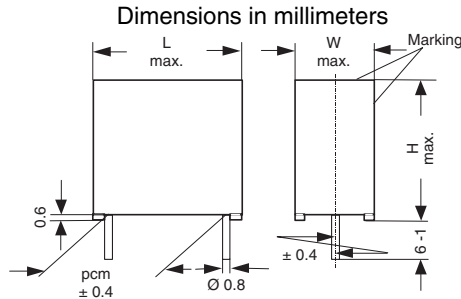


# Metallized Polypropylene Capacitor, Mini-Version (-M)

## Related Document: CECC 31 200



PCM	W	$\varnothing d$
5		0.5
7.5 - 10		0.6
15 - 37.5	< 16.0	0.8
15 - 37.5	$\geq 16.0$	1.0

### MAIN APPLICATIONS

High frequency and pulse operations. Deflection circuits in TV-sets (S-correction). SMPS, loudspeaker crossover networks, electronic ballast, storage, filter, timing and sample and hold circuits.

### MARKING

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

### DIELECTRIC

Polypropylene film

### ELECTRODES

Vacuum deposited

### COATING

Flame retardant plastic case material (UL-class 94 V-0), color blue, epoxy resin sealed

### CONSTRUCTION

Extended metallized film, (Pb)-free, internal series connection (1000 VDC to 2000 VDC), selfhealing

### CONTACTS

Tinned wire (Pb)-free

### IEC TEST CLASSIFICATION

55/100/56, according to IEC 60068

### OPERATING TEMPERATURE RANGE

- 55 °C to + 100 °C

### CAPACITANCE RANGE

1000 pF to 6.8  $\mu$ F

### MAXIMUM PULSE RISE TIME

PCM (mm)	Maximum Pulse Rise Time $d_v/d_t$ [V/ $\mu$ s]					
	250 VDC	400 VDC	630 VDC	1000 VDC	1600 VDC	2000 VDC
5	360	540	1080	—	—	—
7.5	215	325	510	—	—	—
10	150	240	340	1365	4100	—
15	90	135	185	680	1340	3075
22.5	55	80	110	370	620	1365
27.5	40	65	85	285	455	—
37.5	30	45	60	195	300	—

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  
Miniaturized with extensive voltage, pitch and capacitance ranges

### CAPACITANCE TOLERANCES

$\pm 10\%$  (K),  $\pm 5\%$  (J),  $\pm 2.5\%$  (H)

### RATED VOLTAGES ( $U_R$ )

250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1600 VDC, 2000 VDC

### PERMISSIBLE AC VOLTAGES (RMS) UP TO 60 Hz

160 VAC, 220 VAC, 250 VAC, 400 VAC, 500 VAC, 600 VAC, 700 VAC

### TEST VOLTAGE

$1.6 \times U_R$  for 2 s

### INSULATION RESISTANCE

Measured at 100 VDC after one minute

#### For $C \leq 0.33 \mu$ F:

100000 M $\Omega$  minimum value (150000 M $\Omega$  typical value)

#### TIME CONSTANT

Measured at 100 VDC after one minute

#### For $C > 0.33 \mu$ F:

30000 s minimum value (50000 s typical value)

### TEMPERATURE COEFFICIENT

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

### CAPACITANCE DRIFT

Up to + 40 °C,  $\pm 0.5\%$  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 2 mm long leads

### PULL TEST ON LEADS

$\geq 30$  N in direction of leads according to IEC 60068-2-21

### RELIABILITY

Operational life > 300000 h

Failure rate < 5 FIT (40 °C and  $0.5 U_R$ )

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



**RoHS**  
COMPLIANT

# MKP 1840.../...-M

Vishay Roederstein Metallized Polypropylene Capacitor, Mini-Version (-M)  
 Related Document: CECC 31 200



## MAXIMUM PULSE RISE TIME

MEASURED AT	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$C > 1.0 \mu\text{F}$
1 kHz	$0.4 \times 10^{-3}$	$0.4 \times 10^{-3}$	$1.0 \times 10^{-3}$
10 kHz	$0.6 \times 10^{-3}$	$0.6 \times 10^{-3}$	—
100 kHz	$4.0 \times 10^{-3}$	—	—
Maximum values			

## METALLIZED POLYPROPYLENE FILM CAPACITOR, MKP 1840, MINI-VERSION (-M) RELATED DOCUMENT: CECC 31 200

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
1000 pF	- 210	—	—	—	—	—	—	—	—	3.0	6.5	7.5	5.0	—	—	—	—
1500 pF	- 215	—	—	—	—	—	—	—	—	3.0	6.5	7.5	5.0	—	—	—	—
2200 pF	- 222	—	—	—	—	—	—	—	—	3.5	8.5	7.5	5.0	—	—	—	—
3300 pF	- 233	—	—	—	—	—	—	—	—	3.0	8.5	10.0	7.5	—	—	—	—
4700 pF	- 247	—	—	—	—	—	—	—	—	3.0	8.5	10.0	7.5	—	—	—	—
6800 pF	- 268	—	—	—	—	3.0	6.5	7.5	5.0	3.0	8.5	10.0	7.5	—	—	—	—
0.01 $\mu\text{F}$	- 310	3.0	6.5	7.5	5.0	3.5	8.5	7.5	5.0	4.0	9.0	10.0	7.5	4.5	9.5	13.0	10*
0.015 $\mu\text{F}$	- 315	3.0	6.5	7.5	5.0	3.0	8.5	10.0	7.5	4.5	9.5	10.3	7.5	5.5	10.5	13.0	10*
0.022 $\mu\text{F}$	- 322	3.5	8.5	7.5	5.0	4.0	9.0	10.0	7.5	4.5	9.5	13.0	10.0	6.5	11.5	13.0	10*
0.033 $\mu\text{F}$	- 333	3.5	8.5	7.5	5.0	4.5	9.5	10.3	7.5	5.5	10.5	13.0	10.0	5.5	10.5	18.0	15*
0.047 $\mu\text{F}$	- 347	4.0	9.0	10.0	7.5	5.0	10.5	10.3	7.5	6.5	11.5	13.0	10.0	6.5	12.5	18.0	15*
0.068 $\mu\text{F}$	- 368	4.0	9.0	10.0	7.5	5.7	11.5	10.3	7.5	6.0	12.0	18.0	15.0	7.5	13.5	18.0	15*
0.10 $\mu\text{F}$	- 410	5.0	10.5	10.3	7.5	5.5	10.5	18.0	15.0	6.0	12.0	18.0	15.0	6.5	14.5	26.5	22.5*
0.15 $\mu\text{F}$	- 415	5.5	10.5	13.0	10.0	6.0	12.0	18.0	15.0	8.5	14.5	18.0	15.0	7.5	15.5	26.5	22.5*
0.22 $\mu\text{F}$	- 422	6.5	11.5	13.0	10.0	7.5	13.5	18.0	15.0	8.5	17.5	18.0	15.0	8.5	16.5	26.5	22.5*
0.33 $\mu\text{F}$	- 433	6.5	12.5	18.0	15.0	8.5	17.5	18.0	15.0	9.0	17.0	26.5	22.5	11.0	21.0	26.5	22.5*
0.47 $\mu\text{F}$	- 447	7.5	13.5	18.0	15.0	7.5	15.5	26.5	22.5	10.5	18.5	26.5	22.5	11.5	20.5	31.5	27.5*
0.68 $\mu\text{F}$	- 468	8.5	14.5	18.0	15.0	10.5	18.5	26.5	22.5	11.5	20.5	31.5	27.5	13.5	23.5	31.5	27.5*
1.0 $\mu\text{F}$	- 510	8.5	16.5	26.5	22.5	11.0	21.0	26.5	22.5	13.5	23.5	31.5	27.5	16.5	29.5	31.5	27.5*
1.5 $\mu\text{F}$	- 515	10.5	18.5	26.5	22.5	13.5	23.5	31.5	27.5	16.5	29.5	31.5	27.5	—	—	—	—
2.2 $\mu\text{F}$	- 522	11.0	21.0	26.5	22.5	15.0	24.5	31.5	27.5	18.0	33.0	31.5	27.5	—	—	—	—
3.3 $\mu\text{F}$	- 533	13.5	23.5	31.5	27.5	18.0	28.0	31.5	27.5	20.0	40.0	42.5	37.5	—	—	—	—
4.7 $\mu\text{F}$	- 547	15.0	24.5	31.5	27.5	18.0	32.5	41.5	37.5	20.0	40.0	42.5	37.5	—	—	—	—
6.8 $\mu\text{F}$	- 568	14.5	24.5	41.5	37.5	20.0	40.0	42.5	37.5	—	—	—	—	—	—	—	—

\*Ordering Code - 2M (e.g. MKP 1840 410 635-2M)



CAPACITANCE	CAPACITANCE CODE	VOLTAGE CODE 10 1000 VDC / 500 VAC**				VOLTAGE CODE 13 1600 VDC / 600 VAC**				VOLTAGE CODE 20 2000 VDC / 700 VAC**			
		W	H	L	PCM	W	H	L	PCM	W	H	L	PCM
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	—	—	—	—	—	—	—	—	6.0	12.0	18.0	15
4700 pF	- 247	4.0	9.0	13.0	10	—	—	—	—	6.0	12.0	18.0	15
6800 pF	- 268	4.0	9.0	13.0	10	5.5	10.5	18.0	15	7.5	13.5	18.0	15
0.01 µF	- 310	5.5	10.5	13.0	10	6.5	12.5	18.0	15	6.5	14.5	26.5	22.5
0.015 µF	- 315	6.5	11.5	13.0	10	7.5	13.5	18.0	15	7.5	15.5	26.5	22.5
0.022 µF	- 322	5.5	10.5	18.0	15	8.5	14.5	18.0	15	8.5	16.5	26.5	22.5
0.033 µF	- 333	6.0	12.0	18.0	15	8.5	17.5	18.0	15	10.5	18.5	26.5	22.5
0.047 µF	- 347	7.5	13.5	18.0	15	7.5	15.5	26.5	22.5	11.0	21.0	26.5	22.5
0.068 µF	- 368	8.5	14.5	18.0	15	8.5	16.5	26.5	22.5	—	—	—	—
0.10 µF	- 410	7.5	15.5	26.5	22.5	10.5	18.5	26.5	22.5	—	—	—	—
0.15 µF	- 415	9.0	17.0	26.5	22.5	11.5	20.5	31.5	27.5	—	—	—	—
0.22 µF	- 422	10.5	18.5	26.5	22.5	13.5	23.5	31.5	27.5	—	—	—	—
0.33 µF	- 433	11.5	20.5	31.5	27.5	16.5	29.5	31.5	27.5	—	—	—	—
0.47 µF	- 447	13.5	23.5	31.5	27.5	18.0	33.0	31.5	27.5	—	—	—	—
0.68 µF	- 468	16.5	29.5	31.5	27.5	18.0	32.5	41.5	37.5	—	—	—	—
1.0 µF	- 510	18.0	33.0	31.5	27.5	—	—	—	—	—	—	—	—
1.5 µF	- 515	18.0	32.5	41.5	37.5	—	—	—	—	—	—	—	—

Further C-values upon request  
Other PCM on request

\*\*Not suitable for mains applications.

Please refer to X-capacitors in our catalog “RFI Suppression Components”

**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	S*	MKP 1840-410/404-MD	X	—	—
G	AMMO	18.5	S*	MKP 1840-410/404-MG	X	—	—
F	REEL	16.5	350	MKP 1840-410/404-MF	X	—	—
W	REEL	18.5	350	MKP 1840-410/404-MW	X	—	—
V	REEL	18.5	500	MKP 1840-510/254-MV	—	X	—
G	AMMO	18.5	L*	MKP 1840-510/254-MG	—	X	—
—	BULK	—	—	MKP 1840-510/254-M	X	X	X

\*S = box size 55 x 210 x 340 mm (W x H x L)  
\*L = box size 60 x 360 x 510 mm (W x H x L)

**EXAMPLE OF ORDERING CODE**

TYPE	CAPACITANCE CODE	VOLTAGE CODE	TOLERANCE CODE	MINI	PACKAGING CODE
MKP 1840	447	63	4	M	G
Tolerance codes: 4 = 5 % (J); 5 = 10 % (K); 3 = 2.5 % (H);					

# MKP 1840.../...-M



Vishay Roederstein Metallized Polypropylene Capacitor, Mini-Version (-M)  
 Related Document: CECC 31 200

## METALLIZED POLYPROPYLENE FILM CAPACITOR, MKP 1840 PCM5, MINI-VERSION (-5M) RELATED DOCUMENT: CECC 31 200

CAPACITANCE	CAPACITANCE CODE	VOLTAGE CODE 25 250 VDC / 160 VAC				VOLTAGE CODE 40 400 VDC / 220 VAC*				VOLTAGE CODE 63 630 VDC / 250 VAC*			
		W	H	L	PCM	W	H	L	PCM	W	H	L	PCM
3300 pF	- 233	—	—	—	—	—	—	—	—	3.5	8.5	7.5	5
4700 pF	- 247	—	—	—	—	—	—	—	—	3.5	8.5	7.5	5
6800 pF	- 268	—	—	—	—	—	—	—	—	4.5	9.5	7.5	5
0.01 μF	- 310	—	—	—	—	—	—	—	—	4.5	9.5	7.5	5
0.015 μF	- 315	—	—	—	—	4.5	9.5	7.5	5	5.5	11.5	7.5	5
0.022 μF	- 322	—	—	—	—	4.5	9.5	7.5	5	—	—	—	—
0.033 μF	- 333	—	—	—	—	5.5	11.5	7.5	5	—	—	—	—
0.047 μF	- 347	4.5	9.5	7.5	5	5.5	11.5	7.5	5	—	—	—	—
0.068 μF	- 368	5.0	10.0	7.5	5	—	—	—	—	—	—	—	—
0.10 μF	- 410	5.5	11.5	7.5	5	—	—	—	—	—	—	—	—

Further C-values upon request

\*Not suitable for mains applications.

\*S = box size 55 x 210 x 340 mm (W x H x L)

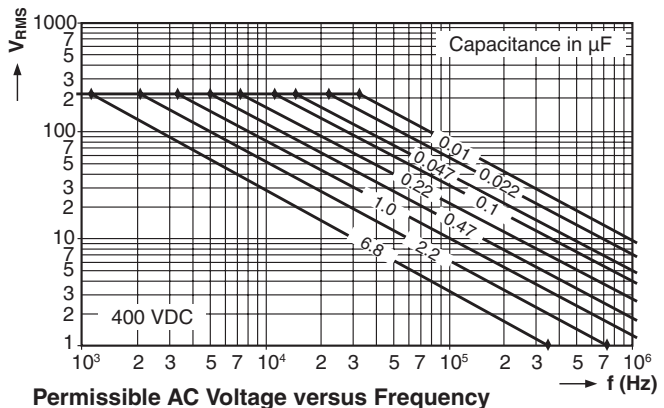
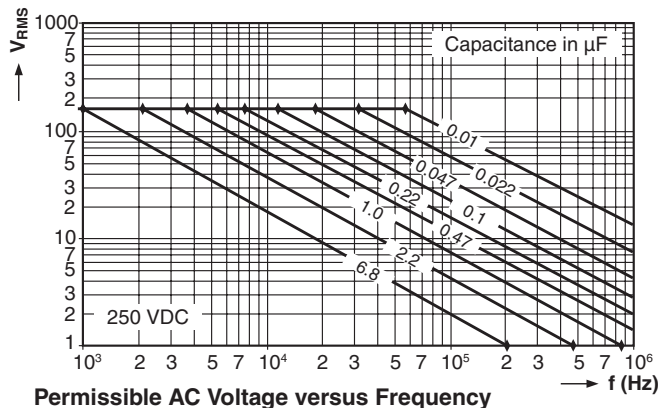
### RECOMMENDED PACKAGING

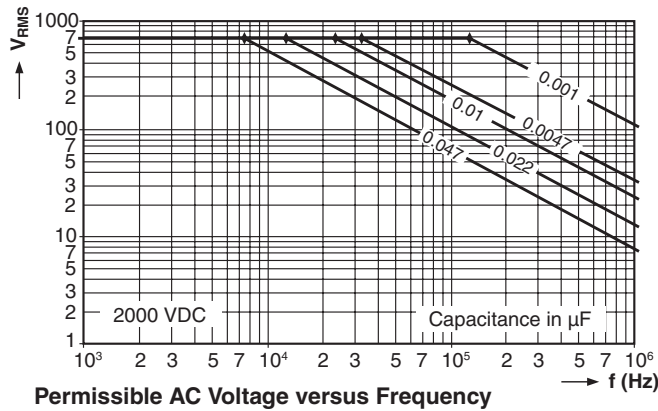
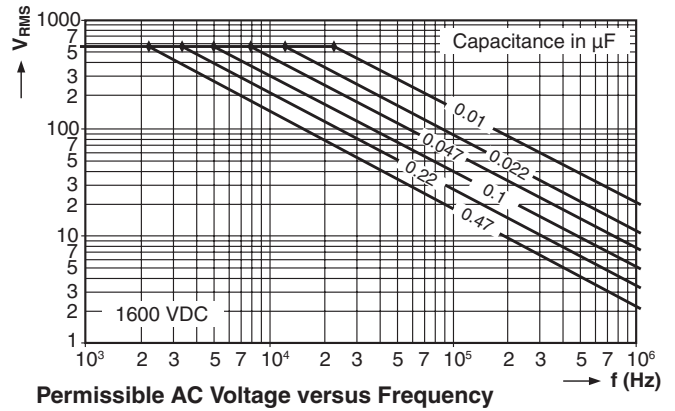
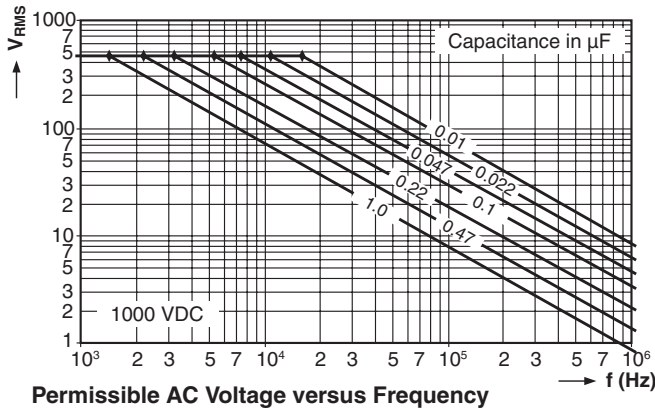
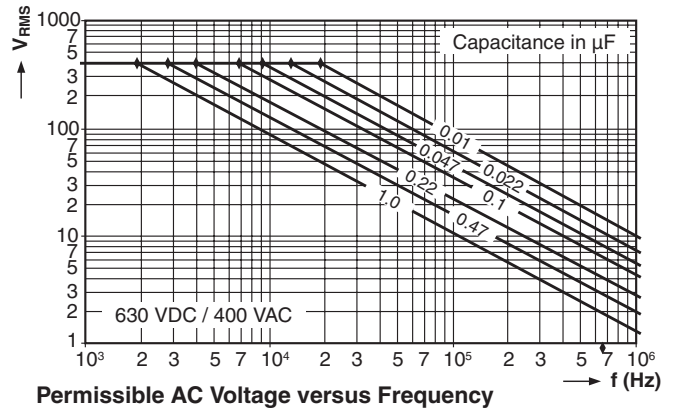
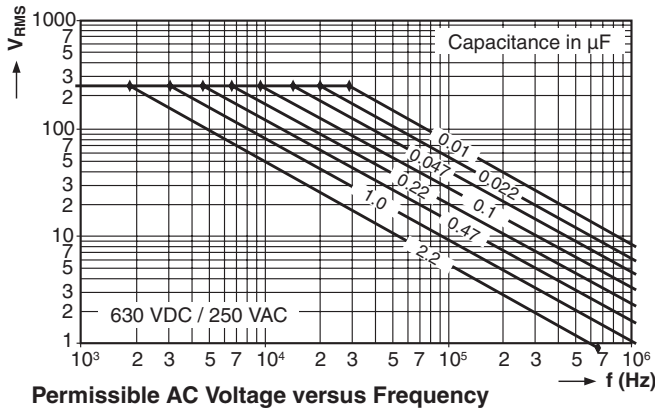
LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLES	PCM 5
D	AMMO	16.5	S*	MKP 1840-310/404-5MD	X
G	AMMO	18.5	S*	MKP 1840-310/404-5MG	X
F	REEL	16.5	350	MKP 1840-310/404-5MF	X
W	REEL	18.5	350	MKP 1840-310/404-5MW	X
—	BULK	—	—	MKP 1840-310/404-5M	X

### EXAMPLE OF ORDERING CODE

TYPE	CAPACITANCE CODE	VOLTAGE CODE	TOLERANCE CODE	MINI	PACKAGING CODE
MKP 1840	347	25	4	5M	G

Tolerance codes: **4** = 5 % (J); **5** = 10 % (K); **3** = 2.5 % (H);







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