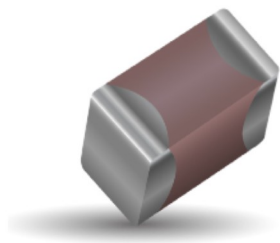


X5R Dielectric, KGM Series

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 $100\mu\text{F}$)

HOW TO ORDER

KGM	03	A	R5	1E	101	M	N
Series	Size	Thickness	Dielectric	Voltage	Capacitance Code Code (in pF)	Capacitance Tolerance	Packaging
General Purpose Tin/Nickel Finish	02 = 01005 03 = 0201 05 = 0402 15 = 0603 21 = 0805 31 = 1206 32 = 1210 43 = 1812	See Cap Chart	R5 = X5R	0G = 4.0V 0J = 6.3V 1A = 10V 1C = 16V 1V = 35V 1E = 25V 1H = 50V	Two Significant Digits + Number of zeroes eg. 106 = $10\mu\text{F}$ 103 = 10nF 470 = 47pF	J* = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	See Table Below

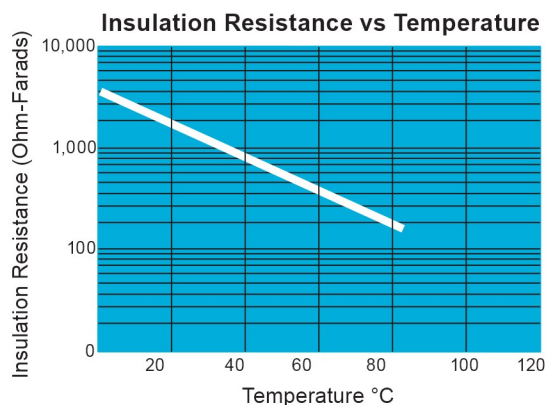
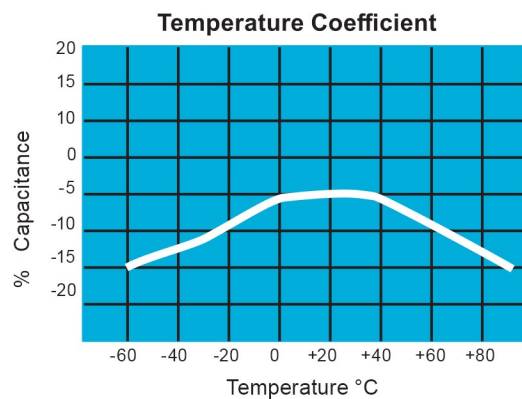
NOTE: Contact factory for availability of Tolerance Options for Specific Part Numbers.
Contact factory for non-specified capacitance values.



PACKAGING CODES

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

TYPICAL ELECTRICAL CHARACTERISTICS



X5R Dielectric, KGM Series

Specifications and Test Methods



X5R Specification Limits		Measuring Conditions (Complies with JIS C5101 / IEC60384)	
Operating Temperature Range		Temperature Cycle Chamber	
Capacitance		Measure after heat treatment Capacitance Frequency Volt C≤10μF Frequency: 1KHz±10% Volt: 1.0±0.2Vrms *0.5±0.2Vrms * KGM02AR50J104, KGM02AR50J474, KGM03CR50J225, KGM03BR50J225 KGM03DR50J475, KGM03CR50G475, KGM05CR50J106 C>10μF Frequency: 120Hz±10% Volt: 0.5±0.2Vrms The charge and discharge current of the capacitor must not exceed 50mA.	
Dissipation Factor / Tanδ		Refer to https://spicat.kyocera-avx.com for individual part number specification	
Insulation Resistance		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		Charge device with 250% of rated voltage for 1-5 seconds, w/ charge and discharge current limited to 50 mA (max) * KGM31AR52A225: 200% of rated voltage	
Bending Strength		Glass epoxy PCB: Fulcrum spacing: 90mm, duration time 10 seconds.	
Solderability		Soaking condition Sn-3Ag-0.5Cu 245±5°C 3±0.5 sec.	
Resistance to Solder Heat	Appearance	No problem observed	
	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	
	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	
	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	
	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	
Termination Strength		No problem observed	
Vibration	Appearance	No problem observed	
	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)

Rated Voltage		Products
×1.0	6.3V	KGM02AR50J224, KGM02AR50J474, KGM03BR50J225, KGM03CR50J225, KGM03DR50J475, KGM05CR50J106, KGM05BR50J156, KGM05DR50J226, KGM21AR50J476
	10V	KGM02AR51A104, KGM03CR51A225, KGM15CR51A226
	16V	KGM03CR51C105, KGM05AR51C225, KGM05CR51C475, KGM15CR51C226
	25V	KGM05AR51E105, KGM05AR51E225, KGM05CR51E225, KGM05CR51E475, KGM15CR51E475, KGM15CR51E106, KGM21AR51E226
	35V	KGM05AR51V105, KGM15CR51V475, KGM15CR51V106
	100V	KGM31AR52A225
×1.2	6.3V	KGM03BR50J105
×1.3	6.3V	KGM02AR50J153-104, KGM03AR50J474
	10V	KGM03AR51A223-224, KGM05AR51A105-225
	16V	KGM05AR51C105

<Load Life / Load Humidity>Insulation Resistance : Over 10MΩ·μF

X5R / R5	03	KGM03BR51A105, KGM03CR51C224, KGM03CR51E224
	05	KGM05BR51A475, KGM05CR51A106, KGM05CR51V225



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

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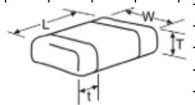
— SURFACE MOUNT CERAMIC CAPACITOR PRODUCTS —

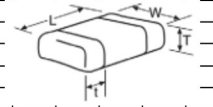
X5R Dielectric, KGM Series

Capacitance Range



Case Size		01005			0201			0402					0603						0805											
Soldering		Reflow Only			Reflow Only			Reflow/Wave					Reflow/Wave						Reflow/Wave											
Packaging		Paper/Embossed			All Paper			All Paper					All Paper						All Embossed											
(L) Length	mm (in.)	0.40 ± 0.02 (0.016 ± 0.0008)			0.60 ± 0.09 (0.024 ± 0.004)			1.00 ± 0.20 (0.040 ± 0.008)					1.60 ± 0.20 (0.063 ± 0.008)						2.01 ± 0.20 (0.079 ± 0.008)											
(W) Width	mm (in.)	0.20 ± 0.02 (0.008 ± 0.0008)			0.30 ± 0.09 (0.011 ± 0.004)			0.50 ± 0.20 (0.020 ± 0.008)					0.80 ± 0.20 (0.031 ± 0.008)						1.25 ± 0.20 (0.049 ± 0.008)											
(t) Terminal	mm (in.)	0.10 ± 0.04 (0.004 ± 0.0016)			0.15 ± 0.05 (0.006 ± 0.002)			0.25 ± 0.10 (0.010 ± 0.004)					0.35 ± 0.15 (0.014 ± 0.006)						0.50 ± 0.25 (0.020 ± 0.010)											
Voltage:		6.3	10	16	4	6.3	10	16	25	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	A	A					A																					
	150	151	A	A					A																					
	220	221	A	A					A							A														
	330	331	A	A					A							A														
	470	471	A	A					A							A														
	680	681	A	A					A							A														
	1000	102	A	A					A							A														
	1500	152	A	A	A				A	A						A														
	2200	222	A	A	A				A	A	A					A														
	3300	332	A	A	A				A	A	A					A														
	4700	472	A	A	A				A	A	A					A														
	6800	682	A	A	A				A	A	A					A														
Cap (μF)	0.010	103	A	A	A				A	A	A					A														
	0.015	153	A													A														
	0.022	223	A						A	A	A	A																	K	
	0.033	333	A						A																				K	
	0.047	473	A						A	A	A	A																	K	
	0.068	683	A						A																				K	
	0.10	104	A	A					A	A	A	A	B															K	K	
	0.15	154																										K	K	
	0.22	224	A						A	A	A	A	A															K	K	
	0.33	334																										A	K	
	0.47	474	A						A	A	A	F	H															A	A	
	0.68	684																										A	A	
	1	105							B	B	C	C																A	A	
	2.2	225							C	B/C	C																	A	A	
	4.7	475							C	D																		A	A	
	10	106							H	C	C	C	C	C														A	A	
	15	156							C	C	C																	A	A	
	22	226							C	D																		A	A	
	47	476																										A	A	
	100	107																										A	A	
Voltage:		6.3	10	16	4	6.3	10	16	25	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		01005			0201			0402					0603						0805											





Case Size	01005 (KGM 02)	0201 (KGM03)				0402 (KGM05)						0603 (KGM15)				0805 (KGM21)	
Thickness Letter	A	A	B	C	D	A	F	B	C	H	D	A	B	C	D	K	A
Max Thickness (mm)	0.22	0.33	0.35	0.39	0.55	0.56	0.6	0.65	0.70	0.75	0.8	0.90	0.95	1	1.02	1.40	1.45
Carrier Tape	PAPER	PAPER				PAPER						PAPER				EMB	
Packaging Code 7"reel	H	H	H	H	H	H	H	H	H	H	H	T	T	T	T	U	U
Packaging Code 13"reel	P	N	N	N	N	N	N	N	N	N	N	M	M	M	M	L	L
PAPER												EMBOSS (EMB)					

X5R Dielectric, KGM Series

Capacitance Range



PREFERRED SIZES ARE SHADED

[illegible]

Case Size	1206 (KGM 31)			1210 (KGM 32)					1812 (KGM 43)
Thickness Letter	M	A	H	C	E	J	A	L	J
Max Thickness (mm)	1.25	1.8	1.9	1.27	1.45	2.21	2.7	2.80	2.80
Carrier Tape	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB
Packaging Code 7"reel	U	U	U	U	U	U	U	U	V
Packaging Code 13"reel	L	L	L	L	L	L	L	L	S
	EMBOSSED (EMB)								