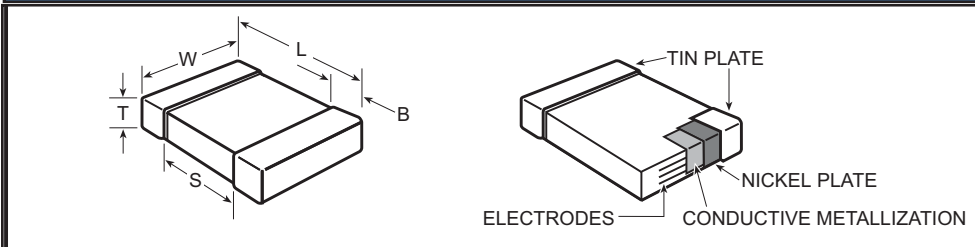


Fail-Safe Floating Electrode MLCC / FE-CAP / X7R Dielectric

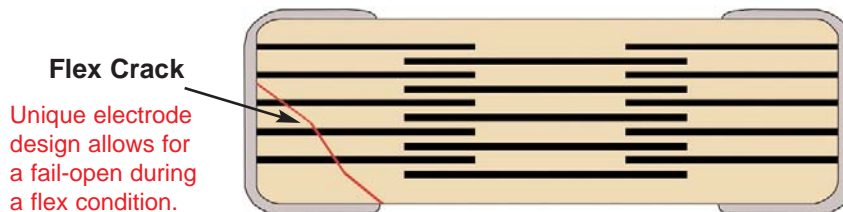
Outline Drawing



Product Description

The FE-CAP is a SMD MLCC which utilizes a floating internal electrode design, wherein the electrodes are configured to form multiple capacitors in series within a single MLCC package. This not only yields improved voltage and ESD performance over standard designs, but also mitigates the risk of low-IR or short-circuit failures that can occur due to board flex. Combined with the stability of an X7R dielectric, the FE-CAP complements KEMET's Open Mode Devices by providing a fail-safe design optimized for low- to mid-range capacitance values.

FE-CAP Internal Design



Dimensions – Millimeters (Inches)

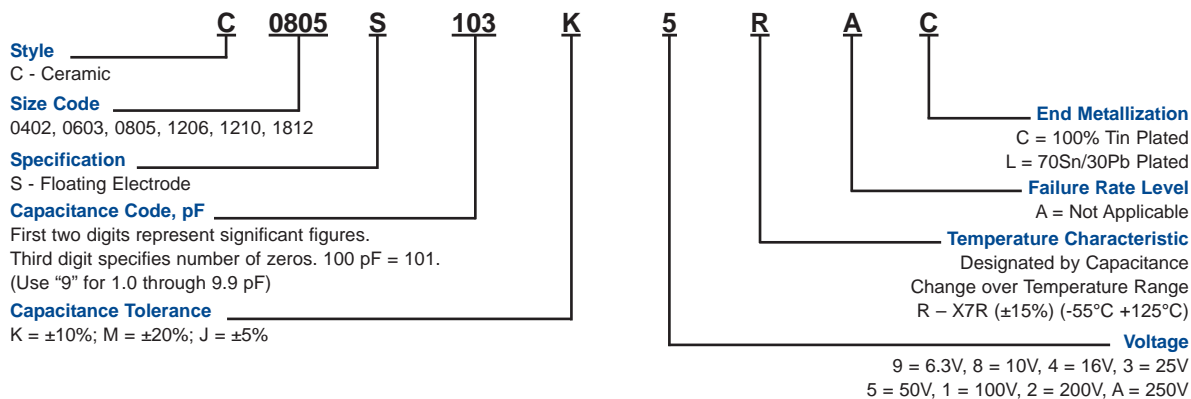
EIA Size Code	Metric Size Code	L Length	W Width	B Bandwidth	S Separation
0402	1005	1.0 (.04) ± 0.05 (.002)	0.5 (.02) ± 0.05 (.002)	0.20 (.008) -0.40 (.016)	0.30 (.012)
0603	1608	1.6 (.063) ± 0.15 (.006)	0.8 (.032) ± 0.15 (.006)	0.35 (.014) ± 0.15 (.006)	0.70 (.028)
0805	2012	2.0 (.079) ± 0.20 (.008)	1.25 (.049) ± 0.20 (.008)	0.05 (.02) ± 0.25 (.010)	0.75 (.030)
1206	3216	3.2 (.126) ± 0.20 (.008)	1.6 (.063) ± 0.20 (.008)	0.50 (.02) ± .25 (.010)	N/A
1210	3225	3.2 (.126) ± 0.20 (.008)	2.5 (.098) ± 0.20 (.008)	0.50 (.02) ± .25 (.010)	N/A
1812	4532	4.5 (.177) ± 0.30 (.012)	3.2 (.126) ± 0.30 (.012)	0.60 (.024) ± .35 (.014)	N/A

Refer to standard thickness dimensions and table located in the F3102 SMT catalog on pages 73, 74, and 77.

X7R Capacitance Range

CAP (pF)	CAP (nF)	CAP CODE	0402					0603					0805					1206					1210					1812																											
			6.3	10	16	25	50	6.3	10	16	25	50	100	200	6.3	10	16	25	50	100	200	250	6.3	10	16	25	50	100	200	250	6.3	10	16	25	50	100	200	250	25	50	100	200	250												
150	0.15	151	█	█	█	█																																																	
180	0.18	181	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
220	0.22	221	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
270	0.27	271	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
330	0.33	331	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
390	0.39	391	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
470	0.47	471	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
560	0.56	561	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
680	0.68	681	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
820	0.82	821	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																	
1000	1.00	102	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█																																
1200	1.2	122																					█	█	█	█	█	█	█																										
1500	1.5	152																					█	█	█	█	█	█	█	█																									
1800	1.8	182																					█	█	█	█	█	█	█	█	█																								
2200	2.2	222																					█	█	█	█	█	█	█	█	█																								
2700	2.7	272																					█	█	█	█	█	█	█	█	█																								
3300	3.3	332																					█	█	█	█	█	█	█	█	█																								
3900	3.9	392																					█	█	█	█	█	█	█	█	█																								
4700	4.7	472																					█	█	█	█	█	█	█	█	█																								
5600	5.6	562																					█	█	█	█	█	█	█	█	█																								
6800	6.8	682																					█	█	█	█	█	█	█	█	█																								
8200	8.2	822																					█	█	█	█	█	█	█	█	█																								
10000	10	103																					█	█	█	█	█	█	█	█	█																								
12000	12	123																					█	█	█	█	█	█	█	█	█																								
15000	15	153																					█	█	█	█	█	█	█	█	█																								
18000	18	183																					█	█	█	█	█	█	█	█	█																								
22000	22	223																					█	█	█	█	█	█	█	█	█																								
27000	27	273																					█	█	█	█	█	█	█	█	█																								
33000	33	333																					█	█	█	█	█	█	█	█	█																								
39000	39	393																					█	█	█	█	█	█	█	█	█																								
47000	47	473																					█	█	█	█	█	█	█	█	█																								
56000	56	563																					█	█	█	█	█	█	█	█	█																								
68000	68	683																					█	█	█	█	█	█	█	█	█																								
82000	82	823																					█	█	█	█	█	█	█	█	█																								
100000	100	104																					█	█	█	█	█	█	█	█	█																								
120000	120	124																					█	█	█	█	█	█	█	█	█																								
150000	150	154																					█	█	█	█	█	█	█	█	█																								
180000	180	184																					█	█	█	█	█	█	█	█	█																								
220000	220	224																					█	█	█	█	█	█	█	█	█																								

Ordering Information



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 1,000 megohm microfarads or 100 gigohm, whichever is less.
- Capacitance and Dissipation Factor (DF) measured at 1kHz and 1 Vrms.

DF Limits are:

50 - 250 Volts	2.5%
16 - 25 Volts	3.5%
6.3 - 10 Volts	5.0%

Soldering Process

These components are suitable for reflow and wave soldering. 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.

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.

Qualification/Certification

AEC-Q200 Rev. C - Automotive
RoHS 6 - 100% tin termination

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

