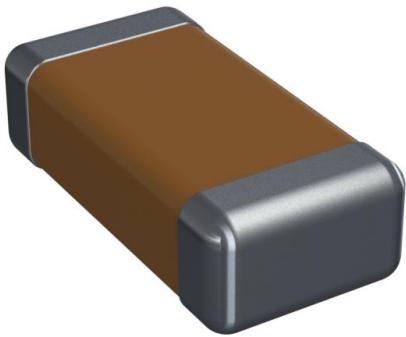


KGM31TR72D102MU Datasheet

www.digi-electronics.com



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

DiGi Electronics Part Number	KGM31TR72D102MU-DG
Manufacturer	KYOCERA AVX
Manufacturer Product Number	KGM31TR72D102MU
Description	CAP CER 1000PF 200V X7R 1206
Detailed Description	1000 pF ±20% 200V Ceramic Capacitor X7R 1206 (3 216 Metric)

This model KGM31TR72D102MU is available at DiGi Electronics.

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

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RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

KGM31TR72D102MU

Series:

KGM - X7R

Capacitance:

1000 pF

Voltage - Rated:

200V

Operating Temperature:

-55°C ~ 125°C

Ratings:

-

Failure Rate:

-

Package / Case:

1206 (3216 Metric)

Height - Seated (Max):

-

Lead Spacing:

-

Manufacturer:

KYOCERA AVX

Product Status:

Active

Tolerance:

±20%

Temperature Coefficient:

X7R

Features:

-

Applications:

General Purpose

Mounting Type:

Surface Mount, MLCC

Size / Dimension:

0.126" L x 0.063" W (3.20mm x 1.60mm)

Thickness (Max):

0.053" (1.35mm)

Lead Style:

-

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8532.24.0020

Moisture Sensitivity Level (MSL):

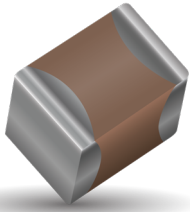
1 (Unlimited)

ECCN:

EAR99

X7R Dielectric, KGM Series

General Specifications



The X7R dielectric is the most popular of the intermediate EIA class II materials due to its relative temperature stability. While the capacitance change is non-linear, temperature variation is within $\pm 15\%$ from -55°C to $+125^{\circ}\text{C}$.

Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency. X7R dielectric chip usage covers a broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.

SpicAT is an additional online resource that KYOCERA AVX offers to help create engineering simulations. Please visit spicat.kyocera-avx.com for more information.

HOW TO ORDER

KGM

Series
General Purpose
Tin/Nickel Finish

03

Size
02= 01005 32= 1210
03= 0201 43= 1812
05= 0402 44= 1825
15= 0603 55= 2220
21= 0805 56= 2225
31= 1206

A

Thickness
See Cap Chart

R7

Dielectric
R7 = X7R

1E

Voltage
0G = 4.0V 1H = 50V
0J = 6.3V 2A = 100V
1A = 10V 2D = 200V
1C = 16V 2E = 250V
1E = 25V 2H = 500V

101

Capacitance Code
2 Significant Digits +
Number of zeros
eg. 106 = $10\mu\text{F}$
103 = 10nF

M

Tolerance
J* = $\pm 5\%$
K = $\pm 10\%$
M = $\pm 20\%$

* $\leq 1\mu\text{F}$ only, contact
factory for additional
values

N

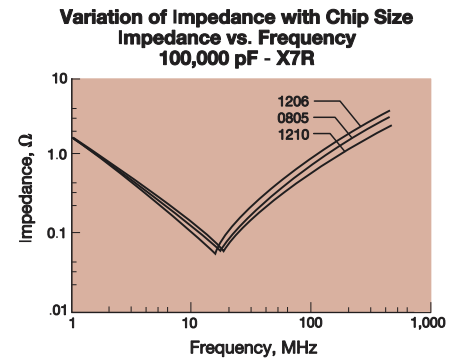
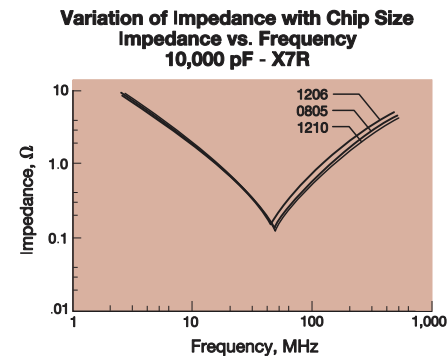
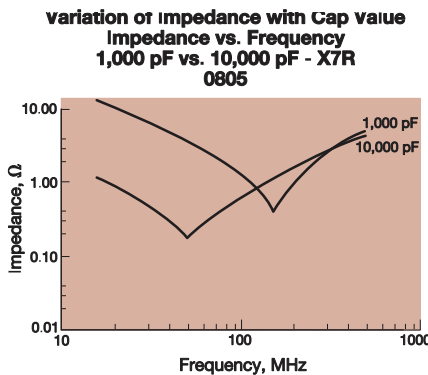
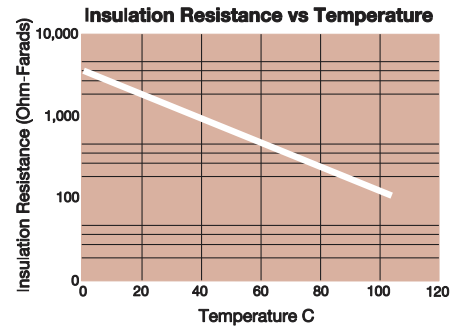
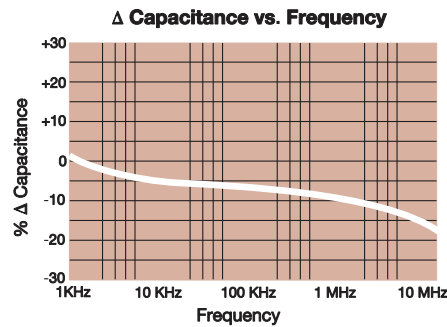
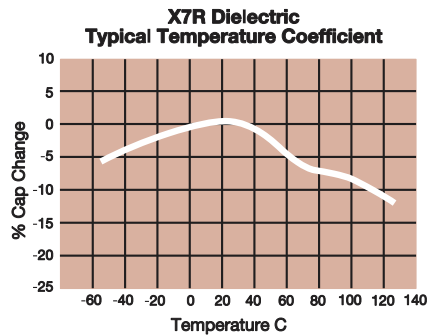
Packaging
See Table Below



PACKAGING CODES

Code	EIA (inch)	IEC(mm)	7" Paper	7" Embossed	13" Paper	13" Embossed
02	01005	0402	H			
03	0201	0603	H		N	
05	0402	1005	H		N	
15	0603	1608	T		M	
21	0805	2012	T	U	M	L
31	1206	3216	T	U	M	L
32	1210	3225		U		L
43	1812	4532		V		S
44	1825	4564		V		S
55	2220	5750		V		S
56	2225	5763		V		S

*Note: The thickness determines if packaging is paper or embossed.



X7R Dielectric, KGM Series

Specifications and Test Methods

Parameter/Test		X7R Specification Limits	Measuring Conditions (Complies with JIS C5101 / IEC60384)									
Operating Temperature Range		-55°C to +125°C	Temperature Cycle Chamber									
Capacitance		Within specified tolerance	Measure after heat treatment									
Dissipation Factor / Tanδ		Refer to https://spicat.kyocera-avx.com for individual part number specification	Capacitance Frequency Volt C≤10μF Frequency : 1kHz±10% Volt : 1.0±0.2Vrms *0.5±0.2Vrms C>10μF Frequency : 120Hz±10% Volt : 0.5±0.2Vrms The charge and discharge current of the capacitor must not exceed 50mA.									
Insulation Resistance		Refer to https://spicat.kyocera-avx.com for individual part number specification	Apply the rated voltage for 1 minute, and measure it in normal temperature and humidity. The charge and discharge current of the capacitor must not exceed 50mA.									
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.									
Bending Strength		No significant damage with 1mm bending	Glass epoxy PCB: Fulcrum spacing: 90mm, duration time 10 seconds.									
Solderability		Solder coverage : 95% min.	Soaking condition Sn-3Ag-0.5Cu 245±5°C 3±0.5 sec.									
Resistance to Solder Heat	Appearance	No problem observed	Take the initial value after heat treatment. Soak the sample in 260°C±5°C solder for 10±0.5 seconds and place in normal temperature and humidity, and measure after heat treatment. (Pre-heating conditions) <table border="1"> <thead> <tr> <th>Order</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>80 to 100°C</td> <td>2 minutes</td> </tr> <tr> <td>2</td> <td>150 to 200°C</td> <td>2 minutes</td> </tr> </tbody> </table> The charge and discharge current of the capacitor must not exceed 50mA for IR and withstanding voltage measurement.	Order	Temperature	Time	1	80 to 100°C	2 minutes	2	150 to 200°C	2 minutes
	Order	Temperature		Time								
	1	80 to 100°C		2 minutes								
	2	150 to 200°C		2 minutes								
Capacitance Variation	≤ ±7.5%											
Dissipation Factor / Tanδ	Within specification											
Insulation Resistance	Within specification											
Withstanding Voltage / Dielectric Strength	Resist without problem											
Thermal Shock	Appearance	No visual defects	Take the initial value after heat treatment. (Cycle) Room temperature (3 min.)→ Lowest operation temperature (30 min.)→ Room temperature (3 min.)→ Highest operation temperature(30 min.) After 5 cycles, measure after heat treatment. The charge and discharge current of the capacitor must not exceed 50mA for IR and withstanding voltage measurement.									
	Capacitance Variation	≤ ±7.5%										
	Dissipation Factor	Within specification										
	Insulation Resistance	Within specification										
Withstanding Voltage / Dielectric Strength	Resist without problem											
Load Life	Appearance	No visual defects	Take the initial value after heat treatment. After applying *1.5 the rated voltage at the highest operation temperature for 1000+12/ -0 hours, and measure the sample after heat treatment in normal temperature and humidity. The charge and discharge current of the capacitor must not exceed 50mA for IR measurement. *Apply 1.0 times when the rated voltage is 4V or less. Applied voltages for respective products are indicated in the chart below.									
	Capacitance Variation	≤ ±12.5%										
	Dissipation Factor / Tanδ	≤ Initial Value x 2.0 (See Above)										
	Insulation Resistance	Over 1000MΩ or 50MΩ · μF, whichever is less. *Exceptions Listed Below										
Load Humidity	Appearance	No visual defects	Take the initial value after heat treatment. After applying rated voltage for 500+12/ -0 hours in the condition of 40°C ± 2°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.									
	Capacitance Variation	≤ ±12.5%										
	Dissipation Factor / Tanδ	Within specification										
	Insulation Resistance	Over 1000MΩ or 50MΩ · μF, whichever is less. *Exceptions Listed Below										
Appearance		No problem observed	Microscope									
Termination Strength		No problem observed	Apply a sideward force of 500g (5N) to a PCB-mounted sample. note : 2N for 0201 size, and 1N for 01005 size.									
Vibration	Appearance	No problem observed	Take the initial value after heat treatment. Vibration frequency: 10 to 55 (Hz) Amplitude: 1.5mm Sweeping condition: 10 → 55 → 10Hz/ 1 minute in X, Y and Z directions: 2 hours each, 6 hours in total, and place in normal temperature and humidity, then measure the sample after heat treatment.									
	Capacitance	Within tolerance										
	Tanδ	Within tolerance										
Heat Treatment		Expose sample in the temperature of 150+0/ -10°C for 1 hour and leave the sample in normal temperature and humidity for 24±2 hours.										

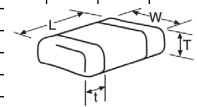
Voltage to be applied in the High Temperature Load (Applied voltage is the multiple of the rated voltage)



X7R Dielectric, KGM Series

Capacitance Range

SIZE	1210								1812					1825				2220					2225								
Soldering	Reflow Only								Reflow Only					Reflow Only				Reflow Only					Reflow Only								
Packaging	Paper/Embossed								All Embossed					All Embossed				All Embossed					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	500	25	50	100	200	500	50	100	200	500					
Cap 100 (pF)	101																														
220 (pF)	221	R	R	R	R	R	R	D																							
330 (pF)	331	R	R	R	R	R	R	D	A	A	A	A	A	A																	
470 (pF)	471	R	R	R	R	R	R	D	A	A	A	A	A	A																	
680 (pF)	681	R	R	R	R	R	R	D	A	A	A	A	A	A																	
1000 (pF)	102	R	R	R	R	R	R	D	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
1500 (pF)	152	R	R	R	R	R	R	D	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
2200 (pF)	222	R	R	R	R	R	R	D	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
3300 (pF)	332	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
3900 (pF)	392	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
4700 (pF)	472	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
5600 (pF)	562	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
6800 (pF)	682	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
Cap 0.010 (µF)	103	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.012 (µF)	123	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.015 (µF)	153	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.018 (µF)	183	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.022 (µF)	223	R	R	R	R	R	R	E	A	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.027 (µF)	273	R	R	R	R	R	R	E	H	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.033 (µF)	333	R	R	R	R	R	R	E	H	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.039 (µF)	393	R	R	R	R	R	R	E	H	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.047 (µF)	473	R	R	R	R	R	R	E	H	A	A	A	A	B	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.068 (µF)	683	R	R	R	R	R	R	H	P	A	A	A	A	B	F	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.082 (µF)	823	R	R	R	R	R	R	H	P	A	A	A	A	B	F	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.100 (µF)	104	R	R	R	R	R	R	H	P	A	A	A	A	B	F	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.120 (µF)	124	R	R	R	R	R	R	H		A	A	A	B	B	J	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.150 (µF)	154	E	E	E	E	E	E	L		A	A	A	B	F	J	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.220 (µF)	224	E	E	E	E	E	E	L		A	A	A	B	F	J	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D
0.330 (µF)	334	E	E	E	E	H	L		A	A	A	B	F	J	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.470 (µF)	474	E	E	E	E	L	L		A	A	A	F	F	J	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	
0.680 (µF)	684	E	E	E	E	L	L		F	F	F	F	J		C	C	C		Z	Z	Z	Z	Z	C	D	D	D	D	G		
1.000 (µF)	105	E	E	E	E	G	L		F	F	F	F	J		C	C	C		Z	Z	Z	Z	Z	C	D	D	D	D	G		
2.200 (µF)	225	L	L	L	L	L			F	F	F	J			C	C	F		Z	Z	Z	C				D	D	D	G		
4.700 (µF)	475	L	L	L	L	L			J	J	J	J			C	F			Z	C	C					D	G				
10 (µF)	106	L	L	L	L	A			J	J	J				F	F			C	C	D					G	G				
22 (µF)	226	L	A	L															D	D	H										
47 (µF)	476	L																													
100 (µF)	107																														
WVDC	10	16	25	50	100	200	500	16	25	50	100	200	500	50	100	200	500	25	50	100	200	500	50	100	200	500					
SIZE	1210								1812					1825				2220					2225								



Case Size	1210 (KGM 32)								1812 (KGM 43)				1825 (KGM 44)				2220 (KGM 55)				2225 (KGM56)		
Thickness Letter	R	D	E	G	H	P	A	L	A	B	F	J	C	F	Z	C	D	H	D	G			
Max Thickness (mm)	1.05	1.4	1.45	1.78	1.8	2.2	2.70	2.80	1.4	1.45	2.21	2.80	2.21	2.80	2.21	2.80	3.3	3.4	2.21	2.80			
Carrier Tape	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB			
Packaging Code 7" reel	U	U	U	U	U	U	U	U	V	V	V	V	V	V	V	V	V	V	V	V			
Packaging Code 13" reel	L	L	L	L	L	L	L	L	S	S	S	S	S	S	S	S	S	S	S	S			

EMBOSSED (EMB)

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