

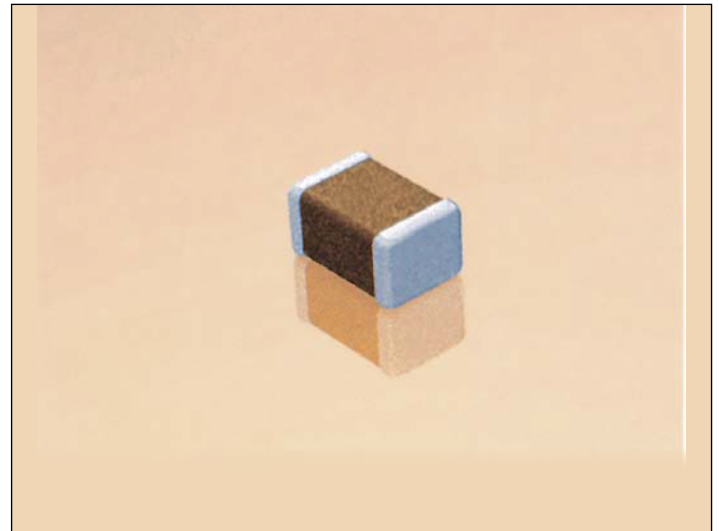
MLC Chip Capacitors

Tip & Ring Chips



KYOCERA AVX "Tip & Ring" or "ring detector" Multilayer Ceramic Chip Capacitors are designed as a standard telecom filter to block -48 Volts DC telephone line voltage and pass subscriber's AC signal pulse (16 to 25Hz, 70 to 90Vrms). The typical ringing signal is seen on figure on page 132. The ringer capacitors replace large leaded film capacitors and are ideal for telecom/modem applications. Using KYOCERA AVX "Tip & Ring" capacitors not only saves valuable real estate on the board and reduces the weight of overall product, but also features standard surface mounting capabilities, so critical to new and compact designs.

The KYOCERA AVX "Tip & Ring" capacitors are offered in standard EIA sizes and standard values. They offer excellent high frequency performance, low ESR and improved temperature performance over film capacitors.



HOW TO ORDER

1812

Style

0805
1206
1210
1808
1812
1825
2220
2225

P

Voltage
250 VDC
Telco
Rating

C

**Temperature
Coefficient**
X7R

104

Capacitance Code
(2 significant digits
+ no. of zeros)
Examples:
1,000 pF = 102
22,000 pF = 223
220,000 pF = 224
1 μ F = 105

K

**Capacitance
Tolerance**
K = $\pm 10\%$
M = $\pm 20\%$

A

**Test
Level**
A = Standard

T

Termination
T = P l a t e d 1 or 2 = 7" Reel
Ni and Sn³ or 4 = 13" Reel
(RoHS Compliant)
9 = Bulk
Z = F L E X I T E R M[®]
100% Tin
(RoHS Compliant)

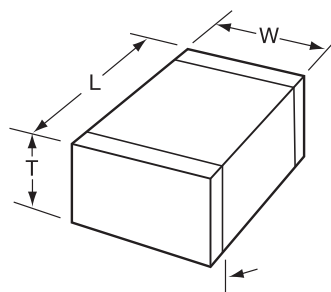
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Packaging
d1 or 2 = 7" Reel
Sn³ or 4 = 13" Reel
9 = Bulk

A

Special Code
A = Standard

Contact factory for availability of Termination and Tolerance options for Specific Part Numbers.



DIMENSIONS

millimeters (inches)

Style	0805	1206	1210*	1808*	1812*	1825*	2220*	2225*
(L) Length	2.01 \pm 0.20 (0.079 \pm 0.008)	3.20 \pm 0.20 (0.126 \pm 0.008)	3.2 \pm 0.20 (0.126 \pm 0.008)	4.57 \pm 0.25 (0.180 \pm 0.010)	4.50 \pm 0.30 (0.177 \pm 0.012)	4.50 \pm 0.30 (0.177 \pm 0.012)	5.60 \pm 0.30 (0.220 \pm 0.012)	5.60 \pm 0.25 (0.220 \pm 0.010)
(W) Width	1.25 \pm 0.20 (0.049 \pm 0.008)	1.60 \pm 0.20 (0.063 \pm 0.008)	2.50 \pm 0.20 (0.098 \pm 0.008)	2.03 \pm 0.25 (0.080 \pm 0.010)	3.2 \pm 0.20 (0.126 \pm 0.008)	6.34 \pm 0.30 (0.252 \pm 0.012)	5.10 \pm 0.40 (0.200 \pm 0.016)	6.35 \pm 0.25 (0.250 \pm 0.010)
(T) Thickness	1.30 max. (0.051 max.)	1.50 max. (0.059 max.)	1.78 max. (0.070 max.)	1.78 max. (0.070 max.)	2.00 max. (0.080 max.)	2.00 max. (0.080 max.)	2.00 max. (0.080 max.)	2.00 max. (0.080 max.)
(t) terminal	0.50 \pm 0.25 (0.020 \pm 0.010)	0.50 \pm 0.25 (0.020 \pm 0.010)	0.50 \pm 0.25 (0.020 \pm 0.010)	0.63 \pm 0.38 (0.025 \pm 0.015)	0.63 \pm 0.38 (0.025 \pm 0.015)	0.63 \pm 0.38 (0.025 \pm 0.015)	0.63 \pm 0.38 (0.025 \pm 0.015)	0.63 \pm 0.38 (0.025 \pm 0.015)

*Reflow Soldering Only

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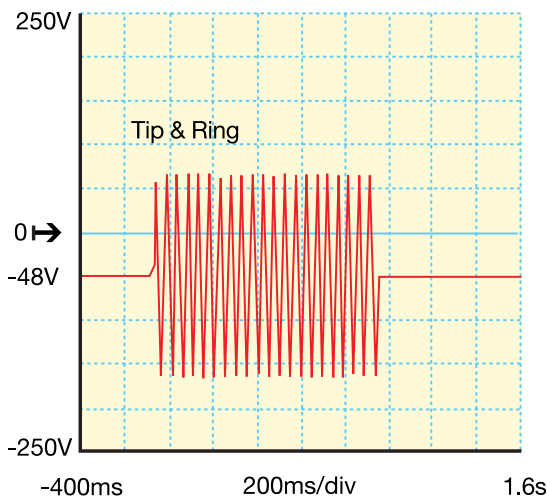
Tip & Ring Chips



CAPACITANCE RANGE (MF)

Size	0805	1206	1210	1808	1812	1825	2220	2225
min.	0.0010	0.0010	0.0010	0.010	0.10	0.33	0.47	0.47
max.	0.027	0.082	0.22	0.27	0.47	1.0	1.0	1.2

“TIP & RING” GRAPH



PERFORMANCE CHARACTERISTICS

Capacitance Range	1000 pF to 1.2 μ F (25°C, 1.0 \pm 0.2 Vrms at 1kHz)
Capacitance Tolerances	\pm 10%, \pm 20%
Dissipation Factor	2.5% max. (25°C, 1.0 \pm 0.2 Vrms at 1kHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	X7R \pm 15% (0 VDC)
Voltage Rating	250 VDC Telco rating
Insulation Resistance	1000 megohm-microfarad min.
Dielectric Strength	Minimum 200% rated voltage for 5 seconds at 50 mA max. current