



## Metalized Polypropylene Film Capacitor DC-Link Capacitor



### FEATURES

- High density DC-link capacitor (more C per volume)
- Very long useful life time: up to 100 000 h at  $U_{NDC}$  and 70 °C
- High ripple current capability, low ESR, low ESL
- Temperature range: 105 °C
- Mounting: radial
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### APPLICATIONS

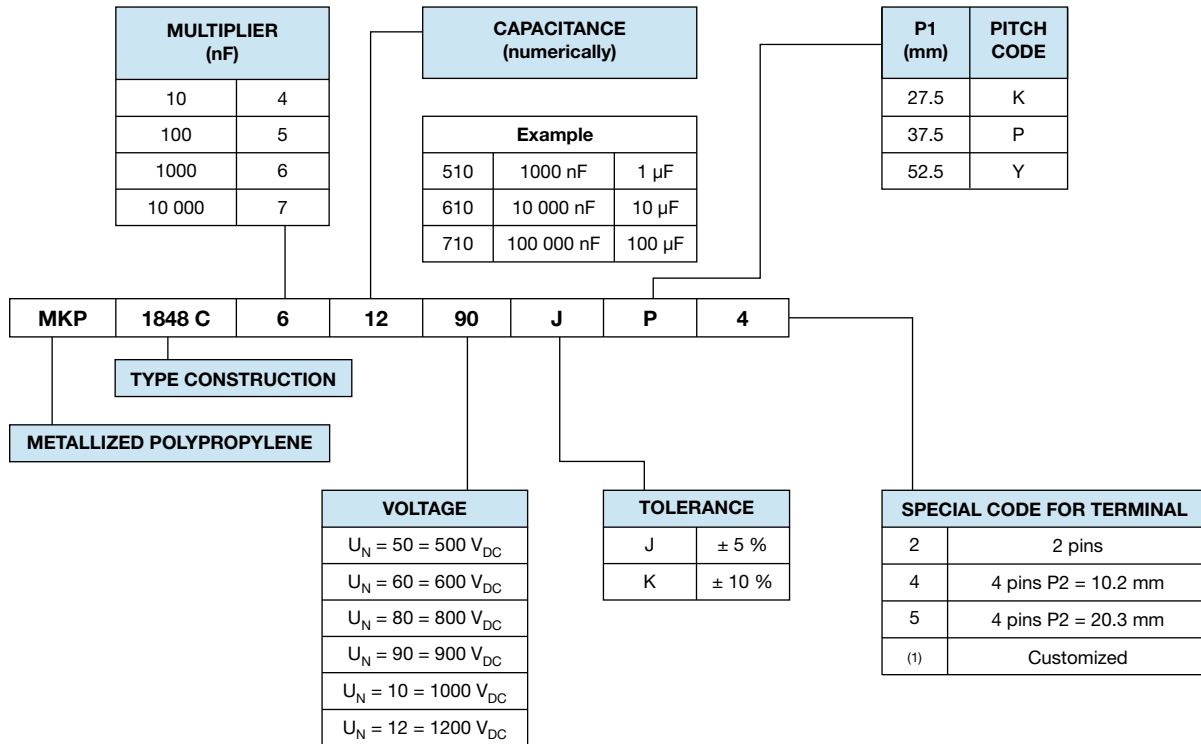
- Renewable energies inverters
- UPS
- Battery chargers
- Motor drives

| QUICK REFERENCE DATA                                     |  |
|--|--|
| Rated capacitance range                                  | 1 $\mu$ F to 500 $\mu$ F   |
| Capacitance tolerance                                    | $\pm$ 5 %  |
| Climatic testing class                                   | 55/105/56  |
| Rated temperature  | 85 °C  |
| Maximum permissible case temperature                     | 105 °C, observing voltage derating   |
| Maximum applicable peak to peak ripple voltage           | 0.2 x $U_{NDC}$  |
| Reference standards                                      | IEC 61071, IEC 60068   |
| Dielectric   | Polypropylene film   |
| Electrodes   | Metallized dielectric capacitor  |
| Construction   | Mono construction  |
| Encapsulation  | Plastic case sealed with resin; flame retardant  |
| Terminals  | Tinned wire  |
| Self inductance ( $L_S$ )                                | < 1 nH per mm of lead spacing  |
| Withstanding DC voltage between terminals <sup>(1)</sup> | 1.5 $U_{NDC}$ for 10 s, cut off current 10 mA, rise time $\leq$ 1000 V/s   |
| Insulation resistance                                    | RC between leads, after 1 min > 10 000 s<br>For $U_{NDC} \leq$ 500 V measuring voltage 100 V<br>For $U_{NDC} >$ 500 V measuring voltage 500 V  |
| Life time expectancy                                     | Useful life time: > 100 000 h at $U_{NDC}$ and 70 °C<br>FIT: < 10 x 10 <sup>-9</sup> /h (10 per 10 <sup>9</sup> component h) at 0.5 x $U_{NDC}$ , 40 °C                                  |
| Marking  | C-value; tolerance; rated voltage; code for dielectric material;<br>code for manufacturing origin; manufacturer's type designation;<br>manufacturer's logo; year and week of manufacture |

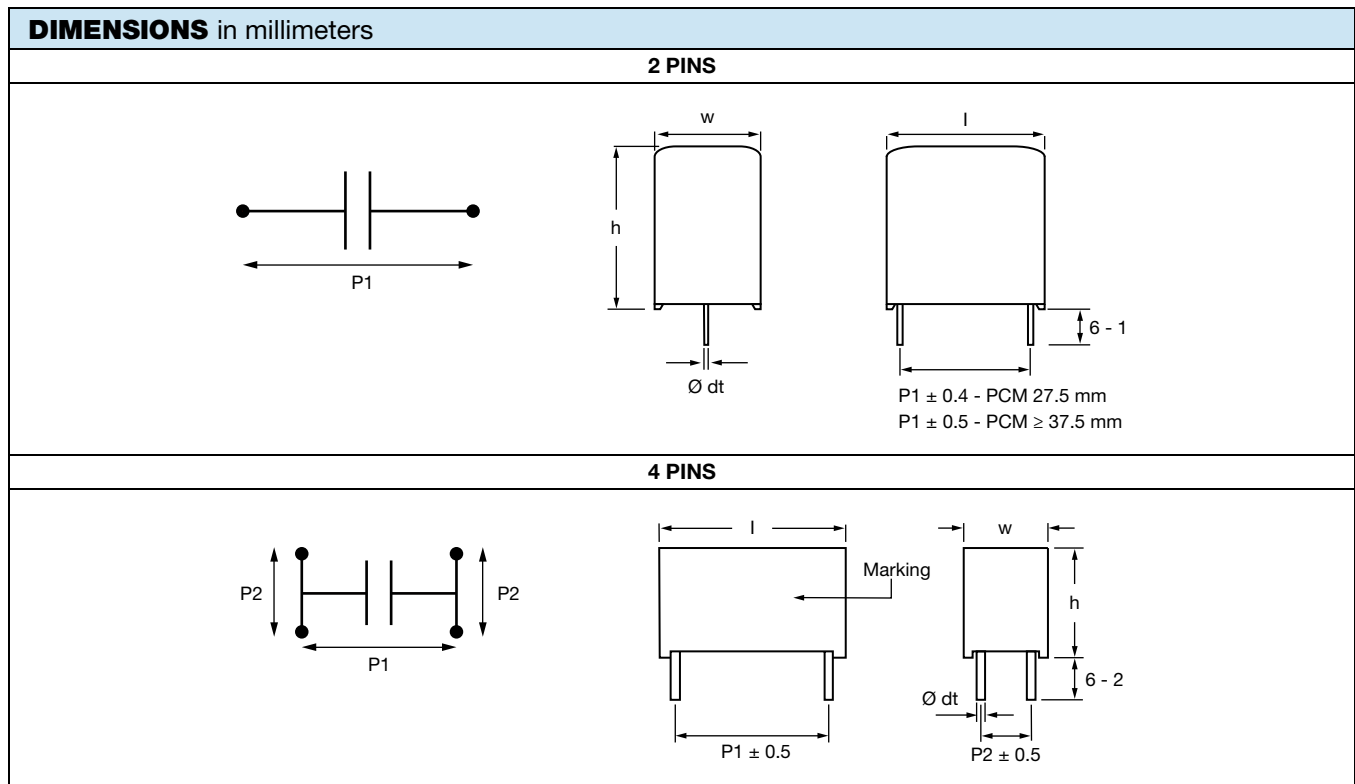
### Notes

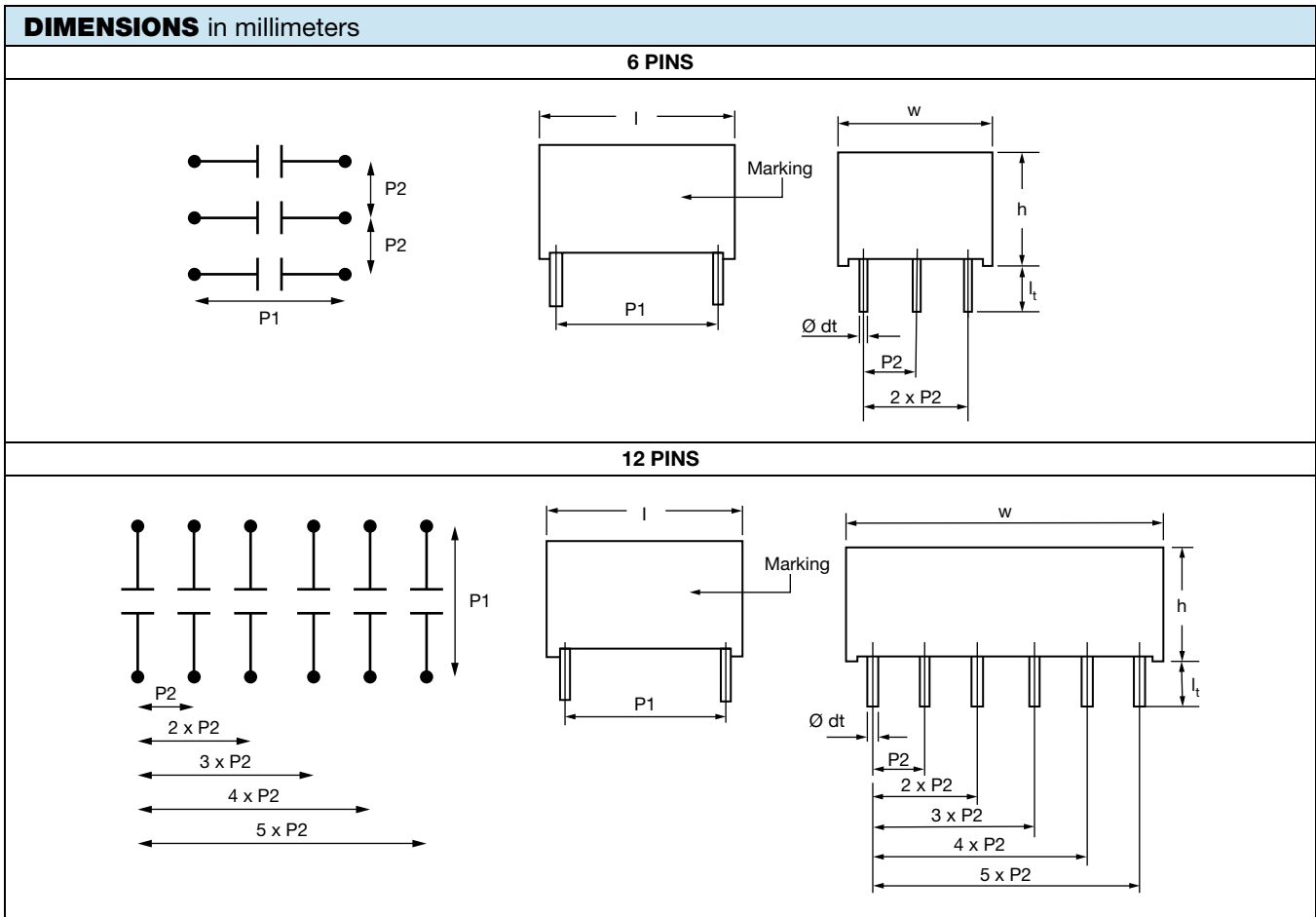
- For more detailed data and test requirements, contact [dc-film@vishay.com](mailto:dc-film@vishay.com)
- For general information like characteristics and definitions used for film capacitors follow the link: [www.vishay.com/doc?28147](http://www.vishay.com/doc?28147)
- (1) See document "Voltage Proof Test for Metalized Capacitors" ([www.vishay.com/doc?28169](http://www.vishay.com/doc?28169))

| DC VOLTAGE RATINGS   |       |       |       |        |        |        |
|----------------------|-------|-------|-------|--------|--------|--------|
| $U_{NDC}$ at 85 °C   | 500 V | 600 V | 800 V | 900 V  | 1000 V | 1200 V |
| $U_{OPDC}$ at 70 °C  | 600 V | 720 V | 960 V | 1100 V | 1200 V | 1440 V |
| $U_{OPDC}$ at 105 °C | 350 V | 420 V | 560 V | 650 V  | 700 V  | 850 V  |

**COMPOSITION OF CATALOG NUMBER**

**Note**

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




**Note**

- $\varnothing dt \pm 10\%$  of standard diameter specified

| <b>ELECTRICAL DATA AND ORDERING CODE</b> |   |                                  |    |      |            |            |                       |                   |                                 |           |                                     |           |   |                  |                              |
|--|---|----------------------------------|----|------|------------|------------|-----------------------|-------------------|---------------------------------|-----------|-------------------------------------|-----------|---|------------------|------------------------------|
| $U_{NDC}$<br>AT<br>85 °C<br>(V)          | CAP. <sup>(6)</sup><br>( $\mu$ F)                         | DIMENSION <sup>(5)</sup><br>(mm) |    |      | P1<br>(mm) | P2<br>(mm) | dV/dt<br>(V/ $\mu$ s) | $I_{PEAK}$<br>(A) | $I_{RMS}$ <sup>(2)</sup><br>(A) |           | ESR <sup>(3)</sup><br>(m $\Omega$ ) |           | $\tan \delta$<br>10 kHz<br>( $< 10^{-4}$ ) <sup>(4)</sup> |                  | ORDERING CODE <sup>(1)</sup> |
|  |   | w                                | h  | l    |            |            |                       |                   | 2<br>PINS                       | 4<br>PINS | 2<br>PINS                           | 4<br>PINS | 2<br>PINS   | 4<br>PINS        |                              |
| 500                                      | $U_{OPDC}$ AT 70 °C = 600 V, $U_{OPDC}$ AT 105 °C = 350 V |                                  |    |      |            |            |                       |                   |                                 |           |                                     |           |   |                  |                              |
|  | 1   | 9                                | 19 | 32   | 27.5       | -          | 40                    | 40                | 1.5                             | -         | 90                                  | -         | 110   | -                | MKP1848C51050JK2             |
|  | 2   | 9                                | 19 | 32   | 27.5       | -          | 40                    | 80                | 2                               | -         | 45                                  | -         | 110   | -                | MKP1848C52050JK2             |
|  | 3   | 9                                | 19 | 32   | 27.5       | -          | 40                    | 120               | 2.5                             | -         | 30                                  | -         | 110   | -                | MKP1848C53050JK2             |
|  | 4   | 11                               | 21 | 32   | 27.5       | -          | 40                    | 160               | 3.5                             | -         | 23                                  | -         | 110   | -                | MKP1848C54050JK2             |
|  | 5   | 11                               | 21 | 32   | 27.5       | -          | 40                    | 200               | 3.5                             | -         | 18                                  | -         | 110   | -                | MKP1848C55050JK2             |
|  | 6   | 13                               | 23 | 32   | 27.5       | -          | 40                    | 240               | 4.5                             | -         | 15                                  | -         | 110   | -                | MKP1848C56050JK2             |
|  | 7   | 15                               | 25 | 32   | 27.5       | -          | 40                    | 280               | 5                               | -         | 13                                  | -         | 110   | -                | MKP1848C57050JK2             |
|  | 8   | 15                               | 25 | 32   | 27.5       | -          | 40                    | 320               | 6                               | -         | 12                                  | -         | 110   | -                | MKP1848C58050JK2             |
|  | 9   | 18                               | 28 | 32   | 27.5       | -          | 40                    | 360               | 7                               | -         | 11                                  | -         | 110   | -                | MKP1848C59050JK2             |
|  | 10  | 18                               | 28 | 32   | 27.5       | -          | 40                    | 400               | 7                               | -         | 10                                  | -         | 110   | -                | MKP1848C61050JK2             |
|  | 12  | 18                               | 28 | 32   | 27.5       | -          | 40                    | 480               | 8                               | -         | 8                                   | -         | 110   | -                | MKP1848C61250JK2             |
|  | 15  | 21                               | 31 | 32   | 27.5       | -          | 40                    | 600               | 9                               | -         | 7                                   | -         | 110   | -                | MKP1848C61550JK2             |
| 18                                       | 20  | 35                               | 32 | 27.5 | -          | 40         | 720                   | 9                 | -                               | 6         | -                                   | 110       | -   | MKP1848C61850JK2 |                              |
| 20                                       | 18.5  | 35.5                             | 43 | 37.5 | 10.2       | 20         | 400                   | 8                 | 9                               | 9         | 8                                   | 210       | 200   | MKP1848C62050JP* |                              |



| ELECTRICAL DATA AND ORDERING CODE |   |   |      |      |           |           |              |                       |                          |        |              |        |  |                  |                   |
|-----------------------------------|---|---|------|------|-----------|-----------|--------------|-----------------------|--------------------------|--------|--------------|--------|--|------------------|-------------------|
| U <sub>NDc</sub> AT 85 °C (V)     | CAP. (6) (μF)   | DIMENSION (5) (mm)  |      |      | P1 (mm)   | P2 (mm)   | dV/dt (V/μs) | I <sub>PEAK</sub> (A) | I <sub>RMS</sub> (2) (A) |        | ESR (3) (mΩ) |        | tan δ 10 kHz (< 10 <sup>-4</sup> ) (4) |                  | ORDERING CODE (1) |
|                                   |   | w   | h    | l    |           |           |              |                       | 2 PINS                   | 4 PINS | 2 PINS       | 4 PINS | 2 PINS                                 | 4 PINS           |                   |
|                                   |   | U <sub>OPDC</sub> AT 70 °C = 600 V, U <sub>OPDC</sub> AT 105 °C = 350 V |      |      |           |           |              |                       |                          |        |              |        |  |                  |                   |
| 500                               | 22  | 21.5  | 38.5 | 43   | 37.5      | 10.2      | 20           | 440                   | 9                        | 10     | 9            | 7      | 210                                    | 200              | MKP1848C62250JP*  |
|                                   | 25  | 21.5  | 38.5 | 43   | 37.5      | 10.2      | 20           | 500                   | 9                        | 10     | 8            | 6      | 210                                    | 200              | MKP1848C62550JP*  |
|                                   | 30  | 24  | 44   | 42   | 37.5      | 10.2      | 20           | 600                   | 11                       | 13     | 7            | 5      | 210                                    | 200              | MKP1848C63050JP*  |
|                                   | 35  | 24  | 44   | 42   | 37.5      | 10.2      | 20           | 700                   | 12                       | 14     | 6            | 4.5    | 210                                    | 200              | MKP1848C63550JP*  |
|                                   | 40  | 30  | 45   | 42   | 37.5      | 10.2/20.3 | 20           | 800                   | 13                       | 15     | 5            | 4      | 210                                    | 200              | MKP1848C64050JP*  |
|                                   | 45  | 30  | 45   | 42   | 37.5      | 10.2/20.3 | 20           | 900                   | 14                       | 16     | 4.5          | 3.5    | 210                                    | 200              | MKP1848C64550JP*  |
|                                   | 50  | 30  | 45   | 42   | 37.5      | 10.2/20.3 | 20           | 1000                  | 15                       | 17     | 4            | 3      | 210                                    | 200              | MKP1848C65050JP*  |
|                                   | 55  | 30  | 57   | 42   | 37.5      | 20.3      | 20           | 1100                  | 16                       | 18     | 3.5          | 3      | 210                                    | 200              | MKP1848C65550JP*  |
|                                   | 60  | 30  | 57   | 42   | 37.5      | 20.3      | 20           | 1200                  | 16                       | 18     | 3.5          | 3      | 210                                    | 200              | MKP1848C66050JP*  |
|                                   | 65  | 30  | 57   | 42   | 37.5      | 20.3      | 20           | 1300                  | 18                       | 19     | 2.5          | 2      | 210                                    | 200              | MKP1848C66550JP*  |
|                                   | 50  | 25  | 45   | 57.5 | 52.5      | 10.2      | 10           | 500                   | 10                       | 11     | 7            | 6      | 450                                    | 400              | MKP1848C65050JY*  |
|                                   | 55  | 25  | 45   | 57.5 | 52.5      | 10.2      | 10           | 550                   | 11                       | 13     | 7            | 6      | 450                                    | 400              | MKP1848C65550JY*  |
|                                   | 60  | 30  | 45   | 57.5 | 52.5      | 20.3      | 10           | 600                   | 12                       | 14     | 6            | 5      | 450                                    | 400              | MKP1848C66050JY*  |
|                                   | 65  | 30  | 45   | 57.5 | 52.5      | 20.3      | 10           | 650                   | 12                       | 14     | 6            | 5      | 450                                    | 400              | MKP1848C66550JY*  |
|                                   | 70  | 30  | 45   | 57.5 | 52.5      | 20.3      | 10           | 700                   | 13                       | 15     | 6            | 5      | 450                                    | 400              | MKP1848C67050JY*  |
|                                   | 75  | 35  | 50   | 57.5 | 52.5      | 20.3      | 10           | 750                   | 14                       | 16     | 5            | 4      | 450                                    | 400              | MKP1848C67550JY*  |
|                                   | 80  | 35  | 50   | 57.5 | 52.5      | 20.3      | 10           | 800                   | 15                       | 17     | 4.5          | 3      | 450                                    | 400              | MKP1848C68050JY*  |
|                                   | 90  | 35  | 50   | 57.5 | 52.5      | 20.3      | 10           | 900                   | 16                       | 18     | 4            | 3      | 450                                    | 400              | MKP1848C69050JY*  |
|                                   | 100   | 35  | 50   | 57.5 | 52.5      | 20.3      | 10           | 1000                  | 17                       | 19     | 4            | 3      | 450                                    | 400              | MKP1848C71050JY*  |
|                                   | 110   | 45  | 45   | 57.5 | 52.5      | 20.3      | 10           | 1100                  | -                        | 19     | -            | 2.5    | -                                      | 450              | MKP1848C71150JY5  |
| 120                               | 45  | 45  | 57.5 | 52.5 | 20.3      | 10        | 1200         | -                     | 19                       | -      | 2.5          | -      | 450                                    | MKP1848C71250JY5 |                   |
| 250 (6)                           | 70  | 65  | 57.5 | 52.5 | 20.3      | 4         | 1000         | -                     | 25                       | -      | 2            | -      | 450                                    | MKP1848C72550JY5 |                   |
| 500 (7)                           | 130   | 65  | 57.5 | 52.5 | 20.3      | 2         | 1000         | -                     | 45                       | -      | 1.5          | -      | 500                                    | MKP1848C75050JY5 |                   |
| 600                               | U <sub>OPDC</sub> AT 70 °C = 720 V, U <sub>OPDC</sub> AT 105 °C = 420 V |   |      |      |           |           |              |                       |                          |        |              |        |  |                  |                   |
|                                   | 1   | 9.0   | 19.0 | 32.0 | 27.5      | -         | 50           | 50                    | 2.5                      | -      | 55           | -      | 85                                     | -                | MKP1848C51060JK2  |
|                                   | 2   | 9.0   | 19.0 | 32.0 | 27.5      | -         | 50           | 100                   | 3                        | -      | 35           | -      | 85                                     | -                | MKP1848C52060JK2  |
|                                   | 3   | 11.0  | 21.0 | 32.0 | 27.5      | -         | 50           | 150                   | 4                        | -      | 23           | -      | 85                                     | -                | MKP1848C53060JK2  |
|                                   | 4   | 11.0  | 21.0 | 32.0 | 27.5      | -         | 50           | 200                   | 4                        | -      | 21           | -      | 85                                     | -                | MKP1848C54060JK2  |
|                                   | 5   | 13.0  | 23.0 | 32.0 | 27.5      | -         | 50           | 250                   | 5                        | -      | 17           | -      | 85                                     | -                | MKP1848C55060JK2  |
|                                   | 6   | 15.0  | 25.0 | 32.0 | 27.5      | -         | 50           | 300                   | 6                        | -      | 14           | -      | 85                                     | -                | MKP1848C56060JK2  |
|                                   | 7   | 15.0  | 25.0 | 32.0 | 27.5      | -         | 50           | 350                   | 6                        | -      | 12           | -      | 85                                     | -                | MKP1848C57060JK2  |
|                                   | 8   | 18.0  | 28.0 | 32.0 | 27.5      | -         | 50           | 400                   | 8                        | -      | 9            | -      | 85                                     | -                | MKP1848C58060JK2  |
|                                   | 9   | 18.0  | 28.0 | 32.0 | 27.5      | -         | 50           | 450                   | 8                        | -      | 9            | -      | 85                                     | -                | MKP1848C59060JK2  |
|                                   | 10  | 18.0  | 28.0 | 32.0 | 27.5      | -         | 50           | 500                   | 9                        | -      | 8            | -      | 85                                     | -                | MKP1848C61060JK2  |
|                                   | 12  | 21.0  | 31.0 | 32.0 | 27.5      | -         | 50           | 600                   | 10                       | -      | 7            | -      | 85                                     | -                | MKP1848C61260JK2  |
|                                   | 15  | 20.0  | 35.0 | 32.0 | 27.5      | -         | 50           | 750                   | 10                       | -      | 6            | -      | 85                                     | -                | MKP1848C61560JK2  |
|                                   | 10  | 18.5  | 35.5 | 43.0 | 37.5      | 10.2      | 25           | 250                   | 7                        | 8      | 14           | 12     | 160                                    | 140              | MKP1848C61060JP*  |
|                                   | 12  | 18.5  | 35.5 | 43.0 | 37.5      | 10.2      | 25           | 300                   | 8                        | 9      | 12           | 10     | 160                                    | 140              | MKP1848C61260JP*  |
|                                   | 15  | 18.5  | 35.5 | 43.0 | 37.5      | 10.2      | 25           | 375                   | 9                        | 10     | 9            | 8      | 160                                    | 140              | MKP1848C61560JP*  |
|                                   | 20  | 21.5  | 38.5 | 43.0 | 37.5      | 10.2      | 25           | 500                   | 11                       | 12     | 7            | 6      | 160                                    | 140              | MKP1848C62060JP*  |
|                                   | 22  | 21.5  | 38.5 | 43.0 | 37.5      | 10.2      | 25           | 550                   | 11                       | 12     | 8            | 7      | 160                                    | 140              | MKP1848C62260JP*  |
|                                   | 25  | 21.5  | 38.5 | 43.0 | 37.5      | 10.2      | 25           | 625                   | 11                       | 13     | 7            | 6      | 160                                    | 140              | MKP1848C62560JP*  |
|                                   | 30  | 24.0  | 44.0 | 42.0 | 37.5      | 10.2      | 25           | 750                   | 13                       | 15     | 6            | 5      | 160                                    | 140              | MKP1848C63060JP*  |
| 35                                | 30.0  | 45.0  | 42.0 | 37.5 | 10.2/20.3 | 25        | 875          | 17                    | 18                       | 4      | 3.5          | 160    | 140                                    | MKP1848C63560JP* |                   |
| 40                                | 30.0  | 45.0  | 42.0 | 37.5 | 10.2/20.3 | 25        | 1000         | 17                    | 18                       | 4      | 3.5          | 160    | 140                                    | MKP1848C64060JP* |                   |
| 45                                | 30.0  | 45.0  | 42.0 | 37.5 | 10.2/20.3 | 25        | 1125         | 17                    | 18                       | 4      | 3.5          | 160    | 140                                    | MKP1848C64560JP* |                   |
| 50                                | 30.0  | 57.0  | 42.0 | 37.5 | 20.3      | 25        | 1250         | 18                    | 19                       | 3.0    | 2.5          | 160    | 140                                    | MKP1848C65060JP* |                   |



| ELECTRICAL DATA AND ORDERING CODE |   |   |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
|-----------------------------------|---|---|------|------|---------|-----------|--------------|-----------------------|--------------------------|--------|--------------|--------|--|------------------|-------------------|
| U <sub>NDc</sub> AT 85 °C (V)     | CAP. (6) (μF)   | DIMENSION (5) (mm)  |      |      | P1 (mm) | P2 (mm)   | dV/dt (V/μs) | I <sub>PEAK</sub> (A) | I <sub>RMS</sub> (2) (A) |        | ESR (3) (mΩ) |        | tan δ 10 kHz (< 10 <sup>-4</sup> ) (4) |                  | ORDERING CODE (1) |
|                                   |   | w   | h    | l    |         |           |              |                       | 2 PINS                   | 4 PINS | 2 PINS       | 4 PINS | 2 PINS                                 | 4 PINS           |                   |
|                                   |   | U <sub>OPDC</sub> AT 70 °C = 720 V, U <sub>OPDC</sub> AT 105 °C = 420 V |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
| 600                               | 40  | 25.0  | 45.0 | 57.5 | 52.5    | 10.2      | 14           | 560                   | 13                       | 14     | 7            | 6      | 350                                    | 300              | MKP1848C64060JY*  |
|                                   | 45  | 25.0  | 45.0 | 57.5 | 52.5    | 10.2      | 14           | 630                   | 13                       | 14     | 7            | 6      | 350                                    | 300              | MKP1848C64560JY*  |
|                                   | 50  | 30.0  | 45.0 | 57.5 | 52.5    | 20.3      | 14           | 700                   | 15                       | 16     | 6            | 5      | 350                                    | 300              | MKP1848C65060JY*  |
|                                   | 55  | 30.0  | 45.0 | 57.5 | 52.5    | 20.3      | 14           | 770                   | 15                       | 16     | 6            | 5      | 350                                    | 300              | MKP1848C65560JY*  |
|                                   | 60  | 30.0  | 45.0 | 57.5 | 52.5    | 20.3      | 14           | 840                   | 15                       | 17     | 5            | 4      | 350                                    | 300              | MKP1848C66060JY*  |
|                                   | 65  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 14           | 910                   | 18                       | 20     | 4            | 3.5    | 350                                    | 300              | MKP1848C66560JY*  |
|                                   | 70  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 14           | 980                   | 18                       | 20     | 4.5          | 4      | 350                                    | 300              | MKP1848C67060JY*  |
|                                   | 75  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 14           | 1050                  | 18                       | 21     | 4            | 3.5    | 350                                    | 300              | MKP1848C67560JY*  |
|                                   | 80  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 14           | 1120                  | 18                       | 21     | 4            | 3.5    | 350                                    | 300              | MKP1848C68060JY*  |
|                                   | 90  | 45.0  | 45.0 | 57.5 | 52.5    | 20.3      | 14           | 1260                  | -                        | 22     | -            | 3      | -                                      | 300              | MKP1848C69060JY5  |
|                                   | 100   | 45.0  | 45.0 | 57.5 | 52.5    | 20.3      | 14           | 1400                  | -                        | 23     | -            | 2.5    | -                                      | 300              | MKP1848C71060JY5  |
| 200 (6)                           | 70.0  | 65.0  | 57.5 | 52.5 | 20.3    | 5         | 1000         | -                     | 30                       | -      | 2            | -      | 350                                    | MKP1848C72060JY5 |                   |
| 400 (7)                           | 130.0   | 65.0  | 57.5 | 52.5 | 20.3    | 2.5       | 1000         | -                     | 50                       | -      | 1.5          | -      | 400                                    | MKP1848C74060JY5 |                   |
| 800                               | U <sub>OPDC</sub> AT 70 °C = 960 V, U <sub>OPDC</sub> AT 105 °C = 560 V |   |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
|                                   | 1   | 9.0   | 19.0 | 32.0 | 27.5    | -         | 60           | 60                    | 2.5                      | -      | 55           | -      | 70                                     | -                | MKP1848C51080JK2  |
|                                   | 2   | 9.0   | 19.0 | 32.0 | 27.5    | -         | 60           | 120                   | 3                        | -      | 35           | -      | 70                                     | -                | MKP1848C52080JK2  |
|                                   | 3   | 11.0  | 21.0 | 32.0 | 27.5    | -         | 60           | 180                   | 4                        | -      | 23           | -      | 70                                     | -                | MKP1848C53080JK2  |
|                                   | 4   | 13.0  | 23.0 | 32.0 | 27.5    | -         | 60           | 240                   | 5                        | -      | 17           | -      | 70                                     | -                | MKP1848C54080JK2  |
|                                   | 5   | 15.0  | 25.0 | 32.0 | 27.5    | -         | 60           | 300                   | 6                        | -      | 14           | -      | 70                                     | -                | MKP1848C55080JK2  |
|                                   | 6   | 18.0  | 28.0 | 32.0 | 27.5    | -         | 60           | 360                   | 7                        | -      | 12           | -      | 70                                     | -                | MKP1848C56080JK2  |
|                                   | 7   | 18.0  | 28.0 | 32.0 | 27.5    | -         | 60           | 420                   | 8                        | -      | 10           | -      | 70                                     | -                | MKP1848C57080JK2  |
|                                   | 8   | 18.0  | 28.0 | 32.0 | 27.5    | -         | 60           | 480                   | 8                        | -      | 9            | -      | 70                                     | -                | MKP1848C58080JK2  |
|                                   | 9   | 21.0  | 31.0 | 32.0 | 27.5    | -         | 60           | 540                   | 10                       | -      | 7.5          | -      | 70                                     | -                | MKP1848C59080JK2  |
|                                   | 10  | 21.0  | 31.0 | 32.0 | 27.5    | -         | 60           | 600                   | 10                       | -      | 7            | -      | 70                                     | -                | MKP1848C61080JK2  |
|                                   | 12  | 20.0  | 35.0 | 32.0 | 27.5    | -         | 60           | 720                   | 11                       | -      | 6            | -      | 70                                     | -                | MKP1848C61280JK2  |
|                                   | 10  | 18.5  | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 350                   | 7                        | 8      | 14           | 12     | 140                                    | 120              | MKP1848C61080JP*  |
|                                   | 12  | 18.5  | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 420                   | 8                        | 9      | 12           | 10     | 140                                    | 120              | MKP1848C61280JP*  |
|                                   | 15  | 18.5  | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 525                   | 9                        | 10     | 9            | 8      | 140                                    | 120              | MKP1848C61580JP*  |
|                                   | 20  | 21.5  | 38.5 | 43.0 | 37.5    | 10.2      | 35           | 700                   | 11                       | 12     | 7            | 6      | 140                                    | 120              | MKP1848C62080JP*  |
|                                   | 22  | 24.0  | 44.0 | 42.0 | 37.5    | 10.2      | 35           | 770                   | 13                       | 14     | 6            | 5      | 140                                    | 120              | MKP1848C62280JP*  |
|                                   | 25  | 24.0  | 44.0 | 42.0 | 37.5    | 10.2      | 35           | 875                   | 13                       | 14     | 6            | 5      | 140                                    | 120              | MKP1848C62580JP*  |
|                                   | 30  | 30.0  | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 35           | 1050                  | 16                       | 17     | 5            | 4      | 140                                    | 120              | MKP1848C63080JP*  |
|                                   | 35  | 30.0  | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 35           | 1225                  | 17                       | 18     | 4            | 3.5    | 140                                    | 120              | MKP1848C63580JP*  |
|                                   | 40  | 30.0  | 57.0 | 42.0 | 37.5    | 20.3      | 35           | 1400                  | 18                       | 19     | 3            | 2.5    | 140                                    | 120              | MKP1848C64080JP*  |
|                                   | 30  | 25.0  | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 540                   | 11                       | 12     | 9            | 8      | 280                                    | 240              | MKP1848C63080JY*  |
|                                   | 35  | 25.0  | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 630                   | 12                       | 13     | 8            | 7      | 280                                    | 240              | MKP1848C63580JY*  |
|                                   | 40  | 25.0  | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 720                   | 13                       | 14     | 7            | 6      | 280                                    | 240              | MKP1848C64080JY*  |
|                                   | 45  | 30.0  | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 810                   | 14                       | 15     | 6            | 5      | 280                                    | 240              | MKP1848C64580JY*  |
|                                   | 50  | 30.0  | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 900                   | 15                       | 16     | 6            | 5      | 280                                    | 240              | MKP1848C65080JY*  |
|                                   | 55  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 990                   | 17                       | 18     | 5            | 4      | 280                                    | 240              | MKP1848C65580JY*  |
|                                   | 60  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 1080                  | 18                       | 19     | 5            | 4      | 280                                    | 240              | MKP1848C66080JY*  |
|                                   | 65  | 35.0  | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 1170                  | 19                       | 20     | 4            | 3.5    | 280                                    | 240              | MKP1848C66580JY*  |
|                                   | 70  | 45.0  | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 1260                  | -                        | 20     | -            | 3.5    | -                                      | 240              | MKP1848C67080JY5  |
|                                   | 75  | 45.0  | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 1350                  | -                        | 22     | -            | 3      | -                                      | 240              | MKP1848C67580JY5  |
|                                   | 80  | 45.0  | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 1440                  | -                        | 22     | -            | 3      | -                                      | 240              | MKP1848C68080JY5  |
| 160 (6)                           | 70.0  | 65.0  | 57.5 | 52.5 | 20.3    | 8         | 1280         | -                     | 30                       | -      | 2.5          | -      | 280                                    | MKP1848C71680JY5 |                   |
| 320 (7)                           | 130.0   | 65.0  | 57.5 | 52.5 | 20.3    | 4.0       | 1280         | -                     | 55                       | -      | 1.5          | -      | 280                                    | MKP1848C73280JY5 |                   |



**ELECTRICAL DATA AND ORDERING CODE**

| U <sub>NDc</sub> AT 85 °C (V) | CAP. (6) (μF)  | DIMENSION (5) (mm) |      |      | P1 (mm) | P2 (mm)   | dV/dt (V/μs) | I <sub>PEAK</sub> (A) | I <sub>RMS</sub> (2) (A) |        | ESR (3) (mΩ) |        | tan δ 10 kHz (< 10 <sup>-4</sup> ) (4) |                  | ORDERING CODE (1) |
|-------------------------------|--|--------------------|------|------|---------|-----------|--------------|-----------------------|--------------------------|--------|--------------|--------|--|------------------|-------------------|
|                               |  | w                  | h    | l    |         |           |              |                       | 2 PINS                   | 4 PINS | 2 PINS       | 4 PINS | 2 PINS                                 | 4 PINS           |                   |
|                               |  |                    |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
| 900                           | 1  | 9.0                | 19.0 | 32.0 | 27.5    | -         | 65           | 65                    | 2                        | -      | 65           | -      | 60                                     | -                | MKP1848C51090JK2  |
|                               | 2  | 11.0               | 21.0 | 32.0 | 27.5    | -         | 65           | 130                   | 3                        | -      | 30           | -      | 60                                     | -                | MKP1848C52090JK2  |
|                               | 3  | 13.0               | 23.0 | 32.0 | 27.5    | -         | 65           | 195                   | 4                        | -      | 20           | -      | 60                                     | -                | MKP1848C53090JK2  |
|                               | 4  | 15.0               | 25.0 | 32.0 | 27.5    | -         | 65           | 260                   | 5                        | -      | 16           | -      | 60                                     | -                | MKP1848C54090JK2  |
|                               | 5  | 18.0               | 28.0 | 32.0 | 27.5    | -         | 65           | 325                   | 7                        | -      | 13           | -      | 60                                     | -                | MKP1848C55090JK2  |
|                               | 6  | 18.0               | 28.0 | 32.0 | 27.5    | -         | 65           | 390                   | 7                        | -      | 11           | -      | 60                                     | -                | MKP1848C56090JK2  |
|                               | 7  | 21.0               | 31.0 | 32.0 | 27.5    | -         | 65           | 455                   | 9                        | -      | 9            | -      | 60                                     | -                | MKP1848C57090JK2  |
|                               | 8  | 21.0               | 31.0 | 32.0 | 27.5    | -         | 65           | 520                   | 9                        | -      | 8            | -      | 60                                     | -                | MKP1848C58090JK2  |
|                               | 9  | 20.0               | 35.0 | 32.0 | 27.5    | -         | 65           | 585                   | 9                        | -      | 7            | -      | 60                                     | -                | MKP1848C59090JK2  |
|                               | 10   | 20.0               | 35.0 | 32.0 | 27.5    | -         | 65           | 650                   | 9                        | -      | 7            | -      | 60                                     | -                | MKP1848C61090KK2  |
|                               | 9  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 315                   | 8                        | 9      | 14           | 12     | 120                                    | 110              | MKP1848C59090JP*  |
|                               | 10   | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 350                   | 8                        | 9      | 13           | 11     | 120                                    | 110              | MKP1848C61090JP*  |
|                               | 12   | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 420                   | 8                        | 9      | 11           | 9      | 120                                    | 110              | MKP1848C61290JP*  |
|                               | 15   | 21.5               | 38.5 | 43.0 | 37.5    | 10.2      | 35           | 525                   | 10                       | 11     | 9            | 8      | 120                                    | 110              | MKP1848C61590JP*  |
|                               | 20   | 24.0               | 44.0 | 42.0 | 37.5    | 10.2      | 35           | 700                   | 13                       | 14     | 6            | 5      | 120                                    | 110              | MKP1848C62090JP*  |
|                               | 22   | 30.0               | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 35           | 770                   | 14                       | 15     | 6            | 5      | 120                                    | 110              | MKP1848C62290JP*  |
|                               | 25   | 30.0               | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 35           | 875                   | 15                       | 16     | 5            | 4.5    | 120                                    | 110              | MKP1848C62590JP*  |
|                               | 30   | 30.0               | 57.0 | 42.0 | 37.5    | 20.3      | 35           | 1050                  | 17                       | 18     | 4.5          | 4      | 120                                    | 110              | MKP1848C63090JP*  |
|                               | 35   | 30.0               | 57.0 | 42.0 | 37.5    | 20.3      | 35           | 1225                  | 18                       | 19     | 3.5          | 3      | 120                                    | 110              | MKP1848C63590JP*  |
|                               | 30   | 25.0               | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 540                   | 12                       | 13     | 8            | 7      | 240                                    | 220              | MKP1848C63090JY*  |
|                               | 35   | 30.0               | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 630                   | 13                       | 14     | 7            | 6      | 240                                    | 220              | MKP1848C63590JY*  |
|                               | 40   | 30.0               | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 720                   | 14                       | 15     | 6            | 5      | 240                                    | 220              | MKP1848C64090JY*  |
|                               | 45   | 35.0               | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 810                   | 16                       | 17     | 6            | 5      | 240                                    | 220              | MKP1848C64590JY*  |
|                               | 50   | 35.0               | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 900                   | 17                       | 18     | 5            | 4.5    | 240                                    | 220              | MKP1848C65090JY*  |
| 55                            | 45.0   | 45.0               | 57.5 | 52.5 | 20.3    | 18        | 990          | -                     | 19                       | -      | 4            | -      | 220                                    | MKP1848C65590JY5 |                   |
| 60                            | 45.0   | 45.0               | 57.5 | 52.5 | 20.3    | 18        | 1080         | -                     | 20                       | -      | 3.5          | -      | 220                                    | MKP1848C66090JY5 |                   |
| 120 (6)                       | 70.0   | 65.0               | 57.5 | 52.5 | 20.3    | 13        | 1560         | -                     | 25                       | -      | 3            | -      | 240                                    | MKP1848C71290JY5 |                   |
| 240 (7)                       | 130.0  | 65.0               | 57.5 | 52.5 | 20.3    | 6         | 1440         | -                     | 45                       | -      | 1.5          | -      | 240                                    | MKP1848C72490JY5 |                   |
| 1000                          | U <sub>OPDC</sub> AT 70 °C = 1200 V, U <sub>OPDC</sub> AT 105 °C = 700 V |                    |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
|                               | 1  | 9.0                | 19.0 | 32.0 | 27.5    | -         | 70           | 70                    | 2                        | -      | 65           | -      | 50                                     | -                | MKP1848C51010JK2  |
|                               | 2  | 13.0               | 23.0 | 32.0 | 27.5    | -         | 70           | 140                   | 3.5                      | -      | 30           | -      | 50                                     | -                | MKP1848C52010JK2  |
|                               | 3  | 15.0               | 25.0 | 32.0 | 27.5    | -         | 70           | 210                   | 5                        | -      | 21           | -      | 50                                     | -                | MKP1848C53010JK2  |
|                               | 4  | 18.0               | 28.0 | 32.0 | 27.5    | -         | 70           | 280                   | 6                        | -      | 16           | -      | 50                                     | -                | MKP1848C54010JK2  |
|                               | 5  | 18.0               | 31.0 | 32.0 | 27.5    | -         | 70           | 350                   | 7                        | -      | 13           | -      | 50                                     | -                | MKP1848C55010JK2  |
|                               | 6  | 21.0               | 31.0 | 32.0 | 27.5    | -         | 70           | 420                   | 8                        | -      | 10           | -      | 50                                     | -                | MKP1848C56010JK2  |
|                               | 7  | 21.0               | 35.0 | 32.0 | 27.5    | -         | 70           | 490                   | 9                        | -      | 9            | -      | 50                                     | -                | MKP1848C57010JK2  |
|                               | 5  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 175                   | 6                        | 7      | 21           | 19     | 100                                    | 90               | MKP1848C55010JP*  |
|                               | 6  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 210                   | 6                        | 7      | 18           | 16     | 100                                    | 90               | MKP1848C56010JP*  |
|                               | 7  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 245                   | 6                        | 7      | 18           | 16     | 100                                    | 90               | MKP1848C57010JP*  |
|                               | 8  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 280                   | 7                        | 8      | 16           | 14     | 100                                    | 90               | MKP1848C58010JP*  |
|                               | 9  | 18.5               | 35.5 | 43.0 | 37.5    | 10.2      | 35           | 315                   | 7                        | 8      | 14           | 12     | 100                                    | 90               | MKP1848C59010JP*  |
|                               | 10   | 21.5               | 38.5 | 43.0 | 37.5    | 10.2      | 35           | 350                   | 8                        | 9      | 12           | 11     | 100                                    | 90               | MKP1848C61010JP*  |
|                               | 12   | 21.5               | 38.5 | 43.0 | 37.5    | 10.2      | 35           | 420                   | 9                        | 10     | 10           | 9      | 100                                    | 90               | MKP1848C61210JP*  |
|                               | 15   | 24.0               | 44.0 | 42.0 | 37.5    | 10.2      | 35           | 525                   | 11                       | 12     | 8            | 7      | 100                                    | 90               | MKP1848C61510JP*  |
|                               | 20   | 30.0               | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 35           | 700                   | 14                       | 15     | 6            | 5      | 100                                    | 90               | MKP1848C62010JP*  |
|                               | 22   | 30.0               | 57.0 | 42.0 | 37.5    | 20.3      | 35           | 770                   | 14                       | 15     | 6            | 5      | 100                                    | 90               | MKP1848C62210JP*  |
|                               | 25   | 30.0               | 57.0 | 42.0 | 37.5    | 20.3      | 35           | 875                   | 16                       | 17     | 4            | 3.5    | 100                                    | 90               | MKP1848C62510JP*  |



| ELECTRICAL DATA AND ORDERING CODE |  |  |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
|-----------------------------------|--|--|------|------|---------|-----------|--------------|-----------------------|--------------------------|--------|--------------|--------|--|------------------|-------------------|
| U <sub>NDC</sub> AT 85 °C (V)     | CAP. (6) (μF)  | DIMENSION (5) (mm)   |      |      | P1 (mm) | P2 (mm)   | dV/dt (V/μs) | I <sub>PEAK</sub> (A) | I <sub>RMS</sub> (2) (A) |        | ESR (3) (mΩ) |        | tan δ 10 kHz (< 10 <sup>-4</sup> ) (4) |                  | ORDERING CODE (1) |
|                                   |  | w  | h    | l    |         |           |              |                       | 2 PINS                   | 4 PINS | 2 PINS       | 4 PINS | 2 PINS                                 | 4 PINS           |                   |
|                                   |  | U <sub>OPDC</sub> AT 70 °C = 1200 V, U <sub>OPDC</sub> AT 105 °C = 700 V |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
| 1000                              | 15   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 270                   | 9                        | 10     | 14           | 12     | 210                                    | 190              | MKP1848C61510JY*  |
|                                   | 20   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 360                   | 9                        | 10     | 12           | 11     | 210                                    | 190              | MKP1848C62010JY*  |
|                                   | 22   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 18           | 396                   | 10                       | 11     | 11           | 10     | 210                                    | 190              | MKP1848C62210JY*  |
|                                   | 25   | 30.0   | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 450                   | 11                       | 12     | 10           | 9      | 210                                    | 190              | MKP1848C62510JY*  |
|                                   | 30   | 30.0   | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 540                   | 12                       | 13     | 8            | 7      | 210                                    | 190              | MKP1848C63010JY*  |
|                                   | 35   | 35.0   | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 630                   | 14                       | 15     | 7            | 6      | 210                                    | 190              | MKP1848C63510JY*  |
|                                   | 40   | 35.0   | 50.0 | 57.5 | 52.5    | 20.3      | 18           | 720                   | 15                       | 17     | 6            | 5      | 210                                    | 190              | MKP1848C64010JY*  |
|                                   | 45   | 45.0   | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 810                   | -                        | 17     | -            | 5      | -                                      | 190              | MKP1848C64510JY5  |
|                                   | 50   | 45.0   | 45.0 | 57.5 | 52.5    | 20.3      | 18           | 900                   | -                        | 18     | -            | 4      | -                                      | 190              | MKP1848C65010JY5  |
|                                   | 100 (6)  | 70.0   | 65.0 | 57.5 | 52.5    | 20.3      | 15           | 1500                  | -                        | 25     | -            | 3.5    | -                                      | 210              | MKP1848C71010JY5  |
| 200 (7)                           | 130.0  | 65.0   | 57.5 | 52.5 | 20.3    | 7         | 1400         | -                     | 45                       | -      | 1.5          | -      | 210                                    | MKP1848C72010JY5 |                   |
| 1200                              | U <sub>OPDC</sub> AT 70 °C = 1440 V, U <sub>OPDC</sub> AT 105 °C = 850 V |  |      |      |         |           |              |                       |                          |        |              |        |  |                  |                   |
|                                   | 1  | 11.0   | 21.0 | 32.0 | 27.5    | -         | 85           | 85                    | 3                        | -      | 45           | -      | 45                                     | -                | MKP1848C51012JK2  |
|                                   | 2  | 15.0   | 25.0 | 32.0 | 27.5    | -         | 85           | 170                   | 4                        | -      | 23           | -      | 45                                     | -                | MKP1848C52012JK2  |
|                                   | 3  | 18.0   | 28.0 | 32.0 | 27.5    | -         | 85           | 255                   | 6                        | -      | 15           | -      | 45                                     | -                | MKP1848C53012JK2  |
|                                   | 4  | 21.0   | 31.0 | 32.0 | 27.5    | -         | 85           | 340                   | 8                        | -      | 12           | -      | 45                                     | -                | MKP1848C54012JK2  |
|                                   | 5  | 20.0   | 35.0 | 32.0 | 27.5    | -         | 85           | 425                   | 8                        | -      | 10           | -      | 45                                     | -                | MKP1848C55012JK2  |
|                                   | 5  | 18.5   | 35.5 | 43.0 | 37.5    | 10.2      | 40           | 200                   | 6                        | 7      | 18           | 16     | 90                                     | 80               | MKP1848C55012JP*  |
|                                   | 6  | 18.5   | 35.5 | 43.0 | 37.5    | 10.2      | 40           | 240                   | 7                        | 8      | 15           | 14     | 90                                     | 80               | MKP1848C56012JP*  |
|                                   | 7  | 21.5   | 38.5 | 43.0 | 37.5    | 10.2      | 40           | 280                   | 8                        | 9      | 13           | 12     | 90                                     | 80               | MKP1848C57012JP*  |
|                                   | 8  | 21.5   | 38.5 | 43.0 | 37.5    | 10.2      | 40           | 320                   | 9                        | 10     | 11           | 10     | 90                                     | 80               | MKP1848C58012JP*  |
|                                   | 9  | 24.0   | 44.0 | 42.0 | 37.5    | 10.2      | 40           | 360                   | 10                       | 11     | 10           | 9      | 90                                     | 80               | MKP1848C59012JP*  |
|                                   | 10   | 24.0   | 44.0 | 42.0 | 37.5    | 10.2      | 40           | 400                   | 10                       | 11     | 9            | 8      | 90                                     | 80               | MKP1848C61012JP*  |
|                                   | 12   | 30.0   | 45.0 | 42.0 | 37.5    | 10.2/20.3 | 40           | 480                   | 12                       | 13     | 8            | 7      | 90                                     | 80               | MKP1848C61212JP*  |
|                                   | 15   | 30.0   | 57.0 | 42.0 | 37.5    | 20.3      | 40           | 600                   | 14                       | 14     | 6            | 5      | 90                                     | 80               | MKP1848C61512JP*  |
|                                   | 10   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 20           | 200                   | 8                        | 9      | 18           | 16     | 180                                    | 160              | MKP1848C61012JY*  |
|                                   | 12   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 20           | 240                   | 8                        | 9      | 15           | 13     | 180                                    | 160              | MKP1848C61212JY*  |
|                                   | 15   | 25.0   | 45.0 | 57.5 | 52.5    | 10.2      | 20           | 300                   | 9                        | 10     | 12           | 11     | 180                                    | 160              | MKP1848C61512JY*  |
|                                   | 20   | 30.0   | 45.0 | 57.5 | 52.5    | 20.3      | 20           | 400                   | 11                       | 12     | 9            | 8      | 180                                    | 160              | MKP1848C62012JY*  |
|                                   | 22   | 35.0   | 50.0 | 57.5 | 52.5    | 20.3      | 20           | 440                   | 13                       | 14     | 8            | 7      | 180                                    | 160              | MKP1848C62212JY*  |
|                                   | 25   | 35.0   | 50.0 | 57.5 | 52.5    | 20.3      | 20           | 500                   | 14                       | 15     | 7            | 6      | 180                                    | 160              | MKP1848C62512JY*  |
|                                   | 30   | 45.0   | 45.0 | 57.5 | 52.5    | 20.3      | 20           | 600                   | -                        | 16     | -            | 5      | -                                      | 160              | MKP1848C63012JY5  |
|                                   | 60 (6)   | 70.0   | 65   | 57.5 | 52.5    | 20.3      | 20           | 1200                  | -                        | 40     | -            | 2.5    | -                                      | 180              | MKP1848C66012JY5  |
| 65 (6)                            | 70.0   | 65   | 57.5 | 52.5 | 20.3    | 18        | 1170         | -                     | 40                       | -      | 2            | -      | 180                                    | MKP1848C66512JY5 |                   |
| 140 (7)                           | 130.0  | 65   | 57.5 | 52.5 | 20.3    | 10        | 1400         | -                     | 45                       | -      | 1.5          | -      | 180                                    | MKP1848C71412JY5 |                   |

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   |                    |                             |                  |                              |             |                             |
|-------------------------|--------------------|-----------------------------|------------------|------------------------------|-------------|-----------------------------|
| U <sub>NDC</sub><br>(V) | HEIGHT<br>(mm)     | CAP. <sup>(5)</sup><br>(μF) | Ø dt             | ORDERING CODE <sup>(1)</sup> | MASS<br>(g) | SPQ <sup>(2)</sup><br>(pcs) |
| 500                     | 19                 | 1                           | 0.8              | MKP1848C51050JK2             | 6           | 160                         |
|                         | 19                 | 2                           | 0.8              | MKP1848C52050JK2             | 5.5         | 160                         |
|                         | 19                 | 3                           | 0.8              | MKP1848C53050JK2             | 5.5         | 160                         |
|                         | 21                 | 4                           | 0.8              | MKP1848C54050JK2             | 8.5         | 130                         |
|                         | 21                 | 5                           | 0.8              | MKP1848C55050JK2             | 8.5         | 130                         |
|                         | 23                 | 6                           | 0.8              | MKP1848C56050JK2             | 10.5        | 115                         |
|                         | 25                 | 7                           | 0.8              | MKP1848C57050JK2             | 12.5        | 100                         |
|                         | 25                 | 8                           | 0.8              | MKP1848C58050JK2             | 11.5        | 100                         |
|                         | 28                 | 9                           | 0.8              | MKP1848C59050JK2             | 15          | 80                          |
|                         | 28                 | 10                          | 0.8              | MKP1848C61050JK2             | 16          | 80                          |
|                         | 28                 | 12                          | 0.8              | MKP1848C61250JK2             | 15          | 80                          |
|                         | 31                 | 15                          | 0.8              | MKP1848C61550JK2             | 21.5        | 65                          |
|                         | 35                 | 18                          | 0.8              | MKP1848C61850JK2             | 20          | 70                          |
|                         | 35.5               | 20                          | 1.0              | MKP1848C62050JP*             | 36          | 91                          |
|                         | 38.5               | 22                          | 1.0              | MKP1848C62250JP*             | 38          | 91                          |
|                         | 38.5               | 25                          | 1.0              | MKP1848C62550JP*             | 36          | 91                          |
|                         | 44                 | 30                          | 1.0              | MKP1848C63050JP*             | 48          | 77                          |
|                         | 44                 | 35                          | 1.0              | MKP1848C63550JP*             | 57          | 63                          |
|                         | 45                 | 40                          | 1.0              | MKP1848C64050JP*             | 60          | 63                          |
|                         | 45                 | 45                          | 1.0              | MKP1848C64550JP*             | 70          | 55                          |
|                         | 45                 | 50                          | 1.0              | MKP1848C65050JP*             | 75          | 55                          |
|                         | 57                 | 55                          | 1.0              | MKP1848C65550JP*             | 68          | 63                          |
|                         | 57                 | 60                          | 1.0              | MKP1848C66050JP*             | 68          | 63                          |
|                         | 57                 | 65                          | 1.0              | MKP1848C66550JP*             | 70          | 63                          |
|                         | 45                 | 50                          | 1.2              | MKP1848C65050JY*             | 70          | 55                          |
|                         | 45                 | 55                          | 1.2              | MKP1848C65550JY*             | 96          | 55                          |
|                         | 45                 | 60                          | 1.2              | MKP1848C66050JY*             | 91          | 45                          |
|                         | 45                 | 65                          | 1.2              | MKP1848C66550JY*             | 100         | 45                          |
|                         | 45                 | 70                          | 1.2              | MKP1848C67050JY*             | 112         | 45                          |
|                         | 50                 | 75                          | 1.2              | MKP1848C67550JY*             | 108         | 40                          |
|                         | 50                 | 80                          | 1.2              | MKP1848C68050JY*             | 115         | 40                          |
|                         | 50                 | 90                          | 1.2              | MKP1848C69050JY*             | 127         | 40                          |
| 50                      | 100                | 1.2                         | MKP1848C71050JY* | 130                          | 40          |                             |
| 45                      | 110                | 1.2                         | MKP1848C71150JY5 | 135                          | 30          |                             |
| 45                      | 120                | 1.2                         | MKP1848C71250JY5 | 150                          | 30          |                             |
| 65                      | 250 <sup>(3)</sup> | 1.2                         | MKP1848C72550JY5 | 266                          | 20          |                             |
| 65                      | 500 <sup>(4)</sup> | 1.2                         | MKP1848C75050JY5 | 490                          | 10          |                             |
| 600                     | 19                 | 1                           | 0.8              | MKP1848C51060JK2             | 6           | 160                         |
|                         | 19                 | 2                           | 0.8              | MKP1848C52060JK2             | 5.5         | 160                         |
|                         | 21                 | 3                           | 0.8              | MKP1848C53060JK2             | 8.5         | 130                         |
|                         | 21                 | 4                           | 0.8              | MKP1848C54060JK2             | 8.5         | 130                         |
|                         | 23                 | 5                           | 0.8              | MKP1848C55060JK2             | 10.5        | 115                         |
|                         | 25                 | 6                           | 0.8              | MKP1848C56060JK2             | 12.5        | 100                         |
|                         | 25                 | 7                           | 0.8              | MKP1848C57060JK2             | 11.5        | 100                         |
|                         | 28                 | 8                           | 0.8              | MKP1848C58060JK2             | 15          | 80                          |
|                         | 28                 | 9                           | 0.8              | MKP1848C59060JK2             | 16          | 80                          |
|                         | 28                 | 10                          | 0.8              | MKP1848C61060JK2             | 15          | 80                          |
|                         | 31                 | 12                          | 0.8              | MKP1848C61260JK2             | 21.5        | 65                          |



| PACKAGING INFORMATION   |                    |                             |                  |                              |             |                             |
|-------------------------|--------------------|-----------------------------|------------------|------------------------------|-------------|-----------------------------|
| U <sub>NDC</sub><br>(V) | HEIGHT<br>(mm)     | CAP. <sup>(5)</sup><br>(µF) | Ø dt             | ORDERING CODE <sup>(1)</sup> | MASS<br>(g) | SPQ <sup>(2)</sup><br>(pcs) |
| 600                     | 35                 | 15                          | 0.8              | MKP1848C61560JK2             | 20          | 70                          |
|                         | 35.5               | 10                          | 1.0              | MKP1848C61060JP*             | 34          | 105                         |
|                         | 35.5               | 12                          | 1.0              | MKP1848C61260JP*             | 32          | 105                         |
|                         | 35.5               | 15                          | 1.0              | MKP1848C61560JP*             | 30          | 105                         |
|                         | 38.5               | 20                          | 1.0              | MKP1848C62060JP*             | 36          | 91                          |
|                         | 38.5               | 22                          | 1.0              | MKP1848C62260JP*             | 38          | 91                          |
|                         | 38.5               | 25                          | 1.0              | MKP1848C62560JP*             | 36          | 91                          |
|                         | 44                 | 30                          | 1.0              | MKP1848C63060JP*             | 48          | 77                          |
|                         | 45                 | 35                          | 1.0              | MKP1848C63560JP*             | 57          | 63                          |
|                         | 45                 | 40                          | 1.0              | MKP1848C64060JP*             | 60          | 63                          |
|                         | 45                 | 45                          | 1.0              | MKP1848C64560JP*             | 60          | 63                          |
|                         | 57                 | 50                          | 1.0              | MKP1848C65060JP*             | 68          | 63                          |
|                         | 45                 | 40                          | 1.2              | MKP1848C64060JY*             | 66          | 55                          |
|                         | 45                 | 45                          | 1.2              | MKP1848C64560JY*             | 70          | 55                          |
|                         | 45                 | 50                          | 1.2              | MKP1848C65060JY*             | 88          | 45                          |
|                         | 45                 | 55                          | 1.2              | MKP1848C65560JY*             | 96          | 45                          |
|                         | 45                 | 60                          | 1.2              | MKP1848C66060JY*             | 91          | 45                          |
|                         | 50                 | 65                          | 1.2              | MKP1848C66560JY*             | 100         | 40                          |
|                         | 50                 | 70                          | 1.2              | MKP1848C67060JY*             | 112         | 40                          |
|                         | 50                 | 75                          | 1.2              | MKP1848C67560JY*             | 108         | 40                          |
|                         | 50                 | 80                          | 1.2              | MKP1848C68060JY*             | 102         | 40                          |
|                         | 45                 | 90                          | 1.2              | MKP1848C69060JY5             | 127         | 30                          |
|                         | 45                 | 100                         | 1.2              | MKP1848C71060JY5             | 120         | 30                          |
| 65                      | 200 <sup>(3)</sup> | 1.2                         | MKP1848C72060JY5 | 266                          | 20          |                             |
| 65                      | 400 <sup>(4)</sup> | 1.2                         | MKP1848C74060JY5 | 490                          | 10          |                             |
| 800                     | 19                 | 1                           | 0.8              | MKP1848C51080JK2             | 6           | 160                         |
|                         | 19                 | 2                           | 0.8              | MKP1848C52080JK2             | 5.5         | 160                         |
|                         | 21                 | 3                           | 0.8              | MKP1848C53080JK2             | 8.5         | 130                         |
|                         | 23                 | 4                           | 0.8              | MKP1848C54080JK2             | 10.5        | 115                         |
|                         | 25                 | 5                           | 0.8              | MKP1848C55080JK2             | 12          | 100                         |
|                         | 28                 | 6                           | 0.8              | MKP1848C56080JK2             | 17          | 80                          |
|                         | 28                 | 7                           | 0.8              | MKP1848C57080JK2             | 16          | 80                          |
|                         | 28                 | 8                           | 0.8              | MKP1848C58080JK2             | 15          | 80                          |
|                         | 31                 | 9                           | 0.8              | MKP1848C59080JK2             | 22          | 65                          |
|                         | 31                 | 10                          | 0.8              | MKP1848C61080JK2             | 21          | 65                          |
|                         | 35                 | 12                          | 0.8              | MKP1848C61280JK2             | 20          | 70                          |
|                         | 35.5               | 10                          | 1.0              | MKP1848C61080JP*             | 34          | 105                         |
|                         | 35.5               | 12                          | 1.0              | MKP1848C61280JP*             | 32          | 105                         |
|                         | 35.5               | 15                          | 1.0              | MKP1848C61580JP*             | 30          | 105                         |
|                         | 38.5               | 20                          | 1.0              | MKP1848C62080JP*             | 36          | 91                          |
|                         | 44                 | 22                          | 1.0              | MKP1848C62280JP*             | 49          | 77                          |
|                         | 44                 | 25                          | 1.0              | MKP1848C62580JP*             | 47          | 77                          |
|                         | 45                 | 30                          | 1.0              | MKP1848C63080JP*             | 62          | 63                          |
|                         | 45                 | 35                          | 1.0              | MKP1848C63580JP*             | 55          | 63                          |
|                         | 57                 | 40                          | 1.0              | MKP1848C64080JP*             | 60          | 63                          |
| 45                      | 30                 | 1.2                         | MKP1848C63080JY* | 76                           | 55          |                             |
| 45                      | 35                 | 1.2                         | MKP1848C63580JY* | 71                           | 55          |                             |
| 45                      | 40                 | 1.2                         | MKP1848C64080JY* | 66                           | 55          |                             |
| 45                      | 45                 | 1.2                         | MKP1848C64580JY* | 95                           | 45          |                             |



| PACKAGING INFORMATION   |                |                             |      |                              |             |                             |
|-------------------------|----------------|-----------------------------|------|------------------------------|-------------|-----------------------------|
| U <sub>NDC</sub><br>(V) | HEIGHT<br>(mm) | CAP. <sup>(5)</sup><br>(μF) | Ø dt | ORDERING CODE <sup>(1)</sup> | MASS<br>(g) | SPQ <sup>(2)</sup><br>(pcs) |
| 800                     | 45             | 50                          | 1.2  | MKP1848C65080JY*             | 88          | 45                          |
|                         | 50             | 55                          | 1.2  | MKP1848C65580JY*             | 112         | 40                          |
|                         | 50             | 60                          | 1.2  | MKP1848C66080JY*             | 107         | 40                          |
|                         | 50             | 65                          | 1.2  | MKP1848C66580JY*             | 100         | 40                          |
|                         | 45             | 70                          | 1.2  | MKP1848C67080JY5             | 128         | 30                          |
|                         | 45             | 75                          | 1.2  | MKP1848C67580JY5             | 123         | 30                          |
|                         | 45             | 80                          | 1.2  | MKP1848C68080JY5             | 119         | 30                          |
|                         | 65             | 160 <sup>(3)</sup>          | 1.2  | MKP1848C71680JY5             | 264         | 20                          |
|                         | 65             | 320 <sup>(4)</sup>          | 1.2  | MKP1848C73280JY5             | 359         | 10                          |
| 900                     | 19             | 1                           | 0.8  | MKP1848C51090JK2             | 6.5         | 160                         |
|                         | 21             | 2                           | 0.8  | MKP1848C52090JK2             | 9           | 130                         |
|                         | 23             | 3                           | 0.8  | MKP1848C53090JK2             | 11          | 115                         |
|                         | 25             | 4                           | 0.8  | MKP1848C54090JK2             | 12          | 100                         |
|                         | 28             | 5                           | 0.8  | MKP1848C55090JK2             | 17          | 80                          |
|                         | 28             | 6                           | 0.8  | MKP1848C56090JK2             | 16          | 80                          |
|                         | 31             | 7                           | 0.8  | MKP1848C57090JK2             | 23          | 65                          |
|                         | 31             | 8                           | 0.8  | MKP1848C58090JK2             | 21          | 65                          |
|                         | 35             | 9                           | 0.8  | MKP1848C59090JK2             | 20          | 70                          |
|                         | 35             | 10                          | 0.8  | MKP1848C61090JK2             | 20          | 70                          |
|                         | 35.5           | 9                           | 1.0  | MKP1848C59090JP*             | 32          | 105                         |
|                         | 35.5           | 10                          | 1.0  | MKP1848C61090JP*             | 32          | 105                         |
|                         | 35.5           | 12                          | 1.0  | MKP1848C61290JP*             | 30          | 105                         |
|                         | 38.5           | 15                          | 1.0  | MKP1848C61590JP*             | 37          | 91                          |
|                         | 44             | 20                          | 1.0  | MKP1848C62090JP*             | 47          | 77                          |
|                         | 45             | 22                          | 1.0  | MKP1848C62290JP*             | 65          | 63                          |
|                         | 45             | 25                          | 1.0  | MKP1848C62590JP*             | 61          | 63                          |
|                         | 57             | 30                          | 1.0  | MKP1848C63090JP*             | 68          | 63                          |
|                         | 57             | 35                          | 1.0  | MKP1848C63590JP*             | 70          | 63                          |
|                         | 45             | 30                          | 1.2  | MKP1848C63090JY*             | 69          | 55                          |
|                         | 45             | 35                          | 1.2  | MKP1848C63590JY*             | 97          | 45                          |
|                         | 45             | 40                          | 1.2  | MKP1848C64090JY*             | 91          | 45                          |
|                         | 50             | 45                          | 1.2  | MKP1848C64590JY*             | 112         | 40                          |
|                         | 50             | 50                          | 1.2  | MKP1848C65090JY*             | 104         | 40                          |
|                         | 45             | 55                          | 1.2  | MKP1848C65590JY5             | 131         | 30                          |
|                         | 45             | 60                          | 1.2  | MKP1848C66090JY5             | 125         | 30                          |
|                         | 65             | 120 <sup>(3)</sup>          | 1.2  | MKP1848C71290JY5             | 276         | 20                          |
|                         | 65             | 240 <sup>(4)</sup>          | 1.2  | MKP1848C72490JY5             | 393         | 10                          |
| 1000                    | 19             | 1                           | 0.8  | MKP1848C51010JK2             | 6           | 160                         |
|                         | 23             | 2                           | 0.8  | MKP1848C52010JK2             | 11          | 115                         |
|                         | 25             | 3                           | 0.8  | MKP1848C53010JK2             | 12          | 100                         |
|                         | 28             | 4                           | 0.8  | MKP1848C54010JK2             | 16.5        | 80                          |
|                         | 31             | 5                           | 0.8  | MKP1848C55010JK2             | 22.5        | 65                          |
|                         | 31             | 6                           | 0.8  | MKP1848C56010JK2             | 21          | 65                          |
|                         | 35             | 7                           | 0.8  | MKP1848C57010JK2             | 21          | 70                          |
|                         | 35.5           | 5                           | 1.0  | MKP1848C55010JP*             | 32          | 105                         |
|                         | 35.5           | 6                           | 1.0  | MKP1848C56010JP*             | 30          | 105                         |
|                         | 35.5           | 7                           | 1.0  | MKP1848C57010JP*             | 33          | 105                         |
|                         | 35.5           | 8                           | 1.0  | MKP1848C58010JP*             | 31          | 105                         |
|                         | 35.5           | 9                           | 1.0  | MKP1848C59010JP*             | 30          | 105                         |



| PACKAGING INFORMATION   |                    |                             |                  |                              |             |                             |
|-------------------------|--------------------|-----------------------------|------------------|------------------------------|-------------|-----------------------------|
| U <sub>NDC</sub><br>(V) | HEIGHT<br>(mm)     | CAP. <sup>(5)</sup><br>(µF) | Ø dt             | ORDERING CODE <sup>(1)</sup> | MASS<br>(g) | SPQ <sup>(2)</sup><br>(pcs) |
| 1000                    | 38.5               | 10                          | 1.0              | MKP1848C61010JP*             | 39          | 91                          |
|                         | 38.5               | 12                          | 1.0              | MKP1848C61210JP*             | 36          | 91                          |
|                         | 44                 | 15                          | 1.0              | MKP1848C61510JP*             | 47          | 77                          |
|                         | 45                 | 20                          | 1.0              | MKP1848C62010JP*             | 57          | 63                          |
|                         | 57                 | 22                          | 1.0              | MKP1848C62210JP*             | 60          | 63                          |
|                         | 57                 | 25                          | 1.0              | MKP1848C62510JP*             | 60          | 63                          |
|                         | 45                 | 15                          | 1.2              | MKP1848C61510JY*             | 70          | 55                          |
|                         | 45                 | 20                          | 1.2              | MKP1848C62010JY*             | 73          | 55                          |
|                         | 45                 | 22                          | 1.2              | MKP1848C62210JY*             | 70          | 55                          |
|                         | 45                 | 25                          | 1.2              | MKP1848C62510JY*             | 98          | 45                          |
|                         | 45                 | 30                          | 1.2              | MKP1848C63010JY*             | 89          | 45                          |
|                         | 50                 | 35                          | 1.2              | MKP1848C63510JY*             | 109         | 40                          |
|                         | 50                 | 40                          | 1.2              | MKP1848C64010JY*             | 99          | 40                          |
|                         | 45                 | 45                          | 1.2              | MKP1848C64510JY5             | 124         | 30                          |
|                         | 45                 | 50                          | 1.2              | MKP1848C65010JY5             | 117         | 30                          |
|                         | 65                 | 100 <sup>(3)</sup>          | 1.2              | MKP1848C71010JY5             | 259         | 20                          |
| 65                      | 200 <sup>(4)</sup> | 1.2                         | MKP1848C72010JY5 | 608                          | 10          |                             |
| 1200                    | 21                 | 1                           | 0.8              | MKP1848C51012JK2             | 9           | 130                         |
|                         | 25                 | 2                           | 0.8              | MKP1848C52012JK2             | 12          | 100                         |
|                         | 28                 | 3                           | 0.8              | MKP1848C53012JK2             | 16          | 80                          |
|                         | 31                 | 4                           | 0.8              | MKP1848C54012JK2             | 21.5        | 65                          |
|                         | 35                 | 5                           | 0.8              | MKP1848C55012JK2             | 20          | 70                          |
|                         | 35.5               | 5                           | 1.0              | MKP1848C55012JP*             | 33          | 105                         |
|                         | 35.5               | 6                           | 1.0              | MKP1848C56012JP*             | 30          | 105                         |
|                         | 38.5               | 7                           | 1.0              | MKP1848C57012JP*             | 39          | 91                          |
|                         | 38.5               | 8                           | 1.0              | MKP1848C58012JP*             | 37          | 91                          |
|                         | 44                 | 9                           | 1.0              | MKP1848C59012JP*             | 50          | 77                          |
|                         | 44                 | 10                          | 1.0              | MKP1848C61012JP*             | 48          | 77                          |
|                         | 45                 | 12                          | 1.0              | MKP1848C61212JP*             | 63          | 63                          |
|                         | 57                 | 15                          | 1.0              | MKP1848C61512JP*             | 60          | 63                          |
|                         | 45                 | 10                          | 1.2              | MKP1848C61012JY*             | 81          | 55                          |
|                         | 45                 | 12                          | 1.2              | MKP1848C61212JY*             | 77          | 55                          |
|                         | 45                 | 15                          | 1.2              | MKP1848C61512JY*             | 70          | 55                          |
|                         | 45                 | 20                          | 1.2              | MKP1848C62012JY*             | 91          | 45                          |
|                         | 50                 | 22                          | 1.2              | MKP1848C62212JY*             | 115         | 40                          |
|                         | 50                 | 25                          | 1.2              | MKP1848C62512JY*             | 108         | 40                          |
|                         | 45                 | 30                          | 1.2              | MKP1848C63012JY5             | 126         | 30                          |
| 65                      | 60 <sup>(3)</sup>  | 1.2                         | MKP1848C66012JY5 | 256                          | 20          |                             |
| 65                      | 65 <sup>(3)</sup>  | 1.2                         | MKP1848C66512JY5 | 257                          | 20          |                             |
| 65                      | 140 <sup>(4)</sup> | 1.2                         | MKP1848C71412JY5 | 608                          | 10          |                             |

**Notes**

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

**CONSTRUCTION DESCRIPTION**

Low inductive wound cell elements of metallized polypropylene film. The capacitors have non segmented film except in the cases with dimensions 70 mm x 65 mm x 57.5 mm and 130 mm x 65 mm x 57.5 mm, wherein the film is segmented. 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**

For product height with seating plane as given by "IEC 60717" as reference.

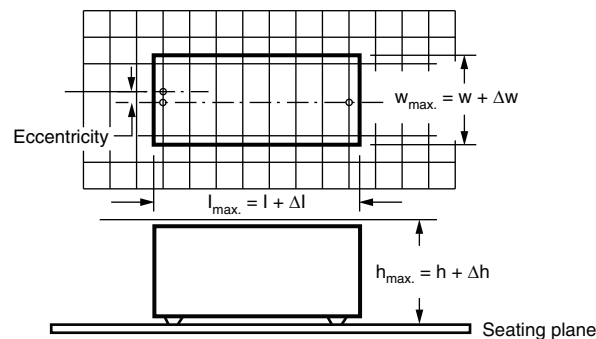
**For 2 pins:**

The maximum space for length ( $l_{max.}$ ), width ( $w_{max.}$ ) and height ( $h_{max.}$ ) of film capacitors to take in account on the printed circuit board is shown in the drawings.

- For products with  $15 \text{ mm} < \text{pitch} \leq 27.5 \text{ mm}$   $\Delta w = \Delta l = 0.5 \text{ mm}$  and  $\Delta h = 0.1 \text{ mm}$
- For products with  $\text{pitch} = 37.5 \text{ mm}$ ,  $\Delta w = \Delta l = 0.7 \text{ mm}$  and  $\Delta h = 0.5 \text{ mm}$
- For products with  $\text{pitch} = 52.5 \text{ mm}$ ,  $\Delta w = \Delta l = 1.0 \text{ mm}$  and  $\Delta h = 0.5 \text{ mm}$

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:


**For 4 pins, 6 pins, and 12 pins:**

| DIMENSIONS in millimeters |                         |                         |            |           |
|---------------------------|-------------------------|-------------------------|------------|-----------|
|                           |                         |                         |            |           |
| <b>P1</b>                 | <b>L<sub>max.</sub></b> | <b>W<sub>max.</sub></b> | <b>Ø D</b> | <b>H</b>  |
| 37.5                      | $l + 1.5$               | $w + 1.8$               | 1.5        | $h + 0.5$ |
| 52.5                      | $l + 1.8$               | $w + 2.0$               | 1.7        | $h + 0.5$ |



## SOLDERING CONDITIONS

For general soldering conditions and wave soldering profile we refer to the document "Soldering Conditions Vishay Film Capacitors": [www.vishay.com/doc?28171](http://www.vishay.com/doc?28171)

## STORAGE TEMPERATURE

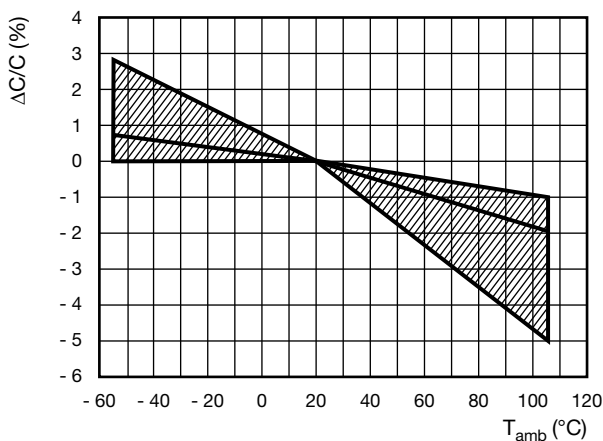
T<sub>stg</sub> = -25 °C to +35 °C with relative humidity of maximum 75 % without condensation

## RATINGS AND CHARACTERISTICS REFERENCE CONDITIONS

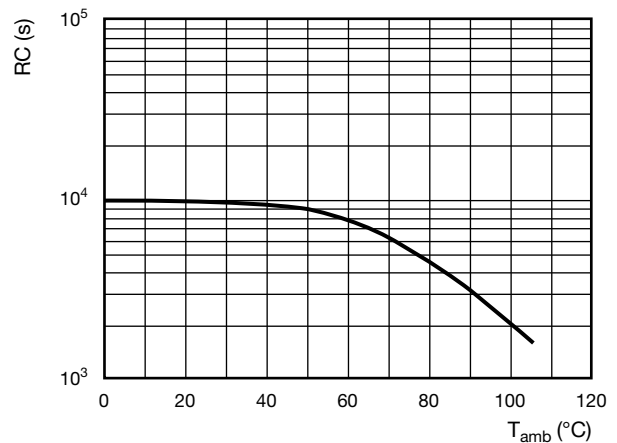
Unless otherwise specified, all electrical values apply to an ambient temperature of 23 °C ± 1 °C, an atmospheric pressure of 86 kPa to 106 kPa and a relative humidity of 50 % ± 2 %.

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 %.

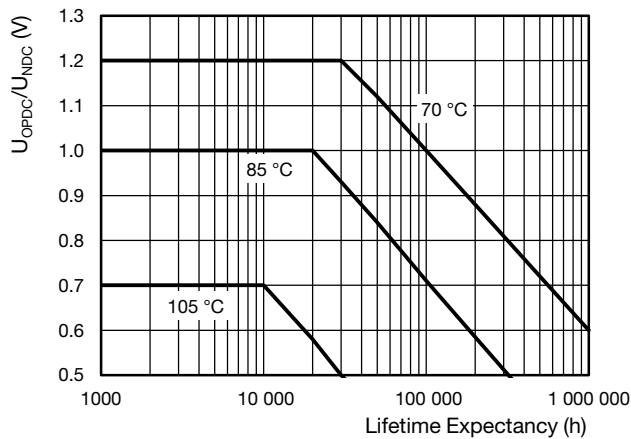
## CHARACTERISTICS



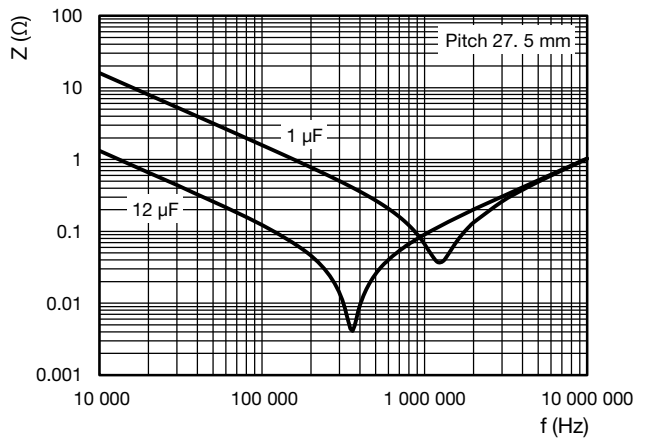
Capacitance as a function of ambient temperature (typical)



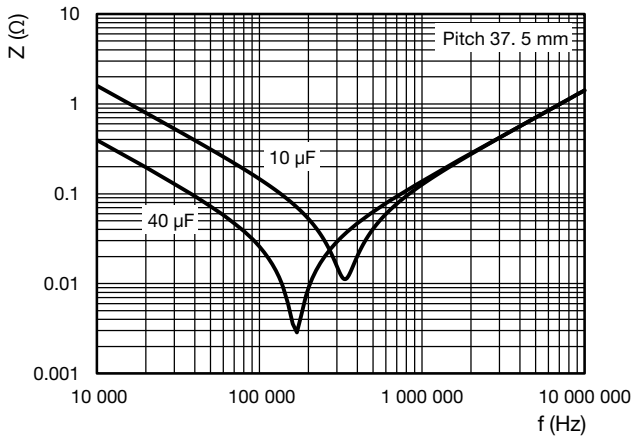
Insulation resistance as a function of ambient temperature (typical)



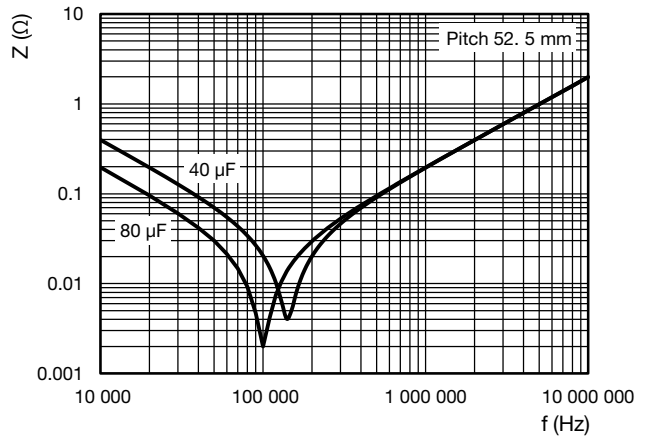
Lifetime expectancy (typical)



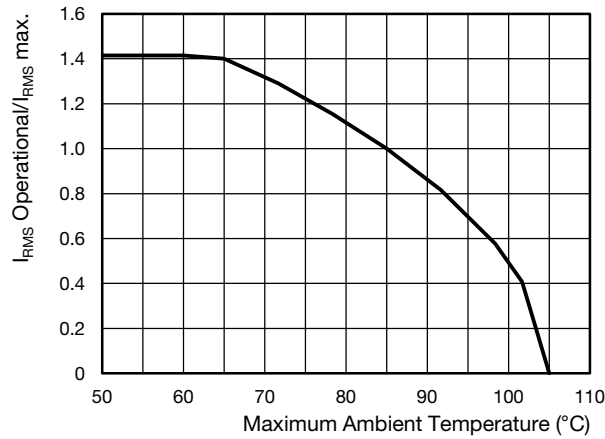
Impedance vs. Frequency (typical)



Impedance vs. Frequency (typical)



Impedance vs. Frequency (typical)



Maximum  $I_{RMS}$  current in function of the ambient temperature

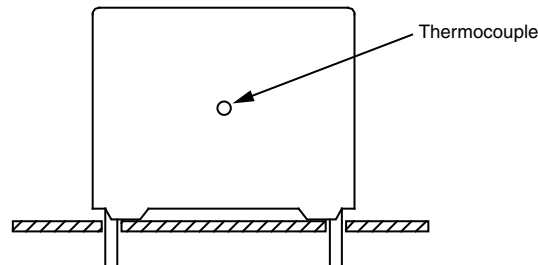
| HEAT CONDUCTIVITY |      |      |                           |
|-------------------|------|------|---------------------------|
| DIMENSION (mm)    |      |      | HEAT CONDUCTIVITY (mW/°C) |
| w                 | h    | l    |                           |
| 9.0               | 19.0 | 32.0 | 24                        |
| 11.0              | 21.0 | 32.0 | 28                        |
| 13.0              | 23.0 | 32.0 | 32                        |
| 15.0              | 25.0 | 32.0 | 36                        |
| 18.0              | 28.0 | 32.0 | 44                        |
| 21.0              | 31.0 | 32.0 | 51                        |
| 20.0              | 35.0 | 32.0 | 56                        |
| 18.5              | 35.5 | 43.0 | 54                        |
| 21.5              | 38.5 | 43.0 | 61                        |
| 24.0              | 44.0 | 42.0 | 70                        |
| 30.0              | 45.0 | 42.0 | 81                        |
| 25.0              | 45.0 | 57.5 | 77                        |
| 30.0              | 45.0 | 57.5 | 85                        |
| 35.0              | 50.0 | 57.5 | 100                       |
| 45.0              | 45.0 | 57.5 | 94                        |
| 70.0              | 65.0 | 57.5 | 152                       |
| 130.0             | 65.0 | 57.5 | 243                       |

**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 ( $\Delta T$ ) can be measured or calculated by  $\Delta T = P/G$ :

- $\Delta T = T_{\text{case}} - T_{\text{ambient}} =$  case temperature rise ( $^{\circ}\text{C}$ ) with a maximum of  $15^{\circ}\text{C}$  at rated temperature.
- $P = I_{\text{RMS}}^2 \times \text{ESR} =$  power dissipation of the component (mW)
- $G =$  heat conductivity of the component ( $\text{mW}/^{\circ}\text{C}$ )

**MEASURING THE COMPONENT TEMPERATURE**


The case temperature is measured in unloaded condition ( $T_{\text{amb}}$ ) and loaded condition ( $T_{\text{C}}$ ).

To avoid external thermal radiation or convection, the capacitor must be tested in a closed area, free from air circulation.

**APPLICATION NOTES AND LIMITING CONDITIONS**

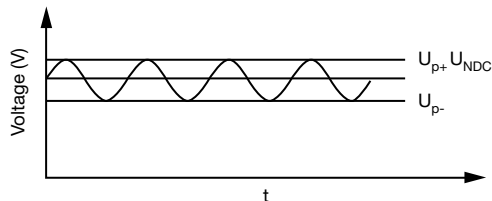
These capacitors are not suitable for mains applications as across-the-line capacitors without additional protection.

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:

1. The continuous peak voltage ( $U_{\text{p+}}$ ) shall not exceed the DC voltage rating ( $U_{\text{NDC}}$ )
2. The peak-to-peak ripple voltage ( $U_{\text{pp}}$ ) shall not be greater than  $0.2 \times U_{\text{NDC}}$

Non reversing recurrent waveform



3. 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](mailto:dc-film@vishay.com).

4. 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:

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

T is the pulse duration

| MAXIMUM REPETITIVE PEAK VOLTAGES |                          |
|----------------------------------|--------------------------|
| REPETITIVE SURGE VOLTAGE         | MAXIMUM DURATION PER DAY |
| $1.1 \times U_{\text{NDC}}$      | 30 % of on load duration |
| $1.15 \times U_{\text{NDC}}$     | 30 min                   |
| $1.2 \times U_{\text{NDC}}$      | 5 min                    |
| $1.3 \times U_{\text{NDC}}$      | 1 min                    |
| $1.5 \times U_{\text{NDC}}$      | 110 ms                   |

**Note**

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



| INSPECTION REQUIREMENTS                                    |  |  |
|--|--|--|
| SUB-CLAUSE NUMBER AND TEST                                 | CONDITIONS   | PERFORMANCE REQUIREMENTS   |
| <b>ROUTINE TEST - FINAL INSPECTION</b>                     |  |  |
| 5.14.2-1<br>External inspection, visual examination        |  | Legible marking as specified   |
| 5.14.2-2<br>Dimensions                                     |  | See specification drawing  |
| 5.3-1<br>Capacitance                                       | 1 kHz at room temperature  | See specific reference data  |
| 5.3-2<br>tan $\delta$                                      | 1 kHz at room temperature<br>10 kHz at room temperature  | See specific reference data  |
| 5.5.1-2<br>Voltage test between terminals                  | 1.5 x $U_{NDC}$ at $T_{amb}$<br>Duration: 10 s   | No visible damage or puncture<br>No flashover  |
| 5.7<br>Insulation resistance                               | $U_{NDC} \leq 500$ V measuring voltage 100 V at room temperature<br>$U_{NDC} > 500$ V measuring voltage 500 V at room temperature<br>Duration: 1 min   | See specific reference data  |
| <b>TYPE TESTS</b>  |  |  |
| 5.14.2<br>External inspection                              | Check for finish, marking and overall dimensions   | Legible marking and finish as specified<br>Dimensions: see specification drawing                               |
| 5.14.0<br>Initial measurements                             | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz   |  |
| 5.14.1-1/4<br>Robustness of terminations<br>IEC 60068-2-21 | Tensile $U_{a1}$<br>Wire diameter    Section modulus    Load<br>$\leq 0.8$ mm $\leq 0.5$ mm <sup>2</sup> 10 N<br>$\leq 1.25$ mm $\leq 1.2$ mm <sup>2</sup> 20 N<br>Duration: 10 s $\pm$ 1 s<br><br>Bending, $U_b$ method 1<br>Wire diameter    Section modulus    Load<br>$\leq 0.8$ mm $\leq 0.05$ mm <sup>2</sup> 10 N<br>$\leq 1.25$ mm $\leq 0.019$ mm <sup>2</sup> 20 N<br>4 x 90°, duration: 2 s to 3 s/bend |  |
| 5.14.1-6<br>Resistance to soldering heat<br>IEC 60068-2-20 | No pre-drying, method 1A<br>Solder bath: 260 °C $\pm$ 5 °C<br>Duration: 10 s $\pm$ 1 s   |  |
| 5.14.4<br>Final measurements                               | Capacitance<br>tan $\delta$  | $ \Delta C/C  \leq 0.5$ %<br>Increase of tan $\delta \leq 0.0050$<br>compared to the values measured in 5.14.0 |
| 5.14.0<br>Initial measurements                             | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz   |  |
| 5.14.3-1<br>Vibration<br>IEC 60068-2-6                     | 10 Hz to 55 Hz; amplitude $\pm 0.35$ mm or acceleration 98 m/s <sup>2</sup><br>Test duration: 10 frequency cycles<br>3 axes offset from each other by 90°<br>1 octave/min<br><br>Visual examination  | No visible damage  |
| 5.14.3-2<br>Shock or impact<br>IEC 60068-2-6               | Pulse shape: half sine<br>Acceleration: 490 m/s <sup>2</sup><br>Duration of pulse: 11 ms<br><br>Visual examination   | No visible damage  |
| 5.14.4<br>Final measurements                               | Capacitance<br>tan $\delta$  | $ \Delta C/C  \leq 0.5$ %<br>Increase of tan $\delta \leq 0.0050$<br>compared to the values measured in 5.14.0 |



| INSPECTION REQUIREMENTS                                      |   |   |
|--|---|---|
| SUB-CLAUSE NUMBER AND TEST                                   | CONDITIONS  | PERFORMANCE REQUIREMENTS  |
| 5.5.3-1<br>Initial measurements                              | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz<br>R insulation  |   |
| 5.5.3-2<br>Voltage test between terminals                    | 1.5 x U <sub>NDC</sub> at T <sub>amb</sub><br>Duration: 60 s  |   |
| 5.5.3-3<br>Final measurements                                | Capacitance<br>tan $\delta$<br>R insulation   | $ \Delta C/C  \leq 0.5 \%$<br>Increase of tan $\delta \leq 0.0050$<br>R insulation $\leq 50 \%$ of specified values                   |
| 5.9-1<br>Initial measurements                                | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz  |   |
| 5.9-2<br>Surge discharge test                                | 1.1 x U <sub>NDC</sub><br>Number of discharges: 5<br>Time lapse: every 2 min (10 min total)   |   |
| 5.9-2<br>Voltage test between terminals                      | Within 5 min after the surge discharge test<br>Duration: 60 s<br>1.5 x U <sub>NDC</sub> at T <sub>amb</sub>   |   |
| 5.9-3<br>Final measurements                                  | Capacitance<br>tan $\delta$ at 10 kHz   | $ \Delta C/C  \leq 1.0 \%$<br>tan $\delta \leq 1.2 \times$ initial tan $\delta + 0.0001$<br>compared to the values measured in 5.9-1  |
| 5.11-1<br>Initial measurements                               | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz  |   |
| 5.11-2<br>Self healing test                                  | 1.5 x U <sub>NDC</sub><br>Duration: 10 s<br>Number of clearings $\leq 5$<br>Clearing = voltage drop of 5 %<br>increase the voltage at 100 V/s till 5 clearings occur<br>with a max. of 2.5 x U <sub>NDC</sub><br>for a duration of 10 s |   |
| 5.11-3<br>Final measurements                                 | Capacitance<br>tan $\delta$   | $ \Delta C/C  \leq 0.5 \%$<br>tan $\delta \leq 1.2 \times$ initial tan $\delta + 0.0001$<br>compared to the values measured in 5.11-1 |
| 5.13-0<br>Initial measurements                               | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz  |   |
| 5.13-1<br>Change of temperature according to IEC 60682-2-14  | Test Nb<br>T <sub>max.</sub> = 85 °C<br>T <sub>min.</sub> = -55 °C<br>Transition time: 1 h, equivalent to 1 °C/min. 5 cycles  |   |
| 5.13-2<br>Damp heat steady state according to IEC 60682-2-78 | Test Ca<br>T <sub>max.</sub> = 40 °C + 2 °C<br>RH = 93 % $\pm$ 3 %<br>Duration: 56 days   |   |
| 5.5.3-2<br>Voltage test between terminals                    | 1.5 x U <sub>NDC</sub> at ambient temperature<br>Duration: 60 s   |   |
| 5.13-3<br>Final measurements                                 | Visual examination  | No puncturing or flashover<br>Self healing punctures are permitted  |
|  | Capacitance<br>tan $\delta$ at 1 V <sub>RMS</sub> 10 kHz  | $ \Delta C/C  \leq 2.0 \%$<br>Increase of tan $\delta \leq 0.0150$<br>compared to the values measured in 5.13-0                       |



| INSPECTION REQUIREMENTS  |   |   |
|--|---|---|
| SUB-CLAUSE NUMBER AND TEST   | CONDITIONS  | PERFORMANCE REQUIREMENTS  |
| 5.10.0<br>Initial measurements                                     | Capacitance at 1 kHz<br>tan δ at 10 kHz   |   |
| 5.10-1<br>Thermal stability test under overload conditions         | Natural cooling $T_{amb} \pm 5\text{ °C}$<br>$1.21 \times P_{max.} = (U_2/2) \times W_2 \times C \times \tan \delta =$<br>$1.21 \times (I_{max.}^2 / W_2 \times C) \times \tan \delta$<br>with $W_2 = 2 \times p \times f_2$ for $I_{max.}$<br>(see specific reference data)<br>$f_2 = 10\text{ kHz}$<br>Duration: 48 h                               |   |
| 5.10-2<br>Final measurements                                       | Measure the temperature every 1.5 h during the last 6 h   | Temperature rise $\leq 1\text{ °C}$<br>$ \Delta C/C  \leq 2.0\%$<br>Increase of $\tan \delta \leq 1.2 \times \text{initial } \delta + 0.0150$ |
| 5.12<br>Resonance frequency measurement                            | Impedance analyser at $T_{amb}$   | < 0.9 times the value as specified in typical curve "Resonant frequency" of this specification  |
| 5.15-0<br>Initial measurements                                     | Capacitance at 1 kHz<br>tan δ at 10 kHz   |   |
| 5.15-1<br>Endurance test between terminals                         | Sequence:<br>$1.3 \times U_{NDC}$ at $85\text{ °C}$<br>$1.3 \times U_{OPDC}$ at $105\text{ °C}$<br><br>Duration: 500 h<br><br>1000 x discharge<br>at $1.3 \times I_{peak}$ (maximum respective peak current in continuous operation)<br><br>$1.3 \times U_{NDC}$ at $85\text{ °C}$<br>$1.3 \times U_{OPDC}$ at $105\text{ °C}$<br><br>Duration: 500 h |   |
| 5.15-2<br>Final measurement  | Capacitance<br>tan δ  | $ \Delta C/C  \leq 3.0\%$<br>Increase of $\tan \delta \leq 0.0150$<br>compared to the values measured in 5.15-0                               |
| 5.16.3-0A<br>Initial measurements                                  | Capacitance at 1 kHz  |   |
| 5.16.3-1A<br>Destruction test sequence for <u>non segment film</u> | $T_{max.} = 85\text{ °C}$<br>Product enveloped with cheese cloth  |   |
| High DC voltage test   | $3 \times U_{NDC}$ or DC voltage<br>until repetitive product healings occur<br>Duration = 15 min  | Audible healings or check healings with oscilloscope  |
| High AC voltage test   | AC RMS voltage = $U_{NDC}/2 \sqrt{2}$<br>with minimum of $250\text{ V}_{AC}$<br>Duration = 5 min<br>Repeat destruction sequence 3 x   |   |
| 5.16.3-2A<br>Final measurements                                    | Visual examination  | No puncturing, flashover or burning of the cheese cloth<br>Self healing punctures are permitted   |



| INSPECTION REQUIREMENTS  |  |   |
|--|--|---|
| SUB-CLAUSE NUMBER AND TEST                                     | CONDITIONS   | PERFORMANCE REQUIREMENTS  |
| 5.16.3-0B<br>Initial measurements                              | Capacitance at 1 kHz   |   |
| 5.16.3-1B<br>Destruction test sequence for <u>segment film</u> | $T_{max.} = 85\text{ }^{\circ}\text{C}$<br>Product enveloped with cheese cloth   |   |
| High DC voltage test   | $3 \times U_{NDC}$ with minimum 2000 $V_{DC}$<br>Duration = 1 min<br><br>Discharge the capacitor<br>Duration = 1 min   | DC power supply capable of obtaining the desired breakdown voltage                          |
| High AC voltage test   | AC RMS voltage = $U_{NDC}/2 \sqrt{2}$<br>with minimum of 250 $V_{AC}$<br>Duration = 15 s<br><br>The above sequence shall be repeated until the test sample capacitance loss 90 % of its initial measurement in 5.16.3-0B.<br>After test sequence will be finish, the capacitor is cooled to ambient temperature and the voltage test between terminals and terminals and case is carried out according to 5.5 and 5.6. |   |
| 5.16.3-2B<br>Final measurements                                | Visual examination<br>Capacitance  | No burning of the cheese cloth<br>The dielectric must withstand the test sequence conducted |



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