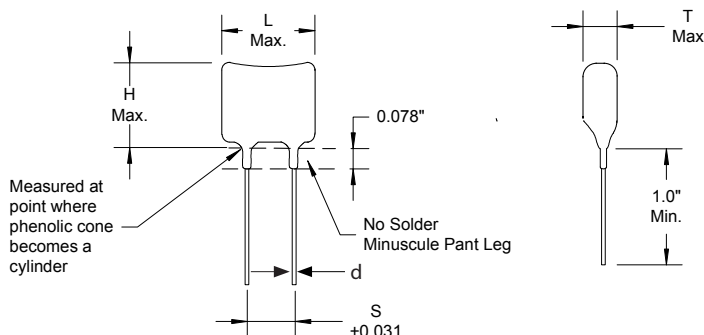


Type CMR, High-Reliability, Mica Capacitors

High-Reliability Dipped Capacitors/MIL-PRF-39001

Type CMR meets requirement of MIL-PRF-39001, Type CMR high-reliability dipped silvered mica capacitors are ideal for high-grade ground, airborne, and space-borne devices, such as computers, jetcraft, and mis-siles.



Regulatory Information

Specifications

Voltage Range:	50 Vdc to 500 Vdc
Capacitance Range:	1 pF to 91,000 pF
Capacitance Tolerance:	±½ pF (D), ±1% (F), ±2% (G), ±5% (J)
Temperature Range:	–55 °C to +125 °C (O), –55 °C to 150 °C (P) P temperature range available only for CMR04, CMR05, CMR06, CMR07, CMR08
Reliability:	Meets Requirements of MIL-PRF-39001 Established reliability to .01%/1,000 hours failure rate

Ratings and Dimensions

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
50 Vdc						
22	CMR03E220DOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
24	CMR03E240DOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
27	CMR03E270JOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
30	CMR03E300JOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
33	CMR03E330JOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
36	CMR03E360JOYR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
39	CMR03E390JOYR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
43	CMR03E430JOYR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
47	CMR03E470JOYR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
51	CMR03E510JOYR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
56	CMR03E560JOYR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
62	CMR03E620JOYR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
68	CMR03E680JOYR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
75	CMR03E750JOYR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
82	CMR03E820JOYR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
91	CMR03F910JOYR	.270 (6.9)	.200 (5.1)	.130 (3.3)	.120 (3.0)	.016 (.4)
100	CMR03F101JOYR	.270 (6.9)	.200 (5.1)	.130 (3.3)	.120 (3.0)	.016 (.4)
110	CMR03F111JOYR	.270 (6.9)	.200 (5.1)	.130 (3.3)	.120 (3.0)	.016 (.4)
120	CMR03F121JOYR	.270 (6.9)	.200 (5.1)	.130 (3.3)	.120 (3.0)	.016 (.4)
130	CMR03F131JOYR	.270 (6.9)	.210 (5.3)	.130 (3.3)	.120 (3.0)	.016 (.4)

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
150	CMR03F151JOYR	.270 (6.9)	.210 (5.3)	.140 (3.6)	.120 (3.0)	.016 (.4)
160	CMR03F161JOYR	.270 (6.9)	.210 (5.3)	.140 (3.6)	.120 (3.0)	.016 (.4)
180	CMR03F181JOYR	.270 (6.9)	.210 (5.3)	.140 (3.6)	.120 (3.0)	.016 (.4)
200	CMR03F201JOYR	.270 (6.9)	.220 (5.6)	.150 (3.8)	.120 (3.0)	.016 (.4)
220	CMR03F221JOYR	.270 (6.9)	.220 (5.6)	.150 (3.8)	.120 (3.0)	.016 (.4)
240	CMR03F241JOYR	.270 (6.9)	.220 (5.6)	.160 (4.1)	.120 (3.0)	.016 (.4)
270	CMR03F271JOYR	.270 (6.9)	.230 (5.8)	.160 (4.1)	.120 (3.0)	.016 (.4)
300	CMR03F301JOYR	.270 (6.9)	.230 (5.8)	.170 (4.3)	.120 (3.0)	.016 (.4)
330	CMR03F331JOYR	.270 (6.9)	.240 (6.1)	.180 (4.6)	.120 (3.0)	.016 (.4)
360	CMR03F361JOYR	.270 (6.9)	.240 (6.1)	.180 (4.6)	.120 (3.0)	.016 (.4)
390	CMR03F391JOYR	.270 (6.9)	.250 (6.4)	.190 (4.8)	.120 (3.0)	.016 (.4)
400	CMR03F401JOYR	.270 (6.9)	.250 (6.4)	.190 (4.8)	.120 (3.0)	.016 (.4)
100 Vdc						
15	CMR03C150DOAR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
18	CMR03C180DOAR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
20	CMR03E200DOAR	.270 (6.9)	.190 (4.8)	.110 (2.8)	.120 (3.0)	.016 (.4)
22	CMR03E220DOAR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
24	CMR03E240DOAR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
27	CMR03E270JOAR	.270 (6.9)	.190 (4.8)	.120 (3.0)	.120 (3.0)	.016 (.4)
30	CMR03E300JOAR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)
33	CMR03E330JOAR	.270 (6.9)	.200 (5.1)	.120 (3.0)	.120 (3.0)	.016 (.4)

Type CMR, High-Reliability, Mica Capacitors

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
36	CMR03E360JOAR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
39	CMR03E390JOAR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
43	CMR03E430JOAR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
47	CMR03E470JOAR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
51	CMR03E510JOAR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
56	CMR03E560JOAR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
62	CMR03E620JOAR	270 (6.9)	210 (5.3)	130 (3.3)	120 (3.0)	.016 (.4)
68	CMR03E680JOAR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
75	CMR03E750JOAR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
82	CMR03E820JOAR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
91	CMR03F910JOAR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
100	CMR03F101JOAR	270 (6.9)	220 (5.6)	150 (3.8)	120 (3.0)	.016 (.4)
110	CMR03F111JOAR	270 (6.9)	220 (5.6)	150 (3.8)	120 (3.0)	.016 (.4)
120	CMR03F121JOAR	270 (6.9)	220 (5.6)	160 (4.1)	120 (3.0)	.016 (.4)
130	CMR03F131JOAR	270 (6.9)	230 (5.8)	160 (4.1)	120 (3.0)	.016 (.4)
150	CMR03F151JOAR	270 (6.9)	230 (5.8)	170 (4.3)	120 (3.0)	.016 (.4)
160	CMR03F161JOAR	270 (6.9)	240 (6.1)	170 (4.3)	120 (3.0)	.016 (.4)
170	CMR03F171JOAR	270 (6.9)	240 (6.1)	180 (4.6)	120 (3.0)	.016 (.4)
180	CMR03F181JOAR	270 (6.9)	240 (6.1)	180 (4.6)	120 (3.0)	.016 (.4)
200	CMR03F201JOAR	270 (6.9)	250 (6.4)	190 (4.8)	120 (3.0)	.016 (.4)
330	CMR04F331JOAR	390 (9.9)	380 (9.7)	220 (5.6)	150 (3.8)	.016 (.4)
360	CMR04F361JOAR	390 (9.9)	380 (9.7)	220 (5.6)	150 (3.8)	.016 (.4)
390	CMR04F391JOAR	390 (9.9)	380 (9.7)	220 (5.6)	150 (3.8)	.016 (.4)
75000	CMR08F753JOAR	1.47 (37.3)	.910 (23.1)	.440 (11.2)	1.05 (26.7)	.040 (1.02)
82000	CMR08F823JOAR	1.48 (37.6)	.920 (23.3)	.460 (11.7)	1.05 (26.7)	.040 (1.02)
91000	CMR08F913JOAR	1.50 (38.1)	.940 (23.9)	.500 (12.7)	1.05 (26.7)	.040 (1.02)
300 Vdc						
1	CMR03C1R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
1.5	CMR03C1R5DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
2	CMR03C2R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
2.5	CMR03C2R5DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
3	CMR03C3R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
3.5	CMR03C3R5DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
4	CMR03C4R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
4.5	CMR03C4R5DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
5	CMR03C5R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
6	CMR03C6R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
7	CMR03C7R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
8	CMR03C8R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
9	CMR03C9R0DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
10	CMR03C100DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
11	CMR03C110DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
12	CMR03C120DOCR	270 (6.9)	190 (4.8)	110 (2.8)	120 (3.0)	.016 (.4)
15	CMR03C150DOCR	270 (6.9)	190 (4.8)	120 (3.0)	120 (3.0)	.016 (.4)
18	CMR03C180DOCR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
20	CMR03E200DOCR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
22	CMR03E220DOCR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
24	CMR03E240DOCR	270 (6.9)	200 (5.1)	120 (3.0)	120 (3.0)	.016 (.4)
27	CMR03E270JOCR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
30	CMR03E300JOCR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
33	CMR03E330JOCR	270 (6.9)	200 (5.1)	130 (3.3)	120 (3.0)	.016 (.4)
36	CMR03E360JOCR	270 (6.9)	210 (5.3)	130 (3.3)	120 (3.0)	.016 (.4)
39	CMR03E390JOCR	270 (6.9)	210 (5.3)	130 (3.3)	120 (3.0)	.016 (.4)
43	CMR03E430JOCR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
47	CMR03E470JOCR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
51	CMR03E510JOCR	270 (6.9)	210 (5.3)	140 (3.6)	120 (3.0)	.016 (.4)
56	CMR03E560JOCR	270 (6.9)	220 (5.6)	150 (3.8)	120 (3.0)	.016 (.4)

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
62	CMR03E620JOCR	270 (6.9)	220 (5.6)	150 (3.8)	120 (3.0)	.016 (.4)
68	CMR03E680JOCR	270 (6.9)	220 (5.6)	150 (3.8)	120 (3.0)	.016 (.4)
75	CMR03E750JOCR	270 (6.9)	230 (5.8)	160 (4.1)	120 (3.0)	.016 (.4)
82	CMR03E820JOCR	270 (6.9)	230 (5.8)	160 (4.1)	120 (3.0)	.016 (.4)
91	CMR03F910JOCR	270 (6.9)	230 (5.8)	170 (4.3)	120 (3.0)	.016 (.4)
100	CMR03F101JOCR	270 (6.9)	240 (6.1)	180 (4.6)	120 (3.0)	.016 (.4)
110	CMR03F111JOCR	270 (6.9)	240 (6.1)	180 (4.6)	120 (3.0)	.016 (.4)
120	CMR03F121JOCR	270 (6.9)	250 (6.4)	190 (4.8)	120 (3.0)	.016 (.4)
270	CMR04F271JOCR	390 (9.9)	380 (9.7)	220 (5.6)	150 (3.8)	.016 (.4)
300	CMR04F301JOCR	390 (9.9)	380 (9.7)	220 (5.6)	150 (3.8)	.016 (.4)
56000	CMR08F563JOCR	1.46 (37.1)	.910 (23.1)	.420 (10.7)	1.05 (26.7)	.040 (1.02)
62000	CMR08F623JOCR	1.47 (37.3)	.920 (23.3)	.450 (11.4)	1.05 (26.7)	.040 (1.02)
68000	CMR08F683JOCR	1.48 (37.6)	.920 (23.3)	.470 (11.9)	1.05 (26.7)	.040 (1.02)
500 Vdc						
1	CMR04C1R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
1	CMR05C1R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
1.5	CMR04C1R5DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
1.5	CMR05C1R5DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
2	CMR04C2R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
2	CMR05C2R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
2.5	CMR04C2R5DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
2.5	CMR05C2R5DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
3	CMR04C3R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
3	CMR05C3R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
3.5	CMR04C3R5DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
3.5	CMR05C3R5DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
4	CMR04C4R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
4	CMR05C4R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
4.5	CMR04C4R5DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
4.5	CMR05C4R5DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
5	CMR04C5R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
5	CMR05C5R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
6	CMR04C6R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
6	CMR05C6R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
7	CMR04C7R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
7	CMR05C7R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
8	CMR04C8R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
8	CMR05C8R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
9	CMR04C9R0DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
9	CMR05C9R0DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
10	CMR04C100DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
10	CMR05C100DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
11	CMR04C110DODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
11	CMR05C110DODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
12	CMR04C120JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
12	CMR05C120JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
15	CMR04C150JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
15	CMR05C150JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
18	CMR04C180JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
18	CMR05C180JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
20	CMR04E200JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
20	CMR05E200JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
22	CMR04E220JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
22	CMR05E220JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
24	CMR04E240JODR	360 (9.1)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)
24	CMR05E240JODR	450 (11.4)	360 (9.1)	170 (4.3)	.225 (5.7)	.025 (.6)
27	CMR04E270JODR	370 (9.4)	330 (8.4)	190 (4.8)	150 (3.8)	.016 (.4)

Type CMR, High-Reliability, Mica Capacitors

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
27	CMR05E270JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
30	CMR04E300JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
30	CMR05E300JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
33	CMR04E330JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
33	CMR05E330JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
36	CMR04E360JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
36	CMR05E360JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
39	CMR04E390JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
39	CMR05E390JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
43	CMR04E430JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
43	CMR05E430JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
47	CMR04E470JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
47	CMR05E470JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
51	CMR04E510JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
51	CMR05E510JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
56	CMR04E560JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
56	CMR05E560JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
62	CMR04E620JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
62	CMR05E620JODR	.450 (11.4)	.360 (9.1)	.170 (4.3)	.225 (5.7)	.025 (.6)
68	CMR04E680JODR	.370 (9.4)	.340 (8.6)	.190 (4.8)	.150 (3.8)	.016 (.4)
68	CMR05E680JODR	.450 (11.4)	.360 (9.1)	.180 (4.6)	.225 (5.7)	.025 (.6)
75	CMR04E750JODR	.370 (9.4)	.340 (8.6)	.200 (5.1)	.150 (3.8)	.016 (.4)
75	CMR05E750JODR	.450 (11.4)	.360 (9.1)	.180 (4.6)	.225 (5.7)	.025 (.6)
82	CMR04E820JODR	.370 (9.4)	.350 (8.9)	.200 (5.1)	.150 (3.8)	.016 (.4)
82	CMR05E820JODR	.450 (11.4)	.360 (9.1)	.180 (4.6)	.225 (5.7)	.025 (.6)
91	CMR04F910JODR	.370 (9.4)	.350 (8.9)	.200 (5.1)	.150 (3.8)	.016 (.4)
91	CMR05F910JODR	.460 (11.7)	.360 (9.1)	.180 (4.6)	.225 (5.7)	.025 (.6)
100	CMR04F101JODR	.370 (9.4)	.350 (8.9)	.200 (5.1)	.150 (3.8)	.016 (.4)
100	CMR05F101JODR	.460 (11.7)	.360 (9.1)	.180 (4.6)	.225 (5.7)	.025 (.6)
110	CMR04F111JODR	.380 (9.7)	.350 (8.9)	.200 (5.1)	.150 (3.8)	.016 (.4)
110	CMR05F111JODR	.460 (11.7)	.370 (9.4)	.180 (4.6)	.225 (5.7)	.025 (.6)
120	CMR04F121JODR	.380 (9.7)	.350 (8.9)	.200 (5.1)	.150 (3.8)	.016 (.4)
120	CMR05F121JODR	.460 (11.7)	.370 (9.4)	.180 (4.6)	.225 (5.7)	.025 (.6)
130	CMR04F131JODR	.380 (9.7)	.360 (9.1)	.200 (5.1)	.150 (3.8)	.016 (.4)
130	CMR05F131JODR	.460 (11.7)	.370 (9.4)	.180 (4.6)	.225 (5.7)	.025 (.6)
150	CMR04F151JODR	.380 (9.7)	.360 (9.1)	.210 (5.3)	.150 (3.8)	.016 (.4)
150	CMR05F151JODR	.460 (11.7)	.370 (9.4)	.190 (4.8)	.225 (5.7)	.025 (.6)
160	CMR04F161JODR	.380 (9.7)	.360 (9.1)	.210 (5.3)	.150 (3.8)	.016 (.4)
160	CMR05F161JODR	.460 (11.7)	.370 (9.4)	.190 (4.8)	.225 (5.7)	.025 (.6)
180	CMR04F181JODR	.380 (9.7)	.370 (9.4)	.210 (5.3)	.150 (3.8)	.016 (.4)
180	CMR05F181JODR	.460 (11.7)	.370 (9.4)	.190 (4.8)	.225 (5.7)	.025 (.6)
200	CMR04F201JODR	.390 (9.9)	.380 (9.7)	.220 (5.6)	.150 (3.8)	.016 (.4)
200	CMR05F201JODR	.460 (11.7)	.380 (9.7)	.190 (4.8)	.225 (5.7)	.025 (.6)
220	CMR04F221JODR	.390 (9.9)	.380 (9.7)	.220 (5.6)	.150 (3.8)	.016 (.4)
220	CMR05F221JODR	.460 (11.7)	.380 (9.7)	.200 (5.1)	.225 (5.7)	.025 (.6)
240	CMR04F241JODR	.390 (9.9)	.380 (9.7)	.220 (5.6)	.150 (3.8)	.016 (.4)
240	CMR05F241JODR	.460 (11.7)	.380 (9.7)	.200 (5.1)	.225 (5.7)	.025 (.6)
270	CMR05F271JODR	.470 (11.9)	.390 (9.9)	.210 (5.3)	.225 (5.7)	.025 (.6)
300	CMR05F301JODR	.470 (11.9)	.390 (9.9)	.210 (5.3)	.225 (5.7)	.025 (.6)
330	CMR05F331JODR	.470 (11.9)	.390 (9.9)	.210 (5.3)	.225 (5.7)	.025 (.6)

Cap (pF)	Catalog Part Number	L in (mm)	H in (mm)	T in (mm)	S in (mm)	d in (mm)
360	CMR05F361JODR	.470 (11.9)	.400 (10.2)	.220 (5.6)	.225 (5.7)	.025 (.6)
390	CMR05F391JODR	.470 (11.9)	.400 (10.2)	.220 (5.6)	.225 (5.7)	.025 (.6)
430	CMR06F431JODR	.640 (16.3)	.510 (13.0)	.200 (5.1)	.350 (8.9)	.032 (.8)
470	CMR06F471JODR	.640 (16.3)	.510 (13.0)	.200 (5.1)	.350 (8.9)	.032 (.8)
510	CMR06F511JODR	.650 (16.5)	.510 (13.0)	.200 (5.1)	.350 (8.9)	.032 (.8)
560	CMR06F561JODR	.650 (16.5)	.510 (13.0)	.200 (5.1)	.350 (8.9)	.032 (.8)
620	CMR06F621JODR	.650 (16.5)	.510 (13.0)	.200 (5.1)	.350 (8.9)	.032 (.8)
680	CMR06F681JODR	.650 (16.5)	.510 (13.0)	.210 (5.3)	.350 (8.9)	.032 (.8)
750	CMR06F751JODR	.650 (16.5)	.510 (13.0)	.210 (5.3)	.350 (8.9)	.032 (.8)
820	CMR06F821JODR	.650 (16.5)	.510 (13.0)	.210 (5.3)	.350 (8.9)	.032 (.8)
1000	CMR06F102JODR	.650 (16.5)	.520 (13.2)	.220 (5.6)	.350 (8.9)	.032 (.8)
1100	CMR06F112JODR	.650 (16.5)	.520 (13.2)	.220 (5.6)	.350 (8.9)	.032 (.8)
1200	CMR06F122JODR	.660 (16.8)	.520 (13.2)	.220 (5.6)	.350 (8.9)	.032 (.8)
1300	CMR06F132JODR	.660 (16.8)	.520 (13.2)	.220 (5.6)	.350 (8.9)	.032 (.8)
1500	CMR06F152JODR	.660 (16.8)	.520 (13.2)	.230 (5.8)	.350 (8.9)	.032 (.8)
1600	CMR06F162JODR	.660 (16.8)	.530 (13.5)	.230 (5.8)	.350 (8.9)	.032 (.8)
1800	CMR06F182JODR	.670 (17.0)	.530 (13.5)	.240 (6.1)	.350 (8.9)	.032 (.8)
2000	CMR06F202JODR	.670 (17.0)	.530 (13.5)	.240 (6.1)	.350 (8.9)	.032 (.8)
2200	CMR06F222JODR	.670 (17.0)	.530 (13.5)	.250 (6.4)	.350 (8.9)	.032 (.8)
2400	CMR06F242JODR	.670 (17.0)	.540 (13.7)	.260 (6.6)	.350 (8.9)	.032 (.8)
2700	CMR06F272JODR	.680 (17.3)	.540 (13.7)	.270 (6.9)	.350 (8.9)	.032 (.8)
3000	CMR06F302JODR	.680 (17.3)	.550 (14.0)	.280 (7.1)	.350 (8.9)	.032 (.8)
3300	CMR06F332JODR	.680 (17.3)	.550 (14.0)	.290 (7.4)	.350 (8.9)	.032 (.8)
3600	CMR06F362JODR	.680 (17.3)	.560 (14.2)	.300 (7.6)	.350 (8.9)	.032 (.8)
3900	CMR06F392JODR	.690 (17.5)	.560 (14.2)	.310 (7.9)	.350 (8.9)	.032 (.8)
4300	CMR06F432JODR	.690 (17.5)	.570 (14.5)	.330 (8.4)	.350 (8.9)	.032 (.8)
4700	CMR06F472JODR	.700 (17.8)	.580 (14.7)	.350 (8.9)	.350 (8.9)	.032 (.8)
5100	CMR07F512JODR	.780 (19.8)	.860 (21.8)	.280 (7.1)	.425 (10.8)	.040 (1.0)
5600	CMR07F562JODR	.780 (19.8)	.870 (22.1)	.290 (7.4)	.425 (10.8)	.040 (1.0)
6200	CMR07F622JODR	.780 (19.8)	.870 (22.1)	.290 (7.4)	.425 (10.8)	.040 (1.0)
6800	CMR07F682JODR	.780 (19.8)	.870 (22.1)	.300 (7.6)	.425 (10.8)	.040 (1.0)
7500	CMR07F752JODR	.790 (20.1)	.880 (22.4)	.310 (7.9)	.425 (10.8)	.040 (1.0)
8200	CMR07F822JODR	.790 (20.1)	.880 (22.4)	.320 (8.1)	.425 (10.8)	.040 (1.0)
9100	CMR07F912JODR	.790 (20.1)	.880 (22.4)	.330 (8.4)	.425 (10.8)	.040 (1.0)
10000	CMR07F103JODR	.800 (20.3)	.890 (22.6)	.340 (8.6)	.425 (10.8)	.040 (1.0)
11000	CMR07F113JODR	.800 (20.3)	.890 (22.6)	.350 (8.9)	.425 (10.8)	.040 (1.0)
12000	CMR07F123JODR	.800 (20.3)	.890 (22.6)	.360 (9.1)	.425 (10.8)	.040 (1.0)
13000	CMR07F133JODR	.810 (20.6)	.890 (22.6)	.370 (9.4)	.425 (10.8)	.040 (1.0)
15000	CMR07F153JODR	.810 (20.6)	.900 (22.9)	.390 (9.9)	.425 (10.8)	.040 (1.0)
16000	CMR07F163JODR	.820 (20.8)	.900 (22.9)	.410 (10.4)	.425 (10.8)	.040 (1.0)
18000	CMR07F183JODR	.820 (20.8)	.910 (23.1)	.430 (10.9)	.425 (10.8)	.040 (1.0)
22000	CMR08F223JODR	1.42 (36.1)	.880 (22.4)	.310 (7.9)	1.05 (26.7)	.040 (1.02)
24000	CMR08F243JODR	1.43 (36.3)	.880 (22.4)	.320 (8.1)	1.05 (26.7)	.040 (1.02)
27000	CMR08F273JODR	1.43 (36.3)	.880 (22.4)	.330 (8.4)	1.05 (26.7)	.040 (1.02)
30000	CMR08F303JODR	1.44 (36.6)	.890 (22.6)	.350 (8.9)	1.05 (26.7)	.040 (1.02)
33000	CMR08F333JODR	1.44 (36.6)	.890 (22.6)	.360 (9.1)	1.05 (26.7)	.040 (1.02)
36000	CMR08F363JODR	1.45 (36.8)	.900 (22.9)	.380 (9.7)	1.05 (26.7)	.040 (1.02)
39000	CMR08F393JODR	1.45 (36.8)	.900 (22.9)	.400 (10.2)	1.05 (26.7)	.040 (1.02)
43000	CMR08F433JODR	1.46 (37.1)	.910 (23.1)	.420 (10.7)	1.05 (26.7)	.040 (1.02)
47000	CMR08F473JODR	1.47 (37.3)	.910 (23.1)	.450 (11.4)	1.05 (26.7)	.040 (1.02)
51000	CMR08F513JODR	1.48 (37.6)	.920 (23.3)	.470 (11.9)	1.05 (26.7)	.040 (1.02)

Type CMR, High-Reliability, Mica Capacitors

Specifications

Capacitance is within tolerance when measured at these frequencies:

- 1 - 1000 pF @ 1 MHz
- > 1000 pF @ 1 KHz

Dissipation Factor limits are below. Measure dissipation factor at 1 MHz when the capacitance is 1 pF to 1000 pF, and at 1 kHz when the capacitance is greater than 1000 pF. Dissipation factor is equal to $DF = 2\pi fRC$, where f is the test frequency, R is the equivalent series resistance, and C is the capacitance. For other capacitance values, see Figure 1.

Capacitance	Dissipation Factor
100-1000 pF	0.00075 max at 1 MHz
1100-3300 pF	0.0014 max at 1 kHz
3600-9100 pF	0.0013 max at 1 kHz
10,000 pF	0.0012 max at 1 kHz

Quality Factor (Q) is the reciprocal of dissipation factor.

Insulation Resistance for capacitances up to 10,000 pF is greater than 100 G. at 25 °C, greater than 10 G. at 125 °C, and greater than 5 G. at 150 °C. For other capacitance values and temperatures, see Figure 2.

Withstanding Voltage is two times the rated voltage, and can be applied up to 5 seconds without damage.

Temperature Coefficient and Capacitance Drift measure the capacitors'

capacitance at 25 °C, -55 °C, 25 °C, 125 °C (or 150 °C) and at 25 °C after stabilizing at each temperature. The capacitance will meet the limits of the Characteristic table shown in Ordering Information.

Failure Rate: Type CMR capacitors have specified failure rate levels ranging from 0.01% to 1.0% per 1000 hours. The failure rate level is established at 90% confidence level and is referred to operational life at full rated voltage at maximum rated temperature.

High Voltage Stabilization: We subject capacitors with Failure Levels M, P, and R to a burn-in at twice rated voltage, at rated temperature, for a minimum of 48 hours. Capacitors that show damage, arcing, breakdown, or low IR are removed. We reject the lot if more than 8% of the capacitors fail.

Solderability: After an 8-hour steam aging, coat leads with a rosin flux (R) and immerse in molten 245 °C $\pm$ 5 °C 60/40 tin/lead solder. Solder coverage will be no less than 95% when examined at 10X magnification.

Life Test: Subject the capacitors to maximum operating temperature (+125 °C or +150 °C) with 1.5 times rated voltage applied for 10,000 hours. Take readings and make visual observations every 2000 hours.

There will be no visual damage and the capacitors will meet the after-test limits on the following page.

Resistance to Solvents: Subject the capacitors to three cycles of 3 minute immersion in solvent, 10 strokes with bristle brush and, where applicable, ½ minute in vapor, per MIL-STD-202, Method 215. Repeat the three cycles for three solvent mixtures: Isopropyl alcohol mixture (Solvent 1), azeotrope mixture (Solvent 3), and water/propylene-glycol mixture (Solvent 4). The marking will not rub off or smear and there will be no visible damage to the capacitor body. Refer to MIL-STD-202 for details.

Resistance to Soldering Heat: Capacitors will meet the requirements of MIL-STD-202, Method 210 Test Condition G. Immerse capacitor leads to within .250 inches (6.4 mm) of the body in molten tin/lead solder (260 °C $\pm$ 5 °C) for 10 $\pm$ 2 seconds. Allow to cool. Capacitors will meet the after-test limits on the following page.

Marking of capacitors conforms to method I of MIL-STD-1285, and includes the type designation, "JAN," brand, trademark, source code, date code, rated voltage, capacitance, capacitance tolerance, and the highest rated temperature. Small capacitors are marked with the letter "J".

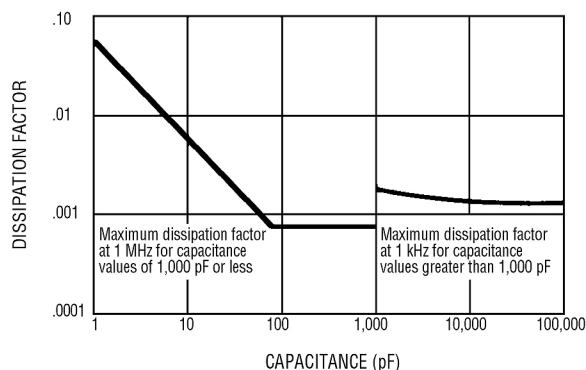


Figure 1. DF vs. Capacitance

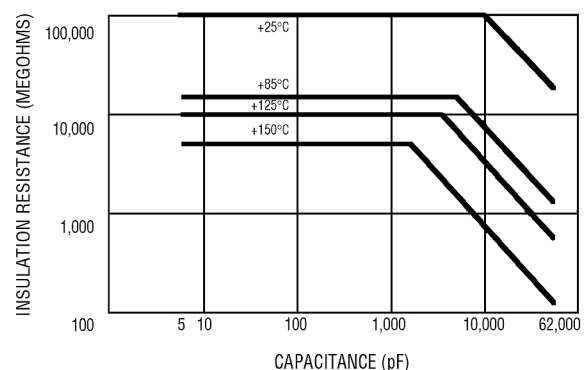
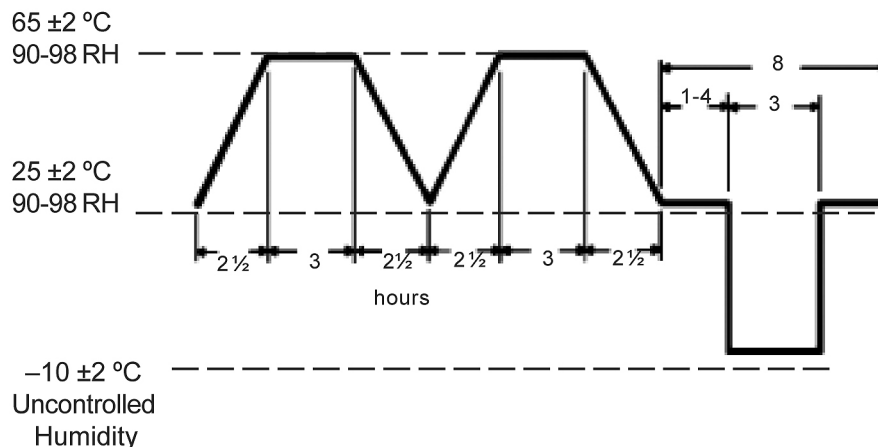


Figure 2. IR vs. Capacitance

Type CMR, High-Reliability, Mica Capacitors

Moisture Resistance: Capacitors will meet the requirements of MIL-STD-202, Method 106F as outlined here and diagrammed on the right. Apply 100 V or the rated voltage (whichever is less) to half of the capacitors. Don't apply voltage to the other half. Refer to MIL-STD-202 for details.

1. Dry capacitors for 24 hours in a $50 \pm 2^\circ\text{C}$ oven and then allow to stabilize at room temperature.
2. Subject the capacitors to 20 24-hour continuous cycles with relative humidity and temperature as shown.
3. 4 to 24 hours after completion of the last cycle the capacitors will show no visual damage and will meet the after-test limits below.



After-Test Limits

Test	Withstand Voltage	Insulation Resistance	Capacitance Change (whichever is greater)	DF	Q
Moisture Resistance	IL	30 GΩ	NV $\pm$ 1% or $\pm$ 1 pF	150% IL	2/3xIL
Life Test	IL	IL	NV $\pm$ 1% or $\pm$ 1 pF	150% IL	2/3xIL
Solder Heat	IL	IL	IV $\pm$ 5% or $\pm$ 5pF	IL	IL

IL=Initial Limit NV=Nominal Value IV=Initial Value

Ordering Information

Order by complete part number, as below.
For other options, write your requirements on your quote request.

Part Numbering System

CMR05	C	100	J	P	D	R
CDE Type	Characteristic	Capacitance 1R0 = 1.0pF 361 = 360pF 122 = 1200pF	Capacitance Tolerance D = $\pm$ 5 pf F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5%	Temperature Range O = -55°C to $+125^\circ\text{C}$ P = -55°C to $+150^\circ\text{C}$ *	Voltage Y = 50 Vdc A = 100 Vdc C = 300 Vdc D = 500 Vdc	Failure Rate M = 1.0%/1000 hrs. P = .1%/1000 hrs. R = .01%/1000 hrs.

	Temp. Coeff. ppm/ $^\circ\text{C}$	Capacitance Drift	Standard Cap. Range
C	-200 to $+200$	$\pm(0.5\% + 0.1\text{pF})$	1 – 18 pF
E	-20 to $+100$	$\pm(0.1\% + 0.1\text{pF})$	20 – 82 pF
F	0 to $+70$	$\pm(0.05\% + 0.1\text{pF})$	91 pF and up

*P temperature range available for CMR04, CMR05, CMR06, CMR07, CMR08

Type CMR, High-Reliability, Mica Capacitors

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