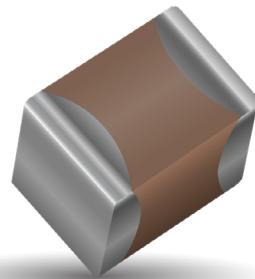


X6S Dielectric, KGM Series

General Specifications



FEATURES

- Offered in a complete range of products for both general and specialized applications and designed to meet a wide variety of needs.
- We have a worldwide network in order to supply our global customer bases quickly and efficiently.
- All of our products are highly reliable due to their monolithic structure of high-purity and superfine uniform ceramics and their integral internal electrodes.
- By combining superior manufacturing technology and materials with high dielectric constants, we produce extremely compact components with exceptional specifications.
- Our stringent quality control at every phase of production from material procurement to shipping ensures consistent manufacturing and superior quality.

DIELECTRIC CHARACTERISTICS

- Temperature Range: -55 to + 105°C
- Standard Temperature: 25°C
- ΔC Max: ±22%

HOW TO ORDER

KGM	05	H	S6	0G	106	M	N
General Purpose Tin/ Nickel Finish	Size 03 = 0201 05 = 0402 15 = 0603 21 = 0805	Thickness See Cap Chart	Dielectric S6 = X6S	Voltage 0E = 2.5V 0G = 4.0V 0J = 6.3V 1A = 10V 1C = 16V 1E = 25V	Capacitance Code Code (in pF) 2 Significant Digits +Number of zeros eg. 10μF = 106 10nF = 103 47pF = 470	Capacitance Tolerance K = ±10% M = ±20%	Packaging See Table Below

PACKAGING CODES

Code	EIA (inch)	IEC(mm)	7" Paper	7" Embossed	13" Paper	13" Embossed
03	0201	0603	H		N	
05	0402	1005	H		N	
15	0603	1608	T		M	
21	0805	2012		U		L

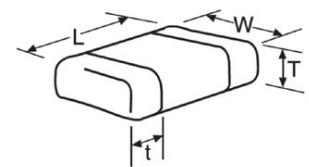
*Note: The thickness determines if packaging is paper or embossed.



CAPACITANCE RANGE

SIZE	0201				0402				0603				0805			
Packaging	All Paper				All Paper				All Paper				All Embossed			
(L) Length mm (in.)	0.60 ± 0.09 (0.024 ± 0.004)				1.00 ± 0.20 (0.040 ± 0.002)				1.60 ± 0.20 (0.063 ± 0.008)				2.01 ± 0.20 (0.079 ± 0.008)			
(W) Width mm (in.)	0.30 ± 0.09 (0.011 ± 0.004)				0.50 ± 0.20 (0.020 ± 0.008)				0.80 ± 0.20 (0.030 ± 0.008)				1.25 ± 0.20 (0.049 ± 0.008)			
(t) Terminal mm. (in.)	0.18 ± 0.005 (0.007 ± 0.002)				0.25 ± 0.10 (0.010 ± 0.004)				0.40 ± 0.20 (0.016 ± 0.008)				0.50 ± 0.25 (0.020 ± 0.010)			
WVDC	2.5	4	6.3	10	4	6.3	10	16	25	2.5	4	6.3	10	16	25	4
Cap (μF)	0.47					A	A									
1.0	C	C	C		A	A										
2.2						A										
4.7	D				B/C	C					A		C			
10				H	C						C	C	C			F
22				D										A	A	A
47										C	C				A	
100																
WVDC	2.5	4	6.3	10	4	6.3	10	16	25	2.5	4	6.3	10	16	25	4
Size	0201				0402				0603				0805			

Case Size	0201 (KGM03)		0402 (KGM05)						0603 (KGM15)		0805 (KGM21)	
Thickness Letter	C	D	A	B	C	H	D	A	C	A	F	
Max Thickness(mm)	0.39	0.55	0.55	0.65	0.70	0.75	0.8	0.90	1.00	1.45	1.52	
Carrier Tape	PAPER						PAPER					
Packaging Code 7"reel	H	H	H	H	H	H	H	T	T	U	U	
Packaging Code 13"reel	N	N	N	N	N	N	N	M	M	L	L	
	PAPER										Embossed (EMB)	



X6S Dielectric, KGM Series

Specifications and Test Methods



X6S Specification Limits		X6S Specification Limits		Measuring Conditions (Complies with JIS C5101 / IEC60384)	
Operating Temperature Range		-55°C to +105°C		Temperature Cycle Chamber	
Capacitance		Within specified tolerance		Measure after heat treatment Capacitance Frequency Volt C \leq 10 μ F Frequency : 1kHz \pm 10% Volt : 1.0 \pm 0.2Vrms *0.5 \pm 0.2Vrms	
Dissipation Factor / Tan δ				C $>$ 10 μ F Frequency : 120Hz \pm 10% Volt : 0.5 \pm 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% rated voltage for 500V devices	
Bending Strength		No significant damage with 1mm bending		Glass epoxy PCB: Fulcrum spacing: 90mm, duration time 10 seconds.	
Solderability				Soaking condition Sn-3Ag-0.5Cu 245 \pm 5°C 3 \pm 0.5 sec.	
Resistance to Solder Heat	Appearance	No problem observed		Take the initial value after heat treatment. Soak the sample in 260°C \pm 5°C solder for 10 \pm 0.5 seconds and place in normal temperature and humidity, and measure after heat treatment. (Pre-heating conditions) Order 1 Temperature 80 to 100°C Time 2 minutes Order 2 150 to 200°C 2 minutes	
	Capacitance Variation	\leq 7.5%		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
	Dissipation Factor / Tan δ	Within specification		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
	Insulation Resistance	Within specification		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
	Withstanding Voltage / Dielectric Strength	Resist without problem		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
Thermal Shock	Appearance	No visual defects		Take the initial value after heat treatment. (Cycle) Room temperature (3 min.) \rightarrow Lowest operation temperature (30 min.) \rightarrow Room temperature (3 min.) \rightarrow Highest operation temperature (30 min.) After 5 cycles, measure after heat treatment.	
	Capacitance Variation	\leq 7.5%		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Dissipation Factor	Within specification		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Insulation Resistance	Within specification		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
	Withstanding Voltage / Dielectric Strength	Resist without problem		The charge and discharge current of the capacitor must not exceed 50mA for IR and withstand voltage measurement.	
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	\leq 12.5%		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Dissipation Factor / Tan δ	\leq Initial Value x 2.0 (See Above)		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Insulation Resistance	Over 1000M Ω or 50M Ω · μ F, whichever is less. *Exceptions Listed Below		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
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 \pm 2°C and 90 to 95%RH, and place in normal temperature and humidity, then measure the sample after heat treatment.	
	Capacitance Variation	\leq 12.5%		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Dissipation Factor / Tan δ	Within specification		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
	Insulation Resistance	Over 1000M Ω or 50M Ω · μ F, whichever is less. *Exceptions Listed Below		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
Appearance				Microscope	
Termination Strength				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	
	Capacitance	Within tolerance		Sweeping condition: 10 \rightarrow 55 \rightarrow 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	
	Tan δ	Within tolerance		The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.	
Heat treatment		Expose sample in the temperature of 150 \pm 0/-10°C for 1 hour and leave the sample in normal temperature and humidity for 24 \pm 2 hours.			

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

Rated Voltage		
x1.0	2.5V	KGM03DS60E475
	4V	KGM03CS60G105, KGM05DS60G226, KGM15CS60G226, KGM21AS60G476
	6.3V	KGM03CS60J105, KGM05BS60J475, KGM05CS60J106, KGM15CS60J226
	10V	KGM03CS61A105, KGM05AS61A474, KGM05AS61A105, KGM05CS61A475, KGM15CS61A226, KGM21AS61A226
	16V	KGM05AS61C474, KGM05AS61C225, KGM15CS61C106, KGM21AS61C226
	25V	KGM05AS61E105

Load Life / Load Humidity > Insulation Resistance: Over 10M Ω · μ F

S6	03	KGM03DS60E475, KGM03CS60G105, KGM03CS60J105, KGM03CS61A105
	05	KGM05DS60G226, KGM05CS60J475, KGM05BS60J475, KGM05CS60J106, KGM05AS61A474, KGM05AS61A105, KGM05CS61A475, KGM05AS61C474, KGM05AS61C225
	15	KGM15CS60G226, KGM15CS60J226, KGM15CS61A106, KGM15CS61A226, KGM15CS61C106
	21	KGM21AS60G476, KGM21AS60J226, KGM21AS61A226, KGM21AS61C226



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