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 x10^{-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±°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)
Test conditions:
Temperature = +40 ±2°C
Relative humidity =93 ±2%
Test duration = 56 days
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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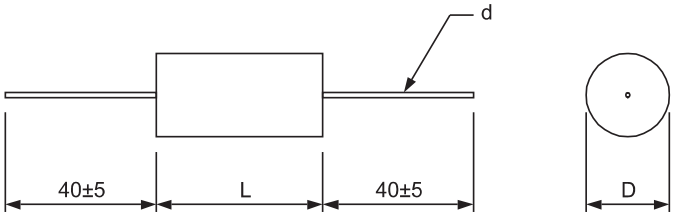

Dimensional tolerances (mm)

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	$V^2/\mu s$	-
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.

[^^]: 2.2uF 250Vdc and 1.5uF 400Vdc terminals d=1mm

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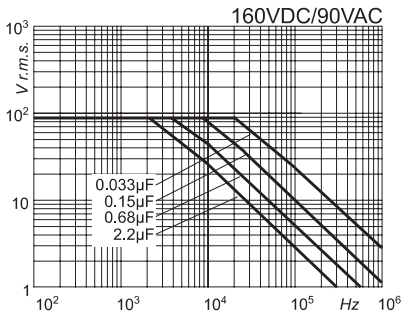
Voltage at +85°C		Cn (µF)		Dimensions (mm)			du/dt	K_0	ICEL CODE[1]
Ur (Vdc)	Urms (Vac)	from	to	D	L	d	V/µs	V²/µs	-
250	200	1,82	2,2	16,5	32	0.8 (^^)	15	7500	MPL125####*J
250	200	2,21	2,7	18,5	32	1	15	7500	MPL125####*J
250	200	2,74	3,3	20	32	1	15	7500	MPL125####*J
400	220 (2)	0,00825	0,012	5	13	0,6	110	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

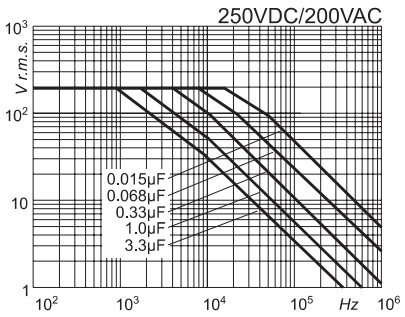
(1) Change the * symbol with the needed capacitance tolerance code: F=±1%, A=±1,25%, G=±2%, H=±2,5%, I=±3% Change the #### characters with the correspondent capacitance code

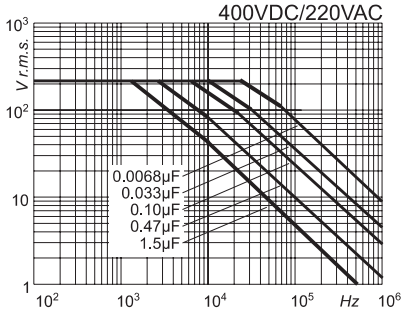
(2) Not suitable for across the line application.

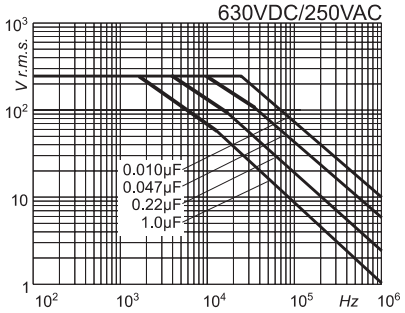
(^^): 2.2uF 250Vdc and 1.5uF 400Vdc terminals d=1mm

Permissible AC voltage versus frequency (sinusoidal waveform) for ΔT=+10°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