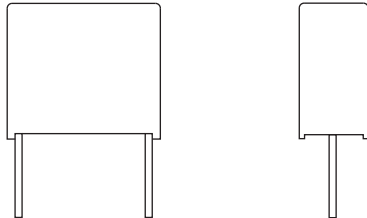




AC and Pulse Double Metallized Polypropylene Film Capacitors MMKP Radial Potted Type



FEATURES

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



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

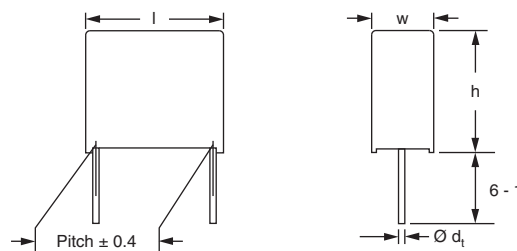
- High voltage, high current and high pulse operations
- Protection circuits in SMPS's, snubber and electronic ballast circuits

QUICK REFERENCE DATA	
Rated DC voltage	250 V _{DC} ; 400 V _{DC} ; 630 V _{DC} ; 1000 V _{DC} ; 1600 V _{DC} ; 2000 V _{DC}
Rated AC voltage	160 V _{AC} ; 220 V _{AC} ; 250 V _{AC} ; 400 V _{AC} ; 600 V _{AC} ; 650 V _{AC} ; 700 V _{AC}
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

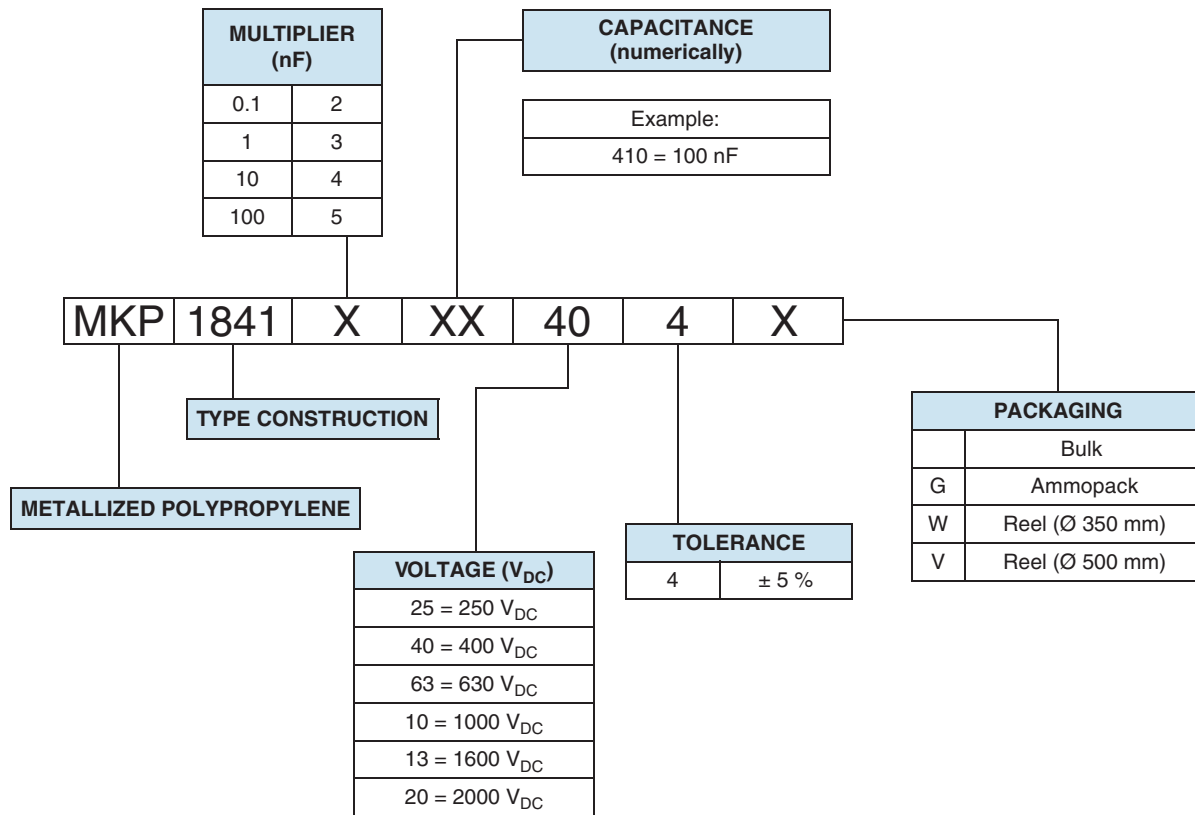
DIMENSIONS in millimeters



PITCH	w	Ø dt
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 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 ⁻⁴	≤ 10 x 10 ⁻⁴	≤ 15 x 10 ⁻⁴
					≤ 5 x 10 ⁻⁴	≤ 10 x 10 ⁻⁴	-
≤ 5 x 10 ⁻⁴	-	-					
PITCH (mm)	MAXIMUM PULSE RISE TIME (dU/dt) _R [V/μs]						
	160 V _{DC}	250 V _{DC}	400 V _{DC}	630 V _{DC}	1000 V _{DC}	1600 V _{DC}	2000 V _{DC}
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) ⁽¹⁾ ; rise time ≤ 1000 V/s						1.6 x U _{RDC} ; 1 min	
Maximum application temperature						100 °C	

Note

- ⁽¹⁾ See "Voltage Proof Test for Metalized Film Capacitors": www.vishay.com/doc?28169



ELECTRICAL DATA						
U _{RDC} (V)	CAP. (μF)	CAPACITANCE CODE	VOLTAGE CODE	V _{AC}	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			



ELECTRICAL DATA						
U_{RDC} (V)	CAP. (μ F)	CAPACITANCE CODE	VOLTAGE CODE	V_{AC}	DIMENSIONS (w x h x l)	PCM
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 _{RDC} (V)	CAP. (μF)	CAPACITANCE CODE	VOLTAGE CODE	V _{AC}	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 ⁽¹⁾	MKP1841315635G	X	-	-
W	Reel	18.5	350	MKP1841315635W	X	-	-
V	Reel	18.5	500	MKP1841410105V	X	X	-
G	Ammo	18.5	L ⁽²⁾	MKP1841410105G	-	X	-
-	Bulk	-	-	MKP1841447105	X	X	X

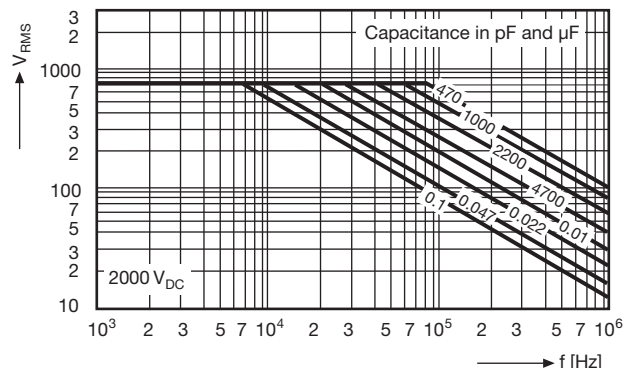
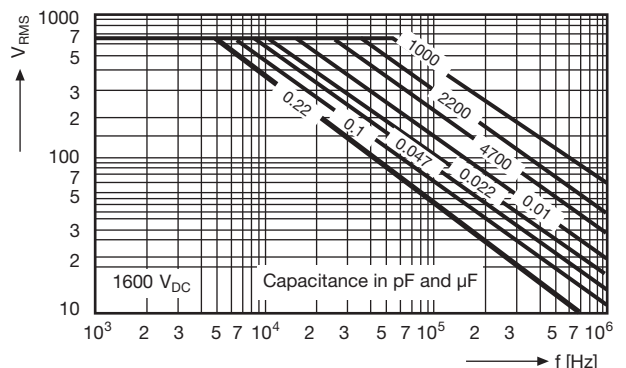
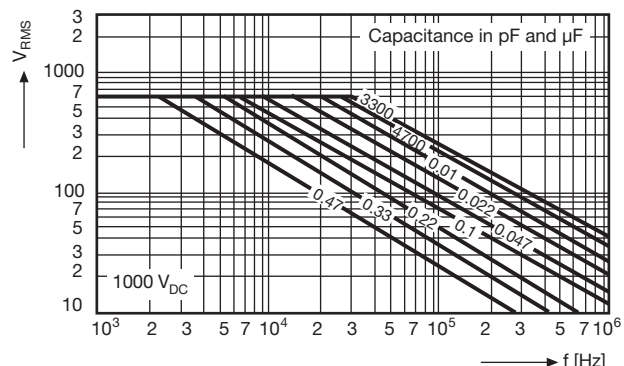
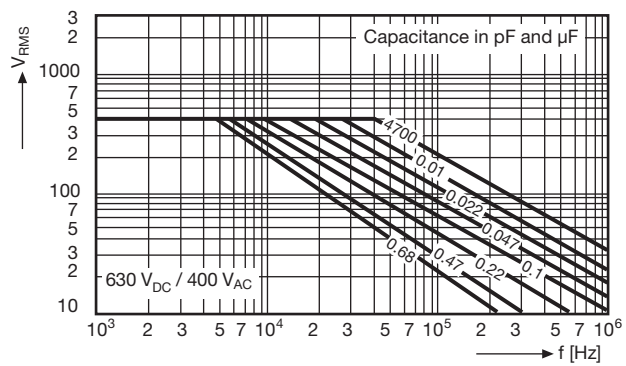
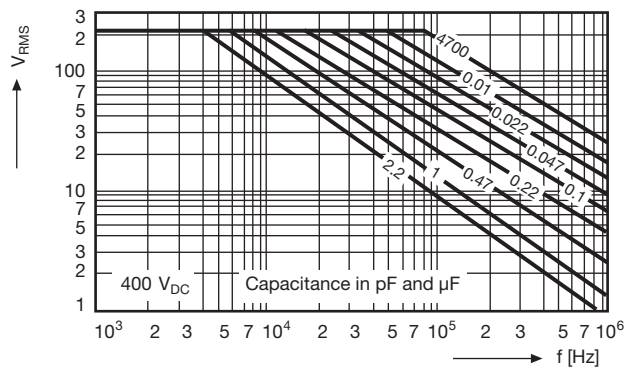
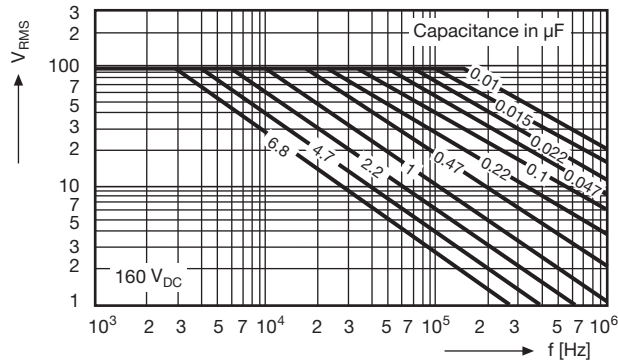
Notes

⁽¹⁾ S = box size 55 mm x 210 mm x 340 mm (W x H x L)

⁽²⁾ L = box size 60 mm x 510 mm x 360 mm (W x H x L)



PERMISSIBLE AC VOLTAGE 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.