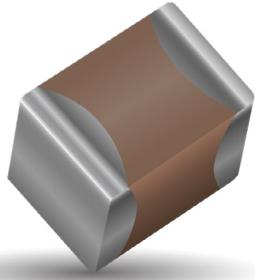


High Voltage MLC Chips, KGM Series

For 600V to 5000V Applications



High value, low leakage and small size are difficult parameters to obtain in capacitors for high voltage systems. KYOCERA AVX special high voltage MLC chip capacitors meet these performance characteristics and are designed for applications such as snubbers in high frequency power converters, resonators in SMPS, and high voltage coupling/dc blocking. These high voltage chip designs exhibit low ESRs at high frequencies.

Larger physical sizes than normally encountered chips are used to make high voltage MLC chip products. Special precautions must be taken in applying these chips in surface mount assemblies. The temperature gradient during heating or cooling cycles should not exceed 4°C per second. The preheat temperature must be within 50°C of the peak temperature reached by the ceramic bodies through the soldering process. Chip sizes 1210 and larger should be reflow soldered only. Capacitors may require protective surface coating to prevent external arcing.

For 1825, 2225 and 3640 sizes, KYOCERA AVX offers leaded version in either thru-hole or SMT configurations (for details see section on high voltage leaded MLC chips)

NEW 630V RANGE

HOW TO ORDER

KGM	21	A	CG	2J	102	F	L
Series	Size	Thickness	Dielectric	Voltage	Capacitance Code Code (in pF)	Capacitance Tolerance	Packaging
General Purpose Tin/Nickel Finish	02= 0101 03= 0201 05= 0402 15= 0603 21= 0805 31= 1206	32=1210 43=1812 44=1825 55=2220 56=2225	See Cap Chart C0G = CG	0G = 4.0V 0J = 6.3V 1A = 10V 1C = 16V 1E = 25V 1H = 50V 2A = 100V 2D = 200V 2E = 250V 2H = 500V	2 Significant Digits +Number of zeros eg. 10µF = 106 10nF = 103 47pF = 470	B = ±10 pF (<10pF) C = ±25 pF (<10pF) D = ±50 pF (<10pF) F = ±1% (≥10pF) G = ±2% (≥10pF) J = ±5% (≥10pF) K = ±10% (≥10pF)	See Table Below

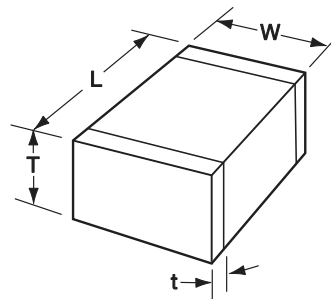


PACKAGING CODES

Code	EIA (inch)	IEC(mm)	7" Paper	7" Embossed	13" Paper	13" Embossed
02	0101	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

* COG ONLY

*thickness determines paper or plastic embossed packaging



DIMENSIONS: millimeters (inches)

SIZE	0805	1206	1210*	1808*	1812*	1825*	2220*	2225*	3640*
(L) Length	2.10 ± 0.20 (0.083 ± 0.008)	3.30 ± 0.30 (0.130 ± 0.012)	3.30 ± 0.40 (0.130 ± 0.016)	4.60 ± 0.50 (0.181 ± 0.020)	4.60 ± 0.50 (0.181 ± 0.020)	4.60 ± 0.50 (0.181 ± 0.020)	5.70 ± 0.50 (0.224 ± 0.020)	5.70 ± 0.50 (0.224 ± 0.020)	9.14 ± 0.25 (0.360 ± 0.010)
(W) Width	1.25 ± 0.20 (0.049 ± 0.008)	1.60 ± 0.30/-0.10 (0.063 ± 0.012/-0.004)	2.50 ± 0.30 (0.098 ± 0.012)	2.00 ± 0.20 (0.079 ± 0.008)	3.20 ± 0.30 (0.126 ± 0.012)	6.30 ± 0.40 (0.248 ± 0.016)	5.00 ± 0.40 (0.197 ± 0.016)	6.30 ± 0.40 (0.248 ± 0.016)	10.2 ± 0.25 (0.400 ± 0.010)
(t) terminal min. max.	0.50 ± 0.20 (0.020 ± 0.008)	0.60 ± 0.20 (0.024 ± 0.008)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.85 ± 0.35 (0.033 ± 0.014)	0.85 ± 0.35 (0.033 ± 0.014)	0.76 (0.030) 1.52 (0.060)

*Reflow Soldering Only



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High Voltage MLC Chips, KGM Series

For 630V to 5000V Applications



NPO (C0G) DIELECTRIC – PERFORMANCE CHARACTERISTICS

Capacitance Range	10 pF to 0.100 μ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz, for $\leq$ 1000 pF use 1 MHz)
Capacitance Tolerances	$\pm$ 5%, $\pm$ 10%, $\pm$ 20%
Dissipation Factor	0.1% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz, for $\leq$ 1000 pF use 1 MHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	0 $\pm$ 30 ppm/°C (0 VDC)
Voltage Ratings	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
Insulation Resistance (+25°C, at 500 VDC)	100K M Ω min. or 1000 M Ω - μ F min., whichever is less
Insulation Resistance (+125°C, at 500 VDC)	10K M Ω min. or 100 M Ω - μ F min., whichever is less
Dielectric Strength	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

NPO (C0G) CAPACITANCE RANGE

Case Size	0805	1206	1210	1808	1812
Soldering	Reflow/Wave	Reflow/Wave	Reflow Only	Reflow Only	Reflow Only
(L) Length	mm (in.) 2.10 $\pm$ 0.20 (0.085 $\pm$ 0.008)	3.30 $\pm$ 0.30 (0.130 $\pm$ 0.012)	3.30 $\pm$ 0.40 (0.130 $\pm$ 0.016)	4.60 $\pm$ 0.50 (0.181 $\pm$ 0.020)	4.60 $\pm$ 0.50 (0.181 $\pm$ 0.020)
(W) Width	mm (in.) 1.25 $\pm$ 0.20 (0.049 $\pm$ 0.008)	1.60 $\pm$ 0.30/-0.10 (0.063 $\pm$ 0.012/-0.004)	2.50 $\pm$ 0.30 (0.098 $\pm$ 0.012)	2.00 $\pm$ 0.20 (0.079 $\pm$ 0.008)	3.20 $\pm$ 0.30 (0.126 $\pm$ 0.012)
(t) Terminal	mm (in.) 0.50 $\pm$ 0.20 (0.020 $\pm$ 0.008)	0.60 $\pm$ 0.20 (0.024 $\pm$ 0.008)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)
Voltage (V)	630 1000	630 1000 1500 2000	630 1000 1500 2000 3000	630 1000 1500 2000 3000 4000	630 1000 1500 2000 3000 4000
0R5 Cap (pF) 0.50	C	E			
1R0 1.0	C	E			
1R2 1.2	C	E			
1R5 1.5	C	E	B	B	B
1R8 1.8	C	E	B	B	B
2R2 2.2	C	E	B	B	B
2R7 2.7	C	E	B	B	B
3R3 3.3	C	E	B	B	B
3R9 3.9	C	E	B	B	B
4R7 4.7	C	E	B	B	B
5R6 5.6	C	E	B	B	B
6R8 6.8	C	E	B	B	B
8R2 8.2	C	E	B	B	B
100 10	C	E	D	D	D
120 12	C	E	D	D	D
150 15	C	E	D	D	D
180 18	C	E	D	D	D
220 22	C	E	D	D	D
270 27	C	E	D	D	D
330 33	C	E	D	D	D
390 39	C	E	D	D	D
470 47	C	E	D	D	D
560 56	C	A	D	D	D
680 68	C	A	D	D	D
820 82	C	A	D	D	D
101 100	C	E	D	D	D
121 120	E	E	D	D	D
151 150	E	E	D	D	D
181 180	E	E	D	D	D
221 220	E	E	D	D	D
271 270	E	E	D	D	D
331 330	E	E	D	D	D
391 390	E	E	D	D	D
471 470	A	D	A	H	H
561 560	A	D	A	H	H
681 680	A	D	A	H	H
751 750	A	A	A	A	A
821 820	A	A	A	A	A
102 1000	A	A	A	A	A
122 1200	A	A	A	A	A
152 1500	A	A	A	A	A
182 1800	A	A	A	A	A
222 2200	A	A	A	A	A
272 2700	A	A	A	A	A
332 3300	A	A	A	A	A
392 3900	A	A	A	A	A
472 4700	A	A	A	A	A
562 5600	G	G	G	G	G
682 6800	G	G	G	G	G
822 8200	G	G	G	G	G
103 Cap (μ F) 0.010	G	G	G	G	G
123 0.012			L	L	L
153 0.015			L	L	L
183 0.018			L	L	L
223 0.022			L	L	L
273 0.027			L	L	L
333 0.033			L	L	L
473 0.047					
563 0.056					
683 0.068					
104 0.100					
Voltage (V)	630 1000	630 1000 1500 2000	630 1000 1500 2000 3000	630 1000 1500 2000 3000 4000	630 1000 1500 2000 3000 4000
Case Size	0805	1206	1210	1808	1812

Case Size	0805 (KGM 21)	1206 (KGM31)	1210 (KGM32)	1808 (KGM42)	1812 (KGM43)
Thickness Letter	C	E	A	B	D
Max Thickness (mm)	0.95	1.35	1.45	0.94	1.45
Carrier Tape	PAPER	EMB	EMB	PAPER	EMB
Packaging Code 7" reel	T	U	U	T	U
Packaging Code 13" reel	M	L	L	M	L
Paper					Embossed(EMB)



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— SURFACE MOUNT CERAMIC CAPACITOR PRODUCTS —

High Voltage MLC Chips, KGM Series

For 630V to 5000V Applications



NP0 (C0G) CAPACITANCE RANGE

SIZE		1825						2220						2225						3640												
Soldering		Reflow Only						Reflow Only						Reflow Only						Reflow Only												
(L) Length	mm	4.60 ± 0.50						5.70 ± 0.50						5.70 ± 0.50						9.14 ± 0.25												
	(in.)	(0.181 ± 0.020)						(0.224 ± 0.020)						(0.224 ± 0.020)						(0.360 ± 0.010)												
(W) Width	mm	6.30 ± 0.40						5.00±0.40						6.30 ± 0.40						10.20 ± 0.25												
	(in.)	(0.248 ± 0.016)						(0.197±0.016)						(0.248 ± 0.016)						(0.400± 0.010)												
(t) Terminal	mm	0.75 ± 0.35						0.85 ± 0.35						0.85 ± 0.35						0.76 (0.030)												
	(in.)	(0.030 ± 0.014)						(0.033 ± 0.014)						(0.033 ± 0.014)						1.52 (0.060)												
Voltage (V)		630	1000	2000	2500	3000	4000	630	1000	1500	2000	2500	3000	4000	5000	630	1000	1500	2000	2500	3000	4000	5000	630	1000	1500	2000	2500	3000	4000	5000	
1R5	Cap (pF) 1.5																															
1R8	1.8																															
2R2	2.2																															
2R7	2.7																															
3R3	3.3																															
3R9	3.9																															
4R7	4.7																															
5R6	5.6																															
6R8	6.8																															
8R2	8.2																															
100	10	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
120	12	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
150	15	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
180	18	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
220	22	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
270	27	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
330	33	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
390	39	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D									
470	47	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G							A	
560	56	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G							A	
680	68	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G							A	
820	82	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G							A	
101	100	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
121	120	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
151	150	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
181	180	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	Z	D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
221	220	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
271	270	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z		D	D	D	D	D	D	D	D	G			A	A	A	A	A	A
331	330	C	C	C	C	C	C	Z	Z	Z	Z	Z	Z	Z		D	D	D	D	D	D	D	D				A	A	A	A	A	A
391	390	C	C	C	C	C		Z	Z	Z	Z	Z	Z	Z		D	D	D	D	D	D	D					A	A	A	A	A	A
471	470	C	C	C	C	C		Z	Z	Z	Z	Z	Z	Z		D	D	D	D	D	D	D					A	A	A	A	A	A
561	560	C	C	C	C	C		Z	Z	Z	Z	Z	Z	Z		D	D	D	D	D	D	D					A	A	A	A	A	A
681	680	C	C	C	F	F		Z	Z	Z	Z	Z	C			D	D	D	D	D	D	D					A	A	A	A	A	A
751	750	C	C	C	F	F		Z	Z	Z	Z	Z	Z			D	D	D	D	D	D	D					A	A	A	A	A	A
821	820	C	C	C	F	F		Z	Z	Z	Z	Z	Z			D	D	D	D	D	D	D					A	A	A	A	A	A
102	1000	C	C	C	F	F		Z	Z	Z	Z	Z	Z			D	D	D	D	D	D	D			A	A	A	A	A	A	A	
122	1200	C	C	C	F			Z	Z	Z	Z	C	C			D	D	D	D	D	D	D			A	A	A	A	A	A	A	
152	1500	C	C	F	F			Z	Z	Z	Z	C	C			D	D	D	D	D	D	D			A	A	A	A	A	A	A	
182	1800	C	C	F	F			Z	Z	Z	Z					D	D	D	D	D	G	G			A	A	A	A	A	A	A	
222	2200	C	C	F				Z	C	C	C					D	D	D	G						A	A	A	A	A	A	A	
272	2700	C	C	F				Z	Z	C	C					D	D	D	D						A	A	A	A	A	A	A	
332	3300	C	C	F				Z	Z	C	C					D	D	D	D						A	A	A	A	A	A	A	
392	3900	C	C	F				Z	Z	C	C					D	D	G	G						A	A	A	A	A	A		
472	4700	C	F	F				Z	C	C	C					D	D	G	G						A	A	A	A				
562	5600	C	F					Z	Z	C						D	D	G	G						A	A	A	A				
682	6800	C	F					Z	Z							D	D	G	G						A	A	A	A				
822	8200	C	F					C	C							G	G								A	A	A					
103	Cap (µF) 0.010	C	F					D	D							G	G								A	A	A					
123	0.012	C	F													G									A	A						
153	0.015	C														G									A	A						
183	0.018	C														G									A	A						
223	0.022	C														G									A	A						
273	0.027	C														G									A							
333	0.033	C														G									A							
393	0.039	F														G									A							
473	0.047															G									A							
563	0.056															G																
683	0.068															G																
104	0.100																															
Voltage (V)		630	1000	2000	2500	3000	4000	630	1000	1500	2000	2500	3000	4000	5000	630	1000	1500	2000	2500	3000	4000	5000	630	1000	1500	2000	2500	3000	4000	5000	
Case Size		1825						2220						2225						3640												

High Voltage MLC Chips, KGM Series

For 630V to 5000V Applications



X7R Dielectric

Performance Characteristics

Capacitance Range	10 pF to 0.82 μ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz)
Capacitance Tolerances	$\pm$ 10%; $\pm$ 20%; +80%, -20%
Dissipation Factor	2.5% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	$\pm$ 15% (0 VDC)
Voltage Ratings	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
Insulation Resistance (+25°C, at 500 VDC)	100K M Ω min. or 1000 M Ω - μ F min., whichever is less
Insulation Resistance (+125°C, at 500 VDC)	10K M Ω min. or 100 M Ω - μ F min., whichever is less
Dielectric Strength	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

X7R CAPACITANCE RANGE

Case Size			0805				1206				1210				1808					1812														
Soldering			Reflow/Wave				Reflow/Wave				Reflow Only				Reflow Only					Reflow Only														
(L) Length	mm (in.)		2.10 ± 0.20 (0.085 ± 0.008)				3.30 ± 0.30 (0.130 ± 0.012)				3.30 ± 0.40 (0.130 ± 0.016)				4.60 ± 0.50 (0.181 ± 0.020)					4.60 ± 0.50 (0.181 ± 0.020)														
(W) Width	mm (in.)		1.25 ± 0.20 (0.049 ± 0.008)				1.60 +0.30/-0.10 (0.063 +0.012/-0.004)				2.50 ± 0.30 (0.098 ± 0.012)				2.00 ± 0.20 (0.079 ± 0.008)					3.20 ± 0.30 (0.126 ± 0.012)														
(t) Terminal	mm max		0.50 ± 0.20 (0.020 ± 0.008)				0.60 ± 0.20 (0.024 ± 0.008)				0.75 ± 0.35 (0.030 ± 0.014)				0.75 ± 0.35 (0.030 ± 0.014)					0.75 ± 0.35 (0.030 ± 0.014)														
Voltage (V)			630		1000		630		1000		1500		2000		630		1000		1500		2000		3000		630		1000		1500		2000		3000	
Cap(µF)	100	101	B	A	D	A	A	A	A	H	H	H	H																					
	120	121	B	A	D	A	A	A	A	H	H	H	H																					
	150	151	B	A	D	A	A	A	A	H	H	H	H																					
	180	181	B	A	D	A	A	A	A	H	H	H	H																					
	220	221	B	A	D	A	A	A	A	H	H	H	H																					
	270	271	B	A	D	A	A	A	A	H	H	H	H												E	E	E	E						
	330	331	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E										
	390	391	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E										
	470	471	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E								E		
	560	561	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E								E		
	680	681	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E								F		
	750	751	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	A	C	E	E	E	E	E								F		
	820	821	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E								F		
	1000	102	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	E	E	E	E	E								F		
	1200	122	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	F	F	F	F	F								F		
	1500	152	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	B	C	F	F	F	F	F								J		
	1800	182	B	A	D	A	A	A	A	H	H	H	H	B	B	B	B	C	C	F	F	F	F	F								J		
	2200	222	B	A	D	A	A	A	A	H	H	J	J	B	B	C	C			F	F	F	F	F								J		
	2700	272	A			D	A	A		H	H	J	L	B	B	C	C			F	F	F	F	F								J		
	3300	332	A			D	A			H	H	J	L	B	B	C	C			F	F	F	F	F								J		
	3900	392	A			D	A			H	H	J		B	B	C				F	F	F	F	F								J		
	4700	472	A			D	A			H	H	J		B	B	C				F	F	F	F	F								J		
	5600	562	A			D	A			H	H	J		B	B	C				F	F	F	F	F								J		
	6800	682	A			D	A			H	H			B	B	C				F	F	F	F	J								J		
	8200	822	A			D	A			H	H			B	B					F	F	F	F	J								J		
Cap(µF)	0.010	103	A			D	A			H	H			B	B					F	F	F	F	J								J		
	0.015	153	A			A	A			H	H			C	C					F	F	J												
	0.018	183	A			A				H	H			C	C					F	J													
	0.022	223	A			A				H	J			C						F	J													
	0.027	273				A				H				C						F	J													
	0.033	333				A				H				C						F	J													
	0.039	393								H				C						F	J													
	0.047	473								H	L			C						F	J													
	0.056	563								J				C						F														
	0.068	683								J				C						F														
	0.082	823								J										F														
	0.100	104								J										F														
	0.150	154																		J														
	0.220	224																		J														
	0.270	274																																
	0.330	334																																
	0.390	394																																
	0.470	474																																
	0.560	564																																
	0.680	684																																
	0.820	824																																
	1.000	105																																
Voltage (V)			630		1000		630		1000		1500		2000		630		1000		1500		2000		3000		630		1000		1500		2000		3000	
Case Size			0805				1206				1210				1808					1812														

Case Size	0805 (KGM 21)		1206 (KGM31)		1210 (KGM32)			1808 (KGM42)		1812 (KGM43)		
Thickness Letter	A	B	A	D	H	J	L	B	C	E	F	J
Max Thickness (mm)	1.45	0.94	1.80	1.45	1.80	2.21	2.80	1.80	2.21	1.80	2.21	2.80
Carrier Tape	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB
Packaging Code 7" reel	U	U	U	U	U	U	U	Y	Y	V	V	V
Packaging Code 13" reel	L	L	L	L	L	L	L	K	K	S	S	S
Embossed(EMB)												

High Voltage MLC Chips, KGM Series

For 630V to 5000V Applications



X7R CAPACITANCE RANGE

SIZE	1825						2220						2225						3640								
Soldering	Reflow Only						Reflow Only						Reflow Only						Reflow Only								
(L) Length	mm	4.60 ± 0.50						5.70 ± 0.50						5.70 ± 0.50						9.14 ± 0.25							
	(in.)	(0.181 ± 0.020)						(0.224 ± 0.020)						(0.224 ± 0.020)						(0.360 ± 0.010)							
(W) Width	mm	6.30 ± 0.40						5.00±0.40						6.30 ± 0.40						10.20 ± 0.25							
	(in.)	(0.248 ± 0.016)						(0.197±0.016)						(0.248 ± 0.016)						(0.400± 0.010)							
(t) Terminal	mm	0.75 ± 0.35						0.85 ± 0.35						0.85 ± 0.35						0.76 (0.030)							
	(in.)	(0.030 ± 0.014)						(0.033 ± 0.014)						(0.033 ± 0.014)						1.52 (0.060)							
Voltage (V)		630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	3000	4000	5000	
101 Cap (pF) 100																											
121 120																											
151 150																											
181 180																											
221 220																											
271 270																											
331 330																											
391 390																											
471 470																											
561 560																											
681 680																											
751 750																											
821 820																											
102 1000		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
122 1200		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
152 1500		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
182 1800		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
222 2000		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
272 2700		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
332 3300		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
392 3900		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
472 4700		C	C	C	C	C	C	Z	Z	Z	Z	Z	C	D	D	D	D	D	D	A	A	A	A	A	A	A	
562 5600		C	C	C	C	F	F	F	Z	Z	Z	Z	C	D	D	D	D	G	G	A	A	A	A	A	A	A	
682 6800		C	C	F	F	F	F	Z	Z	Z	Z	Z	C	D	D	D	D	G	G	A	A	A	A	A	A	A	
822 8200		C	C	F	F	F	F	Z	Z	C	C	C	C	D	D	D	D	G	G	A	A	A	A	A	A	A	
103 Cap (μF) 0.010		C	C	F	F	F	F	Z	Z	C	C	C	C	D	D	D	D	G	G	A	A	A	A	A	A	A	
153 0.015		C	C	F	F	G		Z	Z	C	C	C	C	D	D	G	G	G	H	A	A	A	A	A	A	A	
183 0.018		C	C	F	F			Z	Z	C	D	D		D	D	G	G	G		A	A	A	A	A	A	A	
223 0.022		C	C	F	F			B	B	C	D			D	D	G	G	G		A	A	A	A	A	A	A	
273 0.027		C	C	F				B	B	C	D			D	D	G	G			A	A	A	A	A	A	A	
333 0.033		C	C	F				B	B	D				D	D	G	G			A	A	A	A	A	A	A	
393 0.039		C	C	G				B	B	D				D	D	G				A	A	A	A	A	A	A	
473 0.047		C	C	G				B	B	D				D	D	G				A	A	A	A	A	A	A	
563 0.056		C	C	G				B	B	D				D	D	H				A	A	A	A	A	A	A	
683 0.068		C	F					B	C					D	D	H				A	A	A	A	A	A	A	
823 0.082		C	F					B	C					D	G					A							
104 0.100		C	F					B	C					D	G					A							
154 0.150		C						B	D					D	H					A							
224 0.220		C						Z	D					D						A							
274 0.270		C						Z	D					D						A							
334 0.330		C						Z	D					D						A							
394 0.390		C						Z	D					D						A							
474 0.470		C						Z	D					D						A							
564 0.560		F						C						D						A							
684 0.680								C						G													
824 0.820														G													
105 1.000																											
WVDC		630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	3000	4000	5000	
SIZE		1825						2220						2225						3640							

Case Size	1825 (KGM 44)				2220 (KGM55)				2225 (KGM56)				3640 (KGM91)
Thickness Letter	C	F	G	Z	B	C	D	D	G	H			A
Max Thickness (mm)	2.21	2.8	3.3	2.21	2.54	2.8	3.3	2.21	2.8	3.3			2.8
Carrier Tape	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB	EMB			EMB
Packaging Code 7"reel	V	V	V	V	V	V	V	V	V	V			N/A
Packaging Code 13"reel	S	S	S	S	S	S	S	S	S	S			N/A
Embossed(EMB)													