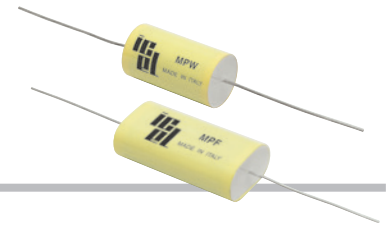




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Main applications

Blocking, filtering, bypassing, timing, coupling, decoupling, audio applications, general applications in electronics. Low power switching applications. Medium-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). Internal series connection for $U_r \geq 1000V_{dc}$. Non inductive type

Terminals

Tinned copper wire (lead-free)

Reference standard

IEC 60384/16, IEC 60068, RoHS compliant

Climatic category

55/100/56 (IEC 60068/1), FMD (DIN 40040)

Operating temperature range (case)

-55°...+105°C

Nominal Capacitance (Cn) μF

1000pF to 33 μF , In compliance with IEC 60063, E6 series. Refer to article table

Capacitance tolerance (at 1kHz)

$\pm 10\%$ (code=K), $\pm 5\%$ (code=J), $\pm 20\%$ (code=M). Other tolerances upon request

Capacitance temperature coefficient

Refer to General Technical Information

Long term stability (at 1kHz)

Capacitance variation $\leq \pm 1\%$ after a period of 2 years at standard environmental conditions

Rated voltage (Ur) (Vdc) at 85°C

160, 250, 400, 630, 1000, 1500 Vdc

Permissible AC voltage at 60Hz (Vac)

90, 200, 220, 250, 450, 600 Vac

Category voltage (Uc)

$U_c = U_r$ at +85°C; $U_c = 0,8xU_r$ at +100°C

Temperature derated voltage

For $T > +85^\circ C$, U_r must be decreased 1,25% for every °C exceeding +85°C

Self inductance

$\leq 1nH/mm$ of capacitor and leads length used for connection

Maximum pulse rise time V/ μs

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

Dissipation factor (DF), max.

$tg\delta \times 10^{-4}$, measured at 25 $\pm 5^\circ C$

Freq.	$C_n \leq 0.1 \mu F$	$0.1 \mu F < C_n \leq 1 \mu F$	$C_n > 1 \mu F$
1kHz	6	6	6
10kHz	10	20	-
100kHz	30	-	-

Insulation resistance (R_{INS})

Measured between terminals, at 25 $\pm 5^\circ C$, after 1 minute of electrification at 100Vdc

C_n	R_{INS}
$\leq 0.33 \mu F$	$\geq 100 G\Omega$
$> 0.33 \mu F$	$\geq 30000 s$

Test voltage between terminals (U_t)

1,6xUr (DC) applied for 2s at 25 $\pm 5^\circ C$ (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 $\leq \pm 1\%$
 DF change ≤ 0.0010 at 10kHz for $C_n \leq 1\mu F$
 DF change ≤ 0.0010 at 1kHz for $C_n > 1\mu F$
 $R_{INS} \geq 50\%$ of initial limit value

Endurance test

Test conditions:

Temperature= +85 $\pm 2^\circ C$
 Test duration= 2000h
 Voltage applied=1,25xUr(DC)

Performance:

Capacitance change $\leq \pm 1\%$
 DF change ≤ 0.0010 at 10kHz for $C_n \leq 1\mu F$
 DF change ≤ 0.0010 at 1kHz for $C_n > 1\mu F$
 $R_{INS} \geq 50\%$ of initial limit value

Resistance to soldering heat test

Test conditions:

Solder bath temperature= +260 $\pm 5^\circ C$
 Dipping time (with heat screen)= 10 $\pm 1s$

Performance:

Capacitance change $\leq \pm 1\%$
 DF change ≤ 0.0010 at 10kHz for $C_n \leq 1\mu F$
 DF change ≤ 0.0010 at 1kHz for $C_n > 1\mu F$
 $R_{INS} \geq 50\%$ of initial limit value

Reliability (MIL HDB 217)

Application conditions:

Applied voltage= 0,5 x Ur(DC)
 Temperature= +40 $\pm 2^\circ C$

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

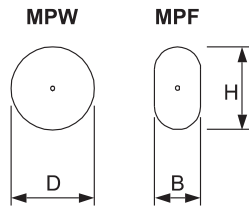
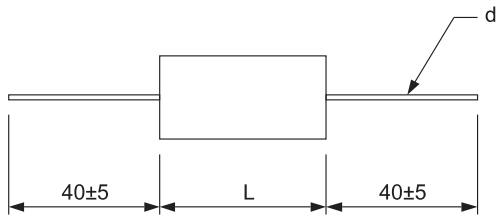
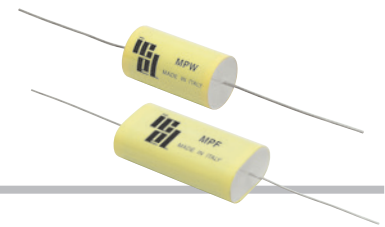
Failure criteria (DIN44122):

Capacitance change $> \pm 10\%$
 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±	H±	B±
10.5	1.0	1.0	-	-
13.0	1.5	1.0	-	-
19.0	1.5	1.5	1.5	1.0
27.0	2.0	2.0	2.0	1.5
32.0	2.0	2.0	2.0	2.0
44.0	2.5	2.5	2.5	2.0

MPW article table (different values available upon request)

Voltage at +85°C		Cn μF	Dimensions (mm)			du/dt V/μs	K ₀ V ² /μs	ICEL CODE ⁽¹⁾
Ur (Vdc)	Urms (Vac)		D	L	d			
160	90	0,068	5	13	0,6	44	14080	MPW1162680*B
160	90	0,1	5,5	13	0,6	44	14080	MPW1163100*B
160	90	0,15	6,5	13	0,6	44	14080	MPW1163150*B
160	90	0,22	7	13	0,6	44	14080	MPW1163220*B
160	90	0,33	6,5	19	0,6	25	8000	MPW1163330*D
160	90	0,47	7,5	19	0,8	25	8000	MPW1163470*D
160	90	0,68	9,5	19	0,8	25	8000	MPW1163680*D
160	90	0,68	7,5	27	0,8	17	5440	MPW1163680*G
160	90	1	11	19	0,8	25	8000	MPW1164100*D
160	90	1	9	27	0,8	17	5440	MPW1164100*G
160	90	1,5	10,5	27	0,8	17	5440	MPW1164150*G
160	90	2,2	12,5	27	0,8	17	5440	MPW1164220*G
160	90	2,2	11,5	32	0,8	12,5	4000	MPW1164220*J
160	90	3,3	15	27	0,8	17	5440	MPW1164330*G
160	90	3,3	14	32	0,8	12,5	4000	MPW1164330*J
160	90	4,7	16	32	0,8	12,5	4400	MPW1164470*J
160	90	6,8	19	32	1	12,5	4400	MPW1164680*J
160	90	6,8	16	44	1	9	2880	MPW1164680*N
160	90	10	20	44	1	9	2880	MPW1165100*N
160	90	15	24	44	1	9	2880	MPW1165150*N
160	90	22	27,5	44	1	9	2880	MPW1165220*N
160	90	33	33,5	44	1	9	2880	MPW1165330*N
250	200	0,022	5	13	0,6	55	27500	MPW1252220*B
250	200	0,033	5,5	13	0,6	55	27500	MPW1252330*B
250	200	0,047	5,5	13	0,6	55	27500	MPW1252470*B
250	200	0,068	6,5	13	0,6	55	27500	MPW1252680*B
250	200	0,1	7,5	13	0,8	55	27500	MPW1253100*B
250	200	0,15	7	19	0,8	31	15500	MPW1253150*D
250	200	0,22	8	19	0,8	31	15500	MPW1253220*D
250	200	0,33	9,5	19	0,8	31	15500	MPW1253330*D
250	200	0,33	8	27	0,8	22	11000	MPW1253330*G
250	200	0,47	9	27	0,8	22	11000	MPW1253470*G
250	200	0,68	10,5	27	0,8	22	11000	MPW1253680*G
250	200	1	13	27	0,8	22	11000	MPW1254100*G
250	200	1	11	32	0,8	15	7500	MPW1254100*J
250	200	1,5	14	32	0,8	15	7500	MPW1254150*J
250	200	2,2	16,5	32	1	15	7500	MPW1254220*J
250	200	3,3	20	32	1	15	7500	MPW1254330*J
250	200	4,7	20	44	1	11	5500	MPW1254470*N
250	200	6,8	24,5	44	1	11	5500	MPW1254680*N

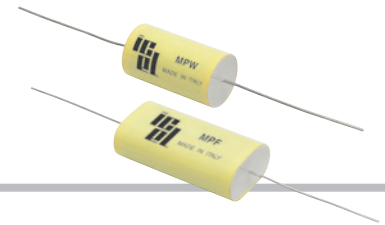
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⁽²⁾ Not suitable for across the line application



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Voltage at +85°C		Cn μF	Dimensions (mm)			du/dt V/μs	K ₀ V ² /μs	ICEL CODE ⁽¹⁾ -
Ur (Vdc)	Urms (Vac)		D	L	d			
250	200	10	27,5	44	1	11	5500	MPW1255100*N
250	200	15	34,5	44	1	11	5500	MPW1255150*N
400	220 ⁽²⁾	0,01	5	13	0,6	110	88000	MPW1402100*B
400	220 ⁽²⁾	0,015	5,5	13	0,6	110	88000	MPW1402150*B
400	220 ⁽²⁾	0,022	6	13	0,6	110	88000	MPW1402220*B
400	220 ⁽²⁾	0,033	6,5	13	0,6	110	88000	MPW1402330*B
400	220 ⁽²⁾	0,047	7,5	13	0,8	110	88000	MPW1402470*B
400	220 ⁽²⁾	0,068	7	19	0,8	61	48800	MPW1402680*D
400	220 ⁽²⁾	0,1	7,5	19	0,8	61	48800	MPW1403100*D
400	220 ⁽²⁾	0,15	8,5	19	0,8	61	48800	MPW1403150*D
400	220 ⁽²⁾	0,22	10,5	19	0,8	61	48800	MPW1403220*D
400	220 ⁽²⁾	0,22	8,5	27	0,8	37,5	30000	MPW1403220*G
400	220 ⁽²⁾	0,33	10,5	27	0,8	37,5	30000	MPW1403330*G
400	220 ⁽²⁾	0,47	12	27	0,8	37,5	30000	MPW1403470*G
400	220 ⁽²⁾	0,68	14	27	0,8	37,5	30000	MPW1403680*G
400	220 ⁽²⁾	0,68	13	32	0,8	29	23200	MPW1403680*J
400	220 ⁽²⁾	1	15,5	32	0,8	29	23200	MPW1404100*J
400	220 ⁽²⁾	1,5	18	32	1	29	23200	MPW1404150*J
400	220 ⁽²⁾	2,2	18	44	1	22	17600	MPW1404220*N
400	220 ⁽²⁾	3,3	21	44	1	22	17600	MPW1404330*N
400	220 ⁽²⁾	4,7	26	44	1	22	17600	MPW1404470*N
400	220 ⁽²⁾	6,8	30	44	1	22	17600	MPW1404680*N
630	250 ⁽²⁾	0,0068	5	13	0,6	190	239000	MPW1631680*B
630	250 ⁽²⁾	0,01	5,5	13	0,6	190	239000	MPW1632100*B
630	250 ⁽²⁾	0,015	6,5	13	0,6	190	239000	MPW1632150*B
630	250 ⁽²⁾	0,022	7,5	13	0,8	190	239000	MPW1632220*B
630	250 ⁽²⁾	0,033	6,5	19	0,6	100	126000	MPW1632330*D
630	250 ⁽²⁾	0,047	7,5	19	0,8	100	126000	MPW1632470*D
630	250 ⁽²⁾	0,068	8,5	19	0,8	100	126000	MPW1632680*D
630	250 ⁽²⁾	0,1	10	19	0,8	100	126000	MPW1633100*D
630	250 ⁽²⁾	0,1	8	27	0,8	58	73080	MPW1633100*G
630	250 ⁽²⁾	0,15	9,5	27	0,8	58	73080	MPW1633150*G
630	250 ⁽²⁾	0,22	11	27	0,8	58	73080	MPW1633220*G
630	250 ⁽²⁾	0,22	10	32	0,8	46	57960	MPW1633220*J
630	250 ⁽²⁾	0,33	13	27	0,8	58	73080	MPW1633330*G
630	250 ⁽²⁾	0,33	12	32	0,8	46	57960	MPW1633330*J
630	250 ⁽²⁾	0,47	13,5	32	0,8	46	57960	MPW1633470*J
630	250 ⁽²⁾	0,68	16	32	0,8	46	57960	MPW1633680*J
630	250 ⁽²⁾	1	19	32	1	46	57960	MPW1634100*J
630	250 ⁽²⁾	1,5	19	44	1	33	41580	MPW1634150*N
630	250 ⁽²⁾	2,2	23	44	1	33	41580	MPW1634220*N
630	250 ⁽²⁾	3,3	28	44	1	33	41580	MPW1634330*N
630	250 ⁽²⁾	4,7	33,5	44	1	33	41580	MPW1634470*N
1000	450 ⁽²⁾	0,015	8,5	19	0,8	150	300000	MPW2102150*D
1000	450 ⁽²⁾	0,022	9,5	19	0,8	150	300000	MPW2102220*D
1000	450 ⁽²⁾	0,022	7	27	0,8	82,5	165000	MPW2102220*G
1000	450 ⁽²⁾	0,033	8	27	0,8	82,5	165000	MPW2102330*G
1000	450 ⁽²⁾	0,047	9	27	0,8	82,5	165000	MPW2102470*G
1000	450 ⁽²⁾	0,068	10,5	27	0,8	82,5	165000	MPW2102680*G
1000	450 ⁽²⁾	0,1	13	27	0,8	82,5	165000	MPW2103100*G
1000	450 ⁽²⁾	0,1	11	32	0,8	70	140000	MPW2103100*J

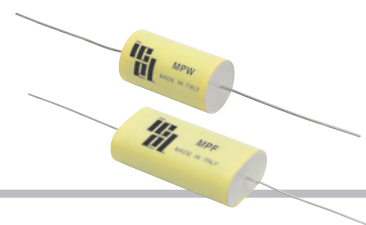
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⁽²⁾ Not suitable for across the line application



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Voltage at +85°C		Cn μF	Dimensions (mm)			du/dt V/μs	K ₀ V ² /μs	ICEL CODE ⁽¹⁾ -
Ur (Vdc)	Urms (Vac)		D	L	d			
1000	450 ⁽²⁾	0,15	13	32	0,8	70	140000	MPW2103150*J
1000	450 ⁽²⁾	0,22	15,5	32	0,8	70	140000	MPW2103220*J
1000	450 ⁽²⁾	0,33	19	32	1	70	140000	MPW2103330*J
1000	450 ⁽²⁾	0,47	22	32	1	70	140000	MPW2103470*J
1500	600 ⁽²⁾	0,001	4,5	13	0,6	250	750000	MPW2151100*B
1500	600 ⁽²⁾	0,0015	5	13	0,6	250	750000	MPW2151150*B
1500	600 ⁽²⁾	0,0022	5,5	13	0,6	250	750000	MPW2151220*B
1500	600 ⁽²⁾	0,0033	5,5	13	0,6	250	750000	MPW2151330*B
1500	600 ⁽²⁾	0,0047	6	13	0,6	250	750000	MPW2151470*B
1500	600 ⁽²⁾	0,0068	6	19	0,6	187,5	562000	MPW2151680*D
1500	600 ⁽²⁾	0,01	7	19	0,8	187,5	562000	MPW2152100*D
1500	600 ⁽²⁾	0,015	9	19	0,8	187,5	562000	MPW2152150*D
1500	600 ⁽²⁾	0,015	7	27	0,8	105	315000	MPW2152150*G
1500	600 ⁽²⁾	0,022	10	19	0,8	187,5	562000	MPW2152220*D
1500	600 ⁽²⁾	0,022	8	27	0,8	105	315000	MPW2152220*G
1500	600 ⁽²⁾	0,033	9,5	27	0,8	105	315000	MPW2152330*G
1500	600 ⁽²⁾	0,047	11	27	0,8	105	315000	MPW2152470*G
1500	600 ⁽²⁾	0,068	12,5	27	0,8	105	315000	MPW2152680*G
1500	600 ⁽²⁾	0,068	11,5	32	0,8	90	270000	MPW2152680*J
1500	600 ⁽²⁾	0,1	14,5	27	0,8	105	315000	MPW2153100*G
1500	600 ⁽²⁾	0,1	13,5	32	0,8	90	270000	MPW2153100*J
1500	600 ⁽²⁾	0,15	16,5	32	1	90	270000	MPW2153150*J
1500	600 ⁽²⁾	0,22	19,5	32	1	90	270000	MPW2153220*J
1500	600 ⁽²⁾	0,33	23	32	1	90	270000	MPW2153330*J

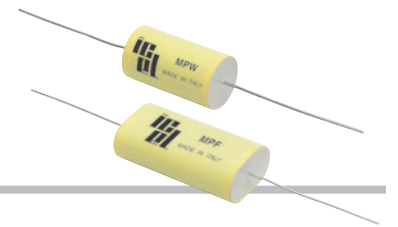
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⁽²⁾ Not suitable for across the line application



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MPF article table (different values available upon request)

Voltage at +85°C		Cn μF	Dimensions (mm)				du/dt V/μs	K ₀ V ² /μs	ICEL CODE ⁽¹⁾
Ur (Vdc)	Urms (Vac)		B	H	L	d			
160	90	0,33	5	9	19	0,6	25	8000	MPF1163330*D
160	90	0,47	5,5	9,5	19	0,6	25	8000	MPF1163470*D
160	90	0,68	6,5	11	19	0,8	25	8000	MPF1163680*D
160	90	1	6,5	11	27	0,8	17	5440	MPF1164100*G
160	90	1,5	7,5	12,5	27	0,8	17	5440	MPF1164150*G
160	90	0,2	8	14	32	0,8	12,5	4000	MPF1164220*J
160	90	3,3	10	16,5	32	0,8	12,5	4000	MPF1164330*J
160	90	4,7	12	20	32	0,8	12,5	4000	MPF1164470*J
160	90	6,8	11,5	19,5	44	0,8	9	2880	MPF1164680*N
160	90	10	13,5	23	44	0,8	9	2880	MPF1165100*N
160	90	15	18	28	44	1	9	2880	MPF1165150*N
250	200	0,15	5	9	19	0,6	31	15500	MPF1253150*D
250	200	0,22	5,5	9,5	19	0,6	31	15500	MPF1253220*D
250	200	0,33	7	12	19	0,8	31	15500	MPF1253330*D
250	200	0,47	9	14	19	0,8	31	15500	MPF1253470*D
250	200	0,68	7	13	27	0,8	22	11000	MPF1253680*G
250	200	1	9	15,5	27	0,8	22	11000	MPF1254100*G
250	200	1,5	10,5	17	32	0,8	15	7500	MPF1254150*J
250	200	2,2	12,5	19,5	32	0,8	15	7500	MPF1254220*J
250	200	3,3	12	20	44	0,8	11	5500	MPF1254330*N
250	200	4,7	14	23,5	44	0,8	11	5500	MPF1254470*N
250	200	6,8	18,5	29	44	1	11	5500	MPF1254680*N
400	220 ⁽²⁾	0,068	5	8	19	0,6	61	48800	MPF1402680*D
400	220 ⁽²⁾	0,1	5	9	19	0,6	61	48800	MPF1403100*D
400	220 ⁽²⁾	0,15	6,5	10,5	19	0,6	61	48800	MPF1403150*D
400	220 ⁽²⁾	0,22	7,5	12,5	19	0,8	61	48800	MPF1403220*D
400	220 ⁽²⁾	0,33	7,5	12,5	27	0,8	37,5	30000	MPF1403330*G
400	220 ⁽²⁾	0,47	9	14	27	0,8	37,5	30000	MPF1403470*G
400	220 ⁽²⁾	0,68	9	15	32	0,8	29	23200	MPF1403680*J
400	220 ⁽²⁾	1	11	19	32	0,8	29	23200	MPF1404100*J
400	220 ⁽²⁾	1,5	10,5	18,5	44	0,8	22	17600	MPF1404150*N
400	220 ⁽²⁾	2,2	13	22	44	0,8	22	17600	MPF1404220*N
400	220 ⁽²⁾	3,3	15	25	44	1	22	17600	MPF1404330*N
630	250 ⁽²⁾	0,033	5	9	19	0,6	100	126000	MPF1632330*D
630	250 ⁽²⁾	0,047	6	10	19	0,6	100	126000	MPF1632470*D
630	250 ⁽²⁾	0,068	6,5	10,5	19	0,6	100	126000	MPF1632680*D
630	250 ⁽²⁾	0,1	7,5	12	19	0,8	100	126000	MPF1633100*D
630	250 ⁽²⁾	0,15	7	11	27	0,8	58	73080	MPF1633150*G
630	250 ⁽²⁾	0,22	8	13	27	0,8	58	73080	MPF1633220*G
630	250 ⁽²⁾	0,33	8	15	32	0,8	46	57960	MPF1633330*J
630	250 ⁽²⁾	0,47	10	17	32	0,8	46	57960	MPF1633470*J
630	250 ⁽²⁾	0,68	12	19	32	0,8	46	57960	MPF1633680*J
630	250 ⁽²⁾	1	11,5	19	44	0,8	33	41580	MPF1634100*N
630	250 ⁽²⁾	1,5	13,5	23,5	44	0,8	33	41580	MPF1634150*N
630	250 ⁽²⁾	2,2	17,5	27,5	44	1	33	41580	MPF1634220*N
1000	450 ⁽²⁾	0,047	6	10	27	0,6	82,5	165000	MPF2102470*G
1000	450 ⁽²⁾	0,068	7,5	12,5	27	0,8	82,5	165000	MPF2102680*G
1000	450 ⁽²⁾	0,1	8	12	32	0,8	70	140000	MPF2103100*J
1000	450 ⁽²⁾	0,15	9,5	16	32	0,8	70	140000	MPF2103150*J
1000	450 ⁽²⁾	0,22	12	18,5	32	0,8	70	140000	MPF2103220*J
1000	450 ⁽²⁾	0,33	13,5	23,5	32	0,8	70	140000	MPF2103330*J

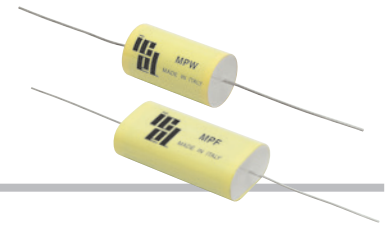
⁽¹⁾ Change the * symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20%

⁽²⁾ Not suitable for across the line application



MPW / MPF

• MKP • axial terminals • general purpose

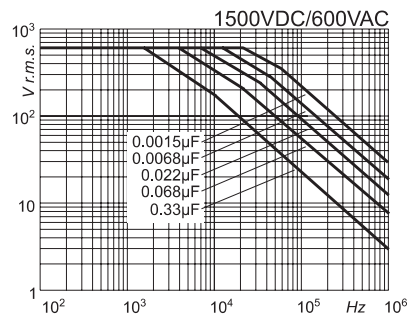
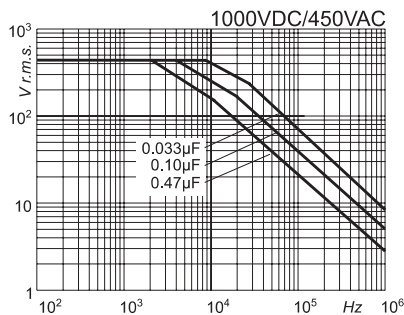
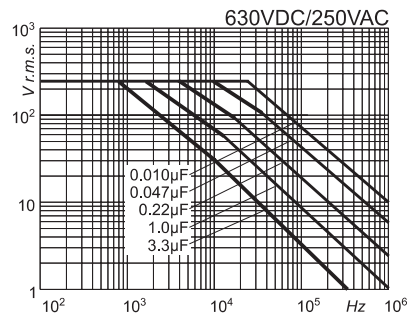
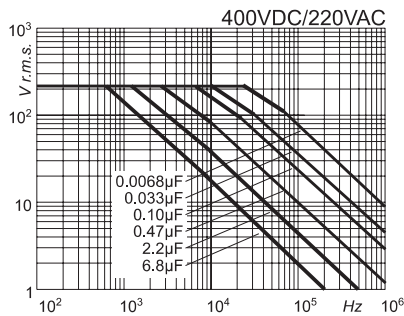
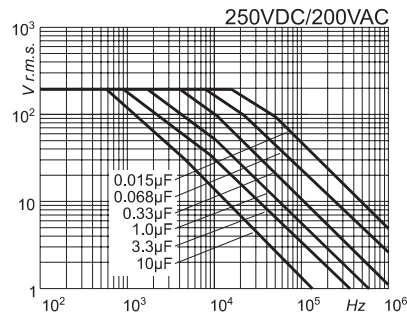
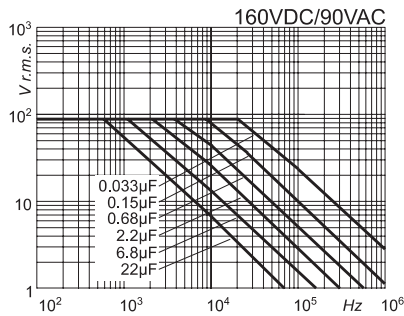


Voltage at +85°C		Cn μF	Dimensions (mm)				du/dt V/μs	K ₀ V ² /μs	ICEL CODE ⁽¹⁾ -
Ur (Vdc)	Urms (Vac)		B	H	L	d			
1500	600 ⁽²⁾	0,01	5	9	19	0,6	187,5	562000	MPF2152100*D
1500	600 ⁽²⁾	0,015	6	10	19	0,6	187,5	562000	MPF2152150*D
1500	600 ⁽²⁾	0,022	7	11	19	0,8	187,5	562000	MPF2152220*D
1500	600 ⁽²⁾	0,033	9	13,5	19	0,8	187,5	562000	MPF2152330*D
1500	600 ⁽²⁾	0,033	6	10,5	27	0,6	105	315000	MPF2152330*G
1500	600 ⁽²⁾	0,047	8	13	27	0,8	105	315000	MPF2152470*G
1500	600 ⁽²⁾	0,068	9	15,5	32	0,8	90	270000	MPF2152680*J
1500	600 ⁽²⁾	0,1	9,5	16,5	32	0,8	90	270000	MPF2153100*J
1500	600 ⁽²⁾	0,15	12,5	18,5	32	0,8	90	270000	MPF2153150*J
1500	600 ⁽²⁾	0,22	14	23,5	32	0,8	90	270000	MPF2153220*J

⁽¹⁾ Change the * symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20%

⁽²⁾ Not suitable for across the line application

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