



MPL

- MKP • axial terminals • general purpose • precision



Main applications

Filtering, timing, integrating circuits, high performance and high precision circuits. Low pulse operation

Dielectric

Polypropylene

Electrodes

Vacuum deposited metal layers

Coating

UL 510 / CSA TIL I-26 polyester tape wrapping; UL 94 V-0 resin end fill (flame retardant execution)

Construction

Extended metallized film (refer to General Technical Information)

Terminals

Tinned copper wire (lead-free)

Reference standard

IEC 60384/16, IEC 60068, RoHS compliant

Climatic category

55/85/56 (IEC 60068/1), FME (DIN40040)

Operating temperature range (case)

-55°...+85°C

Capacitance code

The four digits indicating the capacitance code are used as follows:
1st digit = number of zero to be added to the three significant figures of the capacitance value expressed in pF
2nd, 3rd and 4th digit = the three significant figures of the capacitance value
Examples: 2740 pF = 1274; 0.56 μF = 560000 pF = 3560; 1.21 μF = 1210000 pF = 4121

Nominal Capacitance (Cn) μF

4750pF to 4,7μF, in compliance with IEC60063. Refer to article table

Capacitance tolerance (at 1kHz)

±1% (code=F), ±1,25% (code=A), ±2% (code=G), ±2,5% (code=H); ±3% (code=I)

Capacitance temperature coefficient

Refer to General Technical Information

Long term stability (at 1kHz)

Capacitance variation ± 0.5% after a period of 2 years at standard environmental conditions

Rated voltage (Ur) (Vdc) at 85°C

160, 250, 400, 630 Vdc

Permissible AC voltage at 60Hz (Vac)

90, 200, 220, 250 Vac

Category voltage (Uc)

Uc=Ur at +85°C

Self inductance

≤ 1nH/mm of capacitor and leads length used for connection

Maximum pulse rise time V/μs

Refer to article table. The pulse characteristic Ko depends on the voltage waveform. In any case the value given in the article table must not be exceeded

Dissipation factor (DF), max.

tgδ x 10⁻⁴, measured at 25 ± 5°C

Freq.	Cn ≤ 0.1 μF	0.1 μF < Cn ≤ 1 μF	Cn > 1 μF
1kHz	6	6	6
10kHz	10	20	-
100kHz	30	-	-

Insulation resistance (R_{INS})

Measured between terminals, at 25±5°C, after 1 minute of electrification at 100Vdc

Cn	R _{INS}
≤ 0.33 μF	≥ 100 GΩ
> 0.33 μF	≥ 30000 s

Test voltage between terminals (Ut)

1,6xUr (DC) applied for 2s at 25±5°C (1 minute for type test)

Damp heat test (steady state)

List of admitted high humidity and temperature tests (please refer to paragraph C10 of the GTI)

Test ID	Reference	Permissible
a	Damp heat test (steady state) not biased - IEC60068	YES
b	Damp heat test (steady state) biased AEC Q-200 cockpit	NO
c	Robustness under high humidity, Grade II - IEC 60384-17:2019	NO
d	High robustness under high humidity, Grade III - IEC 60384-17:2019	NO
e	Damp heat test (steady state) biased - 70/70/1000	NO
f	Humidity load test, Test Cy, Severity II - IEC 60068-2-67	NO
g	Humidity load test, Test Cy, Severity III - IEC 60068-2-67 and 85/85/1000 Level 1 - AEC Q-200	NO

Performance:

Capacitance change ≤ ±1%
DF change ≤ 0.0010 at 10kHz for Cn ≤ 1μF
DF change ≤ 0.0010 at 1kHz for Cn > 1μF
R_{INS} ≥ 50% of initial limit value

Endurance test

Test conditions:

Temperature= +85±2°C
Test duration= 2000h
Voltage applied=1,25xUr(DC)

Performance:

Capacitance change ≤ ±1%
DF change ≤ 0.0010 at 10kHz for Cn ≤ 1μF
DF change ≤ 0.0010 at 1kHz for Cn > 1μF
R_{INS} ≥ 50% of initial limit value

Resistance to soldering heat test

Test conditions:

Solder bath temperature= +260±5°C
Dipping time (with heat screen)= 10±1s

Performance:

Capacitance change ≤ ±0.25%
DF change ≤ 0.0010 at 10kHz for Cn ≤ 1μF
DF change ≤ 0.0010 at 1kHz for Cn > 1μF
R_{INS} ≥ 50% of initial limit value

Reliability (MIL HDB 217)

Application conditions:

Applied voltage= 0,5 x Ur(DC)
Temperature= +40±2°C

Failure rate: (1FIT=1x10⁻⁹ failures/components x hours)
≤ 3FIT for all the values

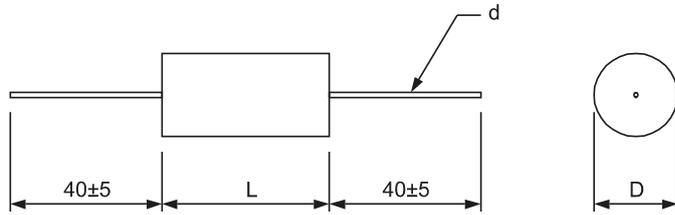
Failure criteria (DIN44122):

Capacitance change > ±10%
DF change > 2 x initial value
R_{INS} < 0,005 x initial limit value
Short or open circuit



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Dimensional tolerances (mm)

L	L±	D±
10.5	1.0	1.0
13.0	1.5	1.0
19.0	1.5	1.5
27.0	2.0	2.0
32.0	2.0	2.0

MPL article table (different values available upon request)

Voltage at +85°C		Cn (µF)		Dimensions (mm)			du/dt	K ₀	ICEL CODE ⁽¹⁾
Ur (Vdc)	Urms (Vac)	from	to	D	L	d	V/µs	V ² /µs	-
160	90	0,0562	0,068	5	13	0,6	44	14080	MPL116####*B
160	90	0,0681	0,1	5,5	13	0,6	44	14080	MPL116####*B
160	90	0,102	0,12	6	13	0,6	44	14080	MPL116####*B
160	90	0,121	0,18	6,5	13	0,6	44	14080	MPL116####*B
160	90	0,182	0,22	7	13	0,6	44	14080	MPL116####*B
160	90	0,221	0,33	7	19	0,6	25	8000	MPL116####*D
160	90	0,332	0,39	7,5	19	0,8	25	8000	MPL116####*D
160	90	0,392	0,47	8	19	0,8	25	8000	MPL116####*D
160	90	0,475	0,56	9	19	0,8	25	8000	MPL116####*D
160	90	0,562	0,68	8	27	0,8	17	5440	MPL116####*G
160	90	0,681	0,82	8,5	27	0,8	17	5440	MPL116####*G
160	90	0,825	1	9	27	0,8	17	5440	MPL116####*G
160	90	1,02	1,2	10	27	0,8	17	5440	MPL116####*G
160	90	1,21	1,5	11	27	0,8	17	5440	MPL116####*G
160	90	1,54	1,8	12,5	27	0,8	17	5440	MPL116####*G
160	90	1,82	2,2	11,5	32	0,8	12,5	4400	MPL116####*J
160	90	2,21	2,7	12,5	32	0,8	12,5	4400	MPL116####*J
160	90	2,74	3,3	14	32	0,8	12,5	4400	MPL116####*J
160	90	3,32	3,9	15	32	0,8	12,5	4400	MPL116####*J
160	90	3,92	4,7	16	32	0,8	12,5	4400	MPL116####*J
250	200	0,0182	0,027	5	13	0,6	55	27500	MPL125####*B
250	200	0,0274	0,047	5,5	13	0,6	55	27500	MPL125####*B
250	200	0,0475	0,056	6	13	0,6	55	27500	MPL125####*B
250	200	0,0562	0,068	6,5	13	0,6	55	27500	MPL125####*B
250	200	0,0681	0,082	7	13	0,6	55	27500	MPL125####*B
250	200	0,0825	0,12	7,5	13	0,8	55	27500	MPL125####*B
250	200	0,121	0,15	7	19	0,8	31	15500	MPL125####*D
250	200	0,154	0,18	7,5	19	0,8	31	15500	MPL125####*D
250	200	0,182	0,27	8	19	0,8	31	15500	MPL125####*D
250	200	0,274	0,33	8	27	0,8	22	11000	MPL125####*G
250	200	0,332	0,39	8,5	27	0,8	22	11000	MPL125####*G
250	200	0,392	0,47	9	27	0,8	22	11000	MPL125####*G
250	200	0,475	0,56	9,5	27	0,8	22	11000	MPL125####*G
250	200	0,562	0,68	10,5	27	0,8	22	11000	MPL125####*G
250	200	0,681	0,82	11,5	27	0,8	22	11000	MPL125####*G
250	200	0,825	1	11	32	0,8	15	7500	MPL125####*J
250	200	1,02	1,2	12,5	32	0,8	15	7500	MPL125####*J
250	200	1,21	1,5	14	32	0,8	15	7500	MPL125####*J
250	200	1,54	1,8	15,5	32	0,8	15	7500	MPL125####*J

⁽¹⁾ Change the * symbol with the needed capacitance tolerance code: F=±1%, A=±1,25%, G=±2%, H=±2,5%, I=±3% Change the #### characters with the correspondent capacitance code

⁽²⁾ Not suitable for across the line application.

^(^A): 2.2µF 250Vdc and 1.5µF 400Vdc terminals d=1mm



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Voltage at +85°C		Cn (µF)		Dimensions (mm)			du/dt	K ₀	ICEL CODE ⁽¹⁾
Ur (Vdc)	Urms (Vac)	from	to	D	L	d	V/µs	V ² /µs	-
250	200	1,82	2,2	16,5	32	0,8 ^(^^)	15	7500	MPL125####*J
250	200	2,21	2,7	18,5	32	1	15	7500	MPL125####*J
250	200	2,74	3,3	20	32	1	15	7500	MPL125####*J
400	220 ⁽²⁾	0,00825	0,012	5	13	0,6	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0121	0,018	5,5	13	0,6	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0182	0,027	6	13	0,6	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0274	0,033	6,5	13	0,6	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0332	0,039	7	13	0,6	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0392	0,056	7,5	13	0,8	110	88000	MPL140####*B
400	220 ⁽²⁾	0,0562	0,082	7	19	0,8	61	48800	MPL140####*D
400	220 ⁽²⁾	0,0825	0,12	7,5	19	0,8	61	48800	MPL140####*D
400	220 ⁽²⁾	0,121	0,15	8,5	19	0,8	61	48800	MPL140####*D
400	220 ⁽²⁾	0,154	0,18	8	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,182	0,22	8,5	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,221	0,27	9,5	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,274	0,33	10,5	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,332	0,39	11	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,392	0,47	12	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,475	0,56	12,5	27	0,8	37,5	30000	MPL140####*G
400	220 ⁽²⁾	0,562	0,68	13	32	0,8	29	23200	MPL140####*J
400	220 ⁽²⁾	0,681	0,82	14,5	32	0,8	29	23200	MPL140####*J
400	220 ⁽²⁾	0,825	1	15,5	32	0,8	29	23200	MPL140####*J
400	220 ⁽²⁾	1,02	1,2	16,5	32	0,8	29	23200	MPL140####*J
400	220 ⁽²⁾	1,21	1,5	18	32	0,8 ^(^^)	29	23200	MPL140####*J
630	250 ⁽²⁾	0,00475	0,0082	5	13	0,6	190	239000	MPL163####*B
630	250 ⁽²⁾	0,00825	0,01	5,5	13	0,6	190	239000	MPL163####*B
630	250 ⁽²⁾	0,0102	0,012	6	13	0,6	190	239000	MPL163####*B
630	250 ⁽²⁾	0,0121	0,015	6,5	13	0,6	190	239000	MPL163####*B
630	250 ⁽²⁾	0,0154	0,018	7	13	0,6	190	239000	MPL163####*B
630	250 ⁽²⁾	0,0182	0,027	7,5	13	0,8	190	239000	MPL163####*B
630	250 ⁽²⁾	0,0274	0,039	6,5	19	0,6	100	126000	MPL163####*D
630	250 ⁽²⁾	0,0392	0,056	7,5	19	0,8	100	126000	MPL163####*D
630	250 ⁽²⁾	0,0562	0,082	8,5	19	0,8	100	126000	MPL163####*D
630	250 ⁽²⁾	0,0825	0,1	8	27	0,8	58	73080	MPL163####*G
630	250 ⁽²⁾	0,102	0,12	9	27	0,8	58	73080	MPL163####*G
630	250 ⁽²⁾	0,121	0,15	9,5	27	0,8	58	73080	MPL163####*G
630	250 ⁽²⁾	0,154	0,18	10	27	0,8	58	73080	MPL163####*G
630	250 ⁽²⁾	0,182	0,22	10	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,221	0,27	11	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,274	0,33	12	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,332	0,39	13	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,392	0,47	13,5	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,475	0,56	15	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,562	0,68	16	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,681	0,82	18	32	0,8	46	57960	MPL163####*J
630	250 ⁽²⁾	0,825	1	19	32	1	46	57960	MPL163####*J

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⁽²⁾ Not suitable for across the line application.

^(^^): 2.2uF 250Vdc and 1.5uF 400Vdc terminals d=1mm

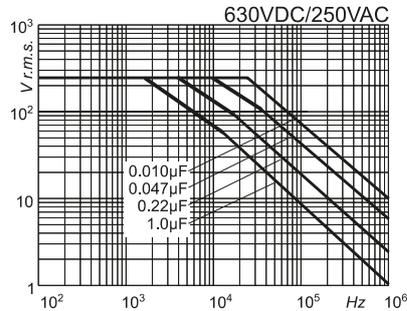
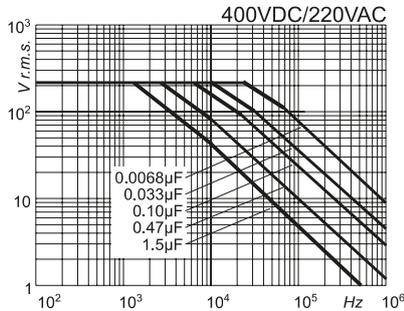
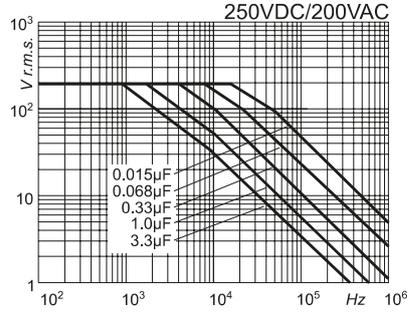
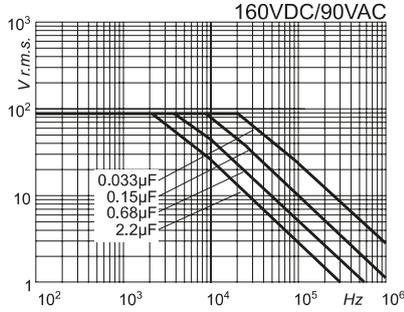


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**Permissible AC voltage versus frequency (sinusoidal waveform) for $\Delta T = +10^\circ\text{C}$
 Referred to the largest length execution among available ones**



Warning: this specification must be completed with the data given in the "General technical information" chapter