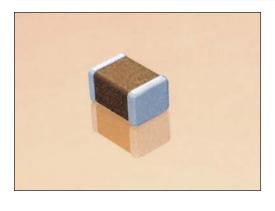
X7S Dielectric



General Specifications



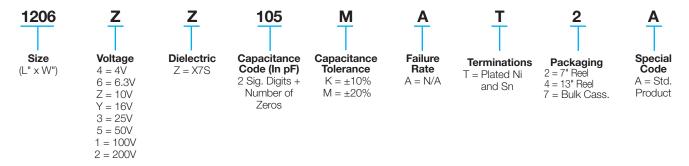
GENERAL DESCRIPTION

X7S formulations are called "temperature stable" ceramics and fall into EIA Class II materials. Its temperature variation of capacitance is within $\pm 22\%$ from -55° C to $+125^{\circ}$ C. This capacitance change is non-linear.

Capacitance for X7S varies under the influence of electrical operating conditions such as voltage and frequency.

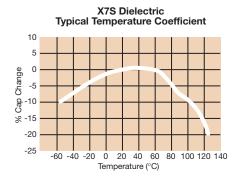
X7S dielectric chip usage covers the broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.

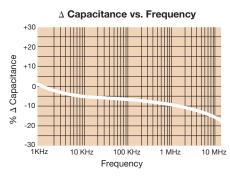
PART NUMBER (SEE PAGE 2 FOR COMPLETE PART NUMBER EXPLANATION)

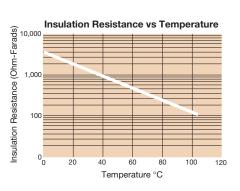


NOTE: Contact factory for availability of Tolerance Options for Specific Part Numbers.

TYPICAL ELECTRICAL CHARACTERISTICS

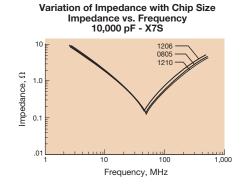


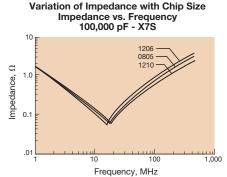




Impedance vs. Frequency 1,000 pF vs. 10,000 pF - X7S 0805 10.00 pF 1,000 pF 10,000 pF 10,000 pF 10,000 pF 1000 pF

Variation of Impedance with Cap Value







X7S Dielectric



Specifications and Test Methods

Parameter/Test		X7S Specification Limits	Measuring Conditions				
Operating Temperature Range		-55°C to +125°C	Temperature Cycle Chamber				
Capacitance		Within specified tolerance					
Dissipation Factor		≤ 2.5% for ≥ 50V DC rating	Freq.: 1.0 kHz ± 10%				
		≤ 3.0% for 25V DC rating	Voltage: 1.0Vrms ± .2V				
		≤ 3.5% for 16V DC rating	For Cap > 10 μF, (0.5Vrms @ 120Hz			
		≤ 5.0% for ≤ 10V DC rating					
Insulation Resistance		100,000MΩ or 1000MΩ - μF,	Charge device with rated voltage for 120 ± 5 secs @ room temp/humidity				
		whichever is less	Charge device with 300% of rated voltage for				
Dielectric Strength		No breakdown or visual defects	1-5 seconds, w/charge and discharge currelimited to 50 mA (max)				
	Appearance	No defects	Deflection: 2mm				
	Capacitance	≤ ±12%	Test Time: 30 seconds				
Resistance to	Variation	≤±12%	1mm/sec				
Flexure	Dissipation	Masta Initial Values (As Abaus)					
Stresses	Factor	Meets Initial Values (As Above)					
	Insulation	 ≥ Initial Value x 0.3	90 mm —				
	Resistance						
Solderability		≥ 95% of each terminal should be covered	Dip device in eutectic solder at 230 ± 5°C				
		with fresh solder	for 5.0 ± 0.5 seconds				
	Appearance	No defects, <25% leaching of either end terminal					
Resistance to Solder Heat	Capacitance Variation	≤ ±7.5%					
	Dissipation			Dip device in eutectic solder at 260°C for 60			
	Factor	Meets Initial Values (As Above)	seconds. Store at room temperature for 24 ± 2 hours before measuring electrical properties.				
	Insulation						
	Resistance	Meets Initial Values (As Above)					
	Dielectric	A4					
	Strength	Meets Initial Values (As Above)					
	Appearance	No visual defects	Step 1: -55°C ± 2°	30 ± 3 minutes			
	Capacitance	≤ ±7.5%	Step 2: Room Temp	≤ 3 minutes			
Thermal Shock	Variation		' '				
	Dissipation	Meets Initial Values (As Above)	Step 3: +125°C ± 2°	30 ± 3 minutes			
	Factor Insulation	, ,	'				
	Resistance	Meets Initial Values (As Above)	Step 4: Room Temp	≤ 3 minutes			
	Dielectric		Repeat for 5 cycles and measure after				
	Strength	Meets Initial Values (As Above)	24 ± 2 hours at room				
	Appearance	No visual defects		vith 1.5 rated voltage (≤ 10V) in			
	Capacitance	≤ ±12.5%					
	Variation	3 2 1 2.0 / 0	test chamber set at $125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 1000 hours (+48, -0)				
	Dissipation	≤ Initial Value x 2.0 (See Above)					
Load Life	Factor	= 11 11 (COO 7 120 VO)	Dama ay a france to at all				
	Insulation Resistance	≥ Initial Value x 0.3 (See Above)	Remove from test chamber and stabilize at room temperature for 24 ± 2 hours before measuring.				
	Dielectric	· · · · · · · · · · · · · · · · · · ·					
	Strength	Meets Initial Values (As Above)					
Load Humidity	Appearance	No visual defects	Store in a test chamber set at 85°C ± 2°C/85% ± 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied. Remove from chamber and stabilize at room temperature and humidity for 24 ± 2 hours before measuring.				
	Capacitance	≤ ±12.5%					
	Variation	≥ ±12.070					
	Dissipation	≤ Initial Value x 2.0 (See Above)					
	Factor	≥ II III.ai value x 2.0 (oee Abuve)					
	Insulation	≥ Initial Value x 0.3 (See Above)					
	Resistance	= 11 11 12 1 12 1 1 1 1 1 1 1 1 1 1 1 1					
	Dielectric	Meets Initial Values (As Above)					
	Strength						



X7S Dielectric





PREFERRED SIZES ARE SHADED

				633							\mathbb{I}			
SIZ	E	0402 0603			0805	1206		121	10					
Solder	ring	Reflow/Wave Reflow/Wave		Re	flow/Wave	Reflow/Wave		Reflow	Only					
Packag	ging	All Paper				r/Embossed	Paper/Embossed		Paper/Em	nbossed				
(L) Length	mm ()	1.00 ± 0.10		1.60 ± 0.15			.01 ± 0.20	3.20 ± 0.20		3.20 ±				
	(in.) mm	(0.040 ± 0.00 0.50 ± 0.10		(0.063 ± 0.006) 0.81 ± 0.15			079 ± 0.008) .25 ± 0.20	(0.126 ± 0.008) 1.60 ± 0.20		(0.126 ± 2.50 ±				
(W) Width	(in.)	(0.020 ± 0.00)		(0.032 ± 0.006)			0.008)	(0.063 ± 0.008)		(0.098 ±				
(t) Terminal	mm	0.25 ± 0.15		0.35 ± 0.15			.50 ± 0.25	0.50 ± 0.25		0.50 ±				
	(in.) WVDC	(0.010 ± 0.00)6)	6.3	± 0.006)	(0.0	020 ± 0.010) 4	(0.020 ± 0.010) 6.3 10		(0.020 ±				
Cap	100	0.3	-+	0.3	20		4	0.3	10	0.0				
(pF)	150					l								
u /	220					l				W	<u></u>			
	330							† <u>~</u>		$\overline{}$	\ \			
	470					l		1 ()			
	680					_		† ,	<u> </u>					
	1000								<u> </u>	Ī				
	1500 2200								*t	1				
	3300		-					t						
	4700								ĺ	ı				
	6800													
Cap	0.010													
(µF	0.015													
	0.022	0												
	0.033 0.047	C				l								
	0.047	C												
	0.10	C												
	0.15					l								
	0.22				G									
	0.33			G										
	0.47 0.68			G G										
	1.0			G		\vdash								
	1.5			u			N	Q						
	2.2						N	Q						
	3.3						N	Q						
	4.7						N	Q	Q					
	10					_				7				
	22 47					l				Z				
	100													
	WVDC	6.3	-	6.3 25			4	6.3 10		6.3	3			
	SIZE	0402		0603			0805	1206		121				
								•						
Letter	Α	С	Е		3	J	K	М	N	Р	Q	Х	Y	Z
Max.	0.33	0.56	0.71).94	1.02	1.27	1.40	1.52	1.78	2.29	2.54	2.79
Thickness	(0.013)	(0.022)	(0.028	, ,	035) (0	.037)	(0.040)	(0.050)	(0.055)	(0.060)	(0.070)	(0.090)	(0.100)	(0.110)
	PAPER EMBOSSED													