

02016D472MAT2A Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	02016D472MAT2A-DG
Manufacturer	KYOCERA AVX
Manufacturer Product Number	02016D472MAT2A
Description	CAP CER 4700PF 6.3V X5R 0201
Detailed Description	4700 pF ±20% 6.3V Ceramic Capacitor X5R 0201 (0603 Metric)

This model 02016D472MAT2A is available at DiGi.Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

 [Request a Quote](#)

 [Datasheet Search](#)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

02016D472MAT2A

Series:

-

Capacitance:

4700 pF

Voltage - Rated:

6.3V

Operating Temperature:

-55°C ~ 85°C

Ratings:

-

Failure Rate:

-

Package / Case:

0201 (0603 Metric)

Height - Seated (Max):

-

Lead Spacing:

-

Manufacturer:

KYOCERA AVX

Product Status:

Active

Tolerance:

±20%

Temperature Coefficient:

X5R

Features:

-

Applications:

General Purpose

Mounting Type:

Surface Mount, MLCC

Size / Dimension:

0.024" L x 0.012" W (0.60mm x 0.30mm)

Thickness (Max):

0.013" (0.33mm)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8532.24.0020

Moisture Sensitivity Level (MSL):

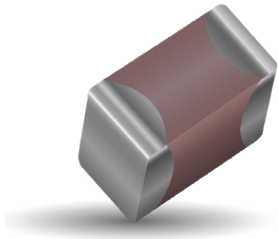
1 (Unlimited)

ECCN:

EAR99

X5R Dielectric

General Specifications



GENERAL DESCRIPTION

- General Purpose Dielectric for Ceramic Capacitors
- EIA Class II Dielectric
- Temperature variation of capacitance is within $\pm 15\%$ from -55°C to $+85^{\circ}\text{C}$
- Well suited for decoupling and filtering applications
- Available in High Capacitance values (up to $100\mu\text{F}$)

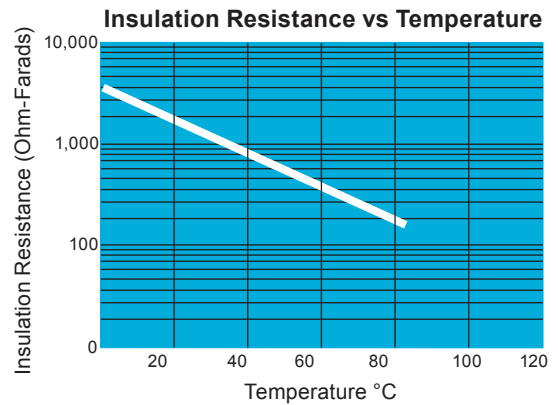
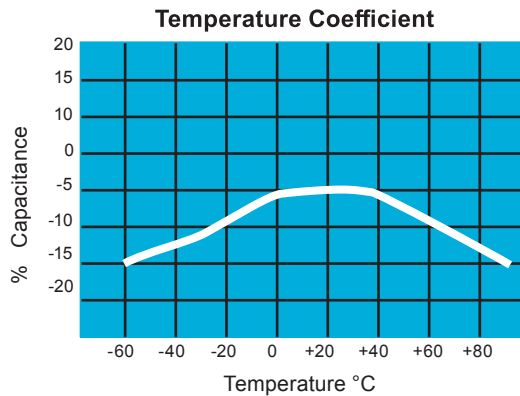
PART NUMBER (SEE PAGE 4 FOR COMPLETE PART NUMBER EXPLANATION)

1210	4	D	107	M	A	T	2	A
Size (L" x W")	Voltage	Dielectric	Capacitance Code (In pF)	Capacitance Tolerance	Failure Rate	Terminations	Packaging	Special Code
0101**	4 = 4V	D = X5R	2 Sig. Digits + Number of Zeros	K = $\pm 10\%$ M = $\pm 20\%$	A = N/A	T = Plated Ni and Sn	2 = 7" Reel 4 = 13" Reel	A = Std.
0201	6 = 6.3V							
0402	Z = 10V							
0603	Y = 16V							
0805	3 = 25V							
1206	D = 35V							
1210	5 = 50V							
1812	1 = 100V							
**EIA 01005								



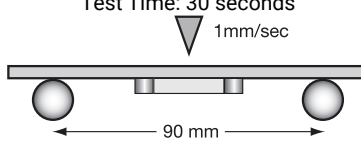
NOTE: Contact factory for availability of Tolerance Options for Specific Part Numbers.
Contact factory for non-specified capacitance values.

TYPICAL ELECTRICAL CHARACTERISTICS



X5R Dielectric

Specifications and Test Methods

Parameter/Test		X5R Specification Limits	Measuring Conditions	
Operating Temperature Range		-55°C to +85°C	Temperature Cycle Chamber	
Capacitance		Within specified tolerance		
Dissipation Factor		$\leq 2.5\%$ for $\geq 50V$ DC rating $\leq 12.5\%$ for 25V, 35V DC rating $\leq 12.5\%$ Max. for 16V DC rating and lower Contact Factory for DF by PN	Freq.: 1.0 kHz $\pm 10\%$ Voltage: 1.0Vrms $\pm .2V$ For Cap > 10 μF , 0.5Vrms @ 120Hz	
Insulation Resistance		10,000M Ω or 500M Ω - μF , whichever is less	Charge device with rated voltage for 120 ± 5 secs @ room temp/humidity	
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)	
Resistance to Flexure Stresses	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		
Solderability		$\geq 95\%$ of each terminal should be covered with fresh solder	Dip device in eutectic solder at 230 $\pm 5^\circ C$ for 5.0 ± 0.5 seconds	
Resistance to Solder Heat	Appearance	No defects, <25% leaching of either end terminal	Dip device in eutectic solder at 260°C for 60seconds. 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)		
Thermal Shock	Appearance	No visual defects	Step 1: -55°C $\pm 2^\circ$	30 ± 3 minutes
	Capacitance Variation	$\leq \pm 7.5\%$	Step 2: Room Temp	≤ 3 minutes
	Dissipation Factor	Meets Initial Values (As Above)	Step 3: +85°C $\pm 2^\circ$	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 and measure after 24 ± 2 hours at room temperature	
Load Life	Appearance	No visual defects	Charge device with 1.5X rated voltage in test chamber set at 85°C $\pm 2^\circ C$ for 1000 hours (+48, -0). Note: Contact factory for *optional specification part numbers that are tested at < 1.5X rated voltage. Remove from test chamber and stabilize at room temperature for 24 ± 2 hours	
	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)		
Load Humidity	Dielectric Strength	Meets Initial Values (As Above)	Take the initial value after heat treatment. After applying rated voltage for 500+12/-0 hours in the condition of 40°C $\pm 2^\circ C$ and 90 to 95%RH, and place in normal temperature and humidity, then measure the sample after heat treatment. The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Appearance	No visual defects		
	Capacitance Variation	$\leq \pm 12.5\%$		
	Dissipation Factor / Tan δ	Within specification		
Insulation Resistance		Over 1000M Ω or 50M Ω · μF , whichever is less. *Exceptions Listed Below		



X5R Dielectric Capacitance Range

PREFERRED SIZES ARE SHADED

Case Size	0101*		0201					0402					0603						0805								
Soldering	Reflow Only		Reflow Only					Reflow/Wave					Reflow/Wave						Reflow/Wave								
Packaging	Paper/Embossed		All Paper					All Paper					All Paper						Paper/Embossed								
(L) Length	mm 0.40 ± 0.02 (0.016 ± 0.0008)		mm 0.60 ± 0.09 (0.024 ± 0.004)					mm 1.00 ± 0.20 (0.040 ± 0.008)					mm 1.60 ± 0.20 (0.063 ± 0.008)						mm 2.01 ± 0.20 (0.079 ± 0.008)								
(W) Width	mm 0.20 ± 0.02 (0.008 ± 0.0008)		mm 0.30 ± 0.09 (0.011 ± 0.004)					mm 0.50 ± 0.20 (0.020 ± 0.008)					mm 0.80 ± 0.20 (0.031 ± 0.008)						mm 1.25 ± 0.20 (0.049 ± 0.008)								
(t) Terminal	mm 0.10 ± 0.04 (0.004 ± 0.0016)		mm 0.15 ± 0.05 (0.006 ± 0.002)					mm 0.25 ± 0.10 (0.010 ± 0.004)					mm 0.35 ± 0.15 (0.014 ± 0.006)						mm 0.50 ± 0.25 (0.020 ± 0.010)								
Voltage:	6.3	10	4	6.3	10	16	25	4	6.3	10	16	25	50	4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50
Cap (pF) 100 101		B					A																				
150 151		B					A																				
220 221		B					A						C														
330 331		B					A						C														
470 471		B					A						C														
680 681		B					A						C														
1000 102		B					A	A					C														
1500 152	B	B					A	A	A				C														
2200 222	B	B				A	A	A					C														
3300 332	B	B				A	A	A					C														
4700 472	B	B				A	A	A					C														
6800 682	B	B				A	A	A					C														
Cap (µF) 0.01 103	B	B				A	A	A					C														
0.015 153	B												C														
0.022 223	B			A	A	A	A						C	C													N
0.033 333	B												C														N
0.047 473	B			A	A	A	A						C	C													N
0.068 689	B												C														N
0.1 104	B			A	A	A	A						C	C	C	C											N
0.15 154																											N
0.22 224	B			A	A	A							C	C	C	C	C										N
0.33 334																											N
0.47 474	B			A	A								C	C	C	C	C	E									N
0.68 684																											N
1.0 105				A	A	C	C						C	C	C	C	C										N
1.5 155																											N
2.2 225				C	C	C							C	C	C	C	C										N
3.3 335																											N
4.7 475				C	C								E	E	E	E											N
10 106													E	E	E												N
22 226													E	G													N
47 476																											N
100 107																											N
Voltage:	6.3	10	4	6.3	10	16	25	4	6.3	10	16	25	50	4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50
Case Size	0101*		0201					0402					0603						0805								

Letter	A	B	C	E	G	J	K	M	N	P	Q	X	Y	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 (0.057)	1.78 (0.070)	2.29 (0.090)	2.54 (0.100)	2.79 (0.110)
	PAPER						EMBOSSSED							

PAPER and EMBOSSSED available for 01005
 NOTE: Contact factory for non-specified capacitance values
 *EIA 01005



X5R Dielectric Capacitance Range

PREFERRED SIZES ARE SHADED

Case Size			1206							1210							1812						
Soldering			Reflow/Wave							Reflow Only							Reflow Only						
Packaging			Paper/Embossed							Paper/Embossed							All Embossed						
(L) Length	mm	(in.)	3.20 ± 0.40 (0.126 ± 0.016)							3.20 ± 0.40 (0.126 ± 0.016)							4.50 ± 0.30 (0.177 ± 0.012)						
(W) Width	mm	(in.)	1.60 ± 0.30 (0.063 ± 0.012)							2.50 ± 0.30 (0.098 ± 0.012)							3.20 ± 0.20 (0.126 ± 0.008)						
(t) Terminal	mm	(in.)	0.50 ± 0.25 (0.020 ± 0.010)							0.50 ± 0.25 (0.020 ± 0.010)							0.61 ± 0.36 (0.024 ± 0.014)						
Voltage:			4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50
Cap (pF)	100	101																					
	150	151																					
	220	221																					
	330	331																					
	470	471																					
	680	681																					
	1000	102																					
	1500	152																					
	2200	222																					
	3300	332																					
	4700	472																					
	6800	682																					
Cap (µF)	0.01	103																					
	0.015	150																					
	0.022	223																					
	0.033	333																					
	0.047	473																					
	0.068	689																					
	0.1	104																					
	0.15	154																					
	0.22	224																					
	0.33	334																					
	0.47	474					Q	Q						X	X								
	0.68	684																					
	1.0	105					Q	Q	Q					X	X	X							
	1.5	155																					
	2.2	225				Q	Q	Q	Q	Q				X	Z	Z							
	3.3	335		Q	Q																		
	4.7	475	X	X	X	X	X	X	X			Z	Z	Z	Z	Z							
	10	106	X	X	X	X	X	X	X		X	X	Z	Z	Z	Z						Z	
	22	226	X	X	X	X	X				Z	Z	Z	Z	Z			Z	Z	Z	Z		
	47	476	X	X	X	X					Z	Z	Z	Z	Z								
	100	107	X	X							Z	Z											
Voltage:			4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50	4	6.3	10	16	25	35	50
Case Size			1206							1210							1812						

Letter	A	B	C	E	G	J	K	M	N	P	Q	X	Y	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 (0.057)	1.78 (0.070)	2.29 (0.090)	2.54 (0.100)	2.79 (0.110)
	PAPER						EMBOSSSED							

PAPER and EMBOSSSED available for 01005

NOTE: Contact factory for non-specified capacitance values
*EIA 01005

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we stricly control the quality of products and services. Welcome your RFQ to

Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.