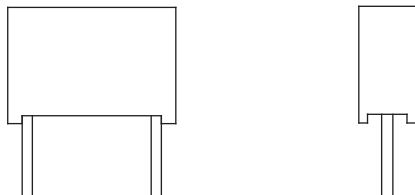




## AC and Pulse Metallized Polypropylene Film Capacitors MKP Radial Potted Type



### 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



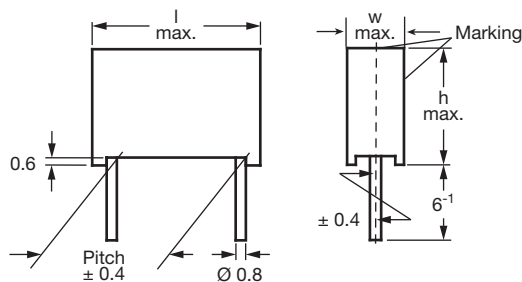
| QUICK REFERENCE DATA                          |   |
|---|---|
| Capacitance range                             | 4700 pF to 10 $\mu$ F   |
| Capacitance tolerances                        | $\pm 20\%$ (M), $\pm 10\%$ (K), $\pm 5\%$ (J)   |
| Climatic testing class according to IEC 60068 | 55/100/56   |
| Operating temperature range                   | -55 $^{\circ}$ C to +100 $^{\circ}$ C   |
| Dielectric                                    | Polypropylene film  |
| Electrodes                                    | Metallized  |
| Construction                                  | Extended metallized film<br>(refer to general information following the link in note below table)   |
| Coating                                       | Flame retardant plastic case, epoxy resin sealed<br>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<br><b>For C <math>\leq</math> 0.33 <math>\mu</math>F:</b><br>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<br><b>For C &gt; 0.33 <math>\mu</math>F:</b><br>30 000 s minimum value                                       |
| Temperature coefficient                       | -250 x 10 <sup>-6</sup> / $^{\circ}$ C (typical value)  |
| Capacitance drift                             | Up to +40 $^{\circ}$ 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 $^{\circ}$ C: $U_C = 1.0 U_R$<br>At +100 $^{\circ}$ 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<br>$d_t$ | 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<br>(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 |                          |                                |                          |



| ELECTRICAL DATA         |              |                     |                 |                 |                                 |             |
|-------------------------|--------------|---------------------|-----------------|-----------------|---------------------------------|-------------|
| U <sub>RDC</sub><br>(V) | CAP.<br>(μF) | CAPACITANCE<br>CODE | VOLTAGE<br>CODE | V <sub>AC</sub> | DIMENSIONS<br>w x h x l<br>(mm) | PCM<br>(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 <sub>RDC</sub><br>(V) | CAP.<br>(µF) | CAPACITANCE<br>CODE | VOLTAGE<br>CODE | V <sub>AC</sub>    | DIMENSIONS<br>w x h x l<br>(mm) | PCM<br>(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 <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".

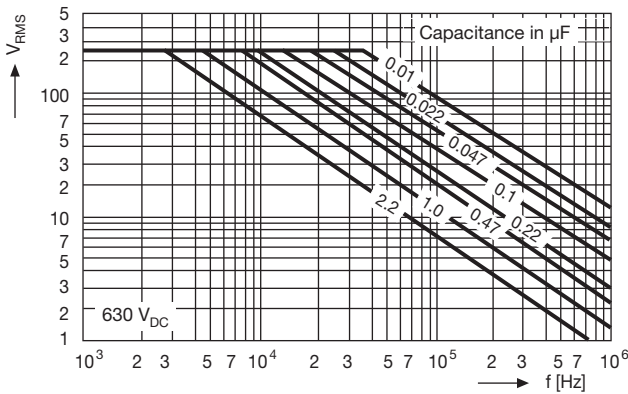
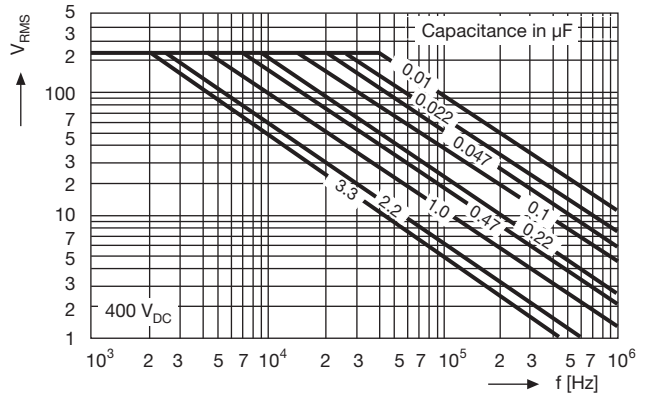
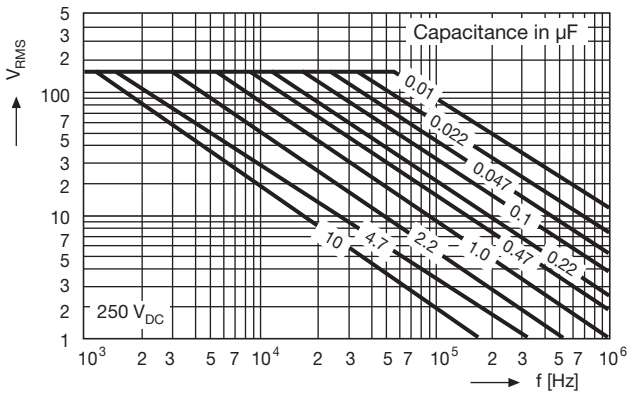
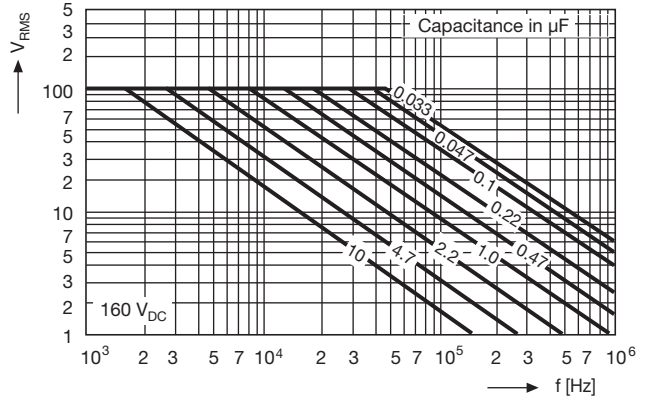
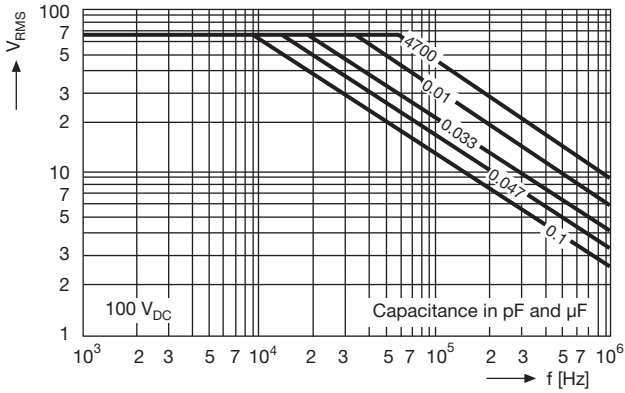
| RECOMMENDED PACKAGING |                      |                    |                          |                           |                  |           |                     |             |
|-----------------------|----------------------|--------------------|--------------------------|---------------------------|------------------|-----------|---------------------|-------------|
| LETTER<br>CODE        | TYPE OF<br>PACKAGING | HEIGHT (H)<br>(mm) | REEL<br>DIAMETER<br>(mm) | ORDERING CODE<br>EXAMPLES | PCM<br>7.5 TO 10 | PCM<br>15 | PCM<br>22.5 TO 27.5 | PCM<br>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**

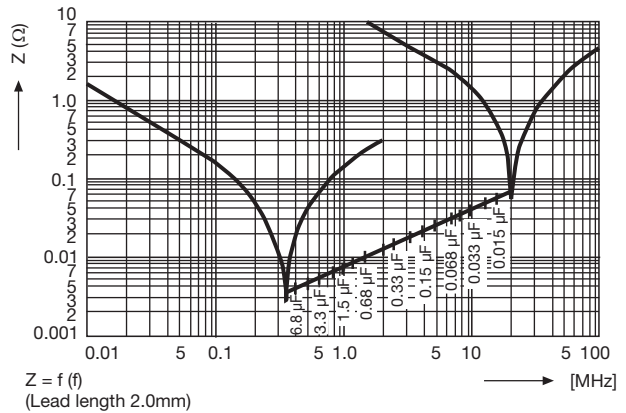
- <sup>(1)</sup> S = box size 55 mm x 210 mm x 340 mm (w x h x l)
- <sup>(2)</sup> L = box size 60 mm x 360 mm x 510 mm (w x h x l)



**PERMISSIBLE AC VOLTAGE VS. FREQUENCY**



**IMPEDANCE VS. FREQUENCY**





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