

ELECTRON PRODUCTS INC.

ENGINEERING DATA SHEET

METALLIZED PAPER AND OR PLASTIC FILM CAPACITORS

SERIES

M

ENVIRONMENTAL DATA

APPLICATIONS

Series M Metallized Paper and or Plastic Film Capacitors are non-polar, non-inductive wound capacitors.

Series M Capacitors come in several styles: Oval Wrap & Fill (M Style); Round Wrap & Fill (MC Style); Axial Epoxy Case (ME Style); Radial Epoxy Case (M2E Style); Rectangular Hermetically Sealed (MG Style); Round Hermetically Sealed (ML Style). They are available in the Regular Size, as well as custom sizes to meet specific customer requirements.

Contact our Engineering Department for special sizes, configurations, capacitance values and AC applications with Anti-Corona construction at all frequencies. Custom metal enclosures are available. Custom designed Feed Through capacitors (MQ Style) are also available for filter applications to specific requirements.

OPERATING TEMPERATURE RANGE

Range: -55°C to +125°C, without voltage derating.

LIFE TEST

Series M capacitors shall be capable of withstanding a test of 1000 hours at 125°C and 100% of the DC rated voltage or a test of 250 hours at 125°C and 140% of the DC voltage. The voltage shall be applied to each capacitor through its individual current-limiting resistor as determined from the formula $R = 0.025/C$, where C is the nominal capacitance in farads and R is in ohms. The test procedures shall be in accordance with MIL-C-18312, except as noted herein. Not more than one failure in twelve shall be permitted. Any one of the following shall be considered a failure.

- a. A change in capacitance of more than 10% from its initial value.
- b. An increase in Dissipation Factor to a value greater than 125% of the acceptance limit.
- c. A decrease in Insulation Resistance to a value less than 30% of the acceptance limit for 25°C.
- d. A permanent short or open.

VIBRATION

Series M capacitors shall be capable of withstanding a vibration test in accordance with MIL-STD-202, Method 201. The following details and exceptions shall apply:

a. **Mounting.** The capacitor body shall be rigidly mounted by the entire body length to the vibration test fixture. The leads shall be soldered to rigidly supported terminals and so spaced that the length of each lead from the capacitor is $1/2 \pm 1/8$ inch from the edge of the supporting terminal.

b. **Measurement during Vibration.** During the last cycle in each direction, an electrical measurement shall be made to detect intermittent contacts (not to be confused with "self healing" clearings) or open or short circuiting.

c. **Examination After Vibration.** Capacitors shall be visibly examined for evidence of mechanical damage.

MOISTURE RESISTANCE

Series M capacitor Styles MG and ML (hermetically sealed in metal containers) shall be capable of withstanding the moisture resistance, humidity, and temperature and immersion cycling or MIL-C-18312. Styles ME and M2E (epoxy encased) and Style M (wrap & fill) capacitors are not intended for exposure to high humidity conditions over extended periods of time.

TERMINAL STRENGTH

Series M capacitors utilize tin-plated, copper-clad steel wire terminals which shall be capable of withstanding the following test without mechanical damage to the capacitor or terminals:

a. **Pull Test.** The capacitor shall withstand a steady pull of 5 pounds axially to the leads for 1 minute.

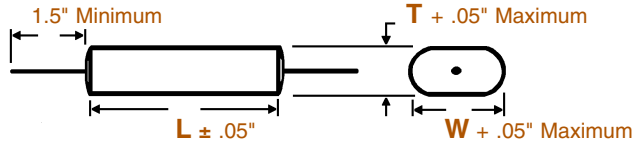
b. **Bend Test.** The wire lead terminals shall be bent at a point of 1/4 inch from the body of the capacitor, first 90 degrees in one direction, then back to the original position, and then 90 degrees in the opposite direction.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS WRAP AND FILL, OVAL AXIAL LEAD

M
METALLIZED PAPER
WRAP & FILL, OVAL
REGULAR SERIES

DIMENSIONS See tables for specific T, W, L values.

WIRE SIZE (Length 1.5" Minimum)



BODY LENGTH (L)	WIRE SIZE	
	AWG No.	Diameter
≤ 0.65"	24	0.020"
> 0.65" ≤ 1.00"	22	0.025"
> 1.00"	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire axial leads; encased in skin-tight plastic wrap with epoxy end fill.

APPLICATION NOTES

Wrap & Fill capacitors are not intended for exposure to high humidity conditions over extended periods of time. For stringent environmental conditions, Wrap & Fill capacitors should be used in encapsulated or hermetically sealed circuitry.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

MFD	100VDC 70VAC				200VDC 120VAC				400VDC 160VAC				600VDC 230VAC			
	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #
RATING	+ .05"	+ .05"	± .05"		+ .05"	+ .05"	± .05"		+ .05"	+ .05"	± .05"		+ .05"	+ .05"	± .05"	
.01	.11	.23	.53	M1-103E	.11	.23	.53	M2-103E	.11	.23	.53	M4-103E	.11	.23	.53	M6-103E
.012	.12	.23	.53	M1-123E	.12	.23	.53	M2-123E	.12	.23	.53	M4-123E	.12	.23	.53	M6-123E
.015	.12	.23	.53	M1-153E	.12	.23	.53	M2-153E	.14	.24	.53	M4-153E	.14	.27	.53	M6-153E
.018	.12	.23	.53	M1-183E	.12	.23	.53	M2-183E	.15	.26	.53	M4-183E	.16	.29	.53	M6-183E
.022	.12	.23	.53	M1-223E	.12	.23	.53	M2-223E	.16	.29	.53	M4-223E	.17	.30	.53	M6-223E
.027	.12	.23	.53	M1-273E	.12	.23	.53	M2-273E	.18	.31	.53	M4-273E	.19	.32	.53	M6-273E
.033	.12	.23	.53	M1-333E	.12	.23	.53	M2-333E	.20	.33	.53	M4-333E	.22	.35	.53	M6-333E
.039	.12	.23	.53	M1-393E	.12	.23	.53	M2-393E	.22	.35	.53	M4-393E	.26	.37	.53	M6-393E
.047	.12	.23	.53	M1-473E	.12	.23	.53	M2-473E	.24	.37	.53	M4-473E	.23	.35	.65	M6-473E
.056	.12	.23	.53	M1-563E	.14	.27	.53	M2-563E	.20	.33	.65	M4-563E	.23	.36	.65	M6-563E
.068	.12	.24	.53	M1-683E	.14	.27	.53	M2-683E	.22	.35	.65	M4-683E	.25	.41	.65	M6-683E
.082	.12	.24	.53	M1-823E	.16	.29	.53	M2-823E	.21	.34	.78	M4-823E	.23	.39	.78	M6-823E
.10	.12	.24	.53	M1-104E	.18	.31	.53	M2-104E	.24	.37	.78	M4-104E	.26	.42	.78	M6-104E
.12	.13	.25	.53	M1-124E	.20	.33	.53	M2-124E	.27	.40	.78	M4-124E	.29	.45	.78	M6-124E
.15	.14	.27	.53	M1-154E	.24	.37	.53	M2-154E	.30	.43	.78	M4-154E	.33	.49	.78	M6-154E
.18	.16	.29	.53	M1-184E	.20	.33	.65	M2-184E	.28	.44	.97	M4-184E	.31	.47	.97	M6-184E
.22	.19	.32	.53	M1-224E	.22	.35	.65	M2-224E	.30	.46	.97	M4-224E	.34	.50	.97	M6-224E
.25	.19	.32	.53	M1-254E	.20	.33	.78	M2-254E	.32	.48	.97	M4-254E	.37	.53	.97	M6-254E
.27	.21	.34	.53	M1-274E	.21	.34	.78	M2-274E	.34	.50	.97	M4-274E	.38	.54	.97	M6-274E
.33	.24	.35	.53	M1-334E	.23	.36	.78	M2-334E	.38	.54	.97	M4-334E	.41	.63	.97	M6-334E
.39	.21	.34	.65	M1-394E	.27	.40	.78	M2-394E	.41	.57	.97	M4-394E	.41	.57	1.17	M6-394E
.47	.24	.35	.65	M1-474E	.30	.43	.78	M2-474E	.40	.56	1.17	M4-474E	.46	.62	1.17	M6-474E
.50	.24	.35	.65	M1-504E	.32	.43	.78	M2-504E	.41	.57	1.17	M4-504E	.47	.63	1.17	M6-504E
.56	.25	.35	.65	M1-564E	.25	.40	.97	M2-564E	.44	.60	1.17	M4-564E	.51	.67	1.17	M6-564E
.68	.23	.36	.78	M1-684E	.29	.44	.97	M2-684E	.49	.65	1.17	M4-684E	.56	.73	1.17	M6-684E
.75	.24	.37	.78	M1-754E	.31	.47	.97	M2-754E	.52	.68	1.17	M4-754E	.46	.63	1.68	M6-754E
.82	.21	.34	.97	M1-824E	.27	.43	1.17	M2-824E	.41	.58	1.68	M4-824E	.49	.66	1.68	M6-824E
1.0	.24	.37	.97	M1-105E	.32	.48	1.17	M2-105E	.47	.64	1.68	M4-105E	.54	.71	1.68	M6-105E
1.5	.31	.44	.97	M1-155E	.40	.56	1.17	M2-155E	.58	.74	1.68	M4-155E	.68	.85	1.68	M6-155E
2.0	.36	.49	.97	M1-205E	.45	.61	1.17	M2-205E	.68	.84	1.68	M4-205E	.76	.98	1.68	M6-205E
3.0	.38	.51	1.17	M1-305E	.44	.60	1.68	M2-305E	.74	1.11	1.68	M4-305E	.72	1.10	2.25	M6-305E
5.0	.34	.56	1.68	M1-505E	.55	.77	1.68	M2-505E	.83	1.20	2.25	M4-505E	.97	1.34	2.25	M6-505E
8.0	.45	.67	1.68	M1-805E	.64	1.02	1.68	M2-805E	1.09	1.47	2.25	M4-805E	1.27	1.65	2.25	M6-805E
10.0	.52	.73	1.68	M1-106E	.73	1.11	1.68	M2-106E	1.24	1.61	2.25	M4-106E	1.45	1.82	2.25	M6-106E

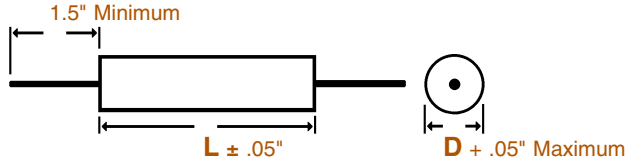
Note: Replace the last digit E with the desired tolerance code from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS WRAP AND FILL, ROUND AXIAL LEAD

MC

METALLIZED PAPER
WRAP & FILL, ROUND
REGULAR SERIES

DIMENSIONS See tables for specific D, L values.



WIRE SIZE (Length 1.5" Minimum)

BODY LENGTH (L)	WIRE SIZE	
	AWG No.	Diameter
$\leq 0.71"$	24	0.020"
$> 0.71" \leq 1.25"$	22	0.025"
$> 1.25"$	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire axial leads; encased in skin-tight plastic wrap with epoxy end fill.

APPLICATION NOTES

Wrap & Fill capacitors are not intended for exposure to high humidity conditions over extended periods of time. For stringent environmental conditions, Wrap & Fill capacitors should be used in encapsulated or hermetically sealed circuitry.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

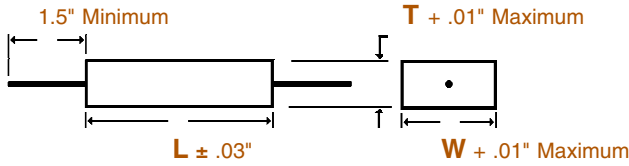
MFD	100VDC 70VAC			200VDC 120VAC			400VDC 160VAC			600VDC 230VAC			
	RATING	D	L	PART #	D	L	PART #	D	L	PART #	D	L	PART #
		+ .05"	± .05"		+ .05"	± .05"		+ .05"	± .05"		+ .05"	± .05"	
.01	.19	.53	MC1-103E	.22	.53	MC2-103E	.24	.53	MC4-103E	.30	.53	MC6-103E	
.012	.21	.53	MC1-123E	.20	.53	MC2-123E	.26	.53	MC4-123E	.30	.53	MC6-123E	
.015	.23	.53	MC1-153E	.22	.53	MC2-153E	.29	.53	MC4-153E	.33	.53	MC6-153E	
.018	.25	.53	MC1-183E	.24	.53	MC2-183E	.28	.53	MC4-183E	.33	.53	MC6-183E	
.022	.22	.53	MC1-223E	.26	.53	MC2-223E	.30	.53	MC4-223E	.35	.53	MC6-223E	
.027	.24	.53	MC1-273E	.28	.53	MC2-273E	.30	.53	MC4-273E	.38	.53	MC6-273E	
.033	.26	.53	MC1-333E	.31	.53	MC2-333E	.32	.53	MC4-333E	.41	.53	MC6-333E	
.039	.25	.53	MC1-393E	.30	.53	MC2-393E	.36	.53	MC4-393E	.39	.53	MC6-393E	
.047	.27	.53	MC1-473E	.32	.53	MC2-473E	.39	.53	MC4-473E	.42	.65	MC6-473E	
.056	.29	.53	MC1-563E	.31	.53	MC2-563E	.42	.65	MC4-563E	.45	.65	MC6-563E	
.068	.32	.53	MC1-683E	.34	.53	MC2-683E	.40	.65	MC4-683E	.49	.65	MC6-683E	
.082	.35	.53	MC1-823E	.37	.53	MC2-823E	.43	.78	MC4-823E	.54	.78	MC6-823E	
.10	.38	.53	MC1-104E	.40	.53	MC2-104E	.47	.78	MC4-104E	.52	.78	MC6-104E	
.12	.42	.53	MC1-124E	.38	.53	MC2-124E	.51	.78	MC4-124E	.56	.78	MC6-124E	
.15	.47	.53	MC1-154E	.42	.53	MC2-154E	.56	.78	MC4-154E	.56	.78	MC6-154E	
.18	.45	.53	MC1-184E	.45	.65	MC2-184E	.54	.97	MC4-184E	.61	.97	MC6-184E	
.22	.49	.53	MC1-224E	.49	.65	MC2-224E	.59	.97	MC4-224E	.67	.97	MC6-224E	
.25	.54	.53	MC1-254E	.54	.78	MC2-254E	.59	.97	MC4-254E	.74	.97	MC6-254E	
.27	.54	.53	MC1-274E	.54	.78	MC2-274E	.59	.97	MC4-274E	.74	.97	MC6-274E	
.33	.59	.53	MC1-334E	.59	.78	MC2-334E	.64	.97	MC4-334E	.74	.97	MC6-334E	
.39	.53	.65	MC1-394E	.53	.78	MC2-394E	.69	.97	MC4-394E	.81	1.17	MC6-394E	
.47	.56	.65	MC1-474E	.53	.78	MC2-474E	.76	1.17	MC4-474E	.81	1.17	MC6-474E	
.50	.49	.65	MC1-504E	.57	.78	MC2-504E	.83	1.17	MC4-504E	.81	1.17	MC6-504E	
.56	.49	.65	MC1-564E	.57	.97	MC2-564E	.83	1.17	MC4-564E	.81	1.17	MC6-564E	
.68	.54	.78	MC1-684E	.62	.97	MC2-684E	.90	1.17	MC4-684E	.81	1.17	MC6-684E	
.75	.58	.78	MC1-754E	.68	.97	MC2-754E	.90	1.17	MC4-754E	.81	1.68	MC6-754E	
.82	.58	.97	MC1-824E	.68	1.17	MC2-824E	.90	1.68	MC4-824E	.81	1.68	MC6-824E	
1.0	.64	.97	MC1-105E	.74	1.17	MC2-105E	.90	1.68	MC4-105E	.81	1.68	MC6-105E	
1.5	.71	.97	MC1-155E	.83	1.17	MC2-155E	.90	1.68	MC4-155E	.81	1.68	MC6-155E	
2.0	.71	.97	MC1-205E	.83	1.17	MC2-205E	.90	1.68	MC4-205E	.81	1.68	MC6-205E	
3.0	.71	1.17	MC1-305E	.83	1.68	MC2-305E	.90	1.68	MC4-305E	.81	2.25	MC6-305E	
5.0	.71	1.68	MC1-505E	.83	1.68	MC2-505E	.90	2.25	MC4-505E	.81	2.25	MC6-505E	
8.0	.71	1.68	MC1-805E	.83	1.68	MC2-805E	.90	2.25	MC4-805E	.81	2.25	MC6-805E	
10.0	.71	1.68	MC1-106E	.83	1.68	MC2-106E	.90	2.25	MC4-106E	.81	2.25	MC6-106E	

Note: Replace the last digit **E** with the desired tolerance code from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS EPOXY CASE, AXIAL LEAD, RECTANGULAR

ME
METALLIZED PAPER
EPOXY CASE, AXIAL, RECT.
REGULAR SERIES

DIMENSIONS See tables for specific T, W, L values.



WIRE SIZE (Length 1.5" Minimum)

BODY LENGTH (L)	WIRE SIZE	
	AWG No.	Diameter
≤ 0.67"	24	0.020"
> 0.67" ≤ 1.06"	22	0.025"
> 1.06"	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire axial leads; encased in a molded epoxy/plastic shell with epoxy fill.

APPLICATION NOTES

Epoxy Case capacitors are not intended for exposure to high humidity conditions over extended periods of time. For stringent environmental conditions, Epoxy Case capacitors should be used in encapsulated or hermetically sealed circuitry.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

MFD	100VDC 70VAC				200VDC 120VAC				400VDC 160VAC				600VDC 230VAC			
	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #
RATING	+ .01"	+ .01"	± .03"		+ .01"	+ .01"	± .03"		+ .01"	+ .01"	± .03"		+ .01"	+ .01"	± .03"	
.01	.17	.29	.57	ME1-103E	.17	.29	.57	ME2-103E	.17	.29	.57	ME4-103E	.17	.29	.57	ME6-103E
.012	.17	.29	.57	ME1-123E	.17	.29	.57	ME2-123E	.17	.29	.57	ME4-123E	.23	.36	.55	ME6-123E
.015	.17	.29	.57	ME1-153E	.17	.29	.57	ME2-153E	.17	.29	.57	ME4-153E	.23	.36	.55	ME6-153E
.018	.17	.29	.57	ME1-183E	.17	.29	.57	ME2-183E	.23	.36	.55	ME4-183E	.23	.36	.55	ME6-183E
.022	.17	.29	.57	ME1-223E	.17	.29	.57	ME2-223E	.23	.36	.55	ME4-223E	.23	.36	.55	ME6-223E
.027	.17	.29	.57	ME1-273E	.17	.29	.57	ME2-273E	.23	.36	.55	ME4-273E	.29	.42	.57	ME6-273E
.033	.17	.29	.57	ME1-333E	.17	.29	.57	ME2-333E	.29	.42	.57	ME4-333E	.29	.42	.57	ME6-333E
.039	.17	.29	.57	ME1-393E	.17	.29	.57	ME2-393E	.29	.42	.57	ME4-393E	.29	.42	.57	ME6-393E
.047	.17	.29	.57	ME1-473E	.17	.29	.57	ME2-473E	.29	.42	.57	ME4-473E	.29	.42	.67	ME6-473E
.056	.17	.29	.57	ME1-563E	.17	.29	.57	ME2-563E	.29	.42	.67	ME4-563E	.29	.42	.67	ME6-563E
.068	.17	.29	.57	ME1-683E	.23	.36	.55	ME2-683E	.29	.42	.67	ME4-683E	.39	.54	.67	ME6-683E
.082	.17	.29	.57	ME1-823E	.23	.36	.55	ME2-823E	.29	.42	.82	ME4-823E	.39	.54	.82	ME6-823E
.10	.17	.29	.57	ME1-104E	.23	.36	.55	ME2-104E	.29	.42	.82	ME4-104E	.39	.54	.82	ME6-104E
.12	.23	.36	.55	ME1-124E	.29	.42	.57	ME2-124E	.39	.54	.82	ME4-124E	.39	.54	.82	ME6-124E
.15	.23	.36	.55	ME1-154E	.29	.42	.57	ME2-154E	.39	.54	.82	ME4-154E	.39	.54	.82	ME6-154E
.18	.23	.36	.55	ME1-184E	.29	.42	.67	ME2-184E	.39	.54	1.04	ME4-184E	.39	.54	1.04	ME6-184E
.22	.23	.36	.55	ME1-224E	.29	.42	.67	ME2-224E	.39	.54	1.04	ME4-224E	.39	.54	1.04	ME6-224E
.25	.29	.42	.57	ME1-254E	.29	.42	.82	ME2-254E	.39	.54	1.04	ME4-254E	.56	.72	1.04	ME6-254E
.27	.29	.42	.57	ME1-274E	.29	.42	.82	ME2-274E	.39	.54	1.04	ME4-274E	.56	.72	1.04	ME6-274E
.33	.29	.42	.57	ME1-334E	.29	.42	.82	ME2-334E	.39	.54	1.19	ME4-334E	.56	.72	1.04	ME6-334E
.39	.29	.42	.67	ME1-394E	.39	.54	.82	ME2-394E	.56	.72	1.24	ME4-394E	.56	.72	1.24	ME6-394E
.47	.29	.42	.67	ME1-474E	.39	.54	.82	ME2-474E	.56	.72	1.24	ME4-474E	.56	.72	1.24	ME6-474E
.50	.29	.42	.67	ME1-504E	.39	.54	.82	ME2-504E	.56	.72	1.24	ME4-504E	.56	.72	1.24	ME6-504E
.56	.29	.42	.67	ME1-564E	.39	.54	1.04	ME2-564E	.56	.72	1.24	ME4-564E	.56	.72	1.24	ME6-564E
.68	.29	.42	.82	ME1-684E	.39	.54	1.04	ME2-684E	.56	.72	1.24	ME4-684E	.56	.72	1.75	ME6-684E
.75	.29	.42	.82	ME1-754E	.39	.54	1.04	ME2-754E	.56	.72	1.24	ME4-754E	.56	.72	1.75	ME6-754E
.82	.29	.42	1.06	ME1-824E	.39	.54	1.04	ME2-824E	.56	.72	1.75	ME4-824E	.56	.72	1.75	ME6-824E
1.0	.29	.42	1.06	ME1-105E	.39	.54	1.19	ME2-105E	.56	.72	1.75	ME4-105E	.56	.72	1.75	ME6-105E
1.5	.39	.54	1.04	ME1-155E	.56	.72	1.24	ME2-155E								
2.0	.39	.54	1.04	ME1-205E	.56	.72	1.24	ME2-205E								
3.0	.56	.72	1.24	ME1-305E	.56	.72	1.75	ME2-305E								
5.0	.56	.72	1.75	ME1-505E												
8.0	.56	.72	1.75	ME1-805E												

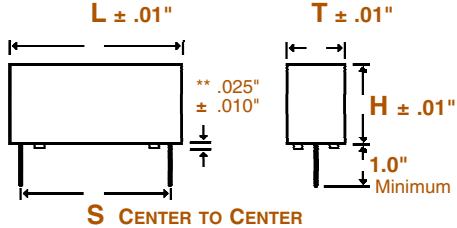
Note: Replace the last digit E with the desired tolerance code from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS EPOXY CASE, RADIAL LEAD, RECTANGULAR

M2E

METALLIZED PAPER
EPOXY CASE, RADIAL, RECT.
REGULAR SERIES

DIMENSIONS See tables for specific T, H, L, S values.



** The mounting pads consist of two individual pads on each end or one continuous pad on each end, depending on the mold. (Not an option).

WIRE SIZE (Length 1.0" Minimum)

BODY LENGTH (L)	LEAD SPACING (S) (C to C ± .01")	WIRE SIZE	
		AWG No.	Diameter
.42"	.300"	22	0.025"
.55"	.400"	22	0.025"
.67"	.500"	22	0.025"
.82"	.600"	22	0.025"
1.04"	.800"	22	0.025"
1.24"	1.100"	20	0.032"
1.75"	1.600"	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire radial leads; encased in a molded epoxy/plastic shell with epoxy fill.

APPLICATION NOTES

Epoxy Case capacitors are not intended for exposure to high humidity conditions over extended periods of time. For stringent environmental conditions, Epoxy Case capacitors should be used in encapsulated or hermetically sealed circuitry.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

MFD	100VDC 70VAC				200VDC 120VAC				400VDC 160VAC				600VDC 230VAC			
	T	H	L	PART #	T	H	L	PART #	T	H	L	PART #	T	H	L	PART #
	± .01"	± .01"	± .01"		± .01"	± .01"	± .01"		± .01"	± .01"	± .01"		± .01"	± .01"	± .01"	
.01	.18	.30	.55	M2E1-103E	.18	.30	.55	M2E2-103E	.18	.30	.55	M2E4-103E	.18	.30	.55	M2E6-103E
.012	.18	.30	.55	M2E1-123E	.18	.30	.55	M2E2-123E	.18	.30	.55	M2E4-123E	.24	.37	.55	M2E6-123E
.015	.18	.30	.55	M2E1-153E	.18	.30	.55	M2E2-153E	.18	.30	.55	M2E4-153E	.24	.37	.55	M2E6-153E
.018	.18	.30	.55	M2E1-183E	.18	.30	.55	M2E2-183E	.24	.37	.55	M2E4-183E	.24	.37	.55	M2E6-183E
.022	.18	.30	.55	M2E1-223E	.18	.30	.55	M2E2-223E	.24	.37	.55	M2E4-223E	.24	.37	.55	M2E6-223E
.027	.18	.30	.55	M2E1-273E	.18	.30	.55	M2E2-273E	.24	.37	.55	M2E4-273E	.30	.43	.55	M2E6-273E
.033	.18	.30	.55	M2E1-333E	.18	.30	.55	M2E2-333E	.30	.43	.55	M2E4-333E	.30	.43	.55	M2E6-333E
.039	.18	.30	.55	M2E1-393E	.18	.30	.55	M2E2-393E	.30	.43	.55	M2E4-393E	.30	.43	.55	M2E6-393E
.047	.18	.30	.55	M2E1-473E	.18	.30	.55	M2E2-473E	.30	.43	.55	M2E4-473E	.30	.43	.67	M2E6-473E
.056	.18	.30	.55	M2E1-563E	.18	.30	.55	M2E2-563E	.30	.43	.67	M2E4-563E	.30	.43	.67	M2E6-563E
.068	.18	.30	.55	M2E1-683E	.24	.37	.55	M2E2-683E	.30	.43	.67	M2E4-683E	.40	.55	.82	M2E6-683E
.082	.18	.30	.55	M2E1-823E	.24	.37	.55	M2E2-823E	.30	.43	.82	M2E4-823E	.40	.55	.82	M2E6-823E
.10	.18	.30	.55	M2E1-104E	.24	.37	.55	M2E2-104E	.30	.43	.82	M2E4-104E	.40	.55	.82	M2E6-104E
.12	.24	.37	.55	M2E1-124E	.30	.43	.55	M2E2-124E	.40	.55	.82	M2E4-124E	.40	.55	.82	M2E6-124E
.15	.24	.37	.55	M2E1-154E	.30	.43	.55	M2E2-154E	.40	.55	.82	M2E4-154E	.40	.55	.82	M2E6-154E
.18	.24	.37	.55	M2E1-184E	.30	.43	.67	M2E2-184E	.40	.55	1.04	M2E4-184E	.40	.55	1.04	M2E6-184E
.22	.24	.37	.55	M2E1-224E	.30	.43	.67	M2E2-224E	.40	.55	1.04	M2E4-224E	.57	.73	1.24	M2E6-224E
.25	.30	.43	.55	M2E1-254E	.30	.43	.82	M2E2-254E	.40	.55	1.04	M2E4-254E	.57	.73	1.24	M2E6-254E
.27	.30	.43	.55	M2E1-274E	.30	.43	.82	M2E2-274E	.40	.55	1.04	M2E4-274E	.57	.73	1.24	M2E6-274E
.33	.30	.43	.55	M2E1-334E	.30	.43	.82	M2E2-334E	.40	.55	1.24	M2E4-334E	.57	.73	1.24	M2E6-334E
.39	.30	.43	.67	M2E1-394E	.40	.55	.82	M2E2-394E	.57	.73	1.24	M2E4-394E	.57	.73	1.24	M2E6-394E
.47	.30	.43	.67	M2E1-474E	.40	.55	.82	M2E2-474E	.57	.73	1.24	M2E4-474E	.57	.73	1.24	M2E6-474E
.50	.30	.43	.67	M2E1-504E	.40	.55	.82	M2E2-504E	.57	.73	1.24	M2E4-504E	.57	.73	1.24	M2E6-504E
.56	.30	.43	.67	M2E1-564E	.40	.55	1.04	M2E2-564E	.57	.73	1.24	M2E4-564E	.57	.73	1.24	M2E6-564E
.68	.30	.43	.82	M2E1-684E	.40	.55	1.04	M2E2-684E	.57	.73	1.24	M2E4-684E	.57	.73	1.75	M2E6-684E
.75	.30	.43	.82	M2E1-754E	.40	.55	1.04	M2E2-754E	.57	.73	1.24	M2E4-754E	.57	.73	1.75	M2E6-754E
.82	.30	.43	1.04	M2E1-824E	.40	.55	1.04	M2E2-824E	.57	.73	1.75	M2E4-824E	.57	.73	1.75	M2E6-824E
1.0	.30	.43	1.04	M2E1-105E	.40	.55	1.24	M2E2-105E	.57	.73	1.75	M2E4-105E	.57	.73	1.75	M2E6-105E
1.5	.40	.55	1.04	M2E1-155E	.57	.73	1.24	M2E2-155E								
2.0	.40	.55	1.04	M2E1-205E	.57	.73	1.24	M2E2-205E								
3.0	.57	.73	1.24	M2E1-305E	.57	.73	1.75	M2E2-305E								
5.0	.57	.73	1.75	M2E1-505E												
8.0	.57	.73	1.75	M2E1-805E												

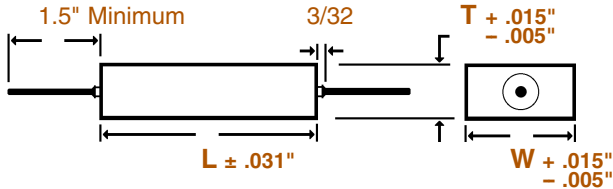
Note: Replace the last digit E with the desired tolerance code, from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS HERMETICALLY SEALED, METAL CASED, RECTANGULAR

MG

METALLIZED PAPER
HERMETIC SEAL, RECT.
REGULAR SERIES

DIMENSIONS See tables for specific T, W, L values.



WIRE SIZE (Length 1.5" Minimum)

BODY SIZE (T) x (W)	WIRE SIZE	
	AWG No.	Diameter
.22" x .34"	24	0.020"
.31" x .41"	22	0.025"
.40" x .57" & Larger	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire axial leads; enclosed in a hermetically sealed rectangular tin plated brass tube with soldered glass to metal end seals.

APPLICATION NOTES

Metal encased capacitors are hermetically sealed and meet the moisture resistance, temperature and immersion cycling requirements of MIL-C-18312.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

MFD	100VDC 70VAC				200VDC 120VAC				400VDC 160VAC				600VDC 230VAC				
	RATING	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #	T	W	L	PART #
	+ .015" - .005"	+ .015" - .005"	± .031"		+ .015" - .005"	+ .015" - .005"	± .031"		+ .015" - .005"	+ .015" - .005"	± .031"		+ .015" - .005"	+ .015" - .005"	± .031"		
.01	.22	.34	.688	MG1-103E	.22	.34	.688	MG2-103E	.22	.34	.688	MG4-103E	.22	.34	.688	MG6-103E	
.012	.22	.34	.688	MG1-123E	.22	.34	.688	MG2-123E	.22	.34	.688	MG4-123E	.22	.34	.688	MG6-123E	
.015	.22	.34	.688	MG1-153E	.22	.34	.688	MG2-153E	.22	.34	.688	MG4-153E	.22	.34	.688	MG6-153E	
.018	.22	.34	.688	MG1-183E	.22	.34	.688	MG2-183E	.22	.34	.688	MG4-183E	.22	.34	.688	MG6-183E	
.022	.22	.34	.688	MG1-223E	.22	.34	.688	MG2-223E	.22	.34	.688	MG4-223E	.22	.34	.813	MG6-223E	
.027	.22	.34	.688	MG1-273E	.22	.34	.688	MG2-273E	.22	.34	.688	MG4-273E	.22	.34	.813	MG6-273E	
.033	.22	.34	1.688	MG1-333E	.22	.34	.688	MG2-333E	.22	.34	.813	MG4-333E	.22	.34	.813	MG6-333E	
.039	.22	.34	.688	MG1-393E	.22	.34	.688	MG2-393E	.22	.34	.813	MG4-393E	.22	.34	.938	MG6-393E	
.047	.22	.34	.688	MG1-473E	.22	.34	.688	MG2-473E	.22	.34	.938	MG4-473E	.22	.34	1.125	MG6-473E	
.056	.22	.34	.688	MG1-563E	.22	.34	.688	MG2-563E	.22	.34	.938	MG4-563E	.22	.34	1.125	MG6-563E	
.068	.22	.34	.688	MG1-683E	.22	.34	.688	MG2-683E	.22	.34	1.125	MG4-683E	.31	.41	.938	MG6-683E	
.082	.22	.34	.688	MG1-823E	.22	.34	.688	MG2-823E	.22	.34	1.125	MG4-823E	.31	.41	1.125	MG6-823E	
.10	.22	.34	.688	MG1-104E	.22	.34	.813	MG2-104E	.31	.41	.938	MG4-104E	.31	.41	1.125	MG6-104E	
.12	.22	.34	.688	MG1-124E	.22	.34	.813	MG2-124E	.31	.41	1.125	MG4-124E	.31	.41	1.313	MG6-124E	
.15	.22	.34	.688	MG1-154E	.22	.34	.938	MG2-154E	.31	.41	1.125	MG4-154E	.31	.41	1.313	MG6-154E	
.18	.22	.34	.688	MG1-184E	.22	.34	.938	MG2-184E	.31	.41	1.313	MG4-184E	.40	.57	1.125	MG6-184E	
.22	.22	.34	.813	MG1-224E	.22	.34	1.125	MG2-224E	.40	.57	1.125	MG4-224E	.40	.57	1.125	MG6-224E	
.25	.22	.34	.813	MG1-254E	.22	.34	1.125	MG2-254E	.40	.57	1.125	MG4-254E	.40	.57	1.313	MG6-254E	
.27	.22	.34	.813	MG1-274E	.22	.34	1.125	MG2-274E	.40	.57	1.125	MG4-274E	.40	.57	1.313	MG6-274E	
.33	.22	.34	.938	MG1-334E	.31	.41	.938	MG2-334E	.40	.57	1.313	MG4-334E	.40	.57	1.813	MG6-334E	
.39	.22	.34	.938	MG1-394E	.31	.41	1.125	MG2-394E	.40	.57	1.313	MG4-394E	.40	.57	1.813	MG6-394E	
.47	.22	.34	1.125	MG1-474E	.31	.41	1.125	MG2-474E	.40	.57	1.813	MG4-474E	.40	.57	1.813	MG6-474E	
.50	.22	.34	1.125	MG1-504E	.31	.41	1.125	MG2-504E	.40	.57	1.813	MG4-504E	.40	.57	1.813	MG6-504E	
.56	.22	.34	1.125	MG1-564E	.31	.41	1.125	MG2-564E	.40	.57	1.813	MG4-564E	.50	.65	1.813	MG6-564E	
.68	.31	.41	.938	MG1-684E	.31	.41	1.313	MG2-684E	.50	.65	1.813	MG4-684E	.50	.65	1.813	MG6-684E	
.75	.31	.41	.938	MG1-754E	.40	.57	1.125	MG2-754E	.50	.65	1.813	MG4-754E	.50	.65	2.063	MG6-754E	
.82	.31	.41	.938	MG1-824E	.40	.57	1.125	MG2-824E	.50	.65	1.813	MG4-824E	.50	.80	2.063	MG6-824E	
1.0	.31	.41	1.125	MG1-105E	.40	.57	1.313	MG2-105E	.50	.65	2.063	MG4-105E	.60	.80	1.813	MG6-105E	
1.5	.31	.41	1.313	MG1-155E	.40	.57	1.813	MG2-155E	.60	.80	1.813	MG4-155E	.60	.80	2.313	MG6-155E	
2.0	.40	.57	1.125	MG1-205E	.40	.57	1.813	MG2-205E	.60	.80	2.313	MG4-205E					
3.0	.40	.57	1.313	MG1-305E	.50	.65	1.813	MG2-305E									
5.0	.50	.65	1.563	MG1-505E	.60	.80	1.813	MG2-505E									
8.0	.50	.65	2.063	MG1-805E													
10.0	.60	.80	1.813	MG1-106E													
12.0	.60	.80	2.063	MG1-126E													
15.0	.60	.80	2.313	MG1-156E													

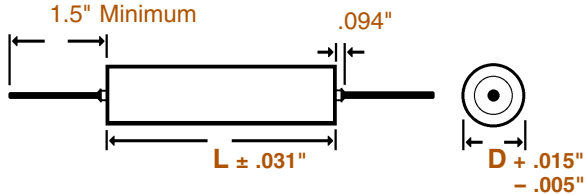
Note: Replace the last digit **E** with the desired tolerance code from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS HERMETICALLY SEALED, ROUND, METAL CASED.

ML

METALLIZED PAPER
HERMETIC SEAL, ROUND
REGULAR SERIES

DIMENSIONS See tables for specific D, L values.



WIRE SIZE (Length 1.5" Minimum)

BODY DIAMETER (D)	WIRE SIZE	
	AWG No.	Diameter
.175" & .195"	24	0.020"
.235" & .312"	22	0.025"
.400" & Larger	20	0.032"

ORDERING DESCRIPTION

Capacitor, fixed: Metallized Paper and or Plastic dielectric; extended foil construction; tin-plated copper-clad steel wire axial leads; encased in a hermetically sealed round tin plated brass tube with soldered glass to metal end seals.

APPLICATION NOTES

Metal encased capacitors are hermetically sealed and meet the moisture resistance, temperature and immersion cycling requirements of MIL-C-18312.

SELECTION AND ORDERING TABLES Select voltage rating, capacitance and tolerance, read Part Number to the right.

MFD	100VDC 70VAC			200VDC 120VAC			400VDC 160VAC			600VDC 230VAC			
	RATING	D	L	PART #	D	L	PART #	D	L	PART #	D	L	PART #
		+ .015" - .005"	± .031"		+ .015" - .005"	± .031"		+ .015" - .005"	± .031"		+ .015" - .005"	± .031"	
.01	.175	.625	ML1-103E	.195	.750	ML2-103E	.235	.750	ML4-103E	.400	.750	ML6-103E	
.012	.175	.625	ML1-123E	.195	.750	ML2-123E	.235	.750	ML4-123E	.400	.750	ML6-123E	
.015	.175	.625	ML1-153E	.195	.750	ML2-153E	.235	.750	ML4-153E	.400	.750	ML6-153E	
.018	.175	.625	ML1-183E	.195	.750	ML2-183E	.235	.750	ML4-183E	.400	.750	ML6-183E	
.022	.175	.625	ML1-223E	.195	.750	ML2-223E	.235	.750	ML4-223E	.400	.875	ML6-223E	
.027	.175	.750	ML1-273E	.195	.750	ML2-273E	.235	.875	ML4-273E	.400	.875	ML6-273E	
.033	.175	.750	ML1-333E	.195	.750	ML2-333E	.235	.875	ML4-333E	.400	.875	ML6-333E	
.039	.175	.750	ML1-393E	.195	.750	ML2-393E	.312	.875	ML4-393E	.562	.875	ML6-393E	
.047	.175	.750	ML1-473E	.235	.750	ML2-473E	.312	.875	ML4-473E	.562	.875	ML6-473E	
.056	.175	.750	ML1-563E	.235	.750	ML2-563E	.312	.875	ML4-563E	.562	1.125	ML6-563E	
.068	.195	.750	ML1-683E	.235	.750	ML2-683E	.312	1.125	ML4-683E	.562	1.125	ML6-683E	
.082	.195	.750	ML1-823E	.235	.875	ML2-823E	.312	1.125	ML4-823E	.562	.875	ML6-823E	
.10	.235	.750	ML1-104E	.235	.875	ML2-104E	.400	.875	ML4-104E	.670	1.125	ML6-104E	
.12	.235	.750	ML1-124E	.312	.875	ML2-124E	.400	.875	ML4-124E	.670	1.125	ML6-124E	
.15	.235	.750	ML1-154E	.312	.875	ML2-154E	.400	1.125	ML4-154E	.750	1.313	ML6-154E	
.18	.235	.875	ML1-184E	.312	.875	ML2-184E	.400	1.125	ML4-184E	.750	1.313	ML6-184E	
.22	.235	.875	ML1-224E	.312	1.125	ML2-224E	.500	1.125	ML4-224E	.750	1.125	ML6-224E	
.25	.235	.875	ML1-254E	.312	1.125	ML2-254E	.500	1.125	ML4-254E	.750	1.313	ML6-254E	
.27	.235	.875	ML1-274E	.312	1.125	ML2-274E	.500	1.125	ML4-274E	1.000	1.313	ML6-274E	
.33	.312	.875	ML1-334E	.312	1.125	ML2-334E	.500	1.313	ML4-334E	1.000	1.313	ML6-334E	
.39	.312	.875	ML1-394E	.400	.875	ML2-394E	.500	1.313	ML4-394E	1.000	1.313	ML6-394E	
.47	.312	.875	ML1-474E	.400	1.125	ML2-474E	.562	1.313	ML4-474E	1.000	1.813	ML6-474E	
.50	.312	.875	ML1-504E	.400	1.125	ML2-504E	.562	1.313	ML4-504E	1.000	1.813	ML6-504E	
.56	.312	.875	ML1-564E	.400	1.125	ML2-564E	.562	1.813	ML4-564E	1.000	1.813	ML6-564E	
.68	.312	1.125	ML1-684E	.400	1.313	ML2-684E	.562	1.813	ML4-684E	1.000	1.813	ML6-684E	
.75	.312	1.125	ML1-754E	.400	1.313	ML2-754E	.562	1.813	ML4-754E	1.000	1.813	ML6-754E	
.82	.312	1.125	ML1-824E	.500	1.125	ML2-824E	.670	1.813	ML4-824E	1.000	1.813	ML6-824E	
1.0	.400	1.125	ML1-105E	.500	1.313	ML2-105E	.670	1.813	ML4-105E	1.000	1.813	ML6-105E	
1.5	.400	1.313	ML1-155E	.562	1.313	ML2-155E	.750	2.063	ML4-155E	1.000	1.813	ML6-155E	
2.0	.500	1.125	ML1-205E	.562	1.813	ML2-205E	1.000	1.813	ML4-205E				
3.0	.500	1.313	ML1-305E	.670	1.813	ML2-305E	1.000	2.063	ML4-305E				
5.0	.562	1.813	ML1-505E	.750	2.063	ML2-505E	1.000	2.625	ML4-505E				
8.0	.750	1.813	ML1-805E	1.000	1.813	ML2-805E	1.000	2.625	ML4-805E				
10.0	.750	2.063	ML1-106E	1.000	2.063	ML2-106E	1.000	2.625	ML4-106E				
12.0	1.000	1.813	ML1-126E	1.000	2.313	ML2-126E	1.000	2.625	ML4-126E				
15.0	1.000	2.063	ML1-156E										

Note: Replace the last digit E with the desired tolerance code from the tolerance table. For an in-between value use the next larger value's dimensions. Custom sizes are readily available. All dimensions are in inches. All +.05" dimension tolerances are Maximum.

METALLIZED PAPER, AND OR PLASTIC FILM CAPACITORS PARAMETRIC TREND CURVES AND ACCEPTANCE CRITERIA

M

SERIES

CAPACITANCE

Reference MIL-STD-202, Method 305
Test Frequency: 1000 Hz
Temperature: +25°C

Capacitance Change Over
Temperature.

Acceptance Limits:

- @ -55°C = -14% Maximum Change
- @ +85°C = ±14% Maximum Change
- @ +125°C = ±25% Maximum Change

DISSIPATION FACTOR

Reference MIL-STD-202,
Method 306
Test Frequency: 1000 Hz
Temperature: +25°C

Acceptance Limit: 1.5% Maximum

INSULATION RESISTANCE

Reference MIL-STD-202, Method 302
Electrification shall be at rated voltage
or 500 VDC, whichever is less and for
a time not greater than 2 minutes.

Acceptance Limits:

<u>Test Temperature</u>	<u>Megs x μf Minimum</u>	<u>Megohms Need not exceed</u>
@ +25°C	250	1500
@ +85°C	25	500
@ +125°C	2.5	50

VOLTAGE RATING

100% of listed voltage rating from -55°C to +125°C.

VOLTAGE TEST

Reference MIL-STD-202, Method 301. Surge current is limited to 1 ampere maximum. Voltage applied for 1 minute (maximum) @ +25°C. Ground test is performed terminal to case (where the case is not a terminal) at 200% of the DC voltage rating. Dielectric strength test is performed terminal to terminal at 150% of the DC voltage rating.