Metallized Polypropylene Film Capacitors
DC-Link Capacitor

FEATURES
- High performance DC filter
- Low ESR
- High peak current capabilities
- High RMS current capabilities
- AEC-Q200 qualified
- Mounting: radial
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS
- High performance DC filtering
- HEV / EV: i.e. power train and OBC
- Renewable energies inverters
- Motor drives
- Power supplies

QUICK REFERENCE DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated capacitance range</td>
<td>1 μF to 400 μF</td>
</tr>
<tr>
<td>Capacitance tolerance</td>
<td>5 %</td>
</tr>
<tr>
<td>Rated voltage range, ( U_{\text{NDC}} )</td>
<td>450 V to 1200 V</td>
</tr>
<tr>
<td>Climatic testing class</td>
<td>40 / 105 / 56</td>
</tr>
<tr>
<td>Rated temperature</td>
<td>85 °C</td>
</tr>
<tr>
<td>Maximum permissible case temperature</td>
<td>105 °C, observing voltage derating</td>
</tr>
<tr>
<td>Maximum applicable peak to peak ripple voltage</td>
<td>0.2 ( U_{\text{NDC}} )</td>
</tr>
<tr>
<td>Reference standards</td>
<td>IEC 61071, IEC 60068</td>
</tr>
<tr>
<td>Dielectric</td>
<td>Polypropylene film</td>
</tr>
<tr>
<td>Electrodes</td>
<td>Metallized dielectric capacitor</td>
</tr>
<tr>
<td>Construction</td>
<td>Mono construction</td>
</tr>
<tr>
<td>Encapsulation</td>
<td>Plastic case, sealed with resin; flame retardant</td>
</tr>
<tr>
<td>Terminals</td>
<td>Tinned wires</td>
</tr>
<tr>
<td>Self inductance (L₉)</td>
<td>&lt; 1 nH per mm of lead spacing</td>
</tr>
<tr>
<td>Withstanding DC voltage between terminals</td>
<td>1.5 ( U_{\text{NDC}} ) for 10 s, cut off current 10 mA, rise time ≤ 1000 V/s</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>RC between leads, after 1 min &gt; 10 000 s For ( U_{\text{NDC}} ) ≤ 500 V measuring voltage 100 V For ( U_{\text{NDC}} ) &gt; 500 V measuring voltage 500 V</td>
</tr>
<tr>
<td>Life time expectancy</td>
<td>Useful life time: &gt; 100 000 h at ( U_{\text{NDC}} ) and 70 °C FIT: &lt; 10 \times 10^{-9}/h (10 per 10^9 component h) at 0.5 ( U_{\text{NDC}} ), 40 °C</td>
</tr>
<tr>
<td>Marking</td>
<td>C-value; tolerance; rated voltage; code for dielectric material; code for manufacturing origin; manufacturer’s type designation; manufacturer’s logo; year and week of manufacture</td>
</tr>
</tbody>
</table>

Notes
- For more detailed data and test requirements, contact dc-film@vishay.com
- For general information like characteristics and definitions used for film capacitors follow the link: www.vishay.com/doc?28147

DC VOLTAGE RATINGS

<table>
<thead>
<tr>
<th>Voltage at 85 °C</th>
<th>450 V</th>
<th>700 V</th>
<th>800 V</th>
<th>900 V</th>
<th>1100 V</th>
<th>1200 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>( U_{\text{PDC}} ) at 70 °C</td>
<td>500 V</td>
<td>800 V</td>
<td>900 V</td>
<td>1100 V</td>
<td>1350 V</td>
<td>1500 V</td>
</tr>
<tr>
<td>( U_{\text{PDC}} ) at 105 °C</td>
<td>300 V</td>
<td>500 V</td>
<td>570 V</td>
<td>650 V</td>
<td>800 V</td>
<td>850 V</td>
</tr>
</tbody>
</table>

For technical questions, contact: dc-film@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?791000
COMPOSITION OF CATALOG NUMBER

<table>
<thead>
<tr>
<th>MULTIPLIER (nF)</th>
<th>CAPACITANCE (numerically)</th>
<th>P1 (mm)</th>
<th>PITCH CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>512</td>
<td>1200 nF</td>
<td>27.5</td>
<td>K</td>
</tr>
<tr>
<td>612</td>
<td>12 000 nF</td>
<td>37.5</td>
<td>P</td>
</tr>
<tr>
<td>712</td>
<td>120 000 nF</td>
<td>52.5</td>
<td>Y</td>
</tr>
</tbody>
</table>

MKP 1848 6 12 09 4 P 4

TYPE CONSTRUCTION

VOLTAGE

- U_N = 45 = 450 V_Dc
- U_N = 70 = 700 V_Dc
- U_N = 08 = 800 V_Dc
- U_N = 09 = 900 V_Dc
- U_N = 91 = 1100 V_Dc
- U_N = 92 = 1200 V_Dc

TOLERANCE

4 ± 5%

SPECIAL CODE FOR TERMINAL

- 2 pins
- 2 pins P2 = 10.2 mm
- 4 pins P2 = 20.3 mm
- Customized

Note

(1) Tabs terminals or customized terminals are available on request

DIMENSIONS in millimeters

2 PINS

4 PINS

For technical questions, contact: dc-film@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000
### DIMENSIONS in millimeters

<table>
<thead>
<tr>
<th>6 PINS</th>
<th>12 PINS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="6PinsDiagram.png" alt="Diagram" /></td>
<td><img src="12PinsDiagram.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

### Notes
- Ø dt ± 10% of standard diameter specified
- For pitch 27.5 mm marking will be either on top or front side.
  - For pitch ≥ 37.5 mm marking will be on front side only

### ELECTRICAL DATA AND ORDERING CODE

<table>
<thead>
<tr>
<th>PINS</th>
<th>CAP, μF (8)</th>
<th>DIMENSION (mm)</th>
<th>P1 (mm)</th>
<th>P2 (mm)</th>
<th>dV/dt (V/μs)</th>
<th>IPEAK (A)</th>
<th>IRMS (2) (mΩ)</th>
<th>ESR (3) (10 kHz)</th>
<th>tan δ (4)</th>
<th>ORDERING CODE (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td>(w)</td>
<td>h</td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>9.0</td>
<td>19.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>75</td>
<td>2.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>11.0</td>
<td>21.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>225</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>13.0</td>
<td>23.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>375</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>15.0</td>
<td>25.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>450</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>17.0</td>
<td>27.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>525</td>
<td>6.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>19.0</td>
<td>29.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>600</td>
<td>8.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>21.0</td>
<td>31.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>675</td>
<td>8.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>23.0</td>
<td>33.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>750</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>25.0</td>
<td>35.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>900</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>27.0</td>
<td>37.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>1125</td>
<td>11.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>29.0</td>
<td>39.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>1400</td>
<td>13.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>31.0</td>
<td>41.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>1600</td>
<td>15.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>33.0</td>
<td>43.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>2000</td>
<td>17.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>35.0</td>
<td>45.0</td>
<td>32.0</td>
<td>27.5</td>
<td>75</td>
<td>2400</td>
<td>19.5</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**
- For technical questions, contact: dc-film@vishay.com

**Disclaimer:**
- THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

**Ordering Code:**
- For precise ordering, consult the Vishay Roederstein website for the most current information.
### ELECTRICAL DATA AND ORDERING CODE

<table>
<thead>
<tr>
<th>U_{\text{OPDC}} AT 70 °C = 500 V, U_{\text{OPDC}} AT 105 °C = 300 V</th>
<th>U_{\text{OPDC}} AT 85 °C = 500 V, U_{\text{OPDC}} AT 105 °C = 300 V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U_{\text{D}}</strong></td>
<td><strong>CAP. (8) (µF)</strong></td>
</tr>
<tr>
<td><strong>PINS</strong></td>
<td><strong>PINS</strong></td>
</tr>
<tr>
<td>12</td>
<td>18.5</td>
</tr>
<tr>
<td>15</td>
<td>18.5</td>
</tr>
<tr>
<td>20</td>
<td>21.5</td>
</tr>
<tr>
<td>22</td>
<td>21.5</td>
</tr>
<tr>
<td>25</td>
<td>21.5</td>
</tr>
<tr>
<td>30</td>
<td>24.0</td>
</tr>
<tr>
<td>35</td>
<td>30.0</td>
</tr>
<tr>
<td>40</td>
<td>30.0</td>
</tr>
<tr>
<td>45</td>
<td>25.0</td>
</tr>
<tr>
<td>50</td>
<td>30.0</td>
</tr>
<tr>
<td>55</td>
<td>30.0</td>
</tr>
<tr>
<td>60</td>
<td>30.0</td>
</tr>
<tr>
<td>65</td>
<td>35.0</td>
</tr>
<tr>
<td>70</td>
<td>35.0</td>
</tr>
<tr>
<td>75</td>
<td>35.0</td>
</tr>
<tr>
<td>80</td>
<td>35.0</td>
</tr>
<tr>
<td>90</td>
<td>45.0</td>
</tr>
<tr>
<td>95</td>
<td>45.0</td>
</tr>
<tr>
<td>100</td>
<td>45.0</td>
</tr>
<tr>
<td>200</td>
<td>70.0</td>
</tr>
<tr>
<td>400</td>
<td>130</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PINS</th>
<th>PINS</th>
<th>PINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Notes:**
- **U_{\text{D}}** represents the voltage降伏值.
- **CAP.** represents the capacitance in microfarads (µF).
- **DIMENSION** represents the physical dimensions in millimeters (mm).
- **P1** and **P2** represent the dimensions for different pin configurations.
- **dV/dt** represents the rate of change of voltage with respect to time in volts per microsecond (V/µs).
- **I_{\text{PEAK}}** represents the peak current in amperes (A).
- **I_{\text{RMS}}** represents the root mean square current in amperes (A).
- **ESR** represents the equivalent series resistance in milliohms (mΩ).
- **tan δ 10 kHz** represents the tangent delta at 10 kHz in percentage (< 10^{-4}).
- **ORDERING CODE** includes various configurations for different applications.

For technical questions, contact: dc-film@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000
### ELECTRICAL DATA AND ORDERING CODE

<table>
<thead>
<tr>
<th>U_{\text{OPDC}} AT 70 °C (V)</th>
<th>CAP. (μF)</th>
<th>DIMENSION (mm)</th>
<th>P1 (mm)</th>
<th>P2 (mm)</th>
<th>dV/dt (V/μs)</th>
<th>I_{\text{PEAK}} (A)</th>
<th>I_{\text{RMS}} (mA)</th>
<th>ESR (mΩ)</th>
<th>tan δ (10 kHz &lt; 10^{-4})</th>
<th>ORDERING CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>19</td>
<td>9</td>
<td>19</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>75</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11</td>
<td>21</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>150</td>
<td>3.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>13</td>
<td>23</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>225</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>15</td>
<td>25</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>300</td>
<td>5.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>18</td>
<td>28</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>375</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>18</td>
<td>28</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>450</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>21</td>
<td>31</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>525</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>21</td>
<td>31</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>600</td>
<td>9.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>20</td>
<td>35</td>
<td>32</td>
<td>27.5</td>
<td>-</td>
<td>75</td>
<td>675</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>10.5</td>
<td>35.5</td>
<td>43</td>
<td>37.5</td>
<td>10.2</td>
<td>40</td>
<td>100</td>
<td>12.5</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>12.5</td>
<td>35.5</td>
<td>43</td>
<td>37.5</td>
<td>10.2</td>
<td>40</td>
<td>480</td>
<td>8.5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>18.5</td>
<td>38.5</td>
<td>43</td>
<td>37.5</td>
<td>10.2</td>
<td>40</td>
<td>600</td>
<td>10</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>24</td>
<td>44</td>
<td>42</td>
<td>37.5</td>
<td>10.2</td>
<td>40</td>
<td>800</td>
<td>13</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>30</td>
<td>45</td>
<td>42</td>
<td>37.5</td>
<td>10.2 / 20.3</td>
<td>40</td>
<td>880</td>
<td>14.5</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>30</td>
<td>45</td>
<td>42</td>
<td>37.5</td>
<td>10.2 / 20.3</td>
<td>40</td>
<td>1000</td>
<td>15.5</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>25</td>
<td>45</td>
<td>57.5</td>
<td>52.5</td>
<td>10.2</td>
<td>10</td>
<td>300</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>30</td>
<td>45</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>350</td>
<td>13</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>30</td>
<td>45</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>100</td>
<td>14.5</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>35</td>
<td>50</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>450</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>35</td>
<td>50</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>500</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>45</td>
<td>45</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>500</td>
<td>-</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>45</td>
<td>45</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>70</td>
<td>65</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>1600</td>
<td>27</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>130</td>
<td>65</td>
<td>57.5</td>
<td>52.5</td>
<td>20.3</td>
<td>10</td>
<td>3200</td>
<td>48.5</td>
<td>-</td>
</tr>
</tbody>
</table>

**U_{\text{OPDC}} AT 70 °C = 800 V, U_{\text{OPDC}} AT 105 °C = 500 V**

**U_{\text{OPDC}} AT 70 °C = 900 V, U_{\text{OPDC}} AT 105 °C = 570 V**

For technical questions, contact: dc-film@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000
**ELECTRICAL DATA AND ORDERING CODE**

<table>
<thead>
<tr>
<th>$U_{\text{OPDC}}$ AT 70 °C = 1100 V, $U_{\text{OPDC}}$ AT 105 °C = 650 V</th>
<th>$U_{\text{OPDC}}$ AT 70 °C = 1350 V, $U_{\text{OPDC}}$ AT 105 °C = 800 V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$U_{\text{DC}}$ AT 85 °C (V)</strong></td>
<td>900</td>
</tr>
<tr>
<td><strong>CAP. (μF)</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>DIMENSION (mm)</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>P1 (mm)</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>P2 (mm)</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>$dV/dt$ (V/μs)</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>$I_{\text{PEAK}}$ (A)</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>$I_{\text{RMS}}$ (A)</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>ESR (mΩ)</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>$\tan \delta$ 10 kHz (&lt; 10^{-4})</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>PINS</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>ORDERING CODE</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

**Notes:**
- For technical questions, contact: dc-film@vishay.com
- THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000
- www.vishay.com
- Document Number: 28164
### ELECTRICAL DATA AND ORDERING CODE

<table>
<thead>
<tr>
<th>$U_{\text{OPDC}}$ AT 70 °C = 1350 V, $U_{\text{OPDC}}$ AT 105 °C = 800 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_{\text{DC}}$ AT 85 °C (V)</td>
</tr>
<tr>
<td>1100</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>140</td>
</tr>
<tr>
<td>1200</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>80</td>
</tr>
</tbody>
</table>

**Notes**

(1) Change the * symbol with special code for the terminals
(2) Maximum RMS current at 10 kHz, +85 °C, Δt = +15 °C, capacitance tolerance ≤ ± 5 %
(3) Equivalent series resistance typical values at f = 10 kHz to 100 kHz for P = 27.5 mm, at f = 10 kHz to 70 kHz for P = 37.5 mm, at f = 10 kHz to 50 kHz for P = 52.5 mm
(4) Maximum tan δ values
(5) Standard dimension
(6) 6 pins
(7) 12 pins
(8) Intermediate capacitance values available on request
## PACKAGING INFORMATION

<table>
<thead>
<tr>
<th>$U_{\text{DC}}$ AT 85 °C (V)</th>
<th>HEIGHT (mm)</th>
<th>CAP, (6) (μF)</th>
<th>Ø dt</th>
<th>ORDERING CODE (1)</th>
<th>MASS (g)</th>
<th>SPQ (2) (pcs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 70 °C = 500 V, $U_{\text{OPDC}}$ AT 105 °C = 300 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 1</td>
<td>0.8</td>
<td>MKP1848510454K2</td>
<td>6</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 2</td>
<td>0.8</td>
<td>MKP1848520454K2</td>
<td>5.5</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 3</td>
<td>0.8</td>
<td>MKP1848530454K2</td>
<td>8.5</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 4</td>
<td>0.8</td>
<td>MKP1848540454K2</td>
<td>8.5</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 5</td>
<td>0.8</td>
<td>MKP1848550454K2</td>
<td>10.5</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 6</td>
<td>0.8</td>
<td>MKP1848560454K2</td>
<td>12.5</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 7</td>
<td>0.8</td>
<td>MKP1848570454K2</td>
<td>11.5</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 8</td>
<td>0.8</td>
<td>MKP1848580454K2</td>
<td>15</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 9</td>
<td>0.8</td>
<td>MKP1848590454K2</td>
<td>16</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 10</td>
<td>0.8</td>
<td>MKP1848610454K2</td>
<td>15</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 12</td>
<td>0.8</td>
<td>MKP1848612454K2</td>
<td>21.5</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 15</td>
<td>0.8</td>
<td>MKP1848615454K2</td>
<td>20</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5 10</td>
<td>1.0</td>
<td>MKP1848610454P*</td>
<td>34</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5 12</td>
<td>1.0</td>
<td>MKP1848612454P*</td>
<td>32</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5 15</td>
<td>1.0</td>
<td>MKP1848615454P*</td>
<td>30</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5 20</td>
<td>1.0</td>
<td>MKP1848620454P*</td>
<td>36</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5 22</td>
<td>1.0</td>
<td>MKP1848622454P*</td>
<td>38</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5 25</td>
<td>1.0</td>
<td>MKP1848625454P*</td>
<td>36</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44 30</td>
<td>1.0</td>
<td>MKP1848630454P*</td>
<td>48</td>
<td>77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 35</td>
<td>1.0</td>
<td>MKP1848635454P*</td>
<td>57</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 40</td>
<td>1.0</td>
<td>MKP1848640454P*</td>
<td>60</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 40</td>
<td>1.2</td>
<td>MKP1848640454Y*</td>
<td>66</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 45</td>
<td>1.2</td>
<td>MKP1848645454Y*</td>
<td>70</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 50</td>
<td>1.2</td>
<td>MKP1848650454Y*</td>
<td>88</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 55</td>
<td>1.2</td>
<td>MKP1848655454Y*</td>
<td>96</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 60</td>
<td>1.2</td>
<td>MKP1848660454Y*</td>
<td>91</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 65</td>
<td>1.2</td>
<td>MKP1848665454Y*</td>
<td>100</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 70</td>
<td>1.2</td>
<td>MKP1848670454Y*</td>
<td>112</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 75</td>
<td>1.2</td>
<td>MKP1848675454Y*</td>
<td>108</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 80</td>
<td>1.2</td>
<td>MKP1848680454Y*</td>
<td>102</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 90</td>
<td>1.2</td>
<td>MKP1848690454Y5</td>
<td>127</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 95</td>
<td>1.2</td>
<td>MKP1848695454Y5</td>
<td>124</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 100</td>
<td>1.2</td>
<td>MKP1848710454Y5</td>
<td>120</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 200</td>
<td>1.2</td>
<td>MKP1848720454Y5 (3)</td>
<td>266</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 400</td>
<td>1.2</td>
<td>MKP1848740454Y5 (4)</td>
<td>490</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT 70 °C = 800 V, $U_{\text{OPDC}}$ AT 105 °C = 500 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 1</td>
<td>0.8</td>
<td>MKP1848510704K2</td>
<td>6</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 2</td>
<td>0.8</td>
<td>MKP1848520704K2</td>
<td>5.5</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 3</td>
<td>0.8</td>
<td>MKP1848530704K2</td>
<td>8.5</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 4</td>
<td>0.8</td>
<td>MKP1848540704K2</td>
<td>10.5</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 5</td>
<td>0.8</td>
<td>MKP1848550704K2</td>
<td>12</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 6</td>
<td>0.8</td>
<td>MKP1848560704K2</td>
<td>17</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 7</td>
<td>0.8</td>
<td>MKP1848570704K2</td>
<td>16</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 8</td>
<td>0.8</td>
<td>MKP1848580704K2</td>
<td>15</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 9</td>
<td>0.8</td>
<td>MKP1848590704K2</td>
<td>22</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 10</td>
<td>0.8</td>
<td>MKP1848610704K2</td>
<td>21</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 12</td>
<td>0.8</td>
<td>MKP1848612704K2</td>
<td>20</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5 10</td>
<td>1.0</td>
<td>MKP1848610704P*</td>
<td>34</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5 12</td>
<td>1.0</td>
<td>MKP1848612704P*</td>
<td>32</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5 15</td>
<td>1.0</td>
<td>MKP1848615704P*</td>
<td>30</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5 20</td>
<td>1.0</td>
<td>MKP1848620704P*</td>
<td>36</td>
<td>91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$U_{\text{NDC}}$ AT 85 °C (V)</td>
<td>HEIGHT (mm)</td>
<td>CAP, (μF)</td>
<td>Ø dt</td>
<td>ORDERING CODE (1)</td>
<td>MASS (g)</td>
<td>SPQ (pcs)</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>------</td>
<td>-------------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>700</td>
<td>44</td>
<td>22</td>
<td>1.0</td>
<td>MKP1848622704P*</td>
<td>49</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>25</td>
<td>1.0</td>
<td>MKP1848625704P*</td>
<td>47</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>30</td>
<td>1.0</td>
<td>MKP1848630704P*</td>
<td>62</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>35</td>
<td>1.0</td>
<td>MKP1848635704P*</td>
<td>55</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>30</td>
<td>1.2</td>
<td>MKP1848630704Y*</td>
<td>76</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>35</td>
<td>1.2</td>
<td>MKP1848635704Y*</td>
<td>71</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>40</td>
<td>1.2</td>
<td>MKP1848640704Y*</td>
<td>66</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>1.2</td>
<td>MKP1848645704Y*</td>
<td>95</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>50</td>
<td>1.2</td>
<td>MKP1848650704Y*</td>
<td>88</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>55</td>
<td>1.2</td>
<td>MKP1848655704Y*</td>
<td>112</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>60</td>
<td>1.2</td>
<td>MKP1848660704Y*</td>
<td>107</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>65</td>
<td>1.2</td>
<td>MKP1848665704Y*</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>70</td>
<td>1.2</td>
<td>MKP1848670704Y5</td>
<td>128</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>75</td>
<td>1.2</td>
<td>MKP1848675704Y5</td>
<td>123</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>80</td>
<td>1.2</td>
<td>MKP1848680704Y5</td>
<td>119</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>160</td>
<td>1.2</td>
<td>MKP1848716704Y5 (5)</td>
<td>264</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>320</td>
<td>1.2</td>
<td>MKP1848732704Y5 (4)</td>
<td>359</td>
<td>10</td>
</tr>
<tr>
<td>800</td>
<td>19</td>
<td>1</td>
<td>0.8</td>
<td>MKP1848510084K2</td>
<td>6.5</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>2</td>
<td>0.8</td>
<td>MKP1848520084K2</td>
<td>9</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>3</td>
<td>0.8</td>
<td>MKP1848530084K2</td>
<td>11</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>4</td>
<td>0.8</td>
<td>MKP1848540084K2</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>5</td>
<td>0.8</td>
<td>MKP1848550084K2</td>
<td>17</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>6</td>
<td>0.8</td>
<td>MKP1848560084K2</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>7</td>
<td>0.8</td>
<td>MKP1848570084K2</td>
<td>23</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>8</td>
<td>0.8</td>
<td>MKP1848580084K2</td>
<td>21</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>9</td>
<td>0.8</td>
<td>MKP1848590084K2</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>35.5</td>
<td>10</td>
<td>1.0</td>
<td>MKP1848610084P*</td>
<td>32</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>35.5</td>
<td>12</td>
<td>1.0</td>
<td>MKP1848612084P*</td>
<td>30</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>38.5</td>
<td>15</td>
<td>1.0</td>
<td>MKP1848615084P*</td>
<td>37</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>20</td>
<td>1.0</td>
<td>MKP1848620084P*</td>
<td>47</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>22</td>
<td>1.0</td>
<td>MKP1848622084P*</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>25</td>
<td>1.0</td>
<td>MKP1848625084P*</td>
<td>61</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>30</td>
<td>1.2</td>
<td>MKP1848630084Y*</td>
<td>69</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>35</td>
<td>1.2</td>
<td>MKP1848635084Y*</td>
<td>97</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>40</td>
<td>1.2</td>
<td>MKP1848640084Y*</td>
<td>91</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>45</td>
<td>1.2</td>
<td>MKP1848645084Y*</td>
<td>112</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>1.2</td>
<td>MKP1848650084Y*</td>
<td>104</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>55</td>
<td>1.2</td>
<td>MKP1848655084Y5</td>
<td>131</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>60</td>
<td>1.2</td>
<td>MKP1848660084Y5</td>
<td>125</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>120</td>
<td>1.2</td>
<td>MKP1848712084Y5 (5)</td>
<td>276</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>240</td>
<td>1.2</td>
<td>MKP1848724084Y5 (4)</td>
<td>393</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>1</td>
<td>0.8</td>
<td>MKP1848510094K2</td>
<td>6</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>2</td>
<td>0.8</td>
<td>MKP1848520094K2</td>
<td>11</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>3</td>
<td>0.8</td>
<td>MKP1848530094K2</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>4</td>
<td>0.8</td>
<td>MKP1848540094K2</td>
<td>16.5</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>5</td>
<td>0.8</td>
<td>MKP1848550094K2</td>
<td>22.5</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>6</td>
<td>0.8</td>
<td>MKP1848560094K2</td>
<td>21</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>7</td>
<td>0.8</td>
<td>MKP1848570094K2</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>35.5</td>
<td>5</td>
<td>1.0</td>
<td>MKP1848550094P*</td>
<td>32</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>35.5</td>
<td>6</td>
<td>1.0</td>
<td>MKP1848560094P*</td>
<td>30</td>
<td>105</td>
</tr>
</tbody>
</table>
## PACKAGING INFORMATION

<table>
<thead>
<tr>
<th>$U_{\text{ND}}$ AT 85 °C (V)</th>
<th>HEIGHT (mm)</th>
<th>CAP. (5) (μF)</th>
<th>Ø dt</th>
<th>ORDERING CODE (1)</th>
<th>MASS (g)</th>
<th>SPQ (2) (pcs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$U_{\text{OPDC}}$ AT 70 °C = 1100 V, $U_{\text{OPDC}}$ AT 105 °C = 650 V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.5</td>
<td>7</td>
<td>1.0</td>
<td>MKP1848570094P*</td>
<td>33</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>35.5</td>
<td>8</td>
<td>1.0</td>
<td>MKP1848580094P*</td>
<td>31</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>35.5</td>
<td>9</td>
<td>1.0</td>
<td>MKP1848590094P*</td>
<td>30</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>38.5</td>
<td>10</td>
<td>1.0</td>
<td>MKP1848610094P*</td>
<td>39</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>38.5</td>
<td>12</td>
<td>1.0</td>
<td>MKP1848612094P*</td>
<td>36</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>15</td>
<td>1.0</td>
<td>MKP1848615094P*</td>
<td>47</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>16</td>
<td>1.0</td>
<td>MKP1848616094P*</td>
<td>45</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>20</td>
<td>1.0</td>
<td>MKP1848620094P*</td>
<td>57</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>15</td>
<td>1.2</td>
<td>MKP1848615094Y*</td>
<td>70</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>20</td>
<td>1.2</td>
<td>MKP1848620094Y*</td>
<td>73</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>22</td>
<td>1.2</td>
<td>MKP1848622094Y*</td>
<td>70</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>25</td>
<td>1.2</td>
<td>MKP1848625094Y*</td>
<td>98</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>30</td>
<td>1.2</td>
<td>MKP1848630094Y*</td>
<td>89</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>35</td>
<td>1.2</td>
<td>MKP1848635094Y*</td>
<td>109</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>40</td>
<td>1.2</td>
<td>MKP1848640094Y*</td>
<td>99</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>45</td>
<td>1.2</td>
<td>MKP1848645094Y5</td>
<td>124</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>50</td>
<td>1.2</td>
<td>MKP1848650094Y5</td>
<td>117</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>100</td>
<td>1.2</td>
<td>MKP1848710094Y5 (3)</td>
<td>259</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
| 65 | 200 | 1.2 | MKP1848720094Y5 (4) | 608 | 10 |**

| **$U_{\text{OPDC}}$ AT 70 °C = 1350 V, $U_{\text{OPDC}}$ AT 105 °C = 800 V** |
| 21 | 1 | 0.8 | MKP1848510914K2 | 9 | 130 |
| 25 | 2 | 0.8 | MKP1848520914K2 | 12 | 100 |
| 28 | 3 | 0.8 | MKP1848530914K2 | 16 | 80 |
| 31 | 4 | 0.8 | MKP1848540914K2 | 21.5 | 65 |
| 35 | 5 | 0.8 | MKP1848550914K2 | 21.5 | 70 |
| 35.5 | 5 | 1.0 | MKP1848550914P* | 33 | 105 |
| 35.5 | 6 | 1.0 | MKP1848560914P* | 30 | 105 |
| 38.5 | 7 | 1.0 | MKP1848570914P* | 39 | 91 |
| 38.5 | 8 | 1.0 | MKP1848580914P* | 37 | 91 |
| 44 | 9 | 1.0 | MKP1848590914P* | 50 | 77 |
| 44 | 10 | 1.0 | MKP1848610914P* | 48 | 77 |
| 45 | 12 | 1.0 | MKP1848612914P* | 63 | 63 |
| 45 | 10 | 1.2 | MKP1848610914Y* | 81 | 55 |
| 45 | 12 | 1.2 | MKP1848612914Y* | 77 | 55 |
| 45 | 15 | 1.2 | MKP1848615914Y* | 70 | 55 |
| 45 | 20 | 1.2 | MKP1848620914Y* | 91 | 45 |
| 50 | 22 | 1.2 | MKP1848622914Y* | 115 | 40 |
| 50 | 25 | 1.2 | MKP1848625914Y* | 108 | 40 |
| 50 | 30 | 1.2 | MKP1848630914Y5 | 126 | 30 |
| 65 | 60 | 1.2 | MKP1848660914Y5 (3) | 256 | 20 |
| 65 | 70 | 1.2 | MKP1848670914Y5 (3) | 257 | 20 |
| 65 | 120 | 1.2 | MKP1848712914Y5 (4) | 606 | 10 |
| 65 | 140 | 1.2 | MKP1848714914Y5 (4) | 608 | 10 |**

| **$U_{\text{OPDC}}$ AT 70 °C = 1500 V, $U_{\text{OPDC}}$ AT 105 °C = 850 V** |
| 21 | 1 | 0.8 | MKP1848510924K2 | 9 | 130 |
| 25 | 2 | 0.8 | MKP1848520924K2 | 11.5 | 100 |
| 28 | 3 | 0.8 | MKP1848530924K2 | 15 | 80 |
| 31 | 4 | 0.8 | MKP1848540924K2 | 20 | 65 |
| 35.5 | 5 | 1.0 | MKP1848550924P* | 31 | 105 |
| 35.5 | 6 | 1.0 | MKP1848560924P* | 29 | 105 |
| 38.5 | 7 | 1.0 | MKP1848570924P* | 37 | 91 |
CONSTRUCTION DESCRIPTION
Low inductive wound cell elements of metallized polypropylene film, potted with resin in a flame retardant case.

SPECIFIC METHOD OF MOUNTING TO WITHSTAND VIBRATION AND SHOCK
The capacitor unit is designed for mounting on a printed circuit board.
In order to withstand vibration and shock tests, it must be insured that the stand-off pips are in good contact with the printed circuit board.
The capacitors shall be mechanically fixed by the leads and the body clamped.

SPACE REQUIREMENTS ON PRINTED-CIRCUIT BOARD
The maximum length and width of film capacitors is shown in the figure.
For product height with seating plane as given by “IEC 60717” as reference.
For 2 pins:

For the maximum product dimensions and maximum space requirements for length ($l_{\text{max}}$), width ($w_{\text{max}}$), and height ($h_{\text{max}}$) following tolerances must be taken in account in the envelopment of the components as shown in the drawings below:
- For products with 15 mm < pitch ≤ 27.5 mm, $\Delta w = \Delta l = 0.5$ mm, and $\Delta h = 0.1$ mm
- For products with pitch = 37.5 mm, $\Delta w = \Delta l = 0.7$ mm, and $\Delta h = 0.5$ mm
- For products with pitch = 52.5 mm, $\Delta w = \Delta l = 1.0$ mm, and $\Delta h = 0.5$ mm
Eccentricity defined as in drawing. The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.
The maximum length and width of film capacitors is shown in the figure.

Notes
(1) Change the * symbol with special code for the terminals
(2) SPQ = Standard Packing Quantity
(3) 6 pins
(4) 12 pins
(5) Intermediate capacitance values available on request

PACKAGING INFORMATION

<table>
<thead>
<tr>
<th>$U_{\text{DC}}$ AT 85 °C (V)</th>
<th>HEIGHT (mm)</th>
<th>CAP. (μF)</th>
<th>Ø dt</th>
<th>ORDERING CODE (1)</th>
<th>MASS (g)</th>
<th>SPQ (2) (pcs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td></td>
<td></td>
<td></td>
<td>$U_{\text{OPDC}}$ AT 70 °C = 1500 V, $U_{\text{OPDC}}$ AT 105 °C = 850 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.5</td>
<td>8</td>
<td>1.0</td>
<td>MKP1848580924P*</td>
<td>35</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>9</td>
<td>1.0</td>
<td>MKP1848590924P*</td>
<td>48</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>10</td>
<td>1.0</td>
<td>MKP1848610924P*</td>
<td>45</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>12</td>
<td>1.0</td>
<td>MKP1848612924P*</td>
<td>60</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>10</td>
<td>1.2</td>
<td>MKP1848610924Y*</td>
<td>79</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>12</td>
<td>1.2</td>
<td>MKP1848612924Y*</td>
<td>74</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>15</td>
<td>1.2</td>
<td>MKP1848615924Y*</td>
<td>67</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>20</td>
<td>1.2</td>
<td>MKP1848620924Y*</td>
<td>115</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>22</td>
<td>1.2</td>
<td>MKP1848622924Y*</td>
<td>109</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>25</td>
<td>1.2</td>
<td>MKP1848625924Y*</td>
<td>100</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>30</td>
<td>1.2</td>
<td>MKP1848630924Y5</td>
<td>119</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>60</td>
<td>1.2</td>
<td>MKP1848660924Y5 (3)</td>
<td>264</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>120</td>
<td>1.2</td>
<td>MKP1848712924Y5 (4)</td>
<td>612</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
For the minimum product dimensions for length \( l_{\text{min}} \), width \( w_{\text{min}} \), and height \( h_{\text{min}} \) following tolerances of the components are valid:

\[
l_{\text{min}} = l - \Delta l, \quad w_{\text{min}} = w - \Delta w, \quad \text{and} \quad h_{\text{min}} = h - \Delta h \quad \text{following}
\]

- For products with 15 mm < pitch \( \leq 22.5 \) mm, \( \Delta l = 1.0 \) mm, and \( \Delta w = \Delta h = 0.5 \) mm
- For products with pitch = 27.5 mm, \( \Delta l = 1.5 \) mm, and \( \Delta w = \Delta h = 0.5 \) mm
- For products with pitch = 37.5 mm, \( \Delta l = 1.5 \) mm, and \( \Delta w = \Delta h = 1.0 \) mm
- For products with pitch = 52.5 mm, \( \Delta l = 1.5 \) mm, and \( \Delta w = \Delta h = 1.0 \) mm

For 4 pins, 6 pins, and 12 pins:

<table>
<thead>
<tr>
<th>P1 (mm)</th>
<th>( L_{\text{max}} ) (mm)</th>
<th>( W_{\text{max}} ) (mm)</th>
<th>( D ) (mm)</th>
<th>H (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.5</td>
<td>( l + 1.6 )</td>
<td>( w + 2.0 )</td>
<td>1.2</td>
<td>h + 0.2</td>
</tr>
<tr>
<td>37.5</td>
<td>( l + 2.0 )</td>
<td>( w + 3.0 )</td>
<td>1.5</td>
<td>h + 0.5</td>
</tr>
<tr>
<td>52.5</td>
<td>( l + 2.4 )</td>
<td>( w + 4.0 )</td>
<td>1.7</td>
<td>h + 0.5</td>
</tr>
</tbody>
</table>

**SOLDERING CONDITIONS**

For general soldering conditions and wave soldering profile, we refer to the application note: “Soldering Guidelines for Film Capacitors”: [www.vishay.com/doc?28171](http://www.vishay.com/doc?28171)

**Storage Temperature**

\( T_{\text{stg}} = -25 \) °C to +35 °C with RH maximum 75 % without condensation.

**Ratings and Characteristics Reference Conditions**

Unless otherwise specified, all electrical values apply to an ambient temperature of 23 °C ± 1 °C, an atmospheric pressure of 86 kPa to 106 kPa and a relative humidity of 50 % ± 2 %.

For reference testing, a conditioning period shall be applied over 96 h ± 4 h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.
CHARACTERISTICS

Capacitance (typical curve)

Lifetime expectancy (typical curve)

Insulation resistance (typical curve)

Impedance vs. frequency (typical curve)
HEAT CONDUCTIVITY

<table>
<thead>
<tr>
<th>DIMENSIONS (mm)</th>
<th>HEAT CONDUCTIVITY (mW/°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>h</td>
</tr>
<tr>
<td>9.0</td>
<td>19.0</td>
</tr>
<tr>
<td>11.0</td>
<td>21.0</td>
</tr>
<tr>
<td>13.0</td>
<td>23.0</td>
</tr>
<tr>
<td>15.0</td>
<td>25.0</td>
</tr>
<tr>
<td>18.0</td>
<td>28.0</td>
</tr>
<tr>
<td>21.0</td>
<td>31.0</td>
</tr>
<tr>
<td>21.0</td>
<td>35.0</td>
</tr>
<tr>
<td>18.5</td>
<td>35.5</td>
</tr>
<tr>
<td>21.5</td>
<td>38.5</td>
</tr>
<tr>
<td>24.0</td>
<td>44.0</td>
</tr>
<tr>
<td>30.0</td>
<td>45.0</td>
</tr>
<tr>
<td>25.0</td>
<td>45.0</td>
</tr>
<tr>
<td>30.0</td>
<td>45.0</td>
</tr>
<tr>
<td>35.0</td>
<td>50.0</td>
</tr>
<tr>
<td>45.0</td>
<td>45.0</td>
</tr>
<tr>
<td>70.0</td>
<td>65.0</td>
</tr>
<tr>
<td>130.0</td>
<td>65.0</td>
</tr>
</tbody>
</table>

POWER DISSIPATION AND MAXIMUM COMPONENT TEMPERATURE RISE

The power dissipation must be limited in order not to exceed the maximum allowed component temperature rise as a function of the free air ambient temperature.

The component temperature rise (ΔT) can be measured or calculated by ΔT = P/G:

- ΔT = T_C - T_amb = case temperature rise (°C) with a maximum of 15 °C at rated temperature.
- P = I_{RMS}^2 x ESR = power dissipation of the component (mW)
- G = heat conductivity of the component (mW/°C)
MEASURING THE COMPONENT TEMPERATURE

The case temperature is measured in unloaded \(T_{\text{amb}}\) and maximum loaded condition \(T_C\).
To avoid thermal radiation or convection, the capacitor must be tested in a closed area from air circulation.

APPLICATION NOTE AND LIMITING CONDITIONS

These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection. These mains applications are strictly regulated in safety standards and therefore electromagnetic interference suppression capacitors conforming the standards must be used.

To select the capacitor for a certain application, the following conditions must be checked:

- The continuous peak voltage \(U_{\text{P+}}\) shall not exceed the rated DC voltage rating \(U_{\text{NDC}}\)
- The peak-to-peak ripple voltage \(U_{\text{PP}}\) shall not be greater than 0.2 x \(U_{\text{NDC}}\)

Non reversing recurrent waveform

- For capacitors connected in parallel, normally the proof voltage and possibly the rated voltage must be reduced. For information depending of the capacitance value and the number of parallel connections contact: dc-film@vishay.com
- The voltage peak slope \((dU/dt)\) shall not exceed the pulse slope at the DC voltage rating.

If the pulse voltage is lower than the rated DC voltage, the rated voltage pulse slope may be multiplied by \(U_{\text{NDC}}\) and divided by the applied voltage.

For all other pulses following equation must be fulfilled:

\[
2 \times \int_0^T \left(\frac{dU}{dt}\right)^2 \, dt < U_{\text{NDC}} \times \left(\frac{dU}{dt}\right)_{\text{rated}}
\]

\(T\) is the pulse duration

Maximum Repetitive Peak Voltages

The capacitor unit may be subjected to the following surge without any significant reduction of lifetime expectancy

<table>
<thead>
<tr>
<th>REPETITIVE SURGE VOLTAGE</th>
<th>MAXIMUM DURATION PER DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 (U_{\text{NDC}})</td>
<td>30 % on load duration</td>
</tr>
<tr>
<td>1.15 (U_{\text{NDC}})</td>
<td>30 min</td>
</tr>
<tr>
<td>1.2 (U_{\text{NDC}})</td>
<td>5 min</td>
</tr>
<tr>
<td>1.3 (U_{\text{NDC}})</td>
<td>1 min</td>
</tr>
<tr>
<td>1.5 (U_{\text{NDC}})</td>
<td>110 ms</td>
</tr>
</tbody>
</table>
### INSPECTION REQUIREMENTS

#### General Notes
Sub-clause numbers of tests and performance requirements refer to the “Sectional Specification, Publication IEC 61071”.

<table>
<thead>
<tr>
<th>SUB-CLAUSE NUMBER AND TEST</th>
<th>CONDITIONS</th>
<th>PERFORMANCE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTINE TEST-FINAL INSPECTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.14.2.1 External inspection, visual examination</td>
<td></td>
<td>Legible marking as specified</td>
</tr>
<tr>
<td>5.14.2.2 Dimensions</td>
<td></td>
<td>See specification drawing</td>
</tr>
<tr>
<td>5.3.1 Capacitance</td>
<td>1 kHz at room temperature</td>
<td>See specific reference data</td>
</tr>
<tr>
<td>5.3.2 tan δ</td>
<td>1 kHz at room temperature</td>
<td>See specific reference data</td>
</tr>
<tr>
<td>10 kHz at room temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5.1.2 Voltage test between terminal</td>
<td>$1.5 \times U_{DC}$ at $T_{amb}$ Duration 10 s</td>
<td>No visible damage or puncture</td>
</tr>
<tr>
<td>5.7 Insulation resistance</td>
<td>$U_{NDC} \leq 500$ V measuring voltage 100 V at room temperature</td>
<td>No flashover</td>
</tr>
<tr>
<td></td>
<td>$U_{NDC} &gt; 500$ V measuring voltage 500 V at room temperature</td>
<td>See specific reference data</td>
</tr>
<tr>
<td><strong>TYPE TESTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.14.2 External inspection</td>
<td>Check for finish, marking and overall dimensions</td>
<td>Legible marking and finish as specified</td>
</tr>
<tr>
<td>5.14.0 Initial measurements</td>
<td>Capacitance at 1 kHz</td>
<td>Dimensions: see specific drawing</td>
</tr>
<tr>
<td>5.14.1.1.4 Robustness of terminations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEC 60068-2-21</td>
<td>Wire diameter section load</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\leq 0.8$ mm $\leq 0.5$ mm$^2$ 10 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\leq 1.25$ mm $\leq 1.2$ mm$^2$ 20 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration 10 s $\pm$ 1 s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bending Ub method 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wire diameter section load</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\leq 0.8$ mm $\leq 0.05$ mm$^3$ 10 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\leq 1.25$ mm $\leq 0.019$ mm$^3$ 20 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$4 \times 90^\circ$, Duration 2 s to 3 s/bend</td>
<td></td>
</tr>
<tr>
<td>5.14.1.6 Resistance to soldering heat</td>
<td>No predrying, method 1A</td>
<td></td>
</tr>
<tr>
<td>IEC 60068-2-20</td>
<td>Solder bath: 260 °C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration 10 s $\pm$ 1 s</td>
<td></td>
</tr>
<tr>
<td>5.14.4 Final measurements</td>
<td>Capacitance tan δ</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Compared to values measured in 5.14.0</td>
<td>Increase of tan δ $\leq 0.0050$</td>
</tr>
<tr>
<td>5.14.0 Initial measurements</td>
<td>Capacitance at 1 kHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tan δ at 10 kHz</td>
<td></td>
</tr>
</tbody>
</table>

Revision: 25-Oct-17

For technical questions, contact: dc-film@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000
<table>
<thead>
<tr>
<th>SUB-CLAUSE NUMBER AND TEST</th>
<th>CONDITIONS</th>
<th>PERFORMANCE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.14.3.1 Vibration</td>
<td>10 Hz to 55 Hz: amplitude ± 0.35 mm or acceleration 98 m/s²</td>
<td>No visible damages</td>
</tr>
<tr>
<td>IEC 60068-2-6</td>
<td>Test duration: 10 frequency cycles, 3 axes offset from each other by 90° 1 octave/min Visual examination</td>
<td></td>
</tr>
<tr>
<td>5.14.3.2 Shock or impact</td>
<td>Pulse shape: half sine Acceleration: 490 m/s² Duration t of pulse: 11 ms Visual examination</td>
<td>No visible damage</td>
</tr>
<tr>
<td>IEC 60068-2-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.14.4 Final measurements</td>
<td>Capacitance tan δ</td>
<td></td>
</tr>
<tr>
<td>5.5.3.1 Initial measurements</td>
<td>Capacitance at 1 kHz tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.5.3.2 Voltage test between terminal</td>
<td>1.5 x U_{NDC} at T_{amb} Duration 60 s</td>
<td></td>
</tr>
<tr>
<td>5.5.3.3 Final measurements</td>
<td>Capacitance tan δ</td>
<td></td>
</tr>
<tr>
<td>5.9.1 Initial measurements</td>
<td>Capacitance at 1 kHz tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.9.2 Surge discharge test</td>
<td>1.1 x U_{NDC} Number of discharges: 5 Time lapse: every 2 min (10 min total)</td>
<td></td>
</tr>
<tr>
<td>5.9.3 Voltage test between terminal</td>
<td>Within 5 min after the surge discharge test Duration 60 s 1.5 x U_{NDC} at T_{amb}</td>
<td></td>
</tr>
<tr>
<td>5.9.3 Final measurements</td>
<td>Capacitance tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.11.1 Initial measurements</td>
<td>Capacitance at 1 kHz tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.11.2 Self healing test</td>
<td>1.5 x U_{NDC} Duration 10 s Number of clearings ≤ 5 Clearing = voltage drop of 5 % increase the voltage at 100 V/s till 5 clearings occur with a max. of 2.5 x U_{NDC} for a duration of 10 s</td>
<td></td>
</tr>
<tr>
<td>5.11.3 Final measurements</td>
<td>Capacitance tan δ</td>
<td></td>
</tr>
<tr>
<td>SUB-CLAUSE NUMBER AND TEST</td>
<td>CONDITIONS</td>
<td>PERFORMANCE REQUIREMENTS</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>5.13.0 Initial measurements</td>
<td>Capacitance at 1 kHz tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.13.1 Change of temperature acc. to IEC 60068-2-14</td>
<td>Test Nb T&lt;sub&gt;max&lt;/sub&gt; = 85 °C T&lt;sub&gt;min&lt;/sub&gt; = -40 °C Transition time: 1 h, equivalent to 1 °C/min</td>
<td></td>
</tr>
<tr>
<td>5.13.2 Damp heat steady state acc. to IEC 60068-2-78</td>
<td>Test Ca T&lt;sub&gt;max&lt;/sub&gt; = 40 °C ± 2 °C RH = 93 % ± 3 % Duration 56 days</td>
<td></td>
</tr>
<tr>
<td>5.13.3 Final measurements</td>
<td>Visual examination</td>
<td>Capacitance tan δ at 1 U&lt;sub&gt;RMS&lt;/sub&gt; 10 kHz</td>
</tr>
<tr>
<td>5.10.0 Initial measurements</td>
<td>Capacitance at 1 kHz tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.10.1 Thermal stability test under overload conditions</td>
<td>Natural cooling T&lt;sub&gt;amb&lt;/sub&gt; ± 5 °C 1.21 x P&lt;sub&gt;max&lt;/sub&gt; = (U&lt;sub&gt;2&lt;/sub&gt;/2) x W&lt;sub&gt;2&lt;/sub&gt; x C x tan δ = 121 x (I&lt;sup&gt;2&lt;/sup&gt; max/W&lt;sub&gt;2&lt;/sub&gt; x c) x tan δ&lt;sub&gt;2&lt;/sub&gt; with W&lt;sub&gt;2&lt;/sub&gt; = 2 x p x f&lt;sub&gt;2&lt;/sub&gt; for I&lt;sub&gt;max&lt;/sub&gt;. (see specific reference data) f&lt;sub&gt;2&lt;/sub&gt; = 10 kHz Duration 48 h</td>
<td>Temperature rise &lt; 1 °C</td>
</tr>
<tr>
<td>5.10.2 Final measurements</td>
<td>Measure the temperature every 1.5 h during the last 6 h Capacitance tan δ at 10 kHz</td>
<td></td>
</tr>
<tr>
<td>5.12 Resonance frequency measurement</td>
<td>Impedance analyzer at T&lt;sub&gt;amb&lt;/sub&gt;</td>
<td>&gt; 0.9 times the value as specified in typical curve “Resonant frequency” of this specification</td>
</tr>
<tr>
<td>5.15.1 Endurance test between terminals</td>
<td>Sequence 1.4 x U&lt;sub&gt;ND&lt;/sub&gt; at T&lt;sub&gt;max&lt;/sub&gt; = 85 °C 1.4 x U&lt;sub&gt;OPDC&lt;/sub&gt; at 105 °C Duration 250 h 1000 x discharge at 1.4 x I (maximum repetitive peak current in continuous operation) 1.4 x U&lt;sub&gt;ND&lt;/sub&gt; at T&lt;sub&gt;max&lt;/sub&gt; = 85 °C 1.4 x U&lt;sub&gt;OPDC&lt;/sub&gt; at 105 °C Duration 250 h</td>
<td></td>
</tr>
<tr>
<td>5.15.2 Final measurements</td>
<td>Capacitance tan δ</td>
<td></td>
</tr>
<tr>
<td>SUB-CLAUSE NUMBER AND TEST</td>
<td>CONDITIONS</td>
<td>PERFORMANCE REQUIREMENTS</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>5.16.3.0 Initial measurements</td>
<td>Capacitance at 1 kHz at $T_{\text{max.}} = 85 , ^\circ\text{C}$</td>
<td></td>
</tr>
<tr>
<td>5.16.3.1 Destruction test sequence</td>
<td></td>
<td>Audible healings or check healings with oscilloscope</td>
</tr>
<tr>
<td>High DC voltage test</td>
<td>Product enveloped with cheese cloth $3 \times U_{\text{ND}}$ or DC voltage Until repetitive product healings occur Duration = 15 min</td>
<td></td>
</tr>
<tr>
<td>High AC voltage test</td>
<td>AC$<em>{\text{RMS}}$ voltage = $U</em>{\text{ND}}/\sqrt{2}$ with minimum of 250 V$_{\text{AC}}$ Duration = 5 min Repeat destruction sequence 3 x</td>
<td></td>
</tr>
<tr>
<td>5.16.3.2 Final measurements</td>
<td>Visual examination</td>
<td>No puncturing or flashover Self healing punctures are permitted</td>
</tr>
</tbody>
</table>
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.