

# 06031C821KAT4A Datasheet



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DiGi Electronics Part Number	06031C821KAT4A-DG
Manufacturer	<a href="#">KYOCERA AVX</a>
Manufacturer Product Number	06031C821KAT4A
Description	CAP CER 820PF 100V X7R 0603
Detailed Description	820 pF ±10% 100V Ceramic Capacitor X7R 0603 (1608 Metric)

This model 06031C821KAT4A is available at DiGi Electronics.

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## Purchase and inquiry

Manufacturer Product Number:

06031C821KAT4A

Series:

-

Capacitance:

820 pF

Voltage - Rated:

100V

Operating Temperature:

-55°C ~ 125°C

Ratings:

-

Failure Rate:

-

Package / Case:

0603 (1608 Metric)

Height - Seated (Max):

-

Lead Spacing:

-

Manufacturer:

KYOCERA AVX

Product Status:

Active

Tolerance:

±10%

Temperature Coefficient:

X7R

Features:

-

Applications:

General Purpose

Mounting Type:

Surface Mount, MLCC

Size / Dimension:

0.063" L x 0.032" W (1.60mm x 0.81mm)

Thickness (Max):

0.035" (0.90mm)

Lead Style:

-

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8532.24.0020

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# X7R Dielectric

## General Specifications



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 conditions such as voltage and frequency.

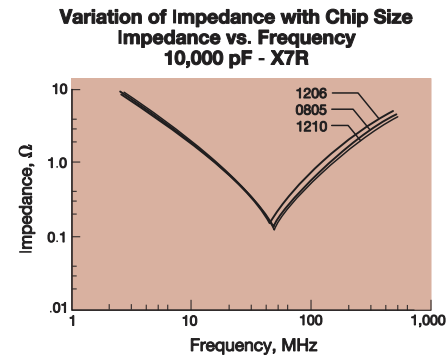
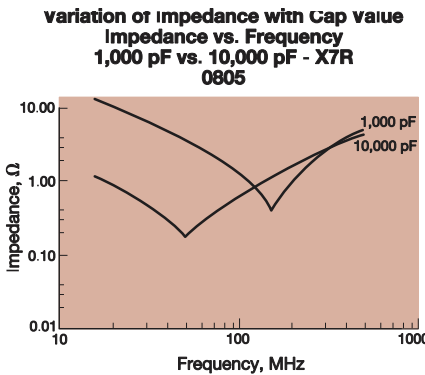
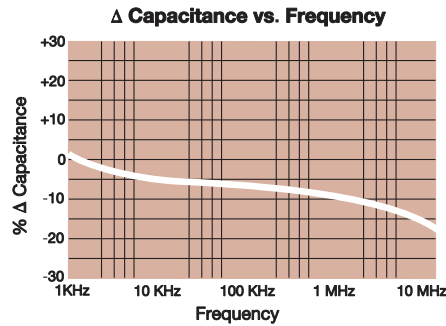
X7R dielectric chip usage covers the broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.



### PART NUMBER (SEE PAGE 4 FOR COMPLETE PART NUMBER EXPLANATION)

<b>0805</b>	<b>5</b>	<b>C</b>	<b>103</b>	<b>M</b>	<b>A</b>	<b>T</b>	<b>2</b>	<b>A</b>
<b>Size</b> (L" x W")	<b>Voltage</b> 4V = 4 6.3V = 6 10V = Z 16V = Y 25V = 3 50V = 5 100V = 1 200V = 2 500V = 7	<b>Dielectric</b> X7R = C	<b>Capacitance Code</b> (In pF) 2 Sig. Digits + Number of Zeros	<b>Capacitance Tolerance</b> J = ± 5%* K = ±10% M = ± 20%	<b>Failure Rate</b> A = Not Applicable	<b>Terminations</b> T = Plated Ni and Sn Z = FLEXITERM®** *Optional termination **See FLEXITERM® X7R section	<b>Packaging</b> 2 = 7" Reel 4 = 13" Reel	<b>Special Code</b> A = Std. Product
				*≤1µF only, contact factory for additional values			<b>Contact Factory For Multiples</b>	

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



# X7R Dielectric

## Specifications and Test Methods

Parameter/Test		X7R Specification Limits	Measuring Conditions	
<b>Operating Temperature Range</b>		-55°C to +125°C	Temperature Cycle Chamber	
<b>Capacitance</b>		Within specified tolerance		
<b>Dissipation Factor</b>		$\leq 10\%$ for $\geq 50V$ DC rating $\leq 12.5\%$ for 25V DC rating $\leq 12.5\%$ for $\leq 10V$ DC rating Contact Factory for DF by PN	Freq.: 1.0 kHz $\pm 10\%$ Voltage: 1.0Vrms $\pm .2V$ For Cap > 10 $\mu$ F, 0.5Vrm @ 120Hz	
<b>Insulation Resistance</b>		10,000M $\Omega$ or 500M $\Omega$ - $\mu$ F, whichever is less	Charge device with rated voltage for 120 $\pm$ 5 secs @ room temp/humidity	
<b>Dielectric Strength</b>		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.	
<b>Resistance to Flexure Stresses</b>	Appearance	No defects	Deflection: 2mm Test Time: 30 seconds	
	Capacitance Variation	$\leq \pm 12\%$		
	Dissipation Factor	Meets Initial Values (As Above)		
	Insulation Resistance	$\geq$ Initial Value x 0.3		
<b>Solderability</b>		$\geq 95\%$ of each terminal should be covered with fresh solder	Dip device in eutectic solder at 230 $\pm$ 5°C for 5.0 $\pm$ 0.5 seconds	
<b>Resistance to Solder Heat</b>	Appearance	No defects, <25% leaching of either end terminal	Dip device in eutectic solder at 260°C for 60 seconds. Store at room temperature for 24 $\pm$ 2 hours before measuring electrical properties.	
	Capacitance Variation	$\leq \pm 7.5\%$		
	Dissipation Factor	Meets Initial Values (As Above)		
	Insulation Resistance	Meets Initial Values (As Above)		
	Dielectric Strength	Meets Initial Values (As Above)		
<b>Thermal Shock</b>	Appearance	No visual defects	Step 1: -55°C $\pm$ 2°	30 $\pm$ 3 minutes
	Capacitance Variation	$\leq \pm 7.5\%$	Step 2: Room Temp	$\leq 3$ minutes
	Dissipation Factor	Meets Initial Values (As Above)	Step 3: +125°C $\pm$ 2°	30 $\pm$ 3 minutes
	Insulation Resistance	Meets Initial Values (As Above)	Step 4: Room Temp	$\leq 3$ minutes
	Dielectric Strength	Meets Initial Values (As Above)	Repeat for 5 cycles and measure after 24 $\pm$ 2 hours at room temperature	
<b>Load Life</b>	Appearance	No visual defects	Pre-treatment: After mounting, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure.  Charge device with $\geq$ rated voltage in test chamber set at 125°C $\pm$ 2°C for 1000 hours (+48, -0).  Pre-treatment: After remove from test chamber, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure.  Contact KYOCERA AVX for datasheet of specific parts.	
	Capacitance Variation	$\leq \pm 12.5\%$		
	Dissipation Factor	$\leq$ Initial Value x 2.0 (See Above)		
	Insulation Resistance	$\geq$ Initial Value x 0.3 (See Above)		
	Dielectric Strength	Meets Initial Values (As Above)		
<b>Load Humidity</b>	Appearance	No visual defects	Pre-treatment: After mounting, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure.  Store in a test chamber set at 85°C $\pm$ 2°C/ 85% $\pm$ 5% relative humidity for 1000 hours (+48, -0) with rated voltage applied.  Pre-treatment: After remove from test chamber, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure.	
	Capacitance Variation	$\leq \pm 12.5\%$		
	Dissipation Factor	$\leq$ Initial Value x 2.0 (See Above)		
	Insulation Resistance	$\geq$ Initial Value x 0.3 (See Above)		
	Dielectric Strength	Meets Initial Values (As Above)		





# X7R Dielectric Capacitance Range

## PREFERRED SIZES ARE SHADED

SIZE	1210							1812					1825			2220					2225				
	Reflow Only Paper/Embossed							Reflow Only All Embossed					Reflow Only All Embossed			Reflow Only All Embossed					Reflow Only All Embossed				
(L) Length	mm (in.)	3.30 ± 0.4 (0.130 ± 0.016)							4.50 ± 0.40 (0.177 ± 0.016)					4.50 ± 0.40 (0.177 ± 0.016)			5.70 ± 0.50 (0.224 ± 0.020)					5.70 ± 0.40 (0.224 ± 0.016)			
(W) Width	mm (in.)	2.50 ± 0.30 (0.098 ± 0.012)							3.20 ± 0.40 (0.126 ± 0.016)					6.40 ± 0.40 (0.252 ± 0.016)			5.00 ± 0.40 (0.197 ± 0.016)					6.30 ± 0.40 (0.248 ± 0.016)			
(t) Terminal	mm (in.)	0.50 ± 0.25 (0.020 ± 0.010)							0.61 ± 0.36 (0.024 ± 0.014)					0.61 ± 0.36 (0.024 ± 0.014)			0.64 ± 0.39 (0.025 ± 0.015)					0.64 ± 0.39 (0.025 ± 0.015)			
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
Cap (pF)		100	101																						
		150	151																						
		220	221		K	K	K	M																	
		330	331		K	K	K	M			N	N	N	N											
		470	471		K	K	K	M			N	N	N	N											
		680	681		K	K	K	M			N	N	N	N											
		1000	102	K	K	K	K	M	N	N	N	N	N	N	X	X	X	X	X	X	X	X	X	X	X
		1500	152	K	K	K	K	M	N	N	N	N	N	N	X	X	X	X	X	X	X	X	X	X	X
		2200	222	K	K	K	K	M	N	N	N	N	N	N	X	X	X	X	X	X	X	X	X	X	X
		3300	332	K	K	K	K	P	N	N	N	N	N	N	X	X	X	X	X	X	X	X	X	X	X
		4700	472	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		6800	682	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
Cap (µF)		0.01	103	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.015	153	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.022	223	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.033	333	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.047	473	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.068	683	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.1	104	K	K	K	K	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.15	154	K	K	K	M	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.22	224	K	K	K	M	P	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.33	334	K	K	K	M	Q	N	N	N	N	N	P	X	X	X	X	X	X	X	X	X	X	X
		0.47	474	M	M	M	P	Q	N	N	N	N	Q	X	X	X	X	X	X	X	X	X	X	X	
		0.68	684	M	M	P	X	Z	Q	Q	Q	Q	Z	X	X	X	X	X	X	Z	X	X	X	X	
		1.0	105	P	P	P	X	Z	Q	Q	Q	X	Z	X	X	X	X	X	X	7	X	X	X	X	
		1.5	155	N	N	Z	Z	Z	Z	Z	Z	Z	X	X	Z	X	X	Z		X	X	Z	X	X	
		2.2	225	X	X	Z	Z	Z	Z	Z	Z	Z	X	X	Z	X	X	Z		X	X	Z	X	Z	
		3.3	335	X	X	Z	Z	Z	Z	Z	Z	Z	X	X		X	Z			X	Z		X	X	
		4.7	475	Z	Z	Z	Z	Z	Z	Z	Z	Z	X	X		Z	Z			X	Z		X	X	
		10	106	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z		Z	7			Z	7		Z	Z	
		22	226	Z	Z	Z										Z				7					
		47	476	Z																					
		100	107																						
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	A	B	C	E	G	J	K	M	N	P	Q	X	Y	Z	7	
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)	3.30 (0.130)	
	PAPER						EMBOSSED									

NOTE: Contact factory for non-specified capacitance values

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