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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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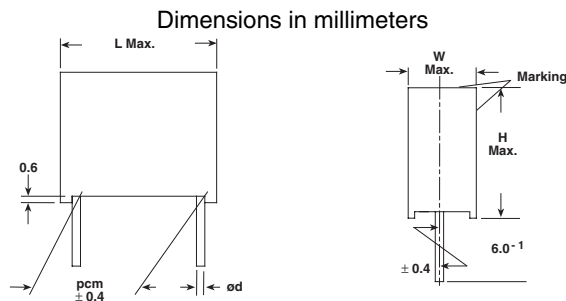
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## Metallized Polypropylene Capacitor, Mini-Version (-M)

### Related Document: IEC 60384-16



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

#### 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

#### TEST VOLTAGE (ELECTRODE/ELECTRODE)

$1.6 \times U_R$  for 2 s

#### IEC TEST CLASSIFICATION

55/100/56, according to IEC 60068

#### MAXIMUM PULSE RISE TIME

PCM (mm)	Maximum Pulse Rise Time $d_v/d_t$ [V/μs]						
	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.

#### FEATURES

Product is completely lead (Pb)-free.  
Product is RoHS compliant.



#### OPERATING TEMPERATURE RANGE

- 55°C to + 100°C



#### CAPACITANCE RANGE

470pF to 4.7μF

**RoHS**  
COMPLIANT

#### 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

#### INSULATION RESISTANCE

Measured at 100 VDC after one minute

For  $C \leq 0.33\mu\text{F}$ :

100,000 MΩ minimum value (150,000 MΩ typical value)

#### TIME CONSTANT

Measured at 100 VDC after one minute

For  $C > 0.33\mu\text{F}$ :

30,000 s minimum value (50,000 s typical value)

#### TEMPERATURE COEFFICIENT

-  $250 \times 10^{-6}/^\circ\text{C}$  (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  $0.5 \times U_R$ )

For further details, please refer to the general information available at [www.vishay.com/doc?26033](http://www.vishay.com/doc?26033).

### DISSIPATION FACTOR TAN $\delta$

MEASURED AT	$C \leq 0.1\mu\text{F}$	$0.1\mu\text{F} < C \leq 1.0\mu\text{F}$	$C > 1.0\mu\text{F}$
1kHz	$0.3 \times 10^{-3}$	$0.3 \times 10^{-3}$	$0.3 \times 10^{-3}$
10kHz	$0.4 \times 10^{-3}$	$0.5 \times 10^{-3}$	—
100kHz	$1.5 \times 10^{-3}$	—	—
Maximum values			

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
470pF	- 147	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
680pF	- 168	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
1000pF	- 210	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
1500pF	- 215	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
2200pF	- 222	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
3300pF	- 233	—	—	—	—	—	—	—	—	3.5	8.0	13.0	10	—	—	—	—
4700pF	- 247	—	—	—	—	—	—	—	—	4.0	9.0	13.0	10	—	—	—	—
6800pF	- 268	—	—	—	—	—	—	—	—	4.5	9.5	13.0	10	—	—	—	—
0.010 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 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 $\mu\text{F}$	- 510	11.0	21.0	26.5	22.5	13.5	23.5	31.5	27.5	—	—	—	—	—	—	—	—
1.5 $\mu\text{F}$	- 515	13.5	23.5	31.5	27.5	16.5	29.5	31.5	27.5	—	—	—	—	—	—	—	—
2.2 $\mu\text{F}$	- 522	15.0	24.5	31.5	27.5	16.0	28.5	41.5	37.5	—	—	—	—	—	—	—	—
3.3 $\mu\text{F}$	- 533	18.0	33.0	31.5	27.5	—	—	—	—	—	—	—	—	—	—	—	—
4.7 $\mu\text{F}$	- 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 EXAMPLES	PCM $\leq 15$	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



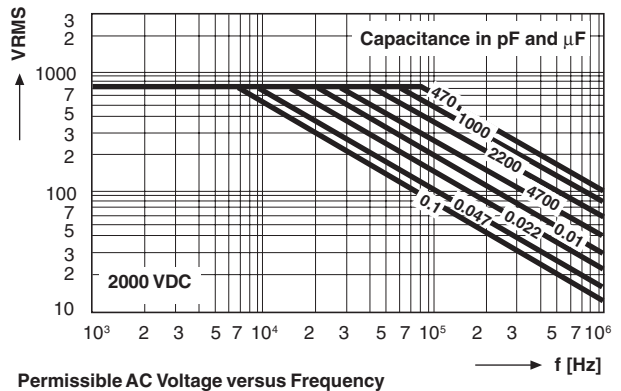
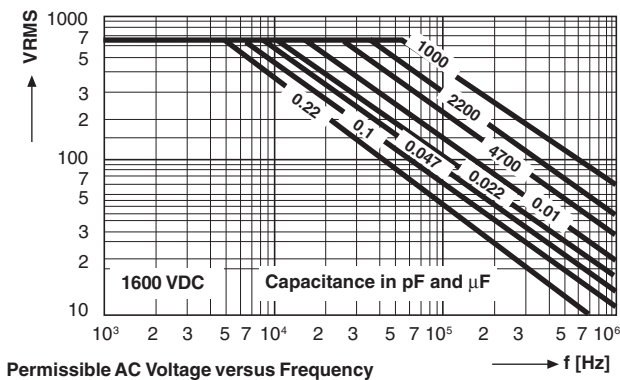
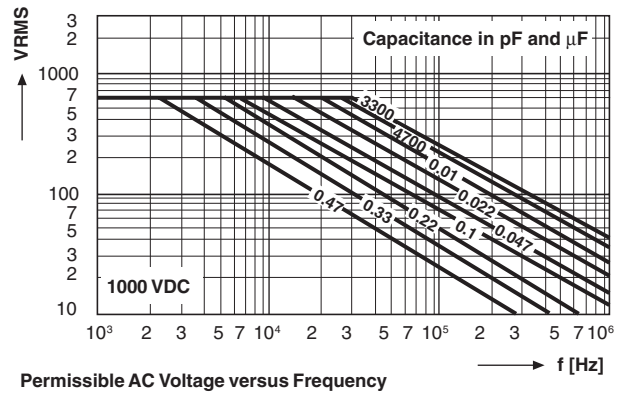
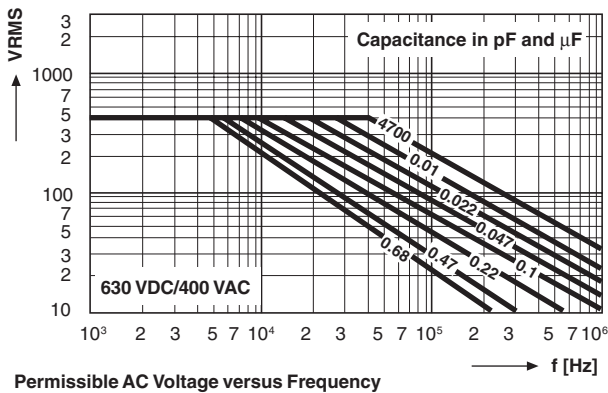
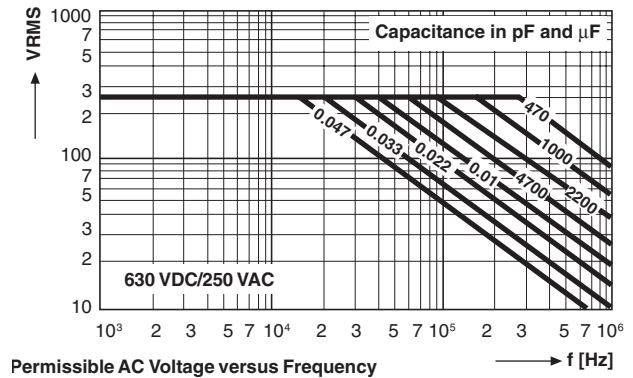
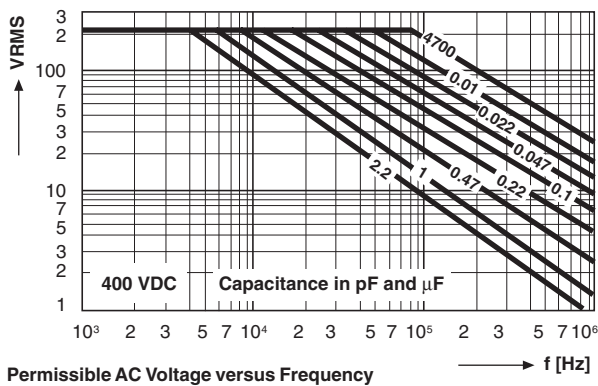
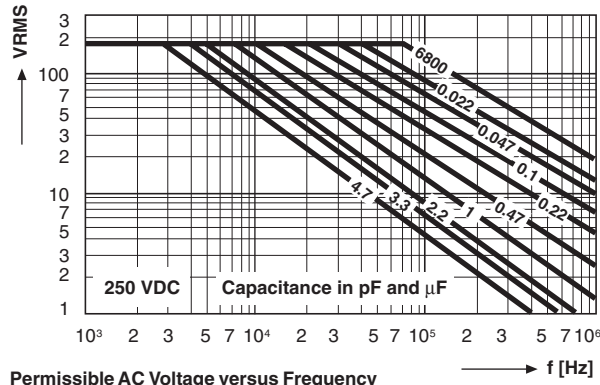


CAPACITANCE	CAPACITANCE CODE	VOLTAGE CODE 10 1000 VDC/600VAC				VOLTAGE CODE 13 1600 VDC/650 VAC				VOLTAGE CODE 20 2000 VDC/700 VAC			
		W	H	L	PCM	W	H	L	PCM	W	H	L	PCM
470pF	- 147	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
680pF	- 168	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
1000pF	- 210	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
1500pF	- 215	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
2200pF	- 222	—	—	—	—	—	—	—	—	5.5	10.5	18.0	15
3300pF	- 233	—	—	—	—	5.5	10.5	18.0	15	6.0	12.0	18.0	15
4700pF	- 247	5.5	10.5	18.0	15	6.5	12.5	18.0	15	6.0	12.0	18.0	15n
6800pF	- 268	5.5	10.5	18.0	15	7.5	13.5	18.0	15	6.5	14.5	26.5	22.5
0.010µF	- 310	6.5	12.5	18.0	15	8.5	14.5	18.0	15	6.5	14.5	26.5	22.5
0.015µF	- 315	6.5	12.5	18.0	15	8.5	17.5	18.0	15	7.5	15.5	26.5	22.5
0.022µF	- 322	8.5	14.5	18.0	15	8.5	16.5	26.5	22.5	8.5	16.5	26.5	22.5
0.033µF	- 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
0.047µF	- 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
0.068µF	- 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
0.10µF	- 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
0.15µF	- 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
0.22µF	- 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
0.33µF	- 433	16.5	29.5	31.5	27.5	—	—	—	—	—	—	—	—
0.47µF	- 447	18.0	32.5	41.5	37.5	—	—	—	—	—	—	—	—

Further C-values upon request

**RECOMMENDED PACKAGING**

LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLES	PCM ≤ 15	PCM 22.5 - 27.5	PCM 37.5
D	AMMO	16.5	—	MKP 1841-410/404-MD	X	—	—
G	AMMO	18.5	—	MKP 1841-410/404-MG	X	—	—
F	REEL	16.5	350	MKP 1841-410/404-MF	X	—	—
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





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