Metallized Polypropylene Capacitor, Mini-Version (-M)
Related Document: IEC 60384-16, CECC 31 200

MAIN APPLICATIONS:
High voltage, high current and high pulse operations. Deflection circuits in TV-sets (S-correction and fly-back tuning). Protection circuits in SMPS's, snubber and electronic ballast circuits. Input and output filtering in SPS designs.

MARKING:
Manufacturer's logo/type/C-value/rated voltage/tolerance/ date of manufacture

DIELECTRIC:
Polypropylene film

ELECTRODES:
Vacuum deposited aluminum

COATING:
Flame retardant plastic case UL-class 94 V-0, color blue, epoxy resin sealed
Flame class B according to IEC 60065 available on request

CONSTRUCTION:
Extended double sided metallized polyester film, internal series connection (630 VDC/400 VAC to 2000 VDC), double sided metallized polyester carrier film.

LEADS:
Tinned wire

IEC TEST CLASSIFICATION:
55/100/56, according to IEC 60068

OPERATING TEMPERATURE RANGE:
- 55°C to + 100°C

CAPACITANCE RANGE:
470pF to 4.7µF

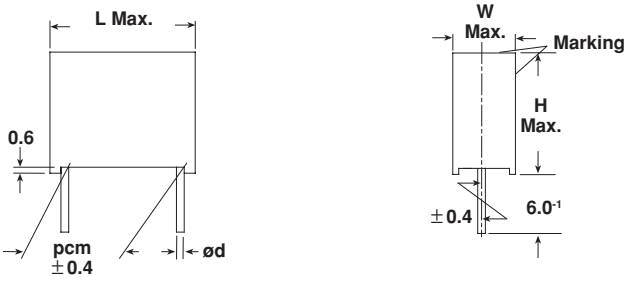
CAPACITANCE TOLERANCES:
± 20% (M), ± 10% (K), ± 5% (J)

RATED VOLTAGES (U_R):
250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1600 VDC, 2000 VDC

PERMISSIBLE AC VOLTAGES (RMS) UP TO 60Hz:
160 VAC, 220 VAC, 250 VAC, 400 VAC, 600 VAC, 650 VAC, 700 VAC

TEST VOLTAGE:
1.6 x U_R for 2 s

Dimensions in millimeters



PCM	W	Ø d
7.5		0.6
10 - 37.5	< 16.0	0.8
10 - 37.5	≥ 16.0	1.0

INSULATION RESISTANCE:
Measured at 100 VDC after one minute

For C ≤ 0.33µF:
100,000 MΩ minimum value (150,000 MΩ typical value)

TIME CONSTANT:
Measured at 100 VDC after one minute

For C > 0.33µF:
30,000 s minimum value (50,000 s typical value)

TEMPERATURE COEFFICIENT:
- 250 x 10^{-6}/°C (typical value)

CAPACITANCE DRIFT:
Up to + 40°C, ± 0.5% for a period of two years

DERATING FOR DC AND AC.

CATEGORY VOLTAGE U_C:
At + 85°C: $U_C = 1.0\ U_R$
At + 100°C: $U_C = 0.7\ U_R$

SELF INDUCTANCE:
~ 6 nH measured with 2mm long leads

PULL TEST ON LEADS:
≥ 30 N in direction of leads according to IEC 60068-2-21

RELIABILITY:
Operational life > 300,000 h
Failure rate < 2 FIT (40°C and 0.5 x U_R)

For further details, please refer to the general information provided in this catalog.

MAXIMUM PULSE RISE TIME

PCM	Maximum pulse rise time d_v/d_t [V/µs]						
(mm)	250 VDC	400 VDC	630/250 VDC	630 VDC	1000 VDC	1600 VDC	2000 VDC
7.5	1730	—	—	—	—	—	—
10	865	1297	2162	—	—	—	—
15	432	649	—	2703	3784	6683	9610
22.5	247	360	—	1441	2018	2827	3326
27.5	192	282	—	1081	1514	2042	2544
37.5	133	200	—	—	1044	1313	1602

If the maximum pulse voltage is less than the rated voltage higher d_v/d_t values can be permitted.

DISSIPATION FACTOR TAN δ

MEASURED AT	C ≤ 0.1µF	0.1µF < C ≤ 1.0µF	C > 1.0µF
1kHz	0.3×10^{-3}	0.3×10^{-3}	0.3×10^{-3}
10kHz	0.4×10^{-3}	0.5×10^{-3}	—
100kHz	1.5×10^{-3}	—	—
	Maximum value		

CAPACITANCE	CAPACITANCE CODE	VOLTAGE CODE 25 250 VDC/ 160 VAC				VOLTAGE CODE 40 400 VDC/ 220 VAC				VOLTAGE CODE 63 630 VDC/ 250 VAC				VOLTAGE CODE 63 630 VDC/ 400 VAC			
		W	H	L	PCM	W	H	L	PCM	W	H	L	PCM	W	H	L	PCM
470 pF	- 147	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
680 pF	- 168	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
1000 pF	- 210	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
1500 pF	- 215	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
2200 pF	- 222	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
3300 pF	- 233	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
4700 pF	- 247	—	—	—	—	—	—	—	—	4.0	9.0	13.0	10	—	—	—	—
6800 pF	- 268	—	—	—	—	—	—	—	—	4.5	9.5	13.0	10	—	—	—	—
0.010 µF	- 310	4.0	9.0	10.0	7.5	4.0	9.0	13.0	10	5.5	10.5	13.0	10	—	—	—	—
0.015 µF	- 315	4.0	9.0	10.0	7.5	4.0	9.0	13.0	10	6.5	11.5	13.0	10	5.5	10.5	18.0	15*
0.022 µF	- 322	4.0	9.0	13.0	10	5.5	10.5	13.0	10	9.0	15.5	13.0	10	6.5	12.5	18.0	15*
0.033 µF	- 333	4.5	9.5	13.0	10	5.5	10.5	18.0	15	9.0	15.5	13.0	10	7.5	13.5	18.0	15*
0.047 µF	- 347	5.5	10.5	13.0	10	5.5	10.5	18.0	15	10.5	17.5	13.0	10	8.5	14.5	18.0	15*
0.068 µF	- 368	6.5	11.5	13.0	10	6.5	12.5	18.0	15	—	—	—	—	7.5	15.5	26.5	22.5
0.10 µF	- 410	5.5	10.5	18.0	15	7.5	13.5	18.0	15	—	—	—	—	8.5	16.5	26.5	22.5
0.15 µF	- 415	6.5	12.5	18.0	15	8.5	14.5	18.0	15	—	—	—	—	10.5	18.5	26.5	22.5
0.22 µF	- 422	7.5	13.5	18.0	15	7.5	15.5	26.5	22.5	—	—	—	—	11.5	20.5	31.5	27.5
0.33 µF	- 433	8.5	17.5	18.0	15	8.5	16.5	26.5	22.5	—	—	—	—	13.5	23.5	31.5	27.5
0.47 µF	- 447	8.5	16.5	26.5	22.5	10.5	18.5	26.5	22.5	—	—	—	—	18.0	28.0	31.5	27.5
0.68 µF	- 468	9.0	17.0	26.5	22.5	11.5	20.5	31.5	27.5	—	—	—	—	18.0	33.0	31.5	27.5
1.0 µF	- 510	11.0	21.0	26.5	22.5	13.5	23.5	31.5	27.5	—	—	—	—	—	—	—	—
1.5 µF	- 515	13.5	23.5	31.5	27.5	16.5	29.5	31.5	27.5	—	—	—	—	—	—	—	—
2.2 µF	- 522	15.0	24.5	31.5	27.5	16.0	28.5	41.5	37.5	—	—	—	—	—	—	—	—
3.3 µF	- 533	18.0	33.0	31.5	27.5	—	—	—	—	—	—	—	—	—	—	—	—
4.7 µF	- 547	18.0	32.5	41.5	37.5	—	—	—	—	—	—	—	—	—	—	—	—

Further C-values upon request

*Ordering Code - 2M for PCM 15 (e.g. MKP 1841-322/635-2M)

RECOMMENDED PACKAGING

LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLE	PCM ≤ 15	PCM 22.5 - 27.5	PCM 37.5
D	AMMO	16.5	—	MKP 1841-410/405-MD	X	—	—
G	AMMO	18.5	—	MKP 1841-410/405-MG	X	—	—
F	REEL	16.5	350	MKP 1841-410/405-MF	X	—	—
W	REEL	18.5	350	MKP 1841-410/405-MW	X	—	—
V	REEL	18.5	500	MKP 1841-510/254-MV	—	X	—
G	AMMO	18.5	—	MKP 1841-510/254-MG	—	X	—
—	BULK	—	—	MKP 1841-510/254-M	X	X	X

CAPACITANCE	CAPACITANCE CODE	VOLTAGE CODE 10 1000 VDC/ 600VAC				VOLTAGE CODE 13 1600 VDC/ 650 VAC				VOLTAGE CODE 20 2000 VDC/ 700 VAC			
		W	H	L	PCM	W	H	L	PCM	W	H	L	PCM
470 pF	- 147	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
680 pF	- 168	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
1000 pF	- 210	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
1500 pF	- 215	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
2200 pF	- 222	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
3300 pF	- 233	—	—	—	—	5.5	10.5	18.0	15	6.0	12.0	18.0	15
4700 pF	- 247	5.5	10.5	18.0	15	6.5	12.5	18.0	15	6.0	12.0	18.0	15
6800 pF	- 268	5.5	10.5	18.0	15	7.5	13.5	18.0	15	6.5	14.5	26.5	22.5
0.010 µF	- 310	6.5	12.5	18.0	15	8.5	14.5	18.0	15	6.5	14.5	26.5	22.5
0.015 µF	- 315	6.5	12.5	18.0	15	8.5	17.5	18.0	15	7.5	15.5	26.5	22.5
0.022 µF	- 322	8.5	14.5	18.0	15	8.5	16.5	26.5	22.5	8.5	16.5	26.5	22.5
0.033 µF	- 333	6.5	14.5	26.5	22.5	8.5	16.5	26.5	22.5	9.0	18.5	31.5	27.5
0.047 µF	- 347	8.5	16.5	26.5	22.5	10.5	18.5	26.5	22.5	11.5	20.5	31.5	27.5
0.068 µF	- 368	10.5	18.5	26.5	22.5	12.5	20.0	26.5	22.5	13.5	23.5	31.5	27.5
0.10 µF	- 410	11.0	21.0	26.5	22.5	13.5	23.5	31.5	27.5	14.5	24.5	41.5	37.5
0.15 µF	- 415	13.5	23.5	31.5	27.5	16.5	29.5	31.5	27.5	16.0	28.5	41.5	37.5
0.22 µF	- 422	15.0	24.5	31.5	27.5	16.0	28.5	41.5	37.5	18.0	32.5	41.5	37.5
0.33 µF	- 433	16.5	29.5	31.5	27.5	—	—	—	—	—	—	—	—
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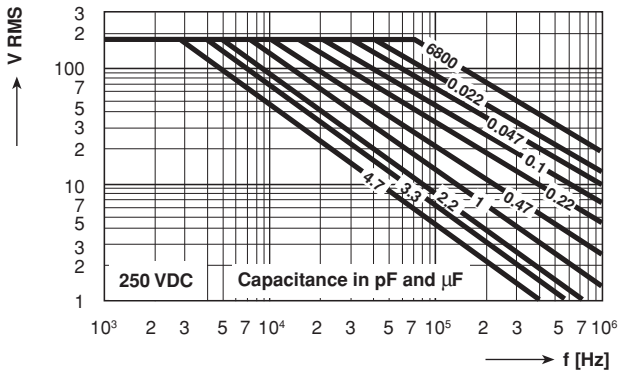
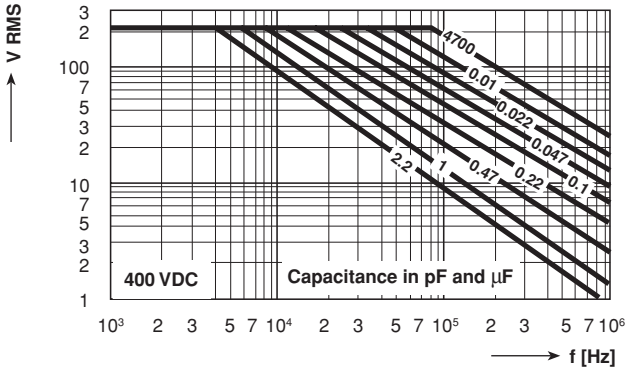
W	REEL	18.5	350	MKP 1841-410/404-MW	X	—	—
V	REEL	18.5	500	MKP 1841-510/254-MV	—	X	—
G	AMMO	18.5	—	MKP 1841-510/254-MG	—	X	—
—	BULK	—	—	MKP 1841-510/254-M	X	X	X



Permissible AC Voltage versus Frequency



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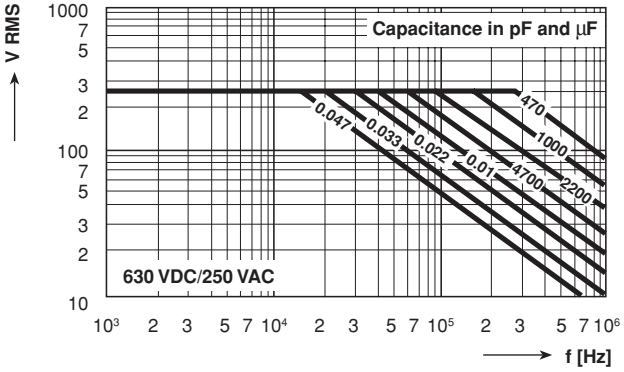

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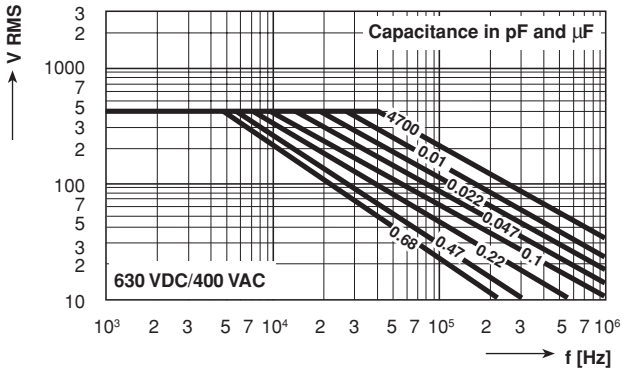
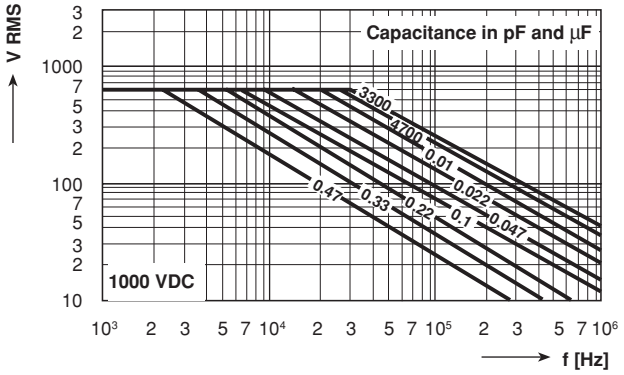


Permissible AC Voltage versus Frequency



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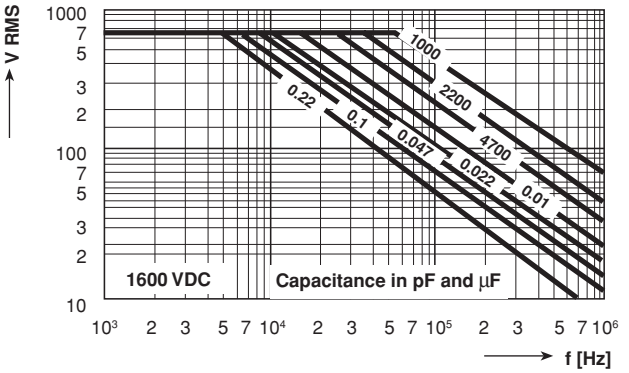

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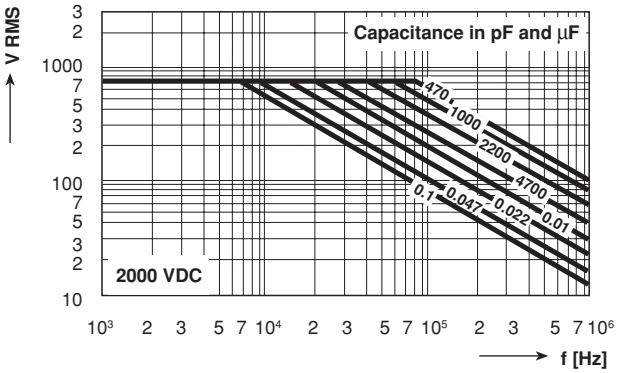

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