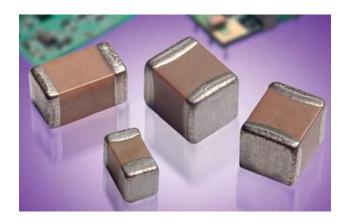
General Specifications



RoHS



X7R formulations are called "temperature stable" ceramics and fall into EIA Class II materials. X7R is the most popular of these intermediate dielectric constant materials. Its temperature variation of capacitance is within ±15% from -55°C to +125°C. This capacitance change is non-linear.

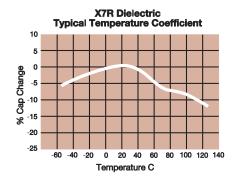
Capacitance for X7R varies under the influence of electrical operating con-ditions such as voltage and frequency.

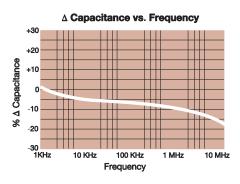
X7R dielectric chip usage covers the broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.

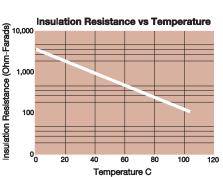
PART NUMBER (see page 2 for complete part number explanation)

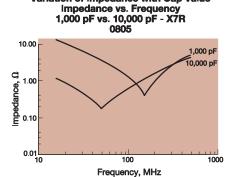
0805	<u>5</u>	<u>C</u>	103	<u>M</u>	<u>A</u>	<u>T</u>	<u>2</u>	<u>A</u>
Size (L" x W")	Voltage 4V = 4 6.3V = 6 10V = Z 16V = Y 25V = 3 50V = 5 100V = 1 200V = 2 500V = 7	Dielectric X7R = C		Capacitance Tolerance J = ± 5%* K = ±10% M = ± 20% *≤1µF only, contact factory for additional values		Terminations T = Plated Ni and Sn 7 = Gold Plated* Z= FLEXITERM®** *Optional termination **See FLEXITERM® X7R section	Packaging 2 = 7" Reel 4 = 13" Reel Contact Factory For Multiples	Special Code A = Std. Product

NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers. Contact factory for non-specified capacitance values.

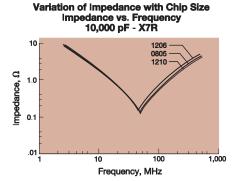


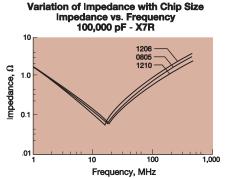






variation of impedance with Cap Value







Specifications and Test Methods

Parame	ter/Test	X7R Specification Limits	Measuring (Conditions						
Operating Tem	perature Range	-55°C to +125°C	Temperature C	ycle Chamber						
Сарас	itance	Within specified tolerance	Freq.: 1.0 k	:Hz + 10%						
Dissipatio	on Factor	≤ 10% for ≥ 50V DC rating≤ 12.5% for 25V DC rating ≤ 12.5% for 25V and 16V DC rating ≤ 12.5% for ≤ 10V DC rating	Voltage: 1.0 For Cap > 10μF,	Vrms ± .2V						
Insulation	Resistance	100,000MΩ or 1000MΩ - μF, whichever is less	Charge device with 120 ± 5 secs @ ro	•						
Dielectric	Strength	No breakdown or visual defects	Charge device with 250% of rated voltage for 1-5 seconds, w/charge and discharge current limited to 50 mA (max) Note: Charge device with 150% of rated voltage for 500V devices.							
	Appearance	No defects	Deflectio	n: 2mm						
Resistance to	Capacitance Variation	≤±12%	Test Time: 3	30 seconds 7 1mm/sec						
Flexure Stresses	Dissipation Factor	Meets Initial Values (As Above)		V						
Insulation Resistance		≥ Initial Value x 0.3	ļ) mm —						
Solder	rability	≥ 95% of each terminal should be covered with fresh solder	Dip device in eutection for 5.0 ± 0.							
	Appearance	No defects, <25% leaching of either end terminal								
	Capacitance Variation	≤ ±7.5%	Dip device in eutectic solder at 260°C for 60seconds.							
Resistance to Solder Heat	Dissipation Factor	Meets Initial Values (As Above)	Store at room temperatur measuring elect							
	Insulation Resistance	Meets Initial Values (As Above)]							
	Dielectric Strength	Meets Initial Values (As Above)								
	Appearance	No visual defects	Step 1: -55°C ± 2°	30 ± 3 minutes						
	Capacitance Variation	≤ ±7.5%	Step 2: Room Temp	≤ 3 minutes						
Thermal Shock	Dissipation Factor	Meets Initial Values (As Above)	Step 3: +125°C ± 2°	30 ± 3 minutes						
	Insulation Resistance	Meets Initial Values (As Above)	Step 4: Room Temp ≤ 3 minutes							
	Dielectric Strength	Meets Initial Values (As Above)	Repeat for 5 cycles 24 ± 2 hours at ro							
	Appearance	No visual defects	Charge device with 1.5 i	rated voltage (≤ 10V) in						
	Capacitance Variation	≤ ±12.5%	test chamber set at 125 ^c (+48	C ± 2°C for 1000 hours						
Load Life	Dissipation Factor	≤ Initial Value x 2.0 (See Above)	If RV > 10V then Life Te but there are exceptions	st voltage will be 2xRV						
	Insulation Resistance	≥ Initial Value x 0.3 (See Above)	further details o	on exceptions)						
	Dielectric Strength	Meets Initial Values (As Above)	Remove from test chamb temperature for 24 ± 2 h							
	Appearance	No visual defects	Store in a test chamb	er set at 85°C + 2°C/						
	Capacitance Variation	≤ ±12.5%	85% ± 5% relative hui (+48, -0) with rated	midity for 1000 hours						
Load Humidity	Dissipation Factor	≤ Initial Value x 2.0 (See Above)	Remove from chamber							
	Insulation Resistance	≥ Initial Value x 0.3 (See Above)	temperature and humidity for 24 ± 2 hours before measuring.							
	Dielectric	Meets Initial Values (As Above)								





PREFERRED SIZES ARE SHADED

SIZE	0101*			0201	ı			0402							(0603	3						0	805				1206								
Soldering	Reflow Only	Н	Ref	ow (Only	_	Т	Refl	ow/\	Nave	 e	✝			Reflo	ow/V	Vave		_	┢		F	Reflo	w/W	ave	_		Т	_		Re	flow	/Wa	ve		
Packaging	Paper/Embossed	Г	All	Pap	oer	r All Paper					Τ			All	Pap	er			Paper/Embossed						Paper/Embossed											
(L) Length mm (in)	0.40 ± 0.02 (0.016 ± 0.0008)	((0.60 ± 0.03 (0.024 ± 0.001)				(1.00 ± 0.10 (0.040 ± 0.004)				1.60 ± 0.15 (0.063 ± 0.006)						2.01 ± 0.20 (0.079 ± 0.008)					3.20 ± 0.20 (0.126 ± 0.008)													
(W) Width mm (in)	0.20 ± 0.02 (0.008 ± 0.0008)	((0.3 0.01			1)	(0 ± (0 ± (((0.8 ²	1 ± 0 2 ± 0		i)					1.25 .049		20 .008)							60 ±				
(t) Terminal mm (in)	0.10± 0.04 (0.004 ± 0.0016)	_ `	0.00		0.00			0.01	5 ± (0 ± (0.00	6)	L			0.014		0.006					(0		± 0.	010)						(0.0		£ 0.0	10)		
WVDC	16	6.3	10	16	25	50	6.3	10			50	6.3	3 10	16	25				250	6.3	10	16	25	50	100	200	250	6.3	10	16	25	50	100	20	0 250	500
Cap 100 101	В	Α	Α	Α	Α	Α			С	С	С		\perp	L		G	G	G			匚	\perp	\perp	$oxed{\Box}$				\perp		\perp	\perp	\perp	L		\perp	
(pF) 150 151	В	Α	Α	Α	Α	Α			С	С	С					G	G	G										\Box		oxdot	\perp	\perp		\perp	\perp	
220 221	В	Α	Α	Α	Α	Α			С	С	С					G	G	G		Ε	Е	Е	Е	Е	Е	Е										
330 331	В	Α	Α	Α	Α	Α			С	С	С					G	G	G			J	J	J	J	J	J										K
470 471	В	Α	Α	Α	Α	Α			С	С	С	Г	Т	Т		G	G	G		П	J	J	J	J	J	J		П		П	П	П	П	Т	\top	K
680 681	В	Α	Α	Α	Α				С	С	С			Т	Î	G	G	G		Ī	J	J	J	J	J	J				П		П		Ī	T	K
1000 102	В	Α	Α	Α	Α		Т	С	С	С	С	Г	Ť	T	Ť	G	G	G	G		J	J	J	J	J	J	J		İ	П	İ	⇈	İΠ	Ť	J	K
1500 152	В	Α	Α	Α	Α		一	С	С	С	C	Т	⇈	T	T	G	G		G		J	J	J	J	J	J	J		J	J	J	J	J	J	J	М
2200 222	В	Α	Α	Α	Α		т	С	C	C	C	Т	⇈	T	1	G	G		G		J	J	J	J	J	J	J		J	J	J	J	J	J	J	М
3300 332	_	Α	Α	Α	Α		т	C	Ċ	C	C	Н	\top	\vdash	+	G	G		G	_	J	Ť.	Ĵ	J	J	J	i i		J	J	Ť.	J.	Ť	J	J	М
4700 472		A	Α	Α	Α		┰	C	c	C	Ċ	Н	+	╁	+	G	G		G	_	J	J	Ĵ	J	J	J	J		J	ŭ	Ť	J	J	Ĵ	J	M
6800 682		A	Α	Α	Α		┢	C	C	C	C	Н	+	╁	+	G	G		G	_	J	Ť	J.	Ť	Ť	J	Ť		i i	Ť	١Ť	Ť	۱Ť	Ĵ	J	P
Cap 0.01 103		A	A	A	A	_	┢	С	C	C	C	┢	+	╫	G	G	G	J	G	 	J	J	J	J	J	J	1	-	1	Ť	H	Ť	1	J	J	P
(µF) 0.015 153						\vdash	┈	C	C	C	C	Н	╫	╁	G	-	G	J	16	_	J	J	J	J	J	J	N	Н	J	i,	1	1	1	M		C
0.022 223		⊢			\vdash	⊢	⊢	C	C	C	C	Н	╁	₩	G	-	G	1		⊢	J	J	J	J	J	N	N		J	H	1	1	1	M	_	C
0.022 223		├	┢	_	⊢	H	₩	C	C	C	C	╌	╫	╀	G	-	J		╁	┢	J	<u>ا</u>	1	J	N	N	N	\vdash	J	H	1	1	J	M	_	_
0.033 333		Н—			H	H	⊢	C	C	C	C	\vdash	+		_		J		+-	├	J	1	1	+-	-	-	N	-	J	1	1 -	1	1	-	_	_
		⊢				L	⊢	_	_	C	_	-	╀	G	_	_	-		₩	⊢	J	J	ļ	J	N	N	IN		J	Ļ	J	1	J	M P	_	_
0.068 683		<u> </u>	\vdash		L	L	▙	С	C	_	C	-	+	G	_		J		₩	₩	J	J	J	J	N	N	-	⊢	J	Ļ	l i	l i	17			
0.1 104		<u> </u>	_	_	<u> </u>	_	<u> </u>	С	С	С	С	Ļ	G	G	_	_	J	-	₩	Ь—	J	J	J	J	N	N	-	-	J	J	J	J	P	P	_	_
0.15 154		<u> </u>			_		<u> </u>				-	G	_	-	-		_	╄	╄	┞	J	J	J	N	N	_	₩	_	J	J	J	J	Q	_	_	_
0.22 224		<u> </u>	<u> </u>		_	<u> </u>	Щ	С	С	С	_	G	G	J	J	J	_	<u> </u>	₩	Ь.	J	J	N	N	N	_	 	<u> </u>	J	J	J	J	Q	_	Q	4
0.33 334		<u> </u>	L		_	_			_	$ldsymbol{f eta}$	\vdash	J	J	J	J	L	_	\vdash	₩	<u> </u>	N	N	N	N	N	_	₩	_	J	J	M	-	Q	_	4	₩
0.47 474					$oxed{oxed}$	$oxed{oxed}$	С	С	_	$oxed{oxed}$	\perp	J	J	J	J	J		\perp	\perp	<u> </u>	Ν	N	N	N	N			上	М	М	М	Р	Q		丄	\perp
0.68 684												J	J	J							Ν	N	N					$oxed{oxed}$	М	М		\perp		\perp	\perp	
1.0 105							С					J	J	J	J	J					N	N		N				\Box	М	М						
2.2 225												J	J	J							Р	Р	Р	P**					Q	Q	Q	Q	Q*	*		
4.7 475												J									Р	Р	Р						Q	Q	Q	Q			\Box	
10 106		Π					П				Т	Т	Т	П	Т	Π		Т	Т	Р	Р	Р					\Box		Q	Q	X	X		Т	\top	\Box
22 226		Г					Г				Т	Τ	\top	Т	Ť	Π		Т	1						ĺ		Ī	Q	Q	Q				Ť	1	\Box
47 476		İТ	İ		İ	İ	Т	İ	Т	İ	Ť	1	十	Ť	T	Ť	İ	Ť	Ť	⇈	İ	İ	T	İ	İ	İ	†	Q	Q			\vdash	T	T	\top	\top
100 107		Т				Т	т		Т	T	\top	✝	\top	т	T	Т	T	\top	1	\vdash	T	т		т						Т	\top	\vdash	т	\top	\top	\top
WVDC	16	6.3	10	16	25	50	6.3	10	16	25	50	6 :	3 10	16	25	50	100	200	250	6.3	10	16	25	50	100	200	250	6.3	10	16	25	50	100	20	250	500
SIZE	0101	-	_	0201		30		6.3 10 16 25 50 0 0402					- 1 - 0	,		0603	_	1200	-1=00	1.0		10	_	805		,	1=00	5.0	,,,,		1=0	12	_	- 1-0	-1=00	1200

Letter	А	В	С	E	G	J	K	М	N	Р	Q	Х	Y	Z
Max.	0.33	0.22	0.56	0.71	0.90	0.94	1.02	1.27	1.40	1.52	1.78	2.29	2.54	2.79
Thickness	(0.013)	(0.009)	(0.022)	(0.028)	(0.035)	(0.037)	(0.040)	(0.050)	(0.055)	(0.060)	(0.070)	(0.090)	(0.100)	(0.110)
·			PAF	PER						EMBC	SSED			

NOTE: Contact factory for non-specified capacitance values



^{*}EIA 0100

^{**}Contact Factory for Specifications

Capacitance Range

PREFERRED SIZES ARE SHADED

SIZE		1210								18	12				1825				2220				2225			
Soldering	g			Ref	flow C	Only				F	Reflov	v Onl	ly		Re	flow C	Only		Re	flow C	Only		Re	flow C	nly	
Packagin			F	Paper			 d				II Emi					Embo				Embo			-	Embos		
	mm				.30 ± 0							± 0.30				.50 ± 0.				.70 ± 0.			_	72 ± 0.:		
(L) Length	(in.)				30± 0.0					((0.177 :	± 0.012	2)		(0.1	177 ± 0.	012)		(0.2	25 ± 0.	016)			25 ± 0.		
(W) Width	mm				50 ± 0.							± 0.20				.40 ± 0.				.00 ± 0.				35 ± 0.		
,	(in.)	<u></u>							(0.126 :		3)		 `	252 ± 0.			<u> </u>	97 ± 0.			i i	50 ± 0.				
(t) Terminal	mm (in.)				50 ± 0. 20 ± 0.						: 0.61 : 0.024	± 0.36 ± 0.014	1)		ı	0.61 ± 0.36 0.64 ± 0.39 (0.024 ± 0.014) (0.025 ± 0.015)							0.64 ± 0.39 (0.025 ± 0.015)			
V	VVDC	10	16	25	50	100	200	500	16	25	50	100	200	500	50	100	200	25	50	100	200	500	<u> </u>	100 2		
Cap 100	101																			1	_	t		1		
(pF) 150	151																				-1	*	\leq	_W_		
220	221																			<)) _	ÎT -	
330	331				<u> </u>		Щ				<u> </u>		ļ			<u> </u>	\sqcup		<u> </u>	l) J		-ע	<u>. </u>	
470	471										_		<u> </u>			-			<u> </u>			<u>+</u> +			_	
680	681				<u> </u>		\vdash						ļ			<u> </u>	\sqcup		<u> </u>			4			_	
1000	102									_	_		-			-	\vdash		<u> </u>			, , , ,				
1500	152	J	J	J	J	J	J	M		_	_		-			-	\vdash					<u> </u>				
2200 3300	222 332	J	J	J	J	J	J	M M		-	-		-	-		-	\vdash			-						
4700	472	J	J	J	J	J	J	M		-	-	 	-	_	<u> </u>	\vdash	\vdash					<u> </u>				
6800	682	J	J	J	J	J	J	M		_	-		-			+	\vdash			1		1	l 			
Cap 0.01	103	J	J	J	J	J	J	M		K	K	K	K	K	М	М	М		Х	Х	Х	Х	М	Р	Р	
(μF) 0.015	153	J	J	J	J	J	J	P		K	K	K	K	P	M	M	M		X	X	X	X	M	P	P	
0.022	223	J	J	J	J	J	J	Q		K	K	K	K	P	М	M	M		X	X	X	X	M	P	P	
0.033	333	J	J	J	J	J	J	Q		K	K	К	К	Х	М	М	М		Х	Х	Х	Х	М	Р	Р	
0.047	473	J	J	J	J	J	J	Q		K	K	К	К	Z	М	М	М		Х	Х	Х	Х	М	Р	Р	
0.058	683	J	J	J	J	J	М	Q		K	K	K	К	Z	М	М	М		Х	Х	Х	Х	М	Р	Р	
0.1	104	J	J	J	J	J	М	Х		K	K	K	К	Z	М	М	М		Х	Х	Х	Х	М	Р	Р	
0.15	154	J	J	J	J	М	Z			K	K	K	Р	Z	М	М	М		Х	Х	Х	Х	М	Р	Х	
0.22	224	J	J	J	J	Р	Z			K	K	K	Р	Z	М	М	М		Х	Х	Х	Х	М	Р	Χ	
0.33	334	J	J	J	J	Q				K	K	М	Х		М	М			Х	Х	Х	Х	М	Р	Х	
0.47	474	М	M	М	М	Q				K	K	Р	Х		М	M			Х	Х	Х	Х	M	Р	Х	
0.68	684	М	М	P	Х	X				М	М	Q			М	P			Х	Х			М	P	Х	
1.0	105	N	N	P	X	Z	\vdash			M	M	X	Z		M	Р	\longmapsto		X	X		-	M	Р	X	
1.5	155 225	N X	N X	Z	Z	Z Z	\vdash			Z	Z	Z		\vdash	Q	-	\vdash		X	X	<u> </u>	-	M	X	Z Z	
2.2 3.3	335	X	X	Z	Z	Z				Z	Z	Z		\vdash		+	\vdash		X	Z		1	IVI		Z	
4.7	475	Z	Z	Z	Z	Z	\vdash			Z	Z			\vdash	\vdash	+	\vdash		X	Z		 	-			
10	106	Z	Z	Z	Z				Z	_			\vdash			+	$\vdash \vdash \vdash$		Z	Z		1				
22	226	Z	Z	Z			$\vdash \vdash \vdash$		_							\vdash		Z	_							
47	476	Z					М									†	\vdash					<u> </u>				
100	107												t			1										
WVDC		10	16	25	50	100	200	500	16	25	50	100	200	500	50	100	200	25	50	100	200	500	50	100	200	
SIZE					1210			1812 1825 2220							2225											
Letter	А		В	С		E	G	J		K	M		N	Р		Q	Х		Υ	Z						
Max.	0.33		.22	0.56		71	0.90	0.9		1.02	1.2		1.40	1.5		1.78	2.29		2.54	2.79						

Letter	Α	В	С	Е	G	J	K	М	N	Р	Q	Х	Υ	Z
Max. Thickness	0.33 (0.013)	0.22 (0.009)	0.56 (0.022)	0.71 (0.028)	0.90 (0.035)	0.94 (0.037)	1.02 (0.040)	1.27 (0.050)	1.40 (0.055)	1.52 (0.060)	1.78 (0.070)	2.29 (0.090)	2.54 (0.100)	2.79 (0.110)
	PAPER									EMBO	SSED			

NOTE: Contact factory for non-specified capacitance values

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

AVX:

08055C393KAT2A 08055C393KAT4A 08055C393MAT2A 08055C471JAT2A 08055C471KAT2A 08055C471KAT4A 08055C471MAT2A 08055C472JAT2A 08055C472KAT2A 08055C472KAT4A 08055C472MAT2A 08055C473JAT2A 08055C473KAT2A 08055C473KAT4A 08055C473MAT2A 08055C473MAT4A 08055C561KAT2A 08055C561KAT4A 08055C561MAT2A 08055C562JAT2A 08055C562KAT2A 08055C562KAT4A 08055C562MAT2A 08055C563JAT2A 08055C563KAT2A 08055C563KAT4A 08055C563MAT2A 08055C681KAT2A 08055C681KAT4A 08055C681MAT2A 08055C682JAT2A 08055C682KAT2A 08055C682KAT4A 08055C682MAT2A 08055C682MAT4A 08055C683KAT2A 08055C683KAT4A 08055C683MAT2A 08055C683MAT4A 08055C821KAT2A 08055C821KAT4A 08055C821MAT2A 08055C822JAT2A 08055C822KAT2A 08055C822KAT4A 08055C823JAT2A 08055C823KAT2A 08055C823MAT2A 08055C101JAT2A 08055C101KAT2A 08055C102JAT2A 08055C102KAT2A 08055C102KAT4A 08055C102MAT2A 08055C102MAT4A 08055C103JAT2A 08055C103JAT4A 08055C103KAT4A 08055C103MAT2A 08055C103MAT4A 08055C104KA72A 08055C104MAT2A 08055C104MAT4A 08055C105KAT2A 08055C122KAT2A 08055C123KAT2A 08055C123MAT2A 08055C124KAT2A 08055C151KAT2 08055C151KAT2A 08055C152KAT4A 08055C152MAT2A 0805YC474MA72A 0805YC474MAT2A 0805YC474MAT4A 0805YC561KAT2A 0805YC562KAT2A 0805YC562MAT2A 0805YC563KAT2A 0805YC563KAT4A 0805YC682KAT2A 0805YC683KAT2A 0805YC821KAT2A 0805YC821MAT2A 0805YC822KAT2A 0805YC822KAT4A 0805YC823KAT2A 0805ZC102KAT2A 0805ZC102MAT2A 0805ZC103KAT2A 0805ZC103MAT2A 0805ZC103MAT4A 0805ZC104KAT2A 0805ZC104MAT2A 0805ZC105JAT2A 0805ZC105JAT4A 0805ZC105KA72A 0805ZC105KAT2A 0805ZC105KAT4A 0805ZC105MAT2A