

KEMET's High Voltage Surface Mount Capacitors are designed to withstand high voltage applications. They offer high capacitance with low leakage current and low ESR at high frequency. The capacitors have pure tin (Sn) plated external electrodes for good solderability. X7R dielectrics are not designed for AC line filtering applications. An insulating coating may be required to prevent surface arcing. These components are RoHS compliant.

APPLICATIONS

- Switch Mode Power Supply
 - Input Filter
 - Resonators
 - Tank Circuit
 - Snubber Circuit
 - Output Filter
- High Voltage Coupling
- High Voltage DC Blocking
- Lighting Ballast
- Voltage Multiplier Circuits
- Coupling Capacitor/CLK

MARKETS

- Power Supply
- High Voltage Power Supply
- DC-DC Converter
- LCD Fluorescent Backlight Ballast
- HID Lighting
- Telecommunications Equipment
- Industrial Equipment/Control
- Medical Equipment/Control
- Computer (LAN/WAN Interface)
- Analog and Digital Modems
- Automotive

OUTLINE DRAWING

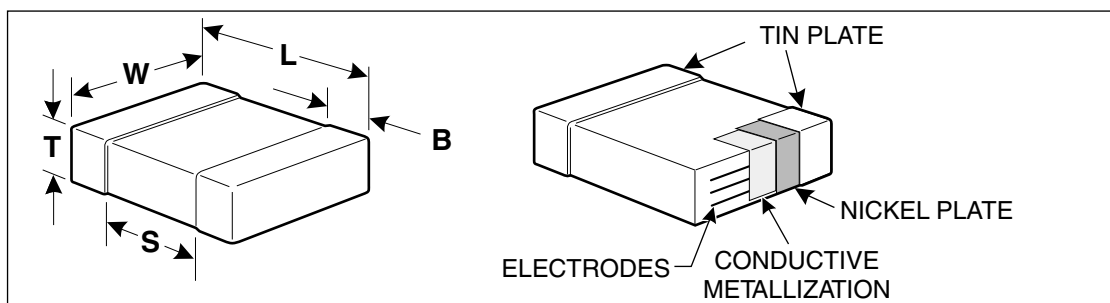


TABLE 1 - DIMENSIONS - MILLIMETERS (in.)

Metric Code	EIA Size Code	L - Length	W - Width	B - Bandwidth	Band Separation
2012	0805	2.0 (0.079) ± 0.2 (0.008)	1.2 (0.049) ± 0.2 (0.008)	0.5 (0.02) ± 0.25 (0.010)	0.75 (0.030)
3216	1206	3.2 (0.126) ± 0.2 (0.008)	1.6 (0.063) ± 0.2 (0.008)	0.5 (0.02) ± 0.25 (0.010)	N/A
3225	1210	3.2 (0.126) ± 0.2 (0.008)	2.5 (0.098) ± 0.2 (0.008)	0.5 (0.02) ± 0.25 (0.010)	N/A
4520	1808	4.5 (0.177) ± 0.3 (0.012)	2.0 (0.079) ± 0.2 (0.008)	0.6 (0.024) ± 0.35 (0.014)	N/A
4532	1812	4.5 (0.177) ± 0.3 (0.012)	3.2 (0.126) ± 0.3 (0.012)	0.6 (0.024) ± 0.35 (0.014)	N/A
4564	1825	4.5 (0.177) ± 0.3 (0.012)	6.4 (0.250) ± 0.4 (0.016)	0.6 (0.024) ± 0.35 (0.014)	N/A
5650	2220	5.6 (0.224) ± 0.4 (0.016)	5.0 (0.197) ± 0.4 (0.016)	0.6 (0.024) ± 0.35 (0.014)	N/A
5664	2225	5.6 (0.224) ± 0.4 (0.016)	6.4 (0.250) ± 0.4 (0.016)	0.6 (0.024) ± 0.35 (0.014)	N/A

C0G DIELECTRIC CAPACITANCE VALUES AND THICKNESS TARGETS (in.)

Cap pF	Capacitance Tolerance *	Series	0805	1206	1210	1808	1812	1825	2220	2225
		Max Thickness (in)	0.050	0.050	0.065	0.065	0.065	0.065	0.067	0.067
		Cap Code/ Voltage	500	1000	500	1000	1500	2000	2500	3000
1.0-2.4	C,D	109-249								
2.7-5.1	C,D K,M	279-519								
5.6-9.1	C,D J,K,M	569-919								
10	C,D J,K,M	100								
11	C,D J,K,M	110								
12	C,D J,K,M	120								
13	C,D J,K,M	130								
15	C,D G,J,K,M	150								
16	C,D G,J,K,M	160								
18	C,D G,J,K,M	180								
20	C,D G,J,K,M	200								
22	C,D G,J,K,M	220								
24	C,D G,J,K,M	240								
27	D,F,G,J,K,M	270								
30	D,F,G,J,K,M	300								
33	D,F,G,J,K,M	330								
36	D,F,G,J,K,M	360								
39	D,F,G,J,K,M	390								
43	D,F,G,J,K,M	430								
47	D,F,G,J,K,M	470								
51	D,F,G,J,K,M	510								
56	F,G,J,K,M	560								
62	F,G,J,K,M	620								
68	F,G,J,K,M	680								
75	F,G,J,K,M	750								
82	F,G,J,K,M	820								
91	F,G,J,K,M	910								
100	F,G,J,K,M	101								
110	F,G,J,K,M	111								
120	F,G,J,K,M	121								
130	F,G,J,K,M	131								
150	F,G,J,K,M	151								
160	F,G,J,K,M	161								
180	F,G,J,K,M	181								
200	F,G,J,K,M	201								
220	F,G,J,K,M	221								
240	F,G,J,K,M	241								
270	F,G,J,K,M	271								
300	F,G,J,K,M	301								
330	F,G,J,K,M	331								
360	F,G,J,K,M	361								
390	F,G,J,K,M	391								
430	F,G,J,K,M	431								
470	F,G,J,K,M	471								
510	F,G,J,K,M	511								
560	F,G,J,K,M	561								
620	F,G,J,K,M	621								
680	F,G,J,K,M	681								
750	F,G,J,K,M	751								
820	F,G,J,K,M	821								
910	F,G,J,K,M	911								
1000	F,G,J,K,M	102								
1100	F,G,J,K,M	112								
1200	F,G,J,K,M	122								
1300	F,G,J,K,M	132								
1500	F,G,J,K,M	152								
1600	F,G,J,K,M	162								
1800	F,G,J,K,M	182								
2000	F,G,J,K,M	202								
2200	F,G,J,K,M	222								
2400	F,G,J,K,M	242								
2700	F,G,J,K,M	272								
3000	F,G,J,K,M	302								
3300	F,G,J,K,M	332								
3600	F,G,J,K,M	362								
3900	F,G,J,K,M	392								
4300	F,G,J,K,M	432								
4700	F,G,J,K,M	472								
5100	F,G,J,K,M	512								
5600	F,G,J,K,M	562								
6200	F,G,J,K,M	622								
6800	F,G,J,K,M	682								
7500	F,G,J,K,M	752								
8200	F,G,J,K,M	822								
9100	F,G,J,K,M	912								
10,000	F,G,J,K,M	103								

* Contact KEMET Sales Representative for C, D, F & G Capacitance Tolerance availability.

Note: Actual thickness dimensions may be less than stated maximum. Check the KEMET website, www.kemet.com, for additional values and chip sizes available.

X7R DIELECTRIC CAPACITANCE VALUES AND THICKNESS TARGETS (in.)

Cap pF	Capacitance Tolerance	Series	0805		1206		1210		1808		1812		1825		2220		2225	
		Max Thickness (in)	Cap Code/ Voltage															
			500	1000	500	1000	500	1000	500	1000	500	1000	500	1000	500	1000	500	1000
10	J,K,M	100																
11	J,K,M	110																
12	J,K,M	120																
13	J,K,M	130																
15	J,K,M	150																
16	J,K,M	160																
18	J,K,M	180																
20	J,K,M	200																
22	J,K,M	220																
24	J,K,M	240																
27	J,K,M	270																
30	J,K,M	300																
33	J,K,M	330																
36	J,K,M	360																
39	J,K,M	390																
43	J,K,M	430																
47	J,K,M	470																
51	J,K,M	510																
56	J,K,M	560																
62	J,K,M	620																
68	J,K,M	680																
75	J,K,M	750																
82	J,K,M	820																
91	J,K,M	910																
100	J,K,M	101																
110	J,K,M	111																
120	J,K,M	121																
130	J,K,M	131																
150	J,K,M	151																
180	J,K,M	181																
220	J,K,M	221																
270	J,K,M	271																
330	J,K,M	331																
390	J,K,M	391																
470	J,K,M	471																
560	J,K,M	561																
680	J,K,M	681																
820	J,K,M	821																
1000	J,K,M	102																
1200	J,K,M	122																
1500	J,K,M	152																
1800	J,K,M	182																
2000	J,K,M	202																
2200	J,K,M	222																
2700	J,K,M	272																
3300	J,K,M	332																
3900	J,K,M	392																
4700	J,K,M	472																
5600	J,K,M	562																
6800	J,K,M	682																
8200	J,K,M	822																
10,000	J,K,M	103																
12,000	J,K,M	123																
15,000	J,K,M	153																
18,000	J,K,M	183																
22,000	J,K,M	223																
27,000	J,K,M	273																
33,000	J,K,M	333																
39,000	J,K,M	393																
47,000	J,K,M	473																
56,000	J,K,M	563																
62,000	J,K,M	623																
68,000	J,K,M	683																
82,000	J,K,M	823																
100,000	J,K,M	104																
120,000	J,K,M	124																
150,000	J,K,M	154																
180,000	J,K,M	184																
220,000	J,K,M	224																

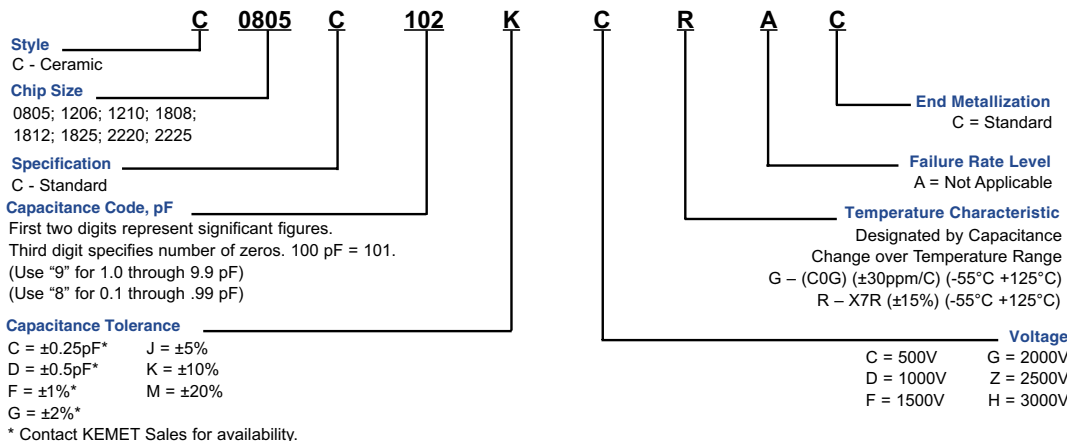
Note: Actual thickness dimensions may be less than stated maximum.

Check the KEMET website, www.kemet.com, for additional values and chip sizes available.

KEMET HIGH VOLTAGE SURFACE MOUNT CHIP (VOLTAGE CODES C,D,F,G,H, and Z) THICKNESS AND REELING QUANTITIES

Chip size		Max. Thickness (in)	Max. Thickness (mm)	Tape Width (mm)	Qty per Reel 7" Plastic	Qty per Reel 13" Plastic
EIA	Metric					
0805	2012	0.055	1.27	8	2,500	10,000
1206	3216	0.065	1.65	8	2,000	8,000
1210	3225	0.101	2.57	8	2,000	8,000
1808	4520	0.080	2.03	12	1,000	4,000
1812/1813	4532	0.067	1.70	12	1,000	4,000
1825	4564	0.067	1.70	12	1,000	4,000
2220	5650	0.067	1.70	12	1,000	4,000
2225	5664	0.067	1.70	12	1,000	4,000

CAPACITOR ORDERING INFORMATION



ELECTRICAL PARAMETERS

Property	Specification
Capacitance	C0G: 1 pF to 0.010 μF X7R: 10 pF to 0.22 μF 25°C, 1.0 $\pm$ 0.2 Vrms, 1 kHz (1 MHz for ≤ 1000 pF (C0G only)
Cap Tolerance	C0G: C*, D*, F*, G*, J, K, M * Contact KEMET Sales for availability. X7R: J, K, M
DF	C0G: 0.1% Max X7R: 2.5% Max
Voltage Ratings	500 V, 1000 V, 1500 V, 2000 V, 2500 V, 3000 V
Operating Temperature Range	From -55°C to $+125^\circ\text{C}$
25°C IR @ 500V	100 G Ω or 1000 M Ω - μF , whichever is less
125°C IR @ 500V	10 G Ω or 100 M Ω - μF , whichever is less
-55°C TCC $+125^\circ\text{C}$ TCC	X7R: $\pm 15\%$ C0G: ± 30 ppm / $^\circ\text{C}$
Dielectric Strength	150% of Rated Voltage for Rated Voltage <1000 V 120% of Rated Voltage for Rated Voltage ≥ 1000 V
Ripple Current	Consult KEMET Sales Representative

MARKING

These chips are supplied unmarked. If required, they can be supplied LASER-marked at an extra cost. Details on the marking format is located on page 96.

PACKAGING

KEMET High Voltage Surface Mount MLCC are available packaged in tape and reel configuration, or bulk bag as outlined on page 82. Please consult factory for waffle packaging options.

SOLDERING PROCESS

The 0805 and 1206 case sizes are suitable for either reflow or wave soldering processes. Sizes 1210 and larger should be limited to reflow soldering only. All sizes incorporate the standard KEMET barrier layer of pure nickel with an overplating of pure tin (Sn) for excellent solderability and resistance to solder leaching of the termination.

RECOMMENDED SOLDER PAD DIMENSIONS

Chip Size	T (Total Length)		S (Separation)		W (Pad Width)		L (Pad Length)	
	mm	in.	mm	in.	mm	in.	mm	in.
0805	3.30	0.130	0.70	0.028	1.60	0.063	1.30	0.051
1206	4.50	0.177	1.50	0.059	2.00	0.079	1.50	0.059
1210	4.50	0.177	1.50	0.059	2.90	0.114	1.50	0.059
1808	5.90	0.232	2.30	0.091	2.40	0.094	1.80	0.071
1812	5.90	0.232	2.30	0.091	3.70	0.146	1.80	0.071
1825	5.90	0.232	2.30	0.091	6.90	0.272	1.80	0.071
2220	7.00	0.276	3.30	0.130	5.50	0.217	1.85	0.073
2225	7.00	0.276	3.30	0.130	6.80	0.268	1.85	0.073

