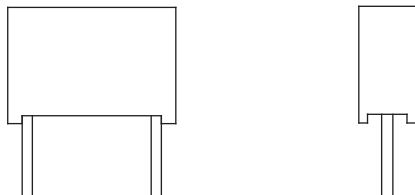




## AC and Pulse Metallized Polypropylene Film Capacitors MKP Radial Potted Type



### FEATURES

- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Pulse operations
- SMPS and thyristor circuits
- Storage, filter, timing, sample and hold circuits



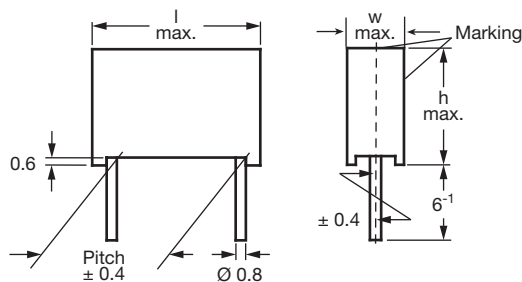
QUICK REFERENCE DATA	
Capacitance range	4700 pF to 10 $\mu$ F
Capacitance tolerances	$\pm 20\%$ (M), $\pm 10\%$ (K), $\pm 5\%$ (J)
Climatic testing class according to IEC 60068	55/100/56
Operating temperature range	-55 °C to +100 °C
Dielectric	Polypropylene film
Electrodes	Metallized
Construction	Extended metallized film (refer to general information following the link in note below table)
Coating	Flame retardant plastic case, epoxy resin sealed UL-class 94 V-0
Leads	Tinned wire
Rated voltages ( $U_R$ )	100 V <sub>DC</sub> , 160 V <sub>DC</sub> , 250 V <sub>DC</sub> , 400 V <sub>DC</sub> , 630 V <sub>DC</sub>
Insulation resistance	Measured at 100 V <sub>DC</sub> after one minute <b>For C <math>\leq</math> 0.33 <math>\mu</math>F:</b> 25 000 M $\Omega$ ( $U_R$ 100 V <sub>DC</sub> )
Permissible AC voltages (RMS) up to 60 Hz	63 V <sub>AC</sub> , 100 V <sub>AC</sub> , 160 V <sub>AC</sub> , 220 V <sub>AC</sub> , 250 V <sub>AC</sub>
Test voltage (electrode/electrode)	1.6 x $U_R$ for 2 s
Time constant	Measured at 100 V <sub>DC</sub> after one minute <b>For C &gt; 0.33 <math>\mu</math>F:</b> 30 000 s minimum value
Temperature coefficient	-250 x 10 <sup>-6</sup> /°C (typical value)
Capacitance drift	Up to +40 °C, < 0.5 % for a period of two years
Dielectric absorption	0.05 % (typical value) according to IEC 60068-2-21
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

### Note

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



**DIMENSIONS** in millimeters



LEAD DIAMETER $d_t$	W	PITCH
$0.5 \pm 0.05$	-	5 to 7.5
$0.6 \pm 0.06$	-	10
$0.6 \pm 0.06$	$\leq 6$	15
$0.8 \pm 0.08$	$> 6$	15
$0.8 \pm 0.08$	$< 16$	22.5 to 37.5
$1.0 \pm 0.1$	$\geq 16$	22.5 to 37.5

**MAXIMUM PULSE RISE TIME**

PCM (mm)	MAXIMUM PULSE RISE TIME $dV/dt$ [V/ $\mu$ s]				
	100 V <sub>DC</sub>	160 V <sub>DC</sub>	250 V <sub>DC</sub>	400 V <sub>DC</sub>	630 V <sub>DC</sub>
5	390	-	-	-	-
7.5	-	240	300	-	-
10	-	175	220	380	510
15	-	100	125	200	280
22.5	-	60	75	120	160
27.5	-	45	60	95	120
37.5	-	30	40	65	85

**Note**

- If the maximum pulse voltage is less than the rated voltage higher  $dV/dt$  values can be permitted.

**DISSIPATION FACTOR  $\tan \delta$**

MEASURED AT	$C \leq 0.1 \mu F$	$0.1 \mu F < C \leq 1.0 \mu F$	$C > 1.0 \mu F$
1 kHz	$\leq 10 \times 10^{-4}$	$\leq 10 \times 10^{-4}$	$\leq 40 \times 10^{-4}$
10 kHz	$\leq 10 \times 10^{-4}$	$\leq 10 \times 10^{-4}$	-
100 kHz	$\leq 10 \times 10^{-4}$	-	-
Maximum values			



<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>(mm)</b>	<b>PCM</b> <b>(mm)</b>
100	0.0047	-247	01	63	3.5 x 8.0 x 7.2	5.0
	0.0068	-268			3.5 x 8.0 x 7.2	5.0
	0.010	-310			3.5 x 8.0 x 7.2	5.0
	0.015	-315			3.5 x 8.0 x 7.2	5.0
	0.022	-322			3.5 x 8.0 x 7.2	5.0
	0.033	-333			3.5 x 8.0 x 7.2	5.0
	0.047	-347			4.5 x 9.0 x 7.2	5.0
	0.068	-368			4.5 x 9.0 x 7.2	5.0
	0.100	-410			6.0 x 11.0 x 7.2	5.0
160	0.033	-333	16	100	3.0 x 8.0 x 10.0	7.5
	0.047	-347			3.0 x 8.0 x 10.0	7.5
	0.068	-368			4.0 x 10.0 x 12.5	10.0
	0.10	-410			4.0 x 10.0 x 12.5	10.0
	0.15	-415			5.0 x 11.0 x 12.5	10.0
	0.22	-422			5.0 x 11.0 x 17.5	15.0
	0.33	-433			6.0 x 12.0 x 17.5	15.0
	0.47	-447			7.0 x 13.5 x 17.5	15.0
	0.68	-468			8.5 x 15.0 x 17.5	15.0
	1.0	-510			7.0 x 16.5 x 26.0	22.5
	1.5	-515			8.5 x 18.0 x 26.0	22.5
	2.2	-522			9.0 x 19.0 x 31.5	27.5
	3.3	-533			11.0 x 21.0 x 31.0	27.5
	4.7	-547			12.5 x 22.5 x 41.5	37.5
	6.8	-568			14.5 x 24.5 x 41.5	37.5
10.0	-610	16.0 x 28.5 x 41.5	37.5			
250	0.010	-310	25	160	3.0 x 8.0 x 10.0	7.5
	0.015	-315			3.0 x 8.0 x 10.0	7.5
	0.022	-322			3.0 x 8.0 x 10.0	7.5
	0.033	-333			4.0 x 10.0 x 12.5	10.0
	0.047	-347			4.0 x 10.0 x 12.5	10.0
	0.068	-368			4.0 x 10.0 x 12.5	10.0
	0.10	-410			4.0 x 10.0 x 12.5	10.0
	0.15	-415			5.0 x 11.0 x 17.5	15.0
	0.22	-422			5.0 x 11.0 x 17.5	15.0
	0.33	-433			6.0 x 12.0 x 17.5	15.0
	0.47	-447			7.0 x 13.5 x 17.5	15.0
	0.68	-468			6.0 x 15.5 x 26.0	22.5
	1.0	-510			7.0 x 16.5 x 26.0	22.5
	1.5	-515			9.0 x 19.0 x 31.5	27.5
	2.2	-522			11.0 x 21.0 x 31.0	27.5
	3.3	-533			13.0 x 23.0 x 31.0	27.5
	4.7	-547			12.5 x 22.5 x 41.5	37.5
	6.8	-568			14.5 x 24.5 x 41.5	37.5
10.0	-610	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 (mm)	PCM (mm)
400	0.010	-310	40	220	4.0 x 10.0 x 12.5	10.0
	0.015	-315			4.0 x 10.0 x 12.5	10.0
	0.022	-322			4.0 x 10.0 x 12.5	10.0
	0.033	-333			4.0 x 10.0 x 12.5	10.0
	0.047	-347			5.0 x 11.0 x 17.5	15.0
	0.068	-368			5.0 x 11.0 x 17.5	15.0
	0.10	-410			5.0 x 11.0 x 17.5	15.0
	0.15	-415			6.0 x 12.0 x 17.5	15.0
	0.22	-422			7.0 x 13.5 x 17.5	15.0
	0.33	-433			6.0 x 15.5 x 26.0	22.5
	0.47	-447			7.0 x 16.5 x 26.0	22.5
	0.68	-468			9.0 x 19.0 x 31.5	27.5
	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			12.5 x 22.5 x 41.5	37.5
		3.3			-533	14.5 x 24.5 x 41.5
	4.7	-547	18.0 x 32.5 x 41.5	37.5		
630	0.010	-310	63	250 <sup>(1)</sup>	4.0 x 10.0 x 12.5	10.0
	0.015	-315			4.0 x 10.0 x 12.5	10.0
	0.022	-322			4.0 x 10.0 x 12.5	10.0
	0.033	-333			5.0 x 11.0 x 17.5	15.0
	0.047	-347			5.0 x 11.0 x 17.5	15.0
	0.068	-368			5.0 x 11.0 x 17.5	15.0
	0.10	-410			6.0 x 12.0 x 17.5	15.0
	0.15	-415			6.0 x 15.5 x 26.0	22.5
	0.22	-422			7.0 x 16.5 x 26.0	22.5
	0.33	-433			8.5 x 18.0 x 26.0	22.5
	0.47	-447			9.0 x 19.0 x 31.5	27.5
	0.68	-468			11.0 x 21.0 x 31.0	27.5
	1.0	-510			13.0 x 23.0 x 31.0	27.5
	1.5	-515			14.5 x 24.5 x 41.5	37.5
	2.2	-522			16.0 x 28.5 x 43.0	37.5

**Notes**

- Further C-values upon request.
- <sup>(1)</sup> Not suitable for mains applications.  
Please refer to X-capacitors in our catalog "RFI Suppression Components".

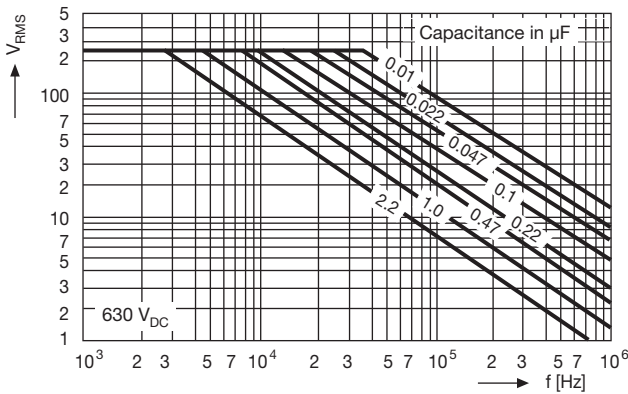
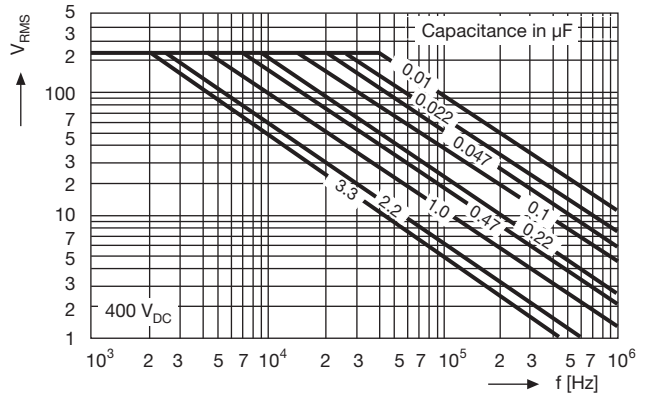
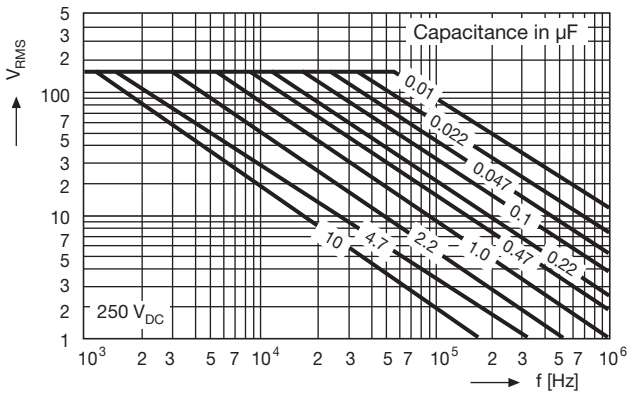
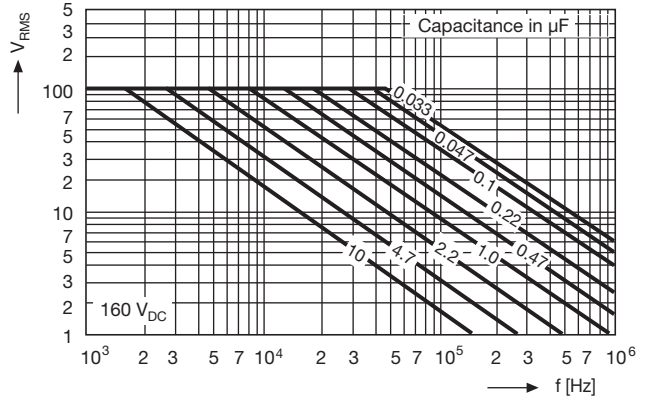
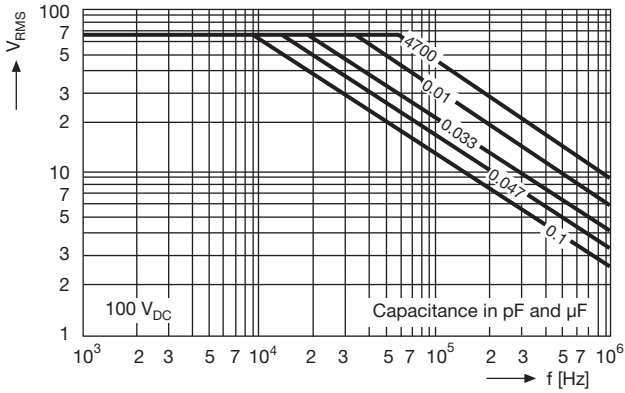
RECOMMENDED PACKAGING								
LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLES	PCM 7.5 TO 10	PCM 15	PCM 22.5 TO 27.5	PCM 37.5
D	Ammo	16.5	S <sup>(1)</sup>	MKP1840310405D	x	x	-	-
G	Ammo	18.5	S <sup>(1)</sup>	MKP1840310405G	x	x	-	-
F	Reel	16.5	350	MKP1840310405F	x	x	-	-
W	Reel	18.5	350	MKP1840310405W	x	x	-	-
V	Reel	18.5	500	MKP1840522255V	-	x	x	-
G	Ammo	18.5	L <sup>(2)</sup>	MKP1840522255G	-	-	x	-
-	Bulk	-	-	MKP1840547255	x	x	x	x

**Notes**

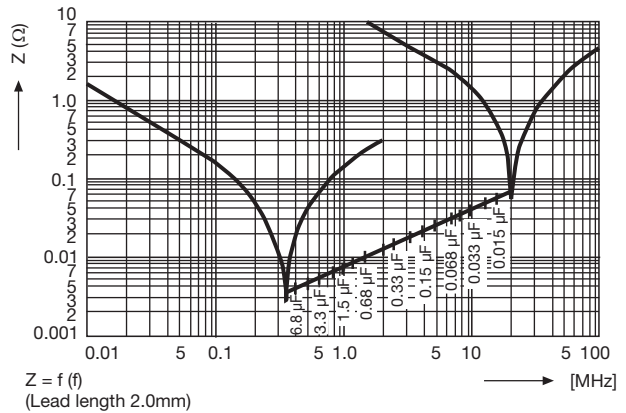
- <sup>(1)</sup> S = box size 55 mm x 210 mm x 340 mm (w x h x l)
- <sup>(2)</sup> L = box size 60 mm x 360 mm x 510 mm (w x h x l)



**PERMISSIBLE AC VOLTAGE VS. FREQUENCY**



**IMPEDANCE VS. FREQUENCY**





## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**