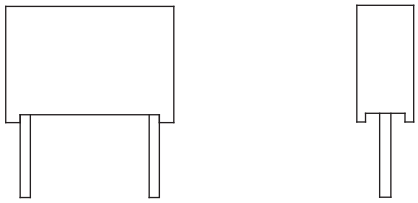
AC and Pulse Metallized Polypropylene Film Capacitors MKP Radial Potted Type



FEATURES

- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

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

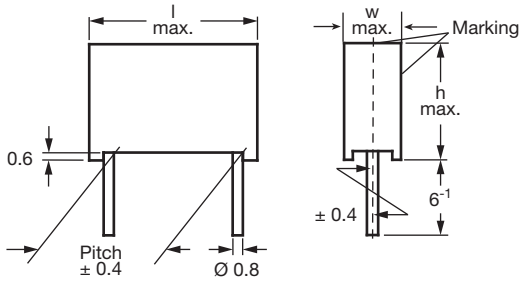
Pb-free
e3
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

QUICK REFERENCE DATA	
Capacitance range	4700 pF to 10 µF
Capacitance tolerances	± 20 % (M), ± 10 % (K), ± 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_{DC}, 160 V_{DC}, 250 V_{DC}, 400 V_{DC}, 630 V_{DC}
Insulation resistance	Measured at 100 V_{DC} after one minute **For C ≤ 0.33 µF:** 25 000 MΩ (U_R 100 V_{DC})
Permissible AC voltages (RMS) up to 60 Hz	63 V_{AC}, 100 V_{AC}, 160 V_{AC}, 220 V_{AC}, 250 V_{AC}
Test voltage (electrode/electrode)	1.6 x U_R for 2 s
Time constant	Measured at 100 V_{DC} after one minute **For C > 0.33 µF:** 30 000 s minimum value
Temperature coefficient	-250 x 10^{-6}/°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	≥ 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

DIMENSIONS in millimeters



LEAD DIAMETER d_t	W	PITCH
0.5 ± 0.05	-	5 to 7.5
0.6 ± 0.06	-	10
0.6 ± 0.06	≤ 6	15
0.8 ± 0.08	> 6	15
0.8 ± 0.08	< 16	22.5 to 37.5
1.0 ± 0.1	≥ 16	22.5 to 37.5

MAXIMUM PULSE RISE TIME

PCM (mm)	MAXIMUM PULSE RISE TIME dV/dt [V/µs]				
	100 V_{DC}	160 V_{DC}	250 V_{DC}	400 V_{DC}	630 V_{DC}
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 δ

MEASURED AT	C ≤ 0.1 µF	0.1 µF < C ≤ 1.0 µF	C > 1.0 µF
1 kHz	≤ 10 x 10^{-4}	≤ 10 x 10^{-4}	≤ 40 x 10^{-4}
10 kHz	≤ 10 x 10^{-4}	≤ 10 x 10^{-4}	-
100 kHz	≤ 10 x 10^{-4}	-	-
	Maximum values		

ELECTRICAL DATA

U_{RDC} (V)	CAP. (µF)	CAPACITANCE CODE	VOLTAGE CODE	V_{AC}	DIMENSIONS w x h x l (mm)	PCM (mm)
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_{RDC} (V)	CAP. (µF)	CAPACITANCE CODE	VOLTAGE CODE	V_{AC}	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	37.5
	4.7	-547			18.0 x 32.5 x 41.5	37.5
630	0.010	-310	63	250 (1)	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.

(1) Not suitable for mains applications.
Please refer to X-capacitors in our catalog “RFI Suppression Components”.

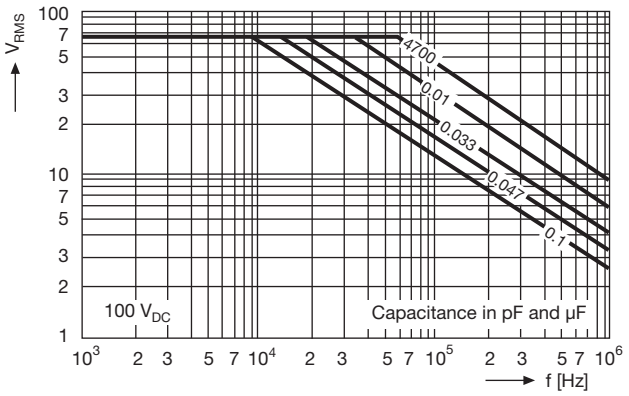
RECOMMENDED PACKAGING

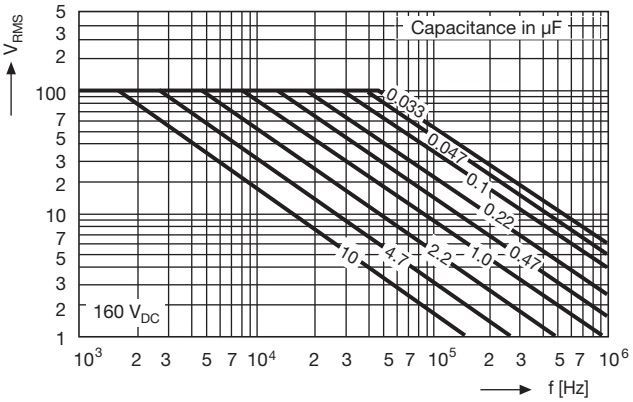
LETTER CODE	TYPE OF PACKAGING	HEIGHT (H) (mm)	REEL DIAMETER (mm)	ORDERING CODE EXAMPLES	PCM 7.5 TO 10	PCM 15	PCM 22.5 TO 27.5	PCM 37.5
D	Ammo	16.5	S (1)	MKP1840310405D	x	x	-	-
G	Ammo	18.5	S (1)	MKP1840310405G	x	x	-	-
F	Reel	16.5	350	MKP1840310405F	x	x	-	-
W	Reel	18.5	350	MKP1840310405W	x	x	-	-
V	Reel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

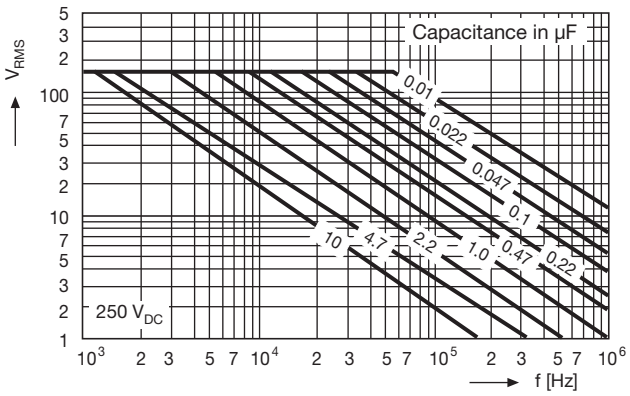
Notes

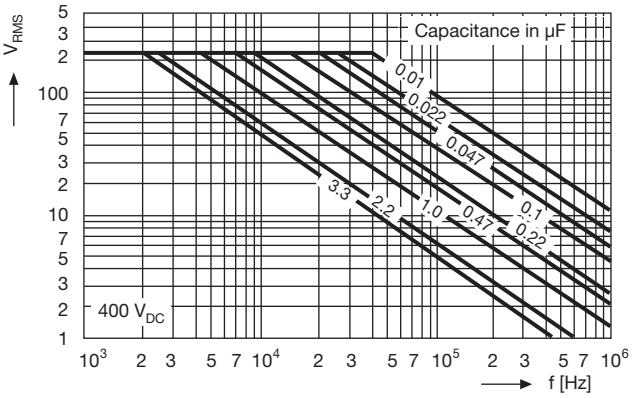
(1) S = box size 55 mm x 210 mm x 340 mm (w x h x l)
(2) L = box size 60 mm x 360 mm x 510 mm (w x h x l)

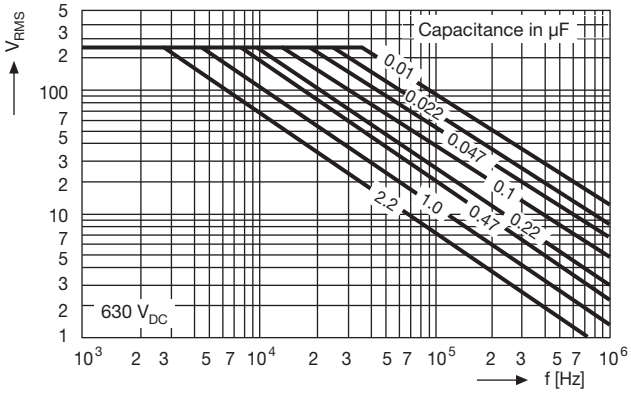
PERMISSIBLE AC VOLTAGE VS. FREQUENCY



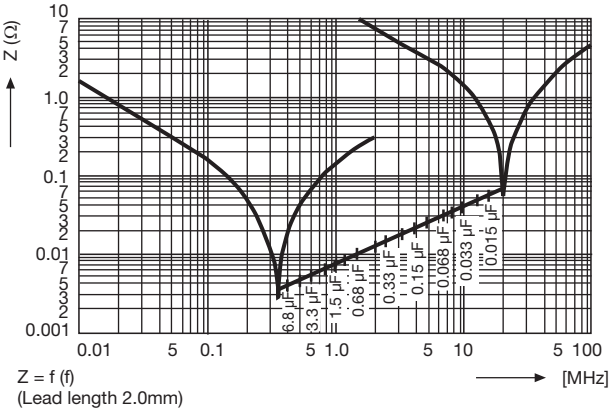








IMPEDANCE VS. FREQUENCY



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.