

## 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

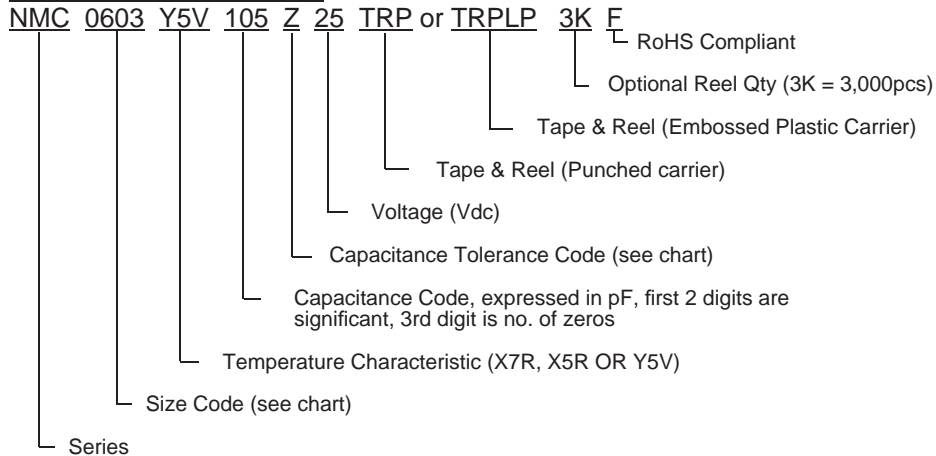
\*See Part Number System for Details



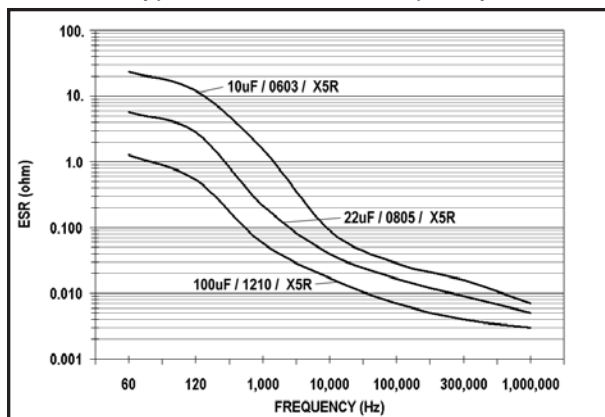
Temperature Coefficient	X7R	X5R	Y5V
Capacitance Range	1.0 $\mu$ F ~ 10 $\mu$ F	1.0 $\mu$ F ~ 100 $\mu$ F	1.0 $\mu$ F ~ 100 $\mu$ F
Capacitance Tolerance	10% (K) & 20% (M)	10% (K) & 20% (M)	+80%/-20% (Z)
Operating Temperature Range	-55°C ~ +125°C	-55°C ~ +85°C	-30°C ~ +85°C
Temperature Characteristics	$\pm 15\%$ $\Delta$ Cap.	$\pm 15\%$ $\Delta$ Cap.	+22%, -82% $\Delta$ Cap.
Rated Voltages	4Vdc, 6.3Vdc, 16Vdc, 25Vdc, 50Vdc & 100Vdc		
Dissipation Factor	See Sizes & Values Tables		
Insulation Resistance	100Megohm/ $\mu$ 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)	C $\leq$ 10 $\mu$ F 1KHz, 1.0V $\pm$ 0.2Vrms (ALC on) C > 10 $\mu$ F 120Hz, 0.5V $\pm$ 0.2Vrms (ALC on)		1KHz, 1.0V $\pm$ 0.1Vrms (ALC on)

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

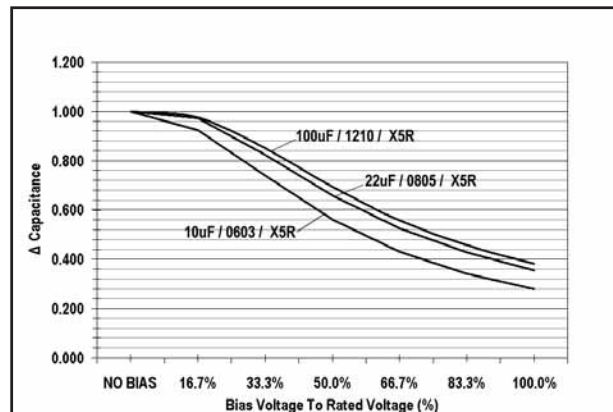
## PART NUMBER SYSTEM



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 (Vdc)												
	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%	5%	3.5%		
3.3µF				10%*					5%	5%	3.5%		
4.7µF				10%*					5%	5%	3.5%		
10µF				15%*				10%	5%	3.5%**			

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

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

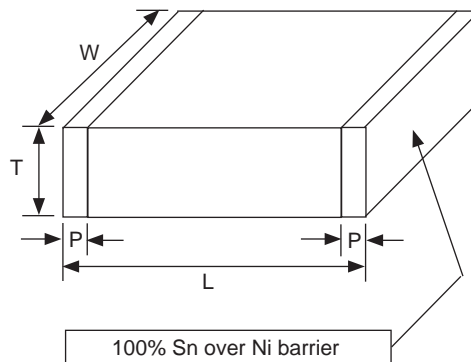
## X7R HIGH CV CAPACITOR VALUES AND SIZES (mm)

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 (Vdc)													
	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%**											

\*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					0.20 ~ 0.75				
Capacitance	Working Voltage (Vdc)													
	4	6.3	10	16	4	6.3	10	16	25	4	6.3	10	16	25
1.0µF		10%	15%	10%		10%	10%	5%	5%		10%	7.5%	5%	5%
1.5µF														
2.2µF	10%	10%				10%	10%	3.5%			10%	10%	5%	5%
3.3µF						10%					10%	10%		
4.7µF	10%	12.5%*				10%	5%				10%	10%	5%	10%
6.8µF														
10µF						10%	10%				10%	10%	5%	
22µF						12.5%					15%			
47µF											10%			

\*T max. 0.65mm, L & W tolerance -0/+0.15mm

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

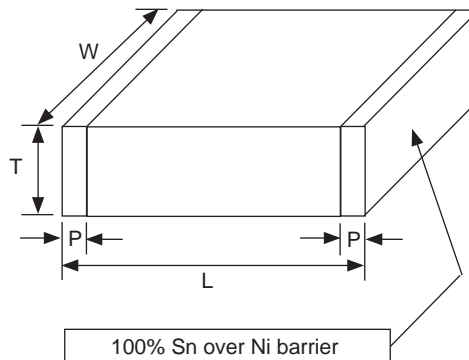
## X5R HIGH CV CAPACITOR VALUES AND SIZES (mm)

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

\*Length 3.2mm ± 0.4mm, 2.8mm maximum thickness

(CONSULT FACTORY  
FOR CAPACITANCE  
VALUES NOT LISTED)

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



## 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	10	6.3	10	16	25	6.3	10	16	25	50
1.0µF	20%	12.5%		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%			

\*2.8mm maximum thickness

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

(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)

