5%	5%	3.5%		
4.7µF				10%*					5%	5%	3.5%		
10µF								10%	5%	3.5%**			
22µF								10%					

* 1.45mm maximum thickness, **2.20mm maximum thickness

Percentages in the table represent the dissipation factor for that value.

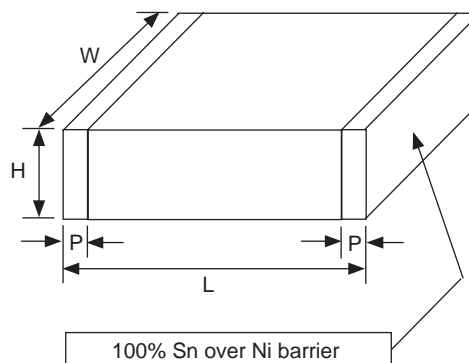
X7R HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	1210						1812					2225		
Length (L)	3.2±0.2						4.5±0.4					5.7±0.4		
Width (W)	2.5±0.2						3.2±0.3					6.35±0.25		
Thickness max. (T)	2.20						1.8					2.20		
Termination Width (P)	0.25 ~ 1.00						0.25 ~ 1.5					0.25 ~ 1.02		
Capacitance	Working Voltage (V)													
	10	16	25	35	50	100	10	16	25	50	100	25	50	100
1.0µF	5%	3.5%	3.5%		3.5%	2.5%**	5%	3.5%	3.5%	2.5%*	2.5%	2.5%	2.5%	2.5%
1.5µF												2.5%		
2.2µF			3.5%									2.5%		
3.3µF			3.5%											
4.7µF		3.5%	5%	2.5%**										
10µF	5%	3.5%	5%**					5%**	3.5%**					

*2.20mm maximum thickness, **2.80mm maximum thickness

Percentages in the table represent the dissipation factor for that value.

(CONSULT FACTORY
FOR CAPACITANCE
VALUES NOT LISTED)



X5R HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	0402			0603				0805				
Length (L)	1.0 ± 0.05			1.6 ± 0.15				2.0 ± 0.2				
Width (W)	0.5 ± 0.05			0.8 ± 0.15				1.25 ± 0.2				
Thickness max. (T)	0.6			1.0				1.45				
Termination Width (P)	0.1 ~ 0.3			0.1 ~ 0.65				0.25 ~ 0.75				
Capacitance	Working Voltage (Vdc)											
	4	6.3	10	4	6.3	10	16	25	6.3	10	16	25
1.0µF		10%	15%		10%	10%	5%	5%	10%	7.5%	5%	5%
1.5µF												
2.2µF	10%				10%	10%			10%	10%	5%	5%
3.3µF					10%				10%	10%		
4.7µF					10%				10%	10%	5%	
6.8µF												
10µF				10%	10%				10%	10%	5%	
22µF									15%			

Percentages in the table represent the dissipation factor for that value.

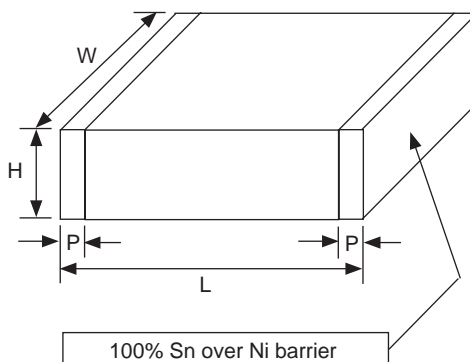
X5R HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	1206					1210					1812			
Length (L)	3.2±0.2					3.2±0.2					4.5±0.4			
Width (W)	1.6±0.2					2.5±0.2					3.2±0.3			
Thickness max. (T)	1.90					2.2					2.8			
Termination Width (P)	0.25 ~ 0.85					0.25 ~ 1.0					0.25 ~ 1.5			
Capacitance	Working Voltage (Vdc)													
	4	6.3	10	16	25	6.3	10	16	25	35	6.3	10	16	25
1.0µF														
1.5µF				5%										
2.2µF		10%	7.5%	5%	3.5%					3.5%				
3.3µF		10%	7.5%	5%	3.5%									
4.7µF		10%	7.5%	5%	5%	10%	5%	3.5%	3.5%*					
6.8µF		10%												
10µF		10%	10%	5%	5%	10%	5%	5%	5%*					3.5%
22µF		10%	10%			10%*	10%*	5%*				5%	5%	
47µF	10%	10%				10%*	10%*				10%			
100µF						15%*					10%**			

*2.8mm maximum thickness, ** 3.3mm maximum thickness

Percentages in the table represent the dissipation factor for that value.

(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)



Y5V HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	0402		0603				0805				
Length (L)	1.0 ± 0.05		1.6 ± 0.15				2.0 ± 0.2				
Width (W)	0.5 ± 0.05		0.8 ± 0.15				1.25 ± 0.2				
Thickness max. (T)	0.6		1.0				1.45				
Termination Width (P)	0.1 ~ 0.3		0.1 ~ 0.65				0.25 ~ 0.75				
Capacitance	Working Voltage (Vdc)										
	6.3	6.3	10	16	25	6.3	10	16	25	50	
1.0µF	20%		16%	16%	9%	16%	12.5%	9%	9%	9%	
1.5µF						16%	12.5%	9%			
2.2µF		20%	16%	16%		16%	12.5%	9%	9%		
3.3µF						16%	12.5%	9%			
4.7µF		20%	12.5%			16%	12.5%	12.5%			
6.8µF							16%				
10µF						20%	30%				
22µF						20%					

*2.5mm maximum thickness

Percentages in the table represent the dissipation factor for that value.

Y5V HIGH CV CAPACITOR VALUES AND SIZES (mm)

EIA Case Size	1206					1210					1812						
Length (L)	3.2±0.2					3.2±0.2					4.5±0.4						
Width (W)	1.6±0.2					2.5±0.2					3.2±0.3						
Thickness max. (T)	1.90					2.2					2.8						
Termination Width (P)	0.25 ~ 0.85					0.25 ~ 1.0					0.25 ~ 1.5						
Capacitance	Working Voltage (Vdc)																
	6.3	10	16	25	35	50	6.3	10	16	25	35	50	6.3	10	16	25	50
1.0µF		12.5%	12.5%	7%		7%		12.5%	12.5%	9%		7%		12.5%	9%	5%	5%
1.5µF		12.5%	12.5%	9%				12.5%	12.5%	9%				12.5%	9%	5%	5%
2.2µF		12.5%	12.5%	9%		9%		12.5%	12.5%	9%		7%		12.5%	9%	5%	5%
3.3µF		12.5%	12.5%	9%				12.5%	12.5%	9%				12.5%	9%	5%	5%
4.7µF		12.5%	12.5%	9%	7%		20%	12.5%	12.5%	9%		7%		12.5%	9%	5%	5%
6.8µF		16%	12.5%					12.5%	12.5%	9%				12.5%	9%	5%	5%
10µF	20%	16%	12.5%	9%	9%			16%	12.5%	9%	7%			12.5%	9%	5%	5%
22µF	20%	16%					20%	16%	16%							5%	
33µF																	
47µF							20%	16%						16%	9%		
100µF							20%*						20%	16%			

*2.5mm maximum thickness

Percentages in the table represent the dissipation factor for that value.

(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)

