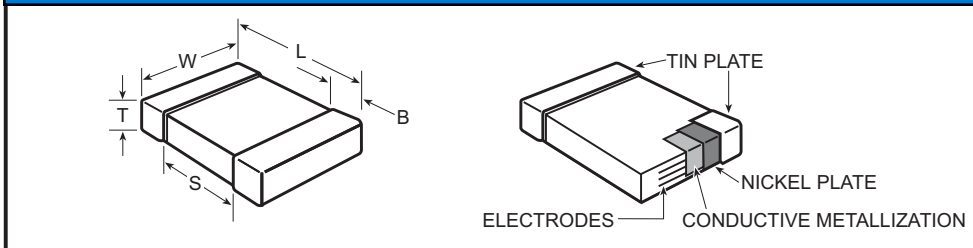


Surface Mount Ceramic Chip Capacitors – X7R Dielectric - Capacitance Extensions

Outline Drawing



Dimensions – Millimeters (Inches)

EIA Size Code	Metric Size Code	L Length	W Width	B Bandwidth	S Separation
0402	1005	1.0 (.039) ± 0.05 (.002)	0.5 (.020) ± 0.05 (.002)	0.20 (.008) ± 0.4 (.016)	0.3 (.012)
0603	1608	1.6 (.063) ± 0.15 (.006)	0.8 (.032) ± 0.15 (.006)	0.35 (.014) ± 0.15 (.006)	0.7 (.028)
0805	2012	2.0 (.079) ± 0.02 (.008)	1.25 (.049) ± 0.2 (.008)	0.5 (.020) ± 0.25 (.010)	0.75 (.030)
1206	3216	3.2 (1.26) ± 0.2 (.008)	1.6 (.063) ± 0.2 (.008)	0.5 (.020) ± 0.25 (.010)	-
1210	3225	3.2 (.126) ± 0.2 (.008)	2.5 (.098) ± 0.2 (.008)	0.5 (.020) ± 0.25 (.010)	-

See Capacitance Value Table below for thickness dimension.

Capacitor Ordering Information

C 0603 C 105 K 4 R A C

Style _____
C - Ceramic

Size Code _____
See dimension table

Specification _____
C - Standard

Capacitance Code, pF _____
First two digits represent significant figures.
Third digit specifies number of zeros. 100 pF = 101.
(Use "9" for 1.0 through 9.9 pF)
(Use "8" for 0.1 through .99 pF)

Capacitance Tolerance _____
K = ± 10% M = ±20%

End Metallization
C = Standard (Tin-plate nickel barrier)

Failure Rate Level
A = Not Applicable

Temperature Characteristic
Designated by Capacitance Change Over Temperature Range
R = X7R (±15%) (-55°C +125°C)

Voltage
9 = 6.3V 8 = 10V 4 = 16V
3 = 25V 5 = 50V

Capacitance Value						
Capacitance Value (μF)	KEMET Part Number	Voltage	Capacitance Tolerance	Thickness	Qty 7" Reel	Qty 13" Reel
0.022	C0402C223_3RAC	25	K, M	0.5 (.020) \pm 0.05 (.002)	10,000	50,000
0.022	C0402C223_5RAC	50	K, M	0.5 (.020) \pm 0.05 (.002)	10,000	50,000
0.047	C0402C473_3RAC	25	K, M	0.5 (.020) \pm 0.05 (.002)	10,000	50,000
0.15	C0603C154_5RAC	50	K, M	0.8 (.032) \pm 0.15 (.006)	4,000	10,000
0.22	C0603C224_3RAC	25	K, M	0.8 (.032) \pm 0.15 (.006)	4,000	10,000
1	C0805C105_3RAC	25	K, M	1.25 (.049) \pm 0.20 (.008)	3,000	10,000
0.47	C0805C474_5RAC	50	K, M	1.00 (.040) \pm 0.10 (.004)	2,500	10,000
0.68	C0805C684_5RAC	50	K, M	1.25 (.049) \pm 0.20 (.008)	3,000	10,000
1	C1206C105_5RAC	50	K, M	1.00 (.040) \pm 0.10 (.004)	2,500	10,000
2.2	C1206C225_3RAC	25	K, M	1.20 (.047) \pm 0.15 (.006)	2,500	10,000
2.2	C1206C225_5RAC	50	K, M	1.60 (.063) \pm 0.20 (.008)	2,000	8,000
4.7	C1206C475_3RAC	25	K, M	1.60 (.063) \pm 0.20 (.008)	2,000	8,000
10	C1210C106_4RAC	16	K, M	1.55 (.061) \pm 0.15 (.006)	2,000	8,000
10	C1210C106_8RAC	10	K, M	1.55 (.061) \pm 0.15 (.006)	2,000	8,000
10	C1210C106_9RAC	6.3	K, M	1.55 (.061) \pm 0.15 (.006)	2,000	8,000
2.2	C1210C225_5RAC	50	K, M	1.25 (.049) \pm 0.15 (.006)	2,500	10,000
3.3	C1210C335_5RAC	50	K, M	1.70 (.067) \pm 0.20 (.008)	2,000	8,000
4.7	C1210C475_3RAC	25	K, M	1.25 (.049) \pm 0.15 (.006)	2,500	10,000
4.7	C1210C475_4RAC	16	K, M	0.90 (.035) \pm 0.10 (.004)	4,000	10,000
4.7	C1210C475_8RAC	10	K, M	0.90 (.035) \pm 0.10 (.004)	4,000	10,000
4.7	C1210C475_9RAC	6.3	K, M	0.90 (.035) \pm 0.10 (.004)	4,000	10,000

Electrical Parameters

As detailed in the KEMET Surface Mount Catalog F3102 for X7R, with the following specific requirements based on room temperature (25°C) parameters:

- Operating Range: -55°C to +125°C, with no-bias capacitance shift limited to the \pm 15% over that range.
- Insulating Resistance (IR) measured after 2 minutes at rated voltage @25°C: Limit is 500 megohm-microfarads or 10,000M Ω , whichever of the two is smaller.
- Capacitance and Dissipation Factor (DF) are measured under the following conditions:
1kHz and 1 Vrms if capacitance \leq 10 μF
120Hz and 0.5 Vrms if capacitance > 10 μF
- DF limits:
50 -200 Volts — 2.5%
16 -25 Volts — 3.5%
6.3 / 10 Volts — 5.0%

Soldering Process

All parts incorporate the standard KEMET barrier layer of pure nickel, with an overplate of pure tin to provide excellent solderability as well as resistance to leaching. The recommended mounting techniques are as follows:

- 0402 / 1210 case sizes — Solder Reflow
- 0603 / 0805 / 1206 case sizes — Solder Wave / Solder Reflow

Marking

These chips will be supplied unmarked. If required, they can be laser-marked as an extra option. Details on the marking format are included in KEMET Surface Mount catalog F3102.

In general, the information provided in the KEMET Surface Mount catalog F3102 applies to these capacitors. The information in this bulletin supplements that in the catalog



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