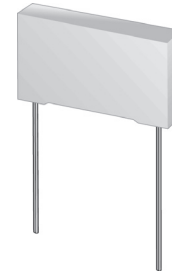


Metallized polypropylene film capacitor MKP - Low dissipation - High performance



Main applications: Resonant capacitor in electronic ballasts and compact lamps, power factor correction and coupling capacitor in SMPSs. Timing, oscillator circuits and audio applications.

Dielectric	Polypropylene																					
Electrodes	Vacuum deposited metal layers																					
Coating	Solvent resistant plastic case with resin sealing. Flame retardant execution (UL 94 V-0)																					
Construction	Extended metallized film (refer to general technical information)																					
Leads	Tinned copper wire																					
Reference standard	IEC 60384/16, IEC 60068, CECC 30000, CECC 31200																					
Climatic category	55/100/56 (IEC 60068/1), FMD (DIN40040)																					
Operating temperature range	-55°...+105°C																					
Rated capacitance (Cr)	0,0022µF to 22µF, in compliance with IEC60063, E6 series. Refer to article table																					
Capacitance tolerance (at 1kHz)	±10% (code=K), ±5% (code=J) and ±20% (code=M). Other tolerances upon request																					
Capacitance temperature coefficient	Refer to graphs in general technical information																					
Long term stability (at 1kHz)	Capacitance variation ≤ ±1% after a period of 2 years at standard environmental conditions																					
Rated voltage (Ur)	160, 250, 400, 630 Vdc (Permissible AC voltage at 60Hz: 90, 200, 220, 250 Vac)																					
Category voltage (Uc)	Uc=Ur at +85°C; Uc=0,8xUr at +100°C																					
Temperature derated voltage	For T> +85°C, Ur must be decreased 1,25% for every °C exceeding +85°C																					
Self inductance	≤ 1nH/mm of capacitor pitch																					
Maximum pulse rise time	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)																					
	<table border="1"> <thead> <tr> <th>Freq.</th> <th>Cr ≤ 0.1µF</th> <th>0.1µF < Cr ≤ 1µF</th> <th>1µF < Cr ≤ 4,7µF</th> <th>Cr > 4,7µF</th> </tr> </thead> <tbody> <tr> <td>1kHz</td> <td>6</td> <td>6</td> <td>6</td> <td>8</td> </tr> <tr> <td>10kHz</td> <td>10</td> <td>20</td> <td>-</td> <td>-</td> </tr> <tr> <td>100kHz</td> <td>30</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Freq.	Cr ≤ 0.1µF	0.1µF < Cr ≤ 1µF	1µF < Cr ≤ 4,7µF	Cr > 4,7µF	1kHz	6	6	6	8	10kHz	10	20	-	-	100kHz	30	-	-	-	
Freq.	Cr ≤ 0.1µF	0.1µF < Cr ≤ 1µF	1µF < Cr ≤ 4,7µF	Cr > 4,7µF																		
1kHz	6	6	6	8																		
10kHz	10	20	-	-																		
100kHz	30	-	-	-																		
Insulation resistance (IR)	(Measured between terminals, at 25±°C, after 1 minute of electrification at 100Vdc for Ur ≥ 100Vdc and 50Vdc for Ur < 100Vdc)																					
	<table border="1"> <thead> <tr> <th>Cr</th> <th>IR</th> </tr> </thead> <tbody> <tr> <td>≤ 0.33µF</td> <td>≥ 100GΩ</td> </tr> <tr> <td>> 0.33µF</td> <td>≥ 30000s</td> </tr> </tbody> </table>	Cr	IR	≤ 0.33µF	≥ 100GΩ	> 0.33µF	≥ 30000s															
Cr	IR																					
≤ 0.33µF	≥ 100GΩ																					
> 0.33µF	≥ 30000s																					
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)	<p>Test conditions: Temperature= +40±2°C Relative humidity= 93±2% Test Duration= 56 days</p>	<p>Performance: Capacitance change ≤ ±2% DF change ≤ 0,0010 at 1kHz IR ≥ 50% of initial limit value</p>																				
Endurance test	<p>Test conditions: Temperature= +85±2°C Test duration= 2000h Voltage applied= 1,25 x Ur(DC)</p>	<p>Performance: Capacitance change ≤ ±3% DF change ≤ 0,0010 at 10kHz for Cr ≤ 1µF DF change ≤ 0,0010 at 1kHz for Cr > 1µF IR ≥ 50% of initial limit value</p>																				

Resistance to soldering heat test

Reliability (MIL HDB 217)

Test conditions:

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

Application conditions:

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

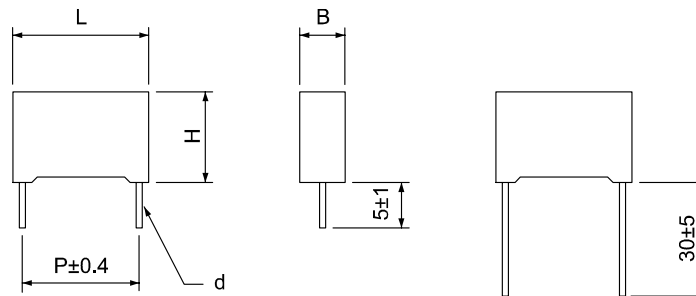
Failure rate: ≤ 3FIT
(1FIT=1x10⁻⁹ failures / components x hours)

Performance:

Capacitance change ≤ ±1%
DF change ≤ 0,0010 at 10kHz for Cr ≤ 1μF
DF change ≤ 0,0010 at 1kHz for Cr > 1μF
IR ≥ 50% initial limit value

Failure criteria (DIN44122):

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



MPB article table (different values available upon request)

Rated voltage		Cap. value (μF)	Dimension in mm					du/dt V/μs	Ko V ² /μs	ICEL ordering code ⁽¹⁾
Vdc	Vac		B	H	L	P	d			
160	90	0,047	4	9	13	10	0,6	80	25600	MPB1162470*D#
160	90	0,068	4	9	13	10	0,6	80	25600	MPB1162680*D#
160	90	0,1	5	11	13	10	0,6	80	25600	MPB1163100*D#
160	90	0,15	5	11	13	10	0,6	80	25600	MPB1163150*D#
160	90	0,15	5	11	18	15	0,8	75	24000	MPB1163150*E#
160	90	0,22	5	11	18	15	0,8	75	24000	MPB1163220*E#
160	90	0,33	6	12	18	15	0,8	75	24000	MPB1163330*E#
160	90	0,47	7,5	13,5	18	15	0,8	75	24000	MPB1163470*E#
160	90	0,68	8,5	14,5	18	15	0,8	75	24000	MPB1163680*E#
160	90	0,68	6	15	26,5	22,5	0,8	45	14400	MPB1163680*G#
160	90	1	10	16	18	15	0,8	75	24000	MPB1164100*E#
160	90	1	7	16	26,5	22,5	0,8	45	14400	MPB1164100*G#
160	90	1,5	10	18,5	26,5	22,5	0,8	45	14400	MPB1164150*G#
160	90	2,2	13	22	26,5	22,5	0,8	45	14400	MPB1164220*G#
160	90	2,2	11	20	32	27,5	0,8	36	11500	MPB1164220*H#
160	90	3,3	13	22	32	27,5	0,8	36	11500	MPB1164330*H#
160	90	4,7	15	24,5	32	27,5	0,8	36	11500	MPB1164470*H#
160	90	6,8	18	33	32	27,5	0,8	36	11500	MPB1164680*H#
160	90	10	22	37	32	27,5	0,8	36	11500	MPB1165100*H#
160	90	10	17	28	42,5	37,5	1	25	8000	MPB1165100*J#
160	90	15	22	30	42,5	37,5	1	25	8000	MPB1165150*J#
160	90	22	28	37	42,5	37,5	1	25	8000	MPB1165220*J#
250	200	0,022	4	9	13	10	0,6	130	65000	MPB1252220*D#
250	200	0,033	4	9	13	10	0,6	130	65000	MPB1252330*D#
250	200	0,047	5	11	13	10	0,6	130	65000	MPB1252470*D#
250	200	0,068	6	12	13	10	0,6	130	65000	MPB1252680*D#
250	200	0,068	5	11	18	15	0,8	125	62500	MPB1252680*E#
250	200	0,1	5	11	18	15	0,8	125	62500	MPB1253100*E#
250	200	0,15	6	12	18	15	0,8	125	62500	MPB1253150*E#
250	200	0,22	7,5	13,5	18	15	0,8	125	62500	MPB1253220*E#
250	200	0,33	8,5	14,5	18	15	0,8	125	62500	MPB1253330*E#
250	200	0,33	6,0	15,0	26,5	22,5	0,8	80	40000	MPB1253330*G#
250	200	0,47	7	16	26,5	22,5	0,8	80	40000	MPB1253470*G#
250	200	0,68	10	18,5	26,5	22,5	0,8	80	40000	MPB1253680*G#
250	200	1	11	20	26,5	22,5	0,8	80	40000	MPB1254100*G#
250	200	1	11	20	32	27,5	0,8	65	32500	MPB1254100*H#

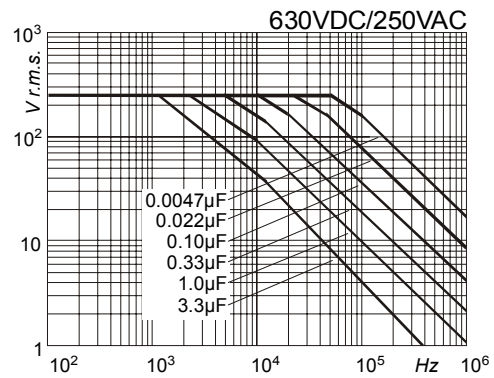
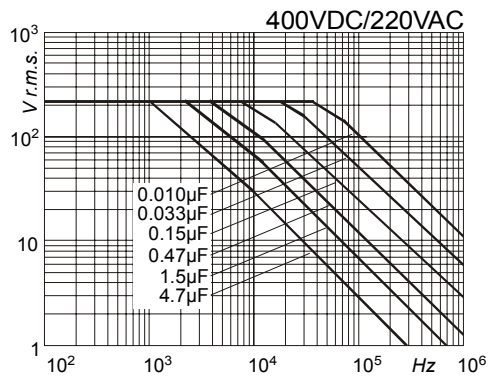
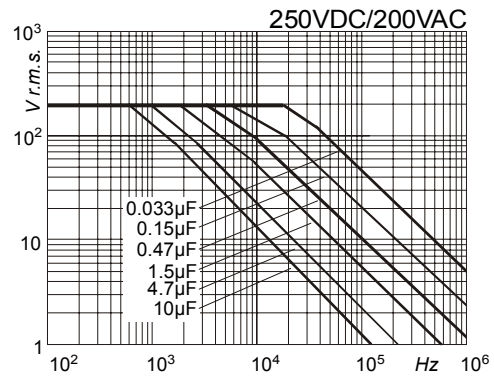
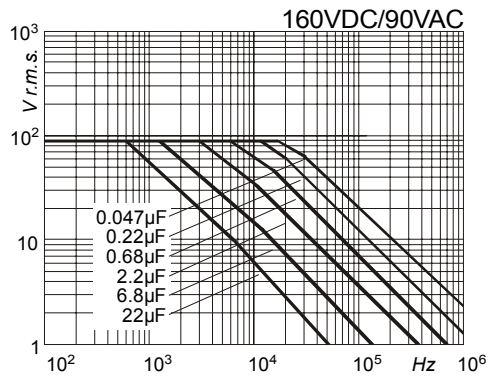
(1) Change the * symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20% and the # symbol with S for 5mm lead length and with L for 30 mm lead length.

Rated voltage Vdc	Vac	Cap. value (µF)	Dimension in mm					du/dt V/µs	Ko V ² /µs	ICEL ordering code ⁽¹⁾
			B	H	L	P	d			
250	200	1,5	13	22	32	27,5	0,8	65	32500	MPB1254150*H#
250	200	2,2	15	24,5	32	27,5	0,8	65	32500	MPB1254220*H#
250	200	3,3	18	33	32	27,5	0,8	65	32500	MPB1254330*H#
250	200	4,7	22	37	32	27,5	0,8	65	32500	MPB1254470*H#
250	200	4,7	17	28	42,5	37,5	1	40	20000	MPB1254470*J#
250	200	6,8	22	30	42,5	37,5	1	40	20000	MPB1254680*J#
250	200	10	28	37	42,5	37,5	1	40	20000	MPB1255100*J#
400	220 ⁽²⁾	0,01	4	9	13	10	0,6	175	140E03	MPB1402100*D#
400	220 ⁽²⁾	0,015	4	9	13	10	0,6	175	140E03	MPB1402150*D#
400	220 ⁽²⁾	0,022	5	11	13	10	0,6	175	140E03	MPB1402220*D#
400	220 ⁽²⁾	0,033	6	12	13	10	0,6	175	140E03	MPB1402330*D#
400	220 ⁽²⁾	0,047	6	12	13	10	0,6	175	140E03	MPB1402470*D#
400	220 ⁽²⁾	0,047	5	11	18	15	0,8	180	144E03	MPB1402470*E#
400	220 ⁽²⁾	0,068	6	12	18	15	0,8	180	144E03	MPB1402680*E#
400	220 ⁽²⁾	0,1	7,5	13,5	18	15	0,8	180	144E03	MPB1403100*E#
400	220 ⁽²⁾	0,15	8,5	14,5	18	15	0,8	180	144E03	MPB1403150*E#
400	220 ⁽²⁾	0,22	10	16	18	15	0,8	180	144E03	MPB1403220*E#
400	220 ⁽²⁾	0,22	7	16	26,5	22,5	0,8	105	84000	MPB1403220*G#
400	220 ⁽²⁾	0,33	8,5	17	26,5	22,5	0,8	105	84000	MPB1403330*G#
400	220 ⁽²⁾	0,47	10	18,5	26,5	22,5	0,8	105	84000	MPB1403470*G#
400	220 ⁽²⁾	0,47	9	17	32	27,5	0,8	80	64000	MPB1403470*H#
400	220 ⁽²⁾	0,68	13	22	26,5	22,5	0,8	105	84000	MPB1403680*G#
400	220 ⁽²⁾	0,68	11	20	32	27,5	0,8	80	64000	MPB1403680*H#
400	220 ⁽²⁾	1	13	22	32	27,5	0,8	80	64000	MPB1404100*H#
400	220 ⁽²⁾	1,5	14	28	32	27,5	0,8	80	64000	MPB1404150*H#
400	220 ⁽²⁾	2,2	18	33	32	27,5	0,8	80	64000	MPB1404220*H#
400	220 ⁽²⁾	3,3	22	37	32	27,5	0,8	80	64000	MPB1404330*H#
400	220 ⁽²⁾	3,3	22	30	42,5	37,5	1	50	40000	MPB1404330*J#
400	220 ⁽²⁾	4,7	28	37	42,5	37,5	1	50	40000	MPB1404470*J#
630	250 ⁽²⁾	0,0022	4	9	13	10	0,6	250	315E03	MPB1631220*D#
630	250 ⁽²⁾	0,0033	4	9	13	10	0,6	250	315E03	MPB1631330*D#
630	250 ⁽²⁾	0,0047	4	9	13	10	0,6	250	315E03	MPB1631470*D#
630	250 ⁽²⁾	0,0068	4	9	13	10	0,6	250	315E03	MPB1631680*D#
630	250 ⁽²⁾	0,01	5	11	13	10	0,6	250	315E03	MPB1632100*D#
630	250 ⁽²⁾	0,015	6	12	13	10	0,6	250	315E03	MPB1632150*D#
630	250 ⁽²⁾	0,022	5	11	18	15	0,8	250	315E03	MPB1632220*E#
630	250 ⁽²⁾	0,033	5	11	18	15	0,8	250	315E03	MPB1632330*E#
630	250 ⁽²⁾	0,047	6	12	18	15	0,8	250	315E03	MPB1632470*E#
630	250 ⁽²⁾	0,068	7,5	13,5	18	15	0,8	250	315E03	MPB1632680*E#
630	250 ⁽²⁾	0,1	8,5	14,5	18	15	0,8	250	315E03	MPB1633100*E#
630	250 ⁽²⁾	0,1	6	15	26,5	22,5	0,8	145	182E03	MPB1633100*G#
630	250 ⁽²⁾	0,15	10	16	18	15	0,8	250	315E03	MPB1633150*E#
630	250 ⁽²⁾	0,15	7	16	26,5	22,5	0,8	145	182E03	MPB1633150*G#
630	250 ⁽²⁾	0,22	10	18,5	26,5	22,5	0,8	145	182E03	MPB1633220*G#
630	250 ⁽²⁾	0,22	9	17	32	27,5	0,8	100	126E03	MPB1633220*H#
630	250 ⁽²⁾	0,33	11	20	26,5	22,5	0,8	145	182E03	MPB1633330*G#
630	250 ⁽²⁾	0,33	11	20	32	27,5	0,8	100	126E03	MPB1633330*H#
630	250 ⁽²⁾	0,47	13	22	32	27,5	0,8	100	126E03	MPB1633470*H#
630	250 ⁽²⁾	0,68	13	22	32	27,5	0,8	100	126E03	MPB1633680*H#
630	250 ⁽²⁾	1	14	28	32	27,5	0,8	100	126E03	MPB1634100*H#
630	250 ⁽²⁾	1,5	18	33	32	27,5	0,8	100	126E03	MPB1634150*H#
630	250 ⁽²⁾	1,5	17	28	42,5	37,5	1,0	65	81900	MPB1634150*J#
630	250 ⁽²⁾	2,2	22	37	32	27,5	0,8	100	126E03	MPB1634220*H#
630	250 ⁽²⁾	2,2	22	30	42,5	37,5	1,0	65	81900	MPB1634220*J#
630	250 ⁽²⁾	3,3	28	37	42,5	37,5	1,0	65	81900	MPB1634330*J#

(1)Change the * symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20% and the # symbol with S for 5mm lead length and with L for 30 mm lead length.

(2)Not suitable for across the line application.

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



Warning

This specification must be completed with the data given in the
 “General technical information” chapter