



## AC and Pulse Double Metallized Polypropylene Film Capacitors MMKP Radial Potted Type



### FEATURES

- 7.5 mm to 37.5 mm lead pitch
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

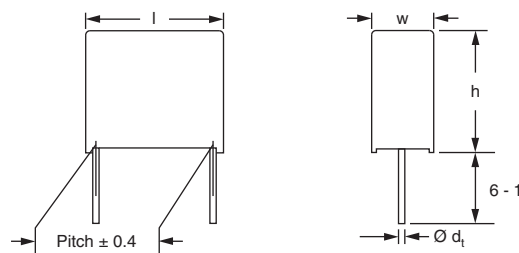
- High voltage, high current and high pulse operations
- Protection circuits in SMPS's, snubber and electronic ballast circuits

QUICK REFERENCE DATA	
Rated DC voltage	250 V <sub>DC</sub> ; 400 V <sub>DC</sub> ; 630 V <sub>DC</sub> ; 1000 V <sub>DC</sub> ; 1600 V <sub>DC</sub> ; 2000 V <sub>DC</sub>
Rated AC voltage	160 V <sub>AC</sub> ; 220 V <sub>AC</sub> ; 250 V <sub>AC</sub> ; 400 V <sub>AC</sub> ; 600 V <sub>AC</sub> ; 650 V <sub>AC</sub> ; 700 V <sub>AC</sub>
Capacitance range	470 pF to 6.8 μF
Capacitance tolerance	± 5 %
Climatic testing class acc. to EN 60068-1	55/100/56
Maximum application temperature	100 °C
Reference standards	IEC 60384-16
Dielectric	Polypropylene film
Electrodes	Metallized
Construction	Internal series construction
Encapsulation	Plastic case, epoxy resin sealed, flame retardant, UL-class 94 V-0
Leads	Tinned wire
Marking	C-value; tolerance; rated voltage; manufacturer's type; code for dielectric material; manufacturer location; manufacturer's logo; year and week

### Note

- For more detailed data and test requirements, contact [dc-film@vishay.com](mailto:dc-film@vishay.com)

### DIMENSIONS in millimeters



PITCH	w	Ø d <sub>t</sub>
7.5	-	0.5 ± 0.05
10	-	0.6 ± 0.06
15	≤ 6	0.6 ± 0.06
15	> 6	0.8 ± 0.08
22.5 to 27.5	-	0.8 ± 0.08
37.5	< 16.0	0.8 ± 0.08
37.5	≥ 16.0	1.0 ± 0.1



**COMPOSITION OF CATALOG NUMBER**



**Note**

- For detailed tape specifications refer to “Packaging Information” [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139) or end of catalog

SPECIFIC REFERENCE DATA							
DESCRIPTION					VALUE		
Tangent of loss angle: C ≤ 0.1 μF 0.1 μF < C ≤ 1.0 μF C > 1.0 μF					at 1 kHz	at 10 kHz	at 100 kHz
					≤ 5 x 10 <sup>-4</sup>	≤ 10 x 10 <sup>-4</sup>	≤ 15 x 10 <sup>-4</sup>
					≤ 5 x 10 <sup>-4</sup>	≤ 10 x 10 <sup>-4</sup>	-
					≤ 5 x 10 <sup>-4</sup>	-	-
PITCH (mm)	MAXIMUM PULSE RISE TIME (dU/dt) <sub>R</sub> [V/μs]						
	160 V <sub>DC</sub>	250 V <sub>DC</sub>	400 V <sub>DC</sub>	630 V <sub>DC</sub>	1000 V <sub>DC</sub>	1600 V <sub>DC</sub>	2000 V <sub>DC</sub>
7.5	1800	2200	3600	4500	-	-	-
10	820	1140	1840	2280	-	-	-
15	410	560	910	3430	6600	11 100	20 300
22.5	260	320	520	2120	2800	3800	6200
27.5	202	240	400	1524	2000	2680	4200
37.5	140	170	280	980	1280	1690	2600
R between leads, for C ≤ 0.33 μF at 100 V; 1 min						> 100 000 MΩ	
R between leads and case: 100 V; 1 min						> 30 000 MΩ	
Withstanding (DC) voltage between leads and case						2840 V; 1 min	
Withstanding (DC) voltage (cut off current 10 mA) <sup>(1)</sup> ; rise time ≤ 1000 V/s						1.6 x U <sub>RDC</sub> ; 1 min	
Maximum application temperature						100 °C	

**Note**

- <sup>(1)</sup> See “Voltage Proof Test for Metalized Film Capacitors”: [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)



ELECTRICAL DATA						
U <sub>RDC</sub> (V)	CAP. (μF)	CAPACITANCE CODE	VOLTAGE CODE	V <sub>AC</sub>	DIMENSIONS (w x h x l)	PCM
160	0.010	310	16	100	4.5 x 9.5 x 10.0	7.5
	0.015	315			4.5 x 9.5 x 10.0	7.5
	0.022	322			4.0 x 10.0 x 12.5	10
	0.033	333			4.0 x 10.0 x 12.5	10
	0.047	347			5.0 x 11.0 x 12.5	10
	0.068	368			6.0 x 12.0 x 12.5	10
	0.10	410			5.0 x 11.0 x 17.5	15
	0.15	415			6.0 x 12.0 x 17.5	15
	0.22	422			7.0 x 13.5 x 17.5	15
	0.33	433			8.5 x 15.0 x 17.5	15
	0.47	447			8.5 x 18.0 x 26.0	22.5
	0.68	468			10.0 x 19.5 x 26.0	22.5
	1.0	510			12.0 x 22.0 x 26.0	22.5
	1.5	515			13.0 x 23.0 x 31.5	27.5
	2.2	522			18.0 x 28.0 x 31.5	27.5
	3.3	533			21.0 x 31.0 x 31.0	27.5
4.7	547	30.0 x 45.0 x 42.0	37.5			
250	0.0068	268	25	160	4.0 x 9.0 x 10.0	7.5
	0.010	310			4.5 x 9.5 x 10.0	7.5
	0.015	315			4.5 x 9.5 x 10.0	7.5
	0.022	322			4.0 x 10.0 x 12.5	10
	0.033	333			4.0 x 10.0 x 12.5	10
	0.047	347			5.0 x 11.0 x 12.5	10
	0.068	368			5.0 x 11.0 x 17.5	15
	0.10	410			5.0 x 11.0 x 17.5	15
	0.15	415			6.0 x 12.0 x 17.5	15
	0.22	422			8.5 x 15.0 x 17.5	15
	0.33	433			7.0 x 16.5 x 26.0	22.5
	0.47	447			8.5 x 18.0 x 26.0	22.5
	0.68	468			10.0 x 19.5 x 26.0	22.5
	1.0	510			11.0 x 21.0 x 31.0	27.5
	1.5	515			13.0 x 23.0 x 31.0	27.5
	2.2	522			18.0 x 28.0 x 31.5	27.5
3.3	533	21.0 x 31.0 x 31.0	27.5			
4.7	547	30.0 x 45.0 x 42.0	37.5			
400	0.0047	247	40	220	4.5 x 9.5 x 10.0	7.5
	0.0068	268			5.0 x 10.5 x 10.0	7.5
	0.010	310			4.0 x 10.0 x 12.5	10
	0.015	315			4.0 x 10.0 x 12.5	10
	0.022	322			4.0 x 10.0 x 12.5	10
	0.033	333			5.0 x 11.0 x 17.5	15
	0.047	347			5.0 x 11.0 x 17.5	15
	0.068	368			6.0 x 12.0 x 17.5	15
	0.10	410			7.0 x 13.5 x 17.5	15
	0.15	415			7.0 x 16.5 x 26.0	22.5
	0.22	422			8.5 x 18.0 x 26.0	22.5
	0.33	433			12.0 x 22.0 x 26.0	22.5
	0.47	447			13.0 x 23.0 x 31.0	27.5
	0.68	468			15.0 x 25.0 x 31.5	27.5
	1.0	510			14.5 x 24.5 x 41.5	37.5
	1.5	515			16.0 x 28.5 x 41.5	37.5
2.2	522	18.5 x 35.5 x 43.0	37.5			



<b>ELECTRICAL DATA</b>						
<b>U<sub>RDC</sub></b> <b>(V)</b>	<b>CAP.</b> <b>(μF)</b>	<b>CAPACITANCE</b> <b>CODE</b>	<b>VOLTAGE</b> <b>CODE</b>	<b>V<sub>AC</sub></b>	<b>DIMENSIONS</b> <b>(w x h x l)</b>	<b>PCM</b>
630	0.00047	147	63	250	3.0 x 8.5 x 10.0	7.5
	0.00068	168			3.0 x 8.5 x 10.0	7.5
	0.0010	210			3.0 x 8.5 x 10.0	7.5
	0.0015	215			3.0 x 8.5 x 10.0	7.5
	0.0022	222			3.0 x 8.5 x 10.0	7.5
	0.0033	233			4.0 x 9.0 x 10.0	7.5
630	0.0047	247	63	400	5.0 x 11.0 x 17.5	15
	0.0068	268			5.0 x 11.0 x 17.5	15
	0.010	310			5.0 x 11.0 x 17.5	15
	0.015	315			5.0 x 11.0 x 17.5	15
	0.022	322			6.0 x 12.0 x 17.5	15
	0.033	333			6.0 x 15.5 x 26.0	22.5
	0.047	347			6.0 x 15.5 x 26.0	22.5
	0.068	368			7.0 x 16.5 x 26.0	22.5
	0.10	410			9.0 x 19.0 x 31.0	27.5
	0.15	415			11.0 x 21.0 x 31.0	27.5
	0.22	422			12.5 x 22.5 x 41.5	37.5
	0.33	433			14.5 x 24.5 x 41.5	37.5
	0.47	447			14.5 x 24.5 x 41.5	37.5
	0.68	468			16.0 x 28.5 x 41.5	37.5
1000	0.0022	222	10	600	5.0 x 11.0 x 17.5	15
	0.0033	233			5.0 x 11.0 x 17.5	15
	0.0047	247			6.0 x 12.0 x 17.5	15
	0.0068	268			7.0 x 13.5 x 17.5	15
	0.010	310			6.0 x 15.5 x 26.0	22.5
	0.015	315			7.0 x 16.5 x 26.0	22.5
	0.022	322			8.5 x 18.0 x 26.0	22.5
	0.033	333			10.0 x 19.5 x 26.0	22.5
	0.047	347			11.0 x 21.0 x 31.0	27.5
	0.068	368			13.0 x 23.0 x 31.0	27.5
	0.10	410			15.0 x 25.0 x 31.5	27.5
	0.15	415			12.5 x 22.5 x 41.5	37.5
	0.22	422			12.5 x 22.5 x 41.5	37.5
	0.33	433			14.5 x 24.5 x 41.5	37.5
0.47	447	16.0 x 28.5 x 41.5	37.5			



ELECTRICAL DATA						
U <sub>RDC</sub> (V)	CAP. (μF)	CAPACITANCE CODE	VOLTAGE CODE	V <sub>AC</sub>	DIMENSIONS (w x h x l)	PCM
1600	0.0010	210	13	650	5.0 x 11.0 x 17.5	15
	0.0015	215			5.0 x 11.0 x 17.5	15
	0.0022	222			5.0 x 11.0 x 17.5	15
	0.0033	233			6.0 x 15.5 x 26.0	22.5
	0.0047	247			6.0 x 15.5 x 26.0	22.5
	0.0068	268			6.0 x 15.5 x 26.0	22.5
	0.010	310			6.0 x 15.5 x 26.0	22.5
	0.015	315			7.0 x 16.5 x 26.0	22.5
	0.022	322			8.5 x 18.0 x 26.0	22.5
	0.033	333			9.0 x 19.0 x 31.0	27.5
	0.047	347			11.0 x 21.0 x 31.0	27.5
	0.068	368			12.5 x 22.5 x 41.5	37.5
	0.10	410			12.5 x 22.5 x 41.5	37.5
	0.15	415			16.0 x 28.5 x 41.5	37.5
	0.22	422			18.0 x 32.5 x 41.5	37.5
2000	0.00047	147	20	700	5.0 x 11.0 x 17.5	15
	0.00068	168			5.0 x 11.0 x 17.5	15
	0.0010	210			6.0 x 15.5 x 26.0	22.5
	0.0015	215			6.0 x 15.5 x 26.0	22.5
	0.0022	222			6.0 x 15.5 x 26.0	22.5
	0.0033	233			6.0 x 15.5 x 26.0	22.5
	0.0047	247			6.0 x 15.5 x 26.0	22.5
	0.0068	268			7.0 x 16.5 x 26.0	22.5
	0.010	310			8.5 x 18.0 x 26.0	22.5
	0.015	315			9.0 x 19.0 x 31.0	27.5
	0.022	322			11.0 x 21.0 x 31.0	27.5
	0.033	333			11.0 x 21.0 x 31.0	27.5
	0.047	347			12.5 x 22.5 x 41.5	37.5
	0.068	368			12.5 x 22.5 x 41.5	37.5
	0.10	410			14.5 x 24.5 x 41.5	37.5

RECOMMENDED PACKAGING							
LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLES	PCM 15	PCM 22.5 TO 27.5	PCM 37.5
G	Ammo	18.5	S <sup>(1)</sup>	MKP1841315635G	X	-	-
W	Reel	18.5	350	MKP1841315635W	X	-	-
V	Reel	18.5	500	MKP1841410105V	X	X	-
G	Ammo	18.5	L <sup>(2)</sup>	MKP1841410105G	-	X	-
-	Bulk	-	-	MKP1841447105	X	X	X

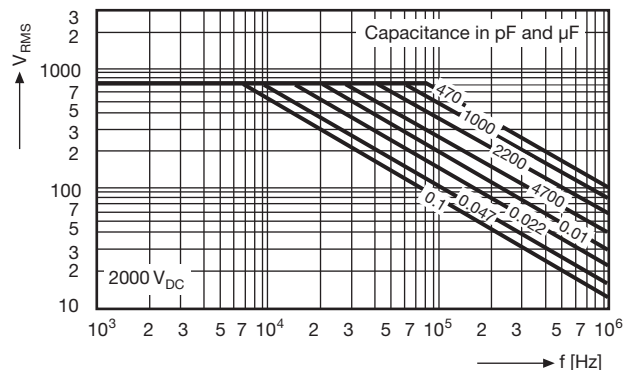
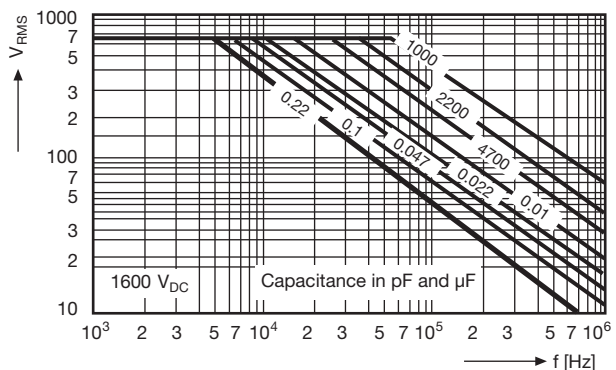
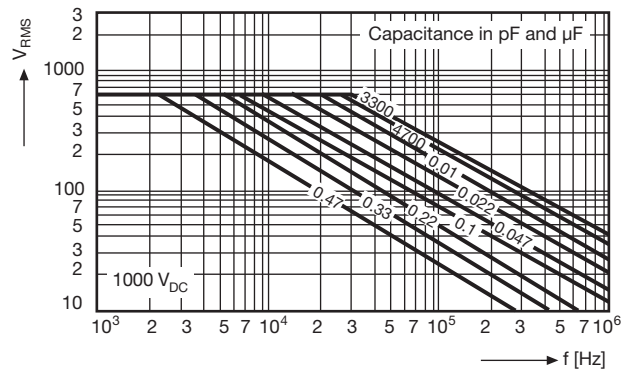
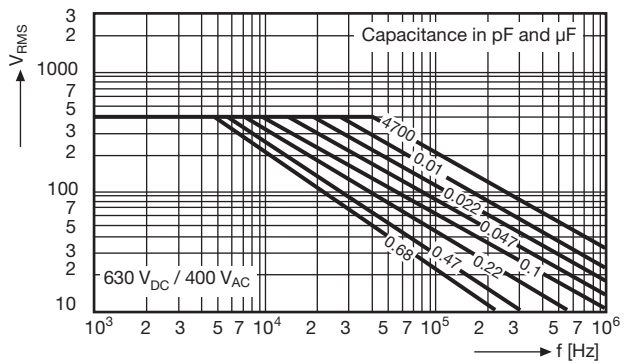
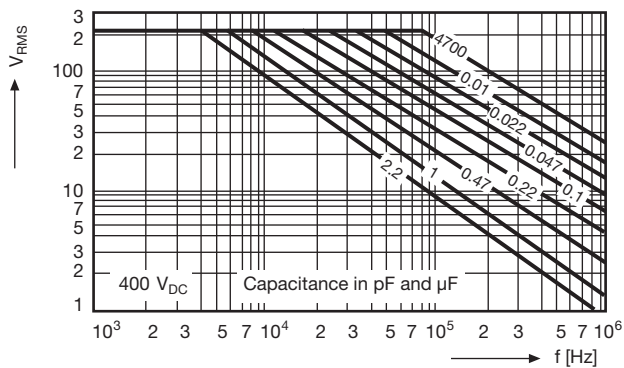
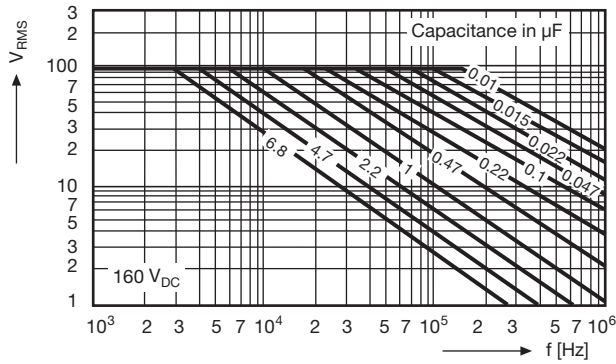
**Notes**

<sup>(1)</sup> S = box size 55 mm x 210 mm x 340 mm (W x H x L)

<sup>(2)</sup> L = box size 60 mm x 510 mm x 360 mm (W x H x L)



**PERMISSIBLE AC VOLTAGE VS. FREQUENCY**





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