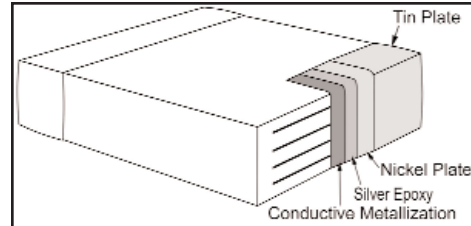
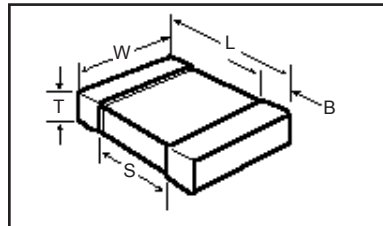


Surface Mount Ceramic Chip Capacitors / **FT-CAP** / Flexible Terminations

Outline Drawing



The “Flexible Termination (FT-CAP)” capacitor is a surface mount multi-layer ceramic capacitor that incorporates a unique, flexible termination system that is integrated with standard termination materials. A conductive silver epoxy is utilized between the conductive metallization and nickel barrier finish in order to establish pliability while maintaining terminal strength, solderability and electrical performance. This technology was developed to address the primary failure mode of MLCC’s, flex cracks, which are typically the result of excessive shear stresses produced during board flexure. Flexible termination technology directs board flex stress away from the ceramic body and into the conductive epoxy area, therefore mitigating flex cracks which can result in low-IR or short-circuit failures. The FT-CAP offers up to 5mm of flex-bend capability, complementing our current "Open Mode", "Floating Electrode (FE-CAP)" and “Floating Electrode with Flexible Termination (FF-CAP)” product lines by providing our customers with a complete portfolio of flex solutions.

Qualification/Certification

Automotive Grade Available: AEC-Q200 Rev. C
RoHS 6/6 - 100% matte tin termination

Dimensions – Millimeters (Inches)

| EIA Size Code | Metric Size Code | L Length | W Width | B Bandwidth | S Separation |
|---------------|------------------|--------------------------|---------------------------|---------------------------|--------------|
| 0603 | 1608 | 1.6 (.063) ± 0.15 (.006) | 0.8 (.032) ± 0.15 (.006) | 0.35 (.014) ± 0.15 (.006) | 0.70 (.028) |
| 0805 | 2012 | 2.1 (.083) ± 0.20 (.008) | 1.25 (.049) ± 0.20 (.008) | 0.05 (.02) ± 0.25 (.010) | 0.75 (.030) |
| 1206 | 3216 | 3.4 (.134) ± 0.20 (.008) | 1.6 (.063) ± 0.20 (.008) | 0.50 (.02) ± .25 (.010) | N/A |
| 1210 | 3225 | 3.4 (.134) ± 0.20 (.008) | 2.5 (.098) ± 0.20 (.008) | 0.50 (.02) ± .25 (.010) | N/A |
| 1808 | 4520 | 4.8 (.189) ± 0.40 (.016) | 2.0 (.079) ± 0.20 (.008) | 0.60 (.024) ± 0.35 (.014) | N/A |
| 1812 | 4532 | 4.8 (.189) ± 0.40 (.016) | 3.2 (.126) ± 0.30 (.021) | 0.60 (.024) ± 0.35 (.014) | N/A |
| 1825 | 4564 | 4.8 (.177) ± 0.40 (.016) | 6.4 (.250) ± 0.40 (.016) | 0.60 (.024) ± 0.35 (.014) | N/A |
| 2220 | 5650 | 6.0 (.236) ± 0.55 (.022) | 5.0 (.197) ± 0.40 (.016) | 0.60 (.024) ± 0.35 (.014) | N/A |
| 2225 | 5664 | 6.0 (.236) ± 0.55 (.022) | 6.4 (.250) ± 0.40 (.016) | 0.60 (.024) ± 0.35 (.014) | N/A |

See “Capacitance Range” tables next page for capacitor chip thickness code specification. Capacitor chip thickness dimensions are detailed in the “Thickness Code Reference Chart” of KEMET Surface Mount Catalog F3102.

X7R Capacitance Range - 1808 thru 2225 Case Sizes

| Cap pF | Cap Code | Cap Tol. | C1808 | | | C1812* | | | | C1825 | | | C2220 | | | | C2225 | | |
|------------|----------|----------|-------|------|------|--------|-----|------|------|-------|------|------|-------|-----|------|------|-------|------|------|
| | | | 50V | 100V | 200V | 25V | 50V | 100V | 200V | 50V | 100V | 200V | 25V | 50V | 100V | 200V | 50V | 100V | 200V |
| 4,700 | 472 | J, K, M | LD | LD | LD | | | | | | | | | | | | | | |
| 5,600 | 562 | J, K, M | LD | LD | LD | | | | | | | | | | | | | | |
| 6,800 | 682 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 8,200 | 822 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 10,000 | 103 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 12,000 | 123 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 15,000 | 153 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 18,000 | 183 | J, K, M | LD | LD | LD | GB | GB | GB | GB | | | | | | | | | | |
| 22,000 | 223 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | | | | |
| 27,000 | 273 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | | | | |
| 33,000 | 333 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | | | | |
| 39,000 | 393 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | | | | |
| 47,000 | 473 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | KC | KC | KC | |
| 56,000 | 563 | J, K, M | LD | LD | | GB | GB | GB | GB | HB | HB | HB | | | | KC | KC | KC | |
| 68,000 | 683 | J, K, M | LD | | | GB | GB | GB | GB | HB | HB | HB | | | | KC | KC | KC | |
| 82,000 | 823 | J, K, M | LD | | | GB | GB | GB | GB | HB | HB | HB | | | JC | KC | KC | KC | |
| 100,000 | 104 | J, K, M | LD | | | GB | GB | GB | GB | HB | HB | HB | | | JC | KC | KC | KC | |
| 120,000 | 124 | J, K, M | LD | | | GB | GB | GB | GB | HB | HB | HB | | | JC | KC | KC | KC | |
| 150,000 | 154 | J, K, M | LD | | | GB | GB | GB | GE | HB | HB | HB | | | JC | KC | KC | KC | |
| 180,000 | 184 | J, K, M | LD | | | GB | GB | GB | GF | HB | HB | HB | | | JC | KC | KC | KC | |
| 220,000 | 224 | J, K, M | | | | GB | GB | GB | GG | HB | HB | HB | | | JC | KC | KC | KC | |
| 270,000 | 274 | J, K, M | | | | GB | GB | GG | GG | HB | HB | HB | JC | JC | JC | JC | KB | KC | KC |
| 330,000 | 334 | J, K, M | | | | GB | GB | GG | GG | HB | HB | HB | JC | JC | JC | JC | KB | KC | KC |
| 390,000 | 394 | J, K, M | | | | GB | GB | GG | GG | HB | HB | HD | JC | JC | JC | JC | KB | KC | KC |
| 470,000 | 474 | J, K, M | | | | GB | GB | GG | GJ | HB | HB | HD | JC | JC | JC | JC | KB | KC | KD |
| 560,000 | 564 | J, K, M | | | | GC | GC | GG | | HB | HD | HD | JC | JC | JC | JD | KB | KC | KD |
| 680,000 | 684 | J, K, M | | | | GC | GC | GG | | HB | HD | HD | JC | JC | JD | JD | KB | KC | KD |
| 820,000 | 824 | J, K, M | | | | GE | GE | GG | | HB | | HF | JC | JC | JF | JF | KB | KC | KE |
| 1,000,000 | 105 | J, K, M | | | | GE | GE | GG | | HB | | HF | JC | JC | JF | JF | KB | KD | KE |
| 1,200,000 | 125 | J, K, M | | | | | | | | HB | | | JC | JC | | | KB | | KE |
| 1,500,000 | 155 | J, K, M | | | | | | | | HC | | | JC | JC | | | KC | | |
| 1,800,000 | 185 | J, K, M | | | | | | | | HD | | | JD | JD | | | KD | | |
| 2,200,000 | 225 | J, K, M | | | | | | | | HF | | | JF | JF | | | KD | | |
| 2,700,000 | 275 | J, K, M | | | | | | | | | | | | | | | | | |
| 3,300,000 | 335 | J, K, M | | | | | | | | | | | | | | | | | |
| 3,900,000 | 395 | J, K, M | | | | | | | | | | | | | | | | | |
| 4,700,000 | 475 | J, K, M | | | | GK | GK | | | | | | | | | | | | |
| 5,600,000 | 565 | J, K, M | | | | | | | | | | | | | | | | | |
| 6,800,000 | 685 | J, K, M | | | | | | | | | | | | | | | | | |
| 8,200,000 | 825 | J, K, M | | | | | | | | | | | | | | | | | |
| 10,000,000 | 106 | J, K, M | | | | GK | | | | | | | JF | JO | | | | | |
| 12,000,000 | 126 | J, K, M | | | | | | | | | | | | | | | | | |
| 15,000,000 | 156 | J, K, M | | | | | | | | | | | | JO | | | | | |
| 18,000,000 | 186 | J, K, M | | | | | | | | | | | | | | | | | |
| 22,000,000 | 226 | J, K, M | | | | | | | | | | | JO | | | | | | |

Electrical Parameters

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

- Operating Range: -55°C to +125°C, with no-bias capacitance shift limited to ± 15% over that range.
- Insulation Resistance (IR) measured after 2 minutes at rated voltage @ 25°C: Limit is 1000 megohm microfarads or 100,000 MΩ, whichever of the two is smaller.
- Capacitance and Dissipation Factor (DF) measured under the following conditions:
 1kHz and 1 Vrms if capacitance ≤ 10μF
 120Hz and 0.5 Vrms if capacitance > 10μF

• DF Limits are:

| | |
|----------------|------|
| 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 techniques are as follows:

- 1210-2225 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 in the KEMET Surface Mount catalog F3102 applies to these capacitors. The information in this bulletin supplements that in the catalog.

RoHS Compliant

