

## Metallized Polypropylene Film Capacitor AC Capacitor MKP Radial Type



### FEATURES

- High peak current capabilities
- Long lifetime
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### APPLICATIONS

- AC filtering
- UPS systems
- Renewable energy - grid interface
- Harmonic filter
- Welding equipment

### QUICK REFERENCE DATA

|                                                          |                                                                                                                                                                                          |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated capacitance range                                  | 1 µF to 70 µF                                                                                                                                                                            |
| Capacitance tolerance                                    | ± 5 % and 10 %                                                                                                                                                                           |
| AC voltage range, U <sub>N</sub>                         | 230 V <sub>AC</sub> , 250 V <sub>AC</sub> , 275 V <sub>AC</sub> , 310 V <sub>AC</sub> , 350 V <sub>AC</sub> , 440 V <sub>AC</sub>                                                        |
| Climatic testing class                                   | 40/85/56                                                                                                                                                                                 |
| Maximum application temperature                          | 105 °C                                                                                                                                                                                   |
| Maximum permissible case temperature                     | 105 °C                                                                                                                                                                                   |
| Reference standards                                      | IEC 61071, IEC 60068                                                                                                                                                                     |
| Dielectric                                               | Polypropylene film                                                                                                                                                                       |
| Electrodes                                               | Metallized dielectric film                                                                                                                                                               |
| Construction                                             | Mono and internal serial construction                                                                                                                                                    |
| Encapsulation                                            | Plastic case sealed with resin; flame retardant                                                                                                                                          |
| Terminals                                                | Tinned wire                                                                                                                                                                              |
| Self inductance (L <sub>S</sub> )                        | < 1 nH per mm of lead spacing                                                                                                                                                            |
| Withstanding DC voltage between terminals <sup>(1)</sup> | 1.5 U <sub>NDC</sub> for 10 s, cut off current 10 mA, rise time ≤ 1000 V/s                                                                                                               |
| Insulation resistance                                    | RC between leads, after 1 min > 10 000 s<br>Measuring voltage: 500 V                                                                                                                     |
| Life time expectancy                                     | Useful lifetime: > 60 000 h at U <sub>N</sub><br>FIT: < 10 x 10 <sup>-9</sup> /h (10 per 10 <sup>9</sup> component hours) at 0.5 x U <sub>N</sub> , 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 |

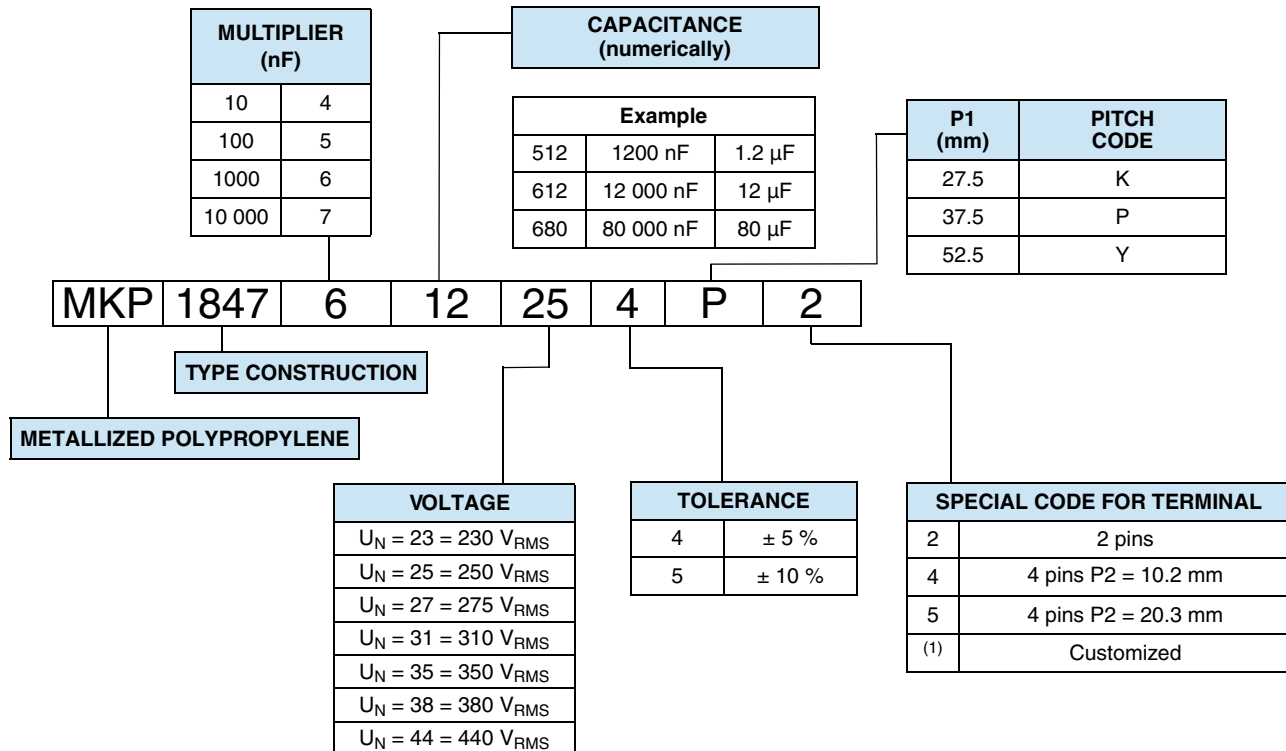
### Notes

- 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)
- <sup>(1)</sup> See document "Voltage Proof Test for Metallized Capacitors" ([www.vishay.com/doc?28169](http://www.vishay.com/doc?28169))

### AC VOLTAGE RATINGS (V<sub>RMS</sub>)

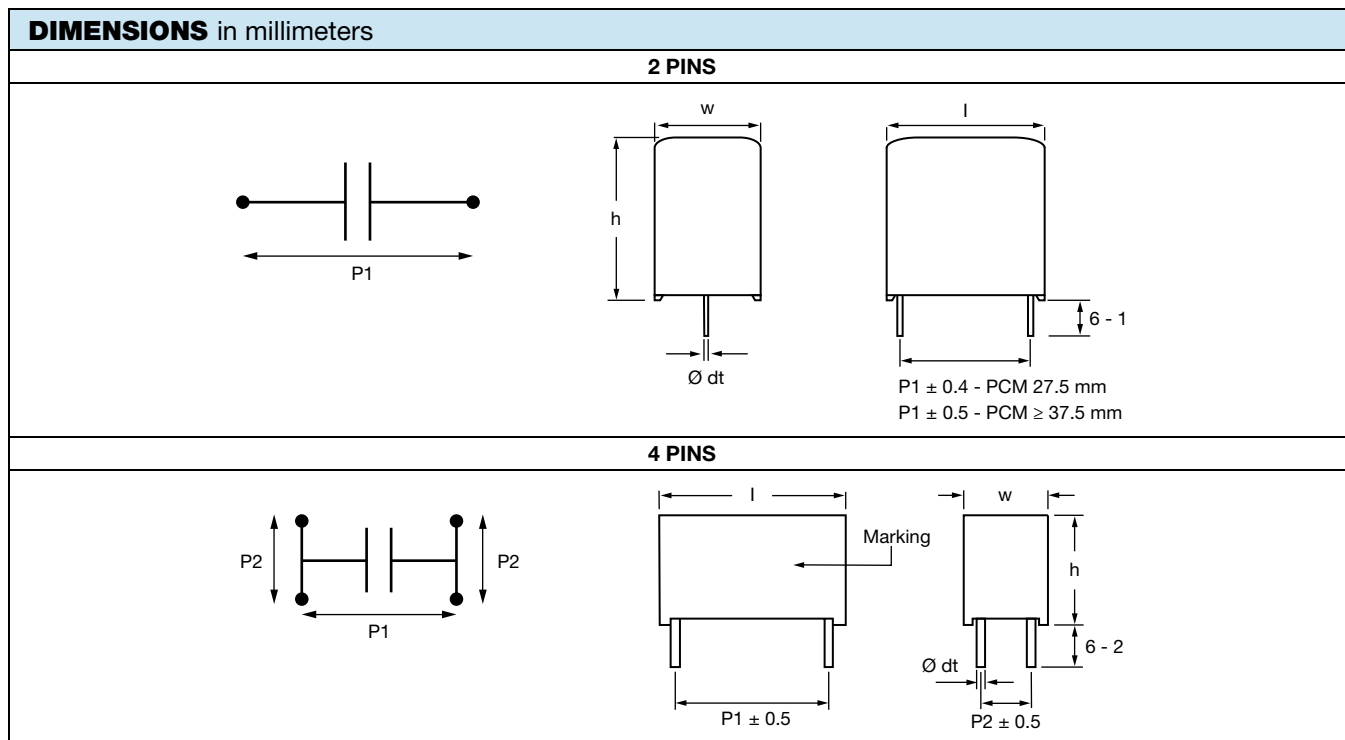
|                            |       |       |       |       |       |       |
|----------------------------|-------|-------|-------|-------|-------|-------|
| U <sub>N</sub>             | 230 V | 250 V | 275 V | 310 V | 350 V | 440 V |
| V <sub>RMS</sub> at 85 °C  | 230 V | 250 V | 275 V | 310 V | 350 V | 440 V |
| V <sub>RMS</sub> at 105 °C | 160 V | 175 V | 190 V | 210 V | 240 V | 300 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



## ELECTRICAL DATA AND ORDERING CODE

| U <sub>RAC</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF)                                                                                                  | DIMENSION <sup>(2)</sup><br>(mm) |      |      | P1<br>(mm) | P2<br>(mm) | dV/dt <sup>(3)</sup><br>(V/μs) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub> <sup>(4)</sup><br>(A) |           | tan δ<br>1 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |           | tan δ<br>10 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |           | ORDERING CODE <sup>(6)</sup> |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------|------|------------|------------|--------------------------------|--------------------------|----------------------------------------|-----------|--------------------------------------------------|-----------|---------------------------------------------------|-----------|------------------------------|
|                         |                                                                                                                              | w                                | h    | l    |            |            |                                |                          | 2<br>PINS                              | 4<br>PINS | 2<br>PINS                                        | 4<br>PINS | 2<br>PINS                                         | 4<br>PINS |                              |
| 230                     | U <sub>NDC</sub> = 450 V; U <sub>RMS</sub> AT 85 °C = 230 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 160 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |           |                              |
|                         | 1                                                                                                                            | 9.0                              | 19.0 | 32.0 | 27.5       | -          | 45                             | 45                       | 2.5                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847510234K2              |
|                         | 2                                                                                                                            | 11.0                             | 21.0 | 32.0 | 27.5       | -          | 45                             | 90                       | 3.5                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847520234K2              |
|                         | 3                                                                                                                            | 13.0                             | 23.0 | 32.0 | 27.5       | -          | 45                             | 135                      | 5.0                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847530234K2              |
|                         | 4                                                                                                                            | 15.0                             | 25.0 | 32.0 | 27.5       | -          | 45                             | 180                      | 6.0                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847540234K2              |
|                         | 5                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 45                             | 225                      | 7.5                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847550234K2              |
|                         | 6                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 45                             | 270                      | 8.0                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847560234K2              |
|                         | 7                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 45                             | 315                      | 8.5                                    | -         | 5                                                | -         | 30                                                | -         | MKP1847570234K2              |
|                         | 8                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 45                             | 360                      | 10.0                                   | -         | 5                                                | -         | 30                                                | -         | MKP1847580234K2              |
|                         | 9                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 45                             | 405                      | 10.5                                   | -         | 5                                                | -         | 30                                                | -         | MKP1847590234K2              |
|                         | 10                                                                                                                           | 20.0                             | 35.0 | 32.0 | 27.5       | -          | 45                             | 450                      | 11.5                                   | -         | 5                                                | -         | 30                                                | -         | MKP1847610234K2              |
|                         | 10                                                                                                                           | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 20                             | 200                      | 8.0                                    | 9.0       | 10                                               | 8         | 75                                                | 70        | MKP1847610234P*              |
|                         | 12                                                                                                                           | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 20                             | 240                      | 9.0                                    | 10.0      | 10                                               | 8         | 75                                                | 70        | MKP1847612234P*              |
|                         | 15                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 20                             | 300                      | 11.0                                   | 12.0      | 10                                               | 8         | 75                                                | 70        | MKP1847615234P*              |
|                         | 20                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 20                             | 400                      | 13.5                                   | 14.5      | 10                                               | 8         | 75                                                | 70        | MKP1847620234P*              |
|                         | 22                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 20                             | 440                      | 14.0                                   | 15.5      | 10                                               | 8         | 75                                                | 70        | MKP1847622234P*              |
|                         | 25                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 20                             | 500                      | 16.0                                   | 17.5      | 10                                               | 8         | 75                                                | 70        | MKP1847625234P*              |
|                         | 30                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 20                             | 600                      | 17.5                                   | 19.0      | 10                                               | 8         | 75                                                | 70        | MKP1847630234P*              |
|                         | 30                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 10                             | 300                      | 13.5                                   | 15.0      | 20                                               | 17        | 150                                               | 135       | MKP1847630234Y*              |
|                         | 35                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 10                             | 350                      | 14.5                                   | 16.0      | 20                                               | 17        | 150                                               | 135       | MKP1847635234Y*              |
|                         | 40                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 10                             | 400                      | 16.5                                   | 18.0      | 20                                               | 17        | 150                                               | 135       | MKP1847640234Y*              |
|                         | 45                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 10                             | 450                      | 17.5                                   | 19.0      | 20                                               | 17        | 150                                               | 135       | MKP1847645234Y*              |
|                         | 50                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 10                             | 500                      | 20.0                                   | 21.5      | 20                                               | 17        | 150                                               | 135       | MKP1847650234Y*              |
|                         | 55                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 10                             | 550                      | 21.0                                   | 22.5      | 20                                               | 17        | 150                                               | 135       | MKP1847655234Y*              |
|                         | 60                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 10                             | 600                      | 21.5                                   | 23.5      | 20                                               | 17        | 150                                               | 135       | MKP1847660234Y*              |
|                         | 65                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 10                             | 650                      | -                                      | 25.5      | -                                                | 17        | -                                                 | 135       | MKP1847665234Y5              |
|                         | 70                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 10                             | 700                      | -                                      | 26.0      | -                                                | 17        | -                                                 | 135       | MKP1847670235Y5              |
| 250                     | U <sub>NDC</sub> = 500 V; U <sub>RMS</sub> AT 85 °C = 250 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 175 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |           |                              |
|                         | 1                                                                                                                            | 9.0                              | 19.0 | 32.0 | 27.5       | -          | 50                             | 50                       | 2.5                                    | -         | 5                                                | -         | 25                                                | -         | MKP1847510254K2              |
|                         | 2                                                                                                                            | 11.0                             | 21.0 | 32.0 | 27.5       | -          | 50                             | 100                      | 4                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847520254K2              |
|                         | 3                                                                                                                            | 13.0                             | 23.0 | 32.0 | 27.5       | -          | 50                             | 150                      | 5                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847530254K2              |
|                         | 4                                                                                                                            | 15.0                             | 25.0 | 32.0 | 27.5       | -          | 50                             | 200                      | 6                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847540254K2              |
|                         | 5                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 50                             | 250                      | 7                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847550254K2              |
|                         | 6                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 50                             | 300                      | 6                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847560254K2              |
|                         | 7                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 50                             | 350                      | 8                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847570254K2              |
|                         | 8                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 50                             | 400                      | 9                                      | -         | 5                                                | -         | 25                                                | -         | MKP1847580254K2              |
|                         | 9                                                                                                                            | 20.0                             | 35.0 | 32.0 | 27.5       | -          | 50                             | 450                      | 11                                     | -         | 5                                                | -         | 25                                                | -         | MKP1847590254K2              |
|                         | 5                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 125                      | 7                                      | 8         | 10                                               | 8         | 70                                                | 65        | MKP1847550254P*              |
|                         | 6                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 150                      | 7                                      | 8         | 10                                               | 8         | 70                                                | 65        | MKP1847560254P*              |
|                         | 7                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 175                      | 7                                      | 8         | 10                                               | 8         | 70                                                | 65        | MKP1847570254P*              |
|                         | 8                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 200                      | 8                                      | 9         | 10                                               | 8         | 70                                                | 65        | MKP1847580254P*              |
|                         | 9                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 225                      | 8                                      | 9         | 10                                               | 8         | 70                                                | 65        | MKP1847590254P*              |
|                         | 10                                                                                                                           | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 250                      | 9                                      | 10        | 10                                               | 8         | 70                                                | 65        | MKP1847610254P*              |
|                         | 12                                                                                                                           | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 25                             | 300                      | 10                                     | 11        | 10                                               | 8         | 70                                                | 65        | MKP1847612254P*              |
|                         | 15                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 25                             | 375                      | 11                                     | 12        | 10                                               | 8         | 70                                                | 65        | MKP1847615254P*              |



## ELECTRICAL DATA AND ORDERING CODE

| U <sub>RAC</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF)                                                                                                  | DIMENSION <sup>(2)</sup><br>(mm) |      |      | P1<br>(mm) | P2<br>(mm) | dV/dt <sup>(3)</sup><br>(V/μs) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub> <sup>(4)</sup><br>(A) |           | tan δ<br>1 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |           | tan δ<br>10 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |                 | ORDERING CODE <sup>(6)</sup> |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------|------|------------|------------|--------------------------------|--------------------------|----------------------------------------|-----------|--------------------------------------------------|-----------|---------------------------------------------------|-----------------|------------------------------|
|                         |                                                                                                                              | w                                | h    | l    |            |            |                                |                          | 2<br>PINS                              | 4<br>PINS | 2<br>PINS                                        | 4<br>PINS | 2<br>PINS                                         | 4<br>PINS       |                              |
| 250                     | U <sub>NDC</sub> = 500 V; U <sub>RMS</sub> AT 85 °C = 250 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 175 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |                 |                              |
|                         | 20                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 25                             | 500                      | 10                                     | 11        | 10                                               | 8         | 70                                                | 65              | MKP1847620254P*              |
|                         | 22                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 25                             | 550                      | 15                                     | 16        | 10                                               | 8         | 70                                                | 65              | MKP1847622254P*              |
|                         | 25                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 25                             | 625                      | 16                                     | 17        | 10                                               | 8         | 70                                                | 65              | MKP1847625254P*              |
|                         | 15                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 12                             | 180                      | 12                                     | 13        | 16                                               | 14        | 135                                               | 125             | MKP1847615254Y*              |
|                         | 20                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 12                             | 240                      | 12                                     | 13        | 16                                               | 14        | 135                                               | 125             | MKP1847620254Y*              |
|                         | 22                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 12                             | 264                      | 12                                     | 13        | 16                                               | 14        | 135                                               | 125             | MKP1847622254Y*              |
|                         | 25                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 12                             | 300                      | 13                                     | 14        | 16                                               | 14        | 135                                               | 125             | MKP1847625254Y*              |
|                         | 30                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 12                             | 360                      | 15                                     | 16        | 16                                               | 14        | 135                                               | 125             | MKP1847630254Y*              |
|                         | 35                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 12                             | 420                      | 16                                     | 17        | 16                                               | 14        | 135                                               | 125             | MKP1847635254Y*              |
|                         | 40                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 12                             | 480                      | 19                                     | 20        | 16                                               | 14        | 135                                               | 125             | MKP1847640254Y*              |
|                         | 45                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 12                             | 540                      | 20                                     | 21        | 16                                               | 14        | 135                                               | 125             | MKP1847645254Y*              |
|                         | 50                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 12                             | 600                      | 21                                     | 22        | 16                                               | 14        | 135                                               | 125             | MKP1847650254Y*              |
|                         | 55                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 12                             | 660                      | -                                      | 24        | -                                                | 14        | -                                                 | 125             | MKP1847655254Y5              |
| 60                      | 45.0                                                                                                                         | 45.0                             | 57.5 | 52.5 | 20.3       | 12         | 720                            | -                        | 25                                     | -         | 14                                               | -         | 125                                               | MKP1847660255Y5 |                              |
| 275                     | U <sub>NDC</sub> = 600 V; U <sub>RMS</sub> AT 85 °C = 275 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 190 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |                 |                              |
|                         | 1                                                                                                                            | 9.0                              | 19.0 | 32.0 | 27.5       | -          | 55                             | 55                       | 2.5                                    | -         | 5                                                | -         | 25                                                | -               | MKP1847510274K2              |
|                         | 2                                                                                                                            | 13.0                             | 23.0 | 32.0 | 27.5       | -          | 55                             | 110                      | 4.5                                    | -         | 5                                                | -         | 25                                                | -               | MKP1847520274K2              |
|                         | 3                                                                                                                            | 15.0                             | 25.0 | 32.0 | 27.5       | -          | 55                             | 165                      | 5.5                                    | -         | 5                                                | -         | 25                                                | -               | MKP1847530274K2              |
|                         | 4                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 55                             | 220                      | 7                                      | -         | 5                                                | -         | 25                                                | -               | MKP1847540274K2              |
|                         | 5                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 55                             | 275                      | 8                                      | -         | 5                                                | -         | 25                                                | -               | MKP1847550274K2              |
|                         | 6                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 55                             | 330                      | 7                                      | -         | 5                                                | -         | 25                                                | -               | MKP1847560274K2              |
|                         | 7                                                                                                                            | 20.0                             | 35.0 | 32.0 | 27.5       | -          | 55                             | 385                      | 10                                     | -         | 5                                                | -         | 25                                                | -               | MKP1847570274K2              |
|                         | 5                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 30                             | 150                      | 7                                      | 8         | 8                                                | 7         | 65                                                | 55              | MKP1847550274P*              |
|                         | 6                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 30                             | 180                      | 7                                      | 8         | 8                                                | 7         | 65                                                | 55              | MKP1847560274P*              |
|                         | 7                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 30                             | 210                      | 8                                      | 9         | 8                                                | 7         | 65                                                | 55              | MKP1847570274P*              |
|                         | 8                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 30                             | 240                      | 8                                      | 9         | 8                                                | 7         | 65                                                | 55              | MKP1847580274P*              |
|                         | 9                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 30                             | 270                      | 9                                      | 10        | 8                                                | 7         | 65                                                | 55              | MKP1847590274P*              |
|                         | 10                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 30                             | 300                      | 10                                     | 11        | 8                                                | 7         | 65                                                | 55              | MKP1847610274P*              |
|                         | 12                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 30                             | 360                      | 11                                     | 12        | 8                                                | 7         | 65                                                | 55              | MKP1847612274P*              |
|                         | 15                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 30                             | 450                      | 13                                     | 14        | 8                                                | 7         | 65                                                | 55              | MKP1847615274P*              |
|                         | 20                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 30                             | 600                      | 16                                     | 17        | 8                                                | 7         | 65                                                | 55              | MKP1847620274P*              |
|                         | 15                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 13                             | 195                      | 11                                     | 12        | 15                                               | 12        | 125                                               | 105             | MKP1847615274Y*              |
|                         | 20                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 13                             | 260                      | 12                                     | 13        | 15                                               | 12        | 125                                               | 105             | MKP1847620274Y*              |
|                         | 22                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 13                             | 286                      | 13                                     | 14        | 15                                               | 12        | 125                                               | 105             | MKP1847622274Y*              |
|                         | 25                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 13                             | 325                      | 15                                     | 16        | 15                                               | 12        | 125                                               | 105             | MKP1847625274Y*              |
|                         | 30                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 13                             | 390                      | 16                                     | 17        | 15                                               | 12        | 125                                               | 105             | MKP1847630274Y*              |
|                         | 35                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 13                             | 455                      | 19                                     | 20        | 15                                               | 12        | 125                                               | 105             | MKP1847635274Y*              |
|                         | 40                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 13                             | 520                      | 20                                     | 21        | 15                                               | 12        | 125                                               | 105             | MKP1847640274Y*              |
|                         | 45                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 13                             | 585                      | -                                      | 23        | -                                                | 12        | -                                                 | 105             | MKP1847645274Y5              |
|                         | 50                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 13                             | 650                      | -                                      | 24        | -                                                | 12        | -                                                 | 105             | MKP1847650275Y5              |



## ELECTRICAL DATA AND ORDERING CODE

| U <sub>RAC</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF)                                                                                                  | DIMENSION <sup>(2)</sup><br>(mm) |      |      | P1<br>(mm) | P2<br>(mm) | dV/dt <sup>(3)</sup><br>(V/μs) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub> <sup>(4)</sup><br>(A) |           | tan δ<br>1 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |           | tan δ<br>10 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |                 | ORDERING CODE <sup>(6)</sup> |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------|------|------------|------------|--------------------------------|--------------------------|----------------------------------------|-----------|--------------------------------------------------|-----------|---------------------------------------------------|-----------------|------------------------------|
|                         |                                                                                                                              | w                                | h    | l    |            |            |                                |                          | 2<br>PINS                              | 4<br>PINS | 2<br>PINS                                        | 4<br>PINS | 2<br>PINS                                         | 4<br>PINS       |                              |
| 310                     | U <sub>NDC</sub> = 630 V; U <sub>RMS</sub> AT 85 °C = 310 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 210 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |                 |                              |
|                         | 1                                                                                                                            | 11.0                             | 21.0 | 32.0 | 27.5       | -          | 68                             | 68                       | 3                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847510314K2              |
|                         | 2                                                                                                                            | 15.0                             | 25.0 | 32.0 | 27.5       | -          | 68                             | 136                      | 5                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847520314K2              |
|                         | 3                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 68                             | 204                      | 7                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847530314K2              |
|                         | 4                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 68                             | 272                      | 8                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847540314K2              |
|                         | 5                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 68                             | 340                      | 9                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847550314K2              |
|                         | 5                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 35                             | 175                      | 7                                      | 8         | 7                                                | 6         | 55                                                | 50              | MKP1847550314P*              |
|                         | 6                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 35                             | 210                      | 8                                      | 9         | 7                                                | 6         | 55                                                | 50              | MKP1847560314P*              |
|                         | 7                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 35                             | 245                      | 9                                      | 10        | 7                                                | 6         | 55                                                | 50              | MKP1847570314P*              |
|                         | 8                                                                                                                            | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 35                             | 280                      | 10                                     | 11        | 7                                                | 6         | 55                                                | 50              | MKP1847580314P*              |
|                         | 9                                                                                                                            | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 35                             | 315                      | 10                                     | 11        | 7                                                | 6         | 55                                                | 50              | MKP1847590314P*              |
|                         | 10                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 35                             | 350                      | 11                                     | 12        | 7                                                | 6         | 55                                                | 50              | MKP1847610315P*              |
|                         | 12                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 35                             | 420                      | 12                                     | 13        | 7                                                | 6         | 55                                                | 50              | MKP1847612314P*              |
|                         | 15                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 35                             | 525                      | 15                                     | 16        | 7                                                | 6         | 55                                                | 50              | MKP1847615314P*              |
|                         | 10                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 15                             | 150                      | 10                                     | 11        | 12                                               | 10        | 105                                               | 90              | MKP1847610314Y*              |
|                         | 12                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 15                             | 180                      | 10                                     | 11        | 12                                               | 10        | 105                                               | 90              | MKP1847612314Y*              |
|                         | 15                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 15                             | 225                      | 12                                     | 13        | 12                                               | 10        | 105                                               | 90              | MKP1847615314Y*              |
|                         | 20                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 15                             | 300                      | 14                                     | 15        | 12                                               | 10        | 105                                               | 90              | MKP1847620314Y*              |
|                         | 22                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 15                             | 330                      | 16                                     | 17        | 12                                               | 10        | 105                                               | 90              | MKP1847622314Y*              |
|                         | 25                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 15                             | 375                      | 17                                     | 18        | 12                                               | 10        | 105                                               | 90              | MKP1847625314Y*              |
|                         | 30                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 15                             | 450                      | -                                      | 21        | -                                                | 10        | -                                                 | 90              | MKP1847630314Y5              |
| 35                      | 45.0                                                                                                                         | 45.0                             | 57.5 | 52.5 | 20.3       | 15         | 525                            | -                        | 22                                     | -         | 10                                               | -         | 90                                                | MKP1847635314Y5 |                              |
| 350                     | U <sub>NDC</sub> = 700 V; U <sub>RMS</sub> AT 85 °C = 350 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 240 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |                 |                              |
|                         | 1                                                                                                                            | 11.0                             | 21.0 | 32.0 | 27.5       | -          | 100                            | 100                      | 3                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847510354K2              |
|                         | 2                                                                                                                            | 15.0                             | 25.0 | 32.0 | 27.5       | -          | 100                            | 200                      | 5                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847520354K2              |
|                         | 3                                                                                                                            | 18.0                             | 28.0 | 32.0 | 27.5       | -          | 100                            | 300                      | 7                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847530354K2              |
|                         | 4                                                                                                                            | 21.0                             | 31.0 | 32.0 | 27.5       | -          | 100                            | 400                      | 9                                      | -         | 5                                                | -         | 20                                                | -               | MKP1847540354K2              |
|                         | 5                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 50                             | 250                      | 7                                      | 8         | 7                                                | 6         | 50                                                | 45              | MKP1847550354P*              |
|                         | 6                                                                                                                            | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 50                             | 300                      | 8                                      | 9         | 7                                                | 6         | 50                                                | 45              | MKP1847560354P*              |
|                         | 7                                                                                                                            | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 50                             | 350                      | 9                                      | 10        | 7                                                | 6         | 50                                                | 45              | MKP1847570354P*              |
|                         | 8                                                                                                                            | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 50                             | 400                      | 10                                     | 11        | 7                                                | 6         | 50                                                | 45              | MKP1847580354P*              |
|                         | 9                                                                                                                            | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 50                             | 450                      | 11                                     | 12        | 7                                                | 6         | 50                                                | 45              | MKP1847590354P*              |
|                         | 10                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2       | 50                             | 500                      | 12                                     | 13        | 7                                                | 6         | 50                                                | 45              | MKP1847610354P*              |
|                         | 12                                                                                                                           | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 50                             | 600                      | 14                                     | 15        | 7                                                | 6         | 50                                                | 45              | MKP1847612354P*              |
|                         | 10                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 25                             | 250                      | 10                                     | 11        | 12                                               | 10        | 100                                               | 85              | MKP1847610354Y*              |
|                         | 12                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 25                             | 300                      | 11                                     | 12        | 12                                               | 10        | 100                                               | 85              | MKP1847612354Y*              |
|                         | 15                                                                                                                           | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 25                             | 375                      | 12                                     | 13        | 12                                               | 10        | 100                                               | 85              | MKP1847615354Y*              |
|                         | 20                                                                                                                           | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 25                             | 500                      | 15                                     | 16        | 12                                               | 10        | 100                                               | 85              | MKP1847620354Y*              |
|                         | 22                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 25                             | 550                      | 17                                     | 18        | 12                                               | 10        | 100                                               | 85              | MKP1847622354Y*              |
|                         | 25                                                                                                                           | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 25                             | 625                      | 18                                     | 19        | 12                                               | 10        | 100                                               | 85              | MKP1847625354Y*              |
|                         | 30                                                                                                                           | 45.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 25                             | 750                      | -                                      | 22        | -                                                | 10        | -                                                 | 85              | MKP1847630354Y5              |



## ELECTRICAL DATA AND ORDERING CODE

| U <sub>RAC</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF)                                                                                                   | DIMENSION <sup>(2)</sup><br>(mm) |      |      | P1<br>(mm) | P2<br>(mm) | dV/dt <sup>(3)</sup><br>(V/μs) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub> <sup>(4)</sup><br>(A) |           | tan δ<br>1 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |           | tan δ<br>10 kHz<br>( $< 10^{-4}$ ) <sup>(5)</sup> |                 | ORDERING CODE <sup>(6)</sup> |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------|------|------------|------------|--------------------------------|--------------------------|----------------------------------------|-----------|--------------------------------------------------|-----------|---------------------------------------------------|-----------------|------------------------------|
|                         |                                                                                                                               | w                                | h    | l    |            |            |                                |                          | 2<br>PINS                              | 4<br>PINS | 2<br>PINS                                        | 4<br>PINS | 2<br>PINS                                         | 4<br>PINS       |                              |
| 440                     | U <sub>NDC</sub> = 1000 V; U <sub>RMS</sub> AT 85 °C = 440 V <sub>AC</sub> ; U <sub>RMS</sub> AT 105 °C = 300 V <sub>AC</sub> |                                  |      |      |            |            |                                |                          |                                        |           |                                                  |           |                                                   |                 |                              |
|                         | 1.0                                                                                                                           | 15.7                             | 28.5 | 41.5 | 37.5       | 10.2       | 80                             | 80                       | 5                                      | -         | 7                                                | -         | 25                                                | -               | MKP1847510444P*              |
|                         | 1.5                                                                                                                           | 18.5                             | 35.5 | 43.0 | 37.5       | 10.2       | 80                             | 120                      | 7                                      | -         | 7                                                | -         | 25                                                | -               | MKP1847515444P*              |
|                         | 2.0                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 80                             | 160                      | 9                                      | 10        | 7                                                | 6         | 25                                                | 20              | MKP1847520444P*              |
|                         | 2.2                                                                                                                           | 21.5                             | 38.5 | 43.0 | 37.5       | 10.2       | 80                             | 176                      | 9                                      | 10        | 7                                                | 6         | 25                                                | 20              | MKP1847522444P*              |
|                         | 3                                                                                                                             | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2/20.3  | 80                             | 240                      | 12                                     | 13        | 7                                                | 6         | 25                                                | 20              | MKP1847530444P*              |
|                         | 3.3                                                                                                                           | 24.0                             | 44.0 | 42.0 | 37.5       | 10.2/20.3  | 80                             | 264                      | 12                                     | 13        | 7                                                | 6         | 25                                                | 20              | MKP1847533444P*              |
|                         | 4                                                                                                                             | 30.0                             | 45.0 | 42.0 | 37.5       | 10.2/20.3  | 80                             | 320                      | 14                                     | 15        | 7                                                | 6         | 25                                                | 20              | MKP1847540444P*              |
|                         | 5                                                                                                                             | 30.0                             | 57.0 | 42.0 | 37.5       | 20.3       | 80                             | 400                      | 17                                     | 18        | 7                                                | 6         | 25                                                | 20              | MKP1847550444P*              |
|                         | 5                                                                                                                             | 25.0                             | 45.0 | 57.5 | 52.5       | 10.2       | 35                             | 175                      | 13                                     | 14        | 12                                               | 10        | 50                                                | 40              | MKP1847550444Y*              |
|                         | 6                                                                                                                             | 30.0                             | 45.0 | 57.5 | 52.5       | 20.3       | 35                             | 210                      | 14                                     | 15        | 12                                               | 10        | 50                                                | 40              | MKP1847560444Y*              |
|                         | 7                                                                                                                             | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 35                             | 245                      | 17                                     | 18        | 12                                               | 10        | 50                                                | 40              | MKP1847570444Y*              |
|                         | 8                                                                                                                             | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 35                             | 280                      | 18                                     | 19        | 12                                               | 10        | 50                                                | 40              | MKP1847580444Y*              |
|                         | 9                                                                                                                             | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 35                             | 315                      | 19                                     | 20        | 12                                               | 10        | 50                                                | 40              | MKP1847580444Y*              |
|                         | 10                                                                                                                            | 35.0                             | 50.0 | 57.5 | 52.5       | 20.3       | 35                             | 350                      | 20                                     | 21        | 12                                               | 10        | 50                                                | 40              | MKP1847610444Y*              |
| 12                      | 45.0                                                                                                                          | 45.0                             | 57.5 | 52.5 | 20.3       | 35         | 420                            | -                        | 24                                     | -         | 10                                               | -         | 40                                                | MKP1847612444Y5 |                              |

## Notes

- (1) Intermediate capacitance values available on request  
 (2) Standard dimension  
 (3) Rated voltage pulse slope (dU/dt) R at voltage U<sub>NDC</sub>  
 (4) Maximum RMS current at 10 kHz, + 85 °C, capacitance tolerance specified  
 (5) The ESR (Equivalent Series Resistance) can be calculated as  $\tan \delta (f)/(2 \times \pi \times f \times C)$   
 (6) Change the \* symbol with special code for the terminals

## PACKAGING INFORMATION

| U <sub>RMS</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF) | Ø dt | ORDERING CODE <sup>(2)</sup> | MASS<br>(g) | SPQ <sup>(3)</sup><br>(pcs) |
|-------------------------|-----------------------------|------|------------------------------|-------------|-----------------------------|
| 230                     | 1                           | 0.8  | MKP1847510234K2              | 6           | 160                         |
|                         | 2                           | 0.8  | MKP1847520234K2              | 9           | 130                         |
|                         | 3                           | 0.8  | MKP1847530234K2              | 11          | 115                         |
|                         | 4                           | 0.8  | MKP1847540234K2              | 12          | 100                         |
|                         | 5                           | 0.8  | MKP1847550234K2              | 17          | 80                          |
|                         | 6                           | 0.8  | MKP1847560234K2              | 16          | 80                          |
|                         | 7                           | 0.8  | MKP1847570234K2              | 15          | 80                          |
|                         | 8                           | 0.8  | MKP1847580234K2              | 22          | 65                          |
|                         | 9                           | 0.8  | MKP1847590234K2              | 21          | 65                          |
|                         | 10                          | 0.8  | MKP1847610234K2              | 21          | 70                          |
|                         | 10                          | 1.0  | MKP1847610234P*              | 32          | 105                         |
|                         | 12                          | 1.0  | MKP1847612234P*              | 30          | 105                         |
|                         | 15                          | 1.0  | MKP1847615234P*              | 37          | 91                          |
|                         | 20                          | 1.0  | MKP1847620234P*              | 48          | 77                          |
|                         | 22                          | 1.0  | MKP1847622234P*              | 45          | 77                          |
|                         | 25                          | 1.0  | MKP1847625234P*              | 62          | 63                          |
|                         | 30                          | 1.0  | MKP1847630234P*              | 56          | 63                          |
|                         | 30                          | 1.2  | MKP1847630234Y*              | 69          | 55                          |
|                         | 35                          | 1.2  | MKP1847635234Y*              | 65          | 55                          |
|                         | 40                          | 1.2  | MKP1847640234Y*              | 91          | 45                          |
|                         | 45                          | 1.2  | MKP1847645234Y*              | 86          | 45                          |
|                         | 50                          | 1.2  | MKP1847650234Y*              | 107         | 40                          |
|                         | 55                          | 1.2  | MKP1847655234Y*              | 101         | 40                          |
|                         | 60                          | 1.2  | MKP1847660234Y*              | 96          | 40                          |
|                         | 65                          | 1.2  | MKP1847665234Y5              | 121         | 30                          |
|                         | 70                          | 1.2  | MKP1847670235Y5              | 120         | 30                          |



## PACKAGING INFORMATION

| U <sub>RMS</sub><br>(V) | CAP. <sup>(1)</sup><br>(μF) | Ø dt | ORDERING CODE <sup>(2)</sup> | MASS<br>(g) | SPQ <sup>(3)</sup><br>(pcs) |
|-------------------------|-----------------------------|------|------------------------------|-------------|-----------------------------|
| 250                     | 1                           | 0.8  | MKP1847510254K2              | 6           | 160                         |
|                         | 2                           | 0.8  | MKP1847520254K2              | 9           | 130                         |
|                         | 3                           | 0.8  | MKP1847530254K2              | 10          | 115                         |
|                         | 4                           | 0.8  | MKP1847540254K2              | 12          | 100                         |
|                         | 5                           | 0.8  | MKP1847550254K2              | 16          | 80                          |
|                         | 6                           | 0.8  | MKP1847560254K2              | 15          | 80                          |
|                         | 7                           | 0.8  | MKP1847570254K2              | 22          | 65                          |
|                         | 8                           | 0.8  | MKP1847580254K2              | 21          | 65                          |
|                         | 9                           | 0.8  | MKP1847590254K2              | 20          | 70                          |
|                         | 5                           | 1.0  | MKP1847550254P*              | 36          | 105                         |
|                         | 6                           | 1.0  | MKP1847560254P*              | 35          | 105                         |
|                         | 7                           | 1.0  | MKP1847570254P*              | 34          | 105                         |
|                         | 8                           | 1.0  | MKP1847580254P*              | 32          | 105                         |
|                         | 9                           | 1.0  | MKP1847590254P*              | 31          | 105                         |
|                         | 10                          | 1.0  | MKP1847610254P*              | 30          | 105                         |
|                         | 12                          | 1.0  | MKP1847612254P*              | 27          | 105                         |
|                         | 15                          | 1.0  | MKP1847615254P*              | 34          | 91                          |
|                         | 20                          | 1.0  | MKP1847620254P*              | 63          | 63                          |
|                         | 22                          | 1.0  | MKP1847622254P*              | 61          | 63                          |
|                         | 25                          | 1.0  | MKP1847625254P*              | 57          | 63                          |
|                         | 15                          | 1.2  | MKP1847615254Y*              | 83          | 55                          |
|                         | 20                          | 1.2  | MKP1847620254Y*              | 77          | 55                          |
|                         | 22                          | 1.2  | MKP1847622254Y*              | 75          | 55                          |
|                         | 25                          | 1.2  | MKP1847625254Y*              | 71          | 55                          |
|                         | 30                          | 1.2  | MKP1847630254Y*              | 97          | 45                          |
|                         | 35                          | 1.2  | MKP1847635254Y*              | 91          | 45                          |
|                         | 40                          | 1.2  | MKP1847640254Y*              | 111         | 40                          |
|                         | 45                          | 1.2  | MKP1847645254Y*              | 105         | 40                          |
|                         | 50                          | 1.2  | MKP1847650254Y*              | 98          | 40                          |
|                         | 55                          | 1.2  | MKP1847655254Y5              | 123         | 30                          |
|                         | 60                          | 1.2  | MKP1847660255Y5              | 120         | 30                          |
| 275                     | 1                           | 0.8  | MKP1847510274K2              | 6           | 160                         |
|                         | 2                           | 0.8  | MKP1847520274K2              | 11          | 115                         |
|                         | 3                           | 0.8  | MKP1847530274K2              | 12          | 100                         |
|                         | 4                           | 0.8  | MKP1847540274K2              | 16          | 80                          |
|                         | 5                           | 0.8  | MKP1847550274K2              | 22          | 65                          |
|                         | 6                           | 0.8  | MKP1847560274K2              | 21          | 65                          |
|                         | 7                           | 0.8  | MKP1847570274K2              | 20          | 70                          |
|                         | 5                           | 1.0  | MKP1847550274P*              | 34          | 105                         |
|                         | 6                           | 1.0  | MKP1847560274P*              | 33          | 105                         |
|                         | 7                           | 1.0  | MKP1847570274P*              | 31          | 105                         |
|                         | 8                           | 1.0  | MKP1847580274P*              | 30          | 105                         |
|                         | 9                           | 1.0  | MKP1847590274P*              | 28          | 105                         |
|                         | 10                          | 1.0  | MKP1847610274P*              | 37          | 91                          |
|                         | 12                          | 1.0  | MKP1847612274P*              | 34          | 91                          |
|                         | 15                          | 1.0  | MKP1847615274P*              | 45          | 77                          |
|                         | 20                          | 1.0  | MKP1847620274P*              | 56          | 63                          |
|                         | 15                          | 1.2  | MKP1847615274Y*              | 78          | 55                          |
|                         | 20                          | 1.2  | MKP1847620274Y*              | 70          | 55                          |
|                         | 22                          | 1.2  | MKP1847622274Y*              | 67          | 55                          |
|                         | 25                          | 1.2  | MKP1847625274Y*              | 95          | 45                          |
|                         | 30                          | 1.2  | MKP1847630274Y*              | 86          | 45                          |
|                         | 35                          | 1.2  | MKP1847635274Y*              | 106         | 40                          |
|                         | 40                          | 1.2  | MKP1847640274Y*              | 96          | 40                          |
|                         | 45                          | 1.2  | MKP1847645274Y5              | 186         | 30                          |
|                         | 50                          | 1.2  | MKP1847650275Y5              | 186         | 30                          |



## PACKAGING INFORMATION

| $U_{RMS}$<br>(V) | CAP. <sup>(1)</sup><br>( $\mu$ F) | $\varnothing$ dt | ORDERING CODE <sup>(2)</sup> | MASS<br>(g) | SPQ <sup>(3)</sup><br>(pcs) |
|------------------|-----------------------------------|------------------|------------------------------|-------------|-----------------------------|
| 310              | 1.0                               | 0.8              | MKP1847510314K2              | 9           | 130                         |
|                  | 2.0                               | 0.8              | MKP1847520314K2              | 12          | 100                         |
|                  | 3.0                               | 0.8              | MKP1847530314K2              | 16          | 80                          |
|                  | 4.0                               | 0.8              | MKP1847540314K2              | 22          | 65                          |
|                  | 5.0                               | 0.8              | MKP1847550314K2              | 20          | 65                          |
|                  | 5.0                               | 1.0              | MKP1847550314P*              | 32          | 105                         |
|                  | 6.0                               | 1.0              | MKP1847560314P*              | 30          | 105                         |
|                  | 7.0                               | 1.0              | MKP1847570314P*              | 28          | 105                         |
|                  | 8.0                               | 1.0              | MKP1847580314P*              | 37          | 91                          |
|                  | 9.0                               | 1.0              | MKP1847590314P*              | 35          | 91                          |
|                  | 10                                | 1.0              | MKP1847610315P*              | 34          | 91                          |
|                  | 12                                | 1.0              | MKP1847612314P*              | 44          | 77                          |
|                  | 15                                | 1.0              | MKP1847615314P*              | 58          | 63                          |
|                  | 10                                | 1.2              | MKP1847610314Y*              | 81          | 55                          |
|                  | 12                                | 1.2              | MKP1847612314Y*              | 77          | 55                          |
|                  | 15                                | 1.2              | MKP1847615314Y*              | 71          | 55                          |
|                  | 20                                | 1.2              | MKP1847620314Y*              | 93          | 45                          |
|                  | 22                                | 1.2              | MKP1847622314Y*              | 117         | 40                          |
|                  | 25                                | 1.2              | MKP1847625314Y*              | 111         | 40                          |
|                  | 30                                | 1.2              | MKP1847630314Y5              | 187         | 30                          |
| 350              | 35                                | 1.2              | MKP1847635314Y5              | 187         | 30                          |
|                  | 1.0                               | 0.8              | MKP1847510354K2              | 9           | 130                         |
|                  | 2.0                               | 0.8              | MKP1847520354K2              | 12          | 100                         |
|                  | 3.0                               | 0.8              | MKP1847530354K2              | 15          | 80                          |
|                  | 4.0                               | 0.8              | MKP1847540354K2              | 21          | 65                          |
|                  | 5.0                               | 1.0              | MKP1847550354P*              | 30          | 105                         |
|                  | 6.0                               | 1.0              | MKP1847560354P*              | 28          | 105                         |
|                  | 7.0                               | 1.0              | MKP1847570354P*              | 37          | 91                          |
|                  | 8.0                               | 1.0              | MKP1847580354P*              | 34          | 91                          |
|                  | 9.0                               | 1.0              | MKP1847590354P*              | 48          | 77                          |
|                  | 10                                | 1.0              | MKP1847610354P*              | 45          | 77                          |
|                  | 12                                | 1.0              | MKP1847612354P*              | 60          | 63                          |
|                  | 10                                | 1.2              | MKP1847610354Y*              | 78          | 55                          |
|                  | 12                                | 1.2              | MKP1847612354Y*              | 74          | 55                          |
|                  | 15                                | 1.2              | MKP1847615354Y*              | 67          | 55                          |
|                  | 20                                | 1.2              | MKP1847620354Y*              | 87          | 45                          |
|                  | 22                                | 1.2              | MKP1847622354Y*              | 111         | 40                          |
|                  | 25                                | 1.2              | MKP1847625354Y*              | 102         | 40                          |
|                  | 30                                | 1.2              | MKP1847630354Y5              | 187         | 30                          |
| 440              | 1.0                               | 1.0              | MKP1847510444P*              | 27          | 70                          |
|                  | 1.5                               | 1.0              | MKP1847515444P*              | 42          | 105                         |
|                  | 2.0                               | 1.0              | MKP1847520444P*              | 52          | 91                          |
|                  | 2.2                               | 1.0              | MKP1847522444P*              | 52          | 91                          |
|                  | 3.0                               | 1.0              | MKP1847530444P*              | 61          | 77                          |
|                  | 3.3                               | 1.0              | MKP1847533444P*              | 58          | 77                          |
|                  | 4.0                               | 1.0              | MKP1847540444P*              | 74          | 63                          |
|                  | 5.0                               | 1.0              | MKP1847550444P*              | 83          | 63                          |
|                  | 5.0                               | 1.2              | MKP1847550444Y*              | 100         | 55                          |
|                  | 6.0                               | 1.2              | MKP1847560444Y*              | 135         | 45                          |
|                  | 7.0                               | 1.2              | MKP1847570444Y*              | 155         | 40                          |
|                  | 8.0                               | 1.2              | MKP1847580444Y*              | 152         | 40                          |
|                  | 9.0                               | 1.2              | MKP1847590444Y*              | 145         | 40                          |
|                  | 10                                | 1.2              | MKP1847610445Y*              | 140         | 40                          |
|                  | 12                                | 1.2              | MKP1847612445Y5              | 180         | 30                          |

## Notes

- (1) Intermediate capacitance values available on request  
(2) Change the \* symbols with special code for terminals  
(3) SPQ = Standard Packing Quantity

## CONSTRUCTION

Low inductive wound cell elements of metallized polypropylene film, potted with resin in a flame retardant case.

### Specific Method of Mounting to Withstand Vibration and Shock

The capacitor unit is designed for mounting on a printed circuit board.

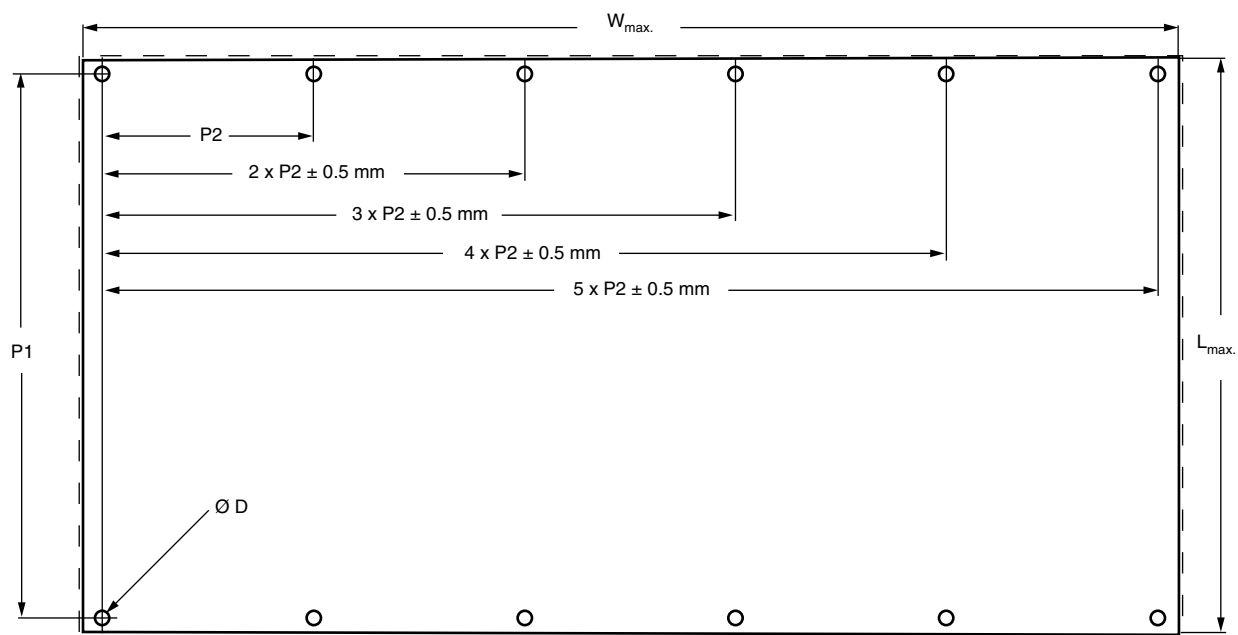
In order to withstand vibration and shock tests, it must be insured that the stand-off pips are in good contact with the printed circuit board.

The capacitors shall be mechanically fixed by the leads and the body clamped.

### Space Requirements on Printed-Circuit Board

The maximum length and width of film capacitors is shown in the figure.

- Product height with seating plane as given by "IEC 60717" as reference:



| P1 (mm) | L <sub>max.</sub> (mm) | W <sub>max.</sub> (mm) | Ø D (mm) | Δh (mm) |
|---------|------------------------|------------------------|----------|---------|
| 27.5    | l + 2                  | w + 1.6                | 1.2      | 0.2     |
| 37.5    | l + 3                  | w + 2.0                | 1.5      | 0.5     |
| 52.5    | l + 4                  | w + 2.4                | 1.7      | 0.5     |

## SOLDERING CONDITIONS

For general soldering conditions and wave soldering profile, we refer to the document:

"Characteristics and Definitions used for Film Capacitors": [www.vishay.com/doc?26033](http://www.vishay.com/doc?26033)

### Storage Temperature

Storage temperature: T<sub>stg</sub> = - 25 °C to + 35 °C with RH maximum 75 % without condensation.

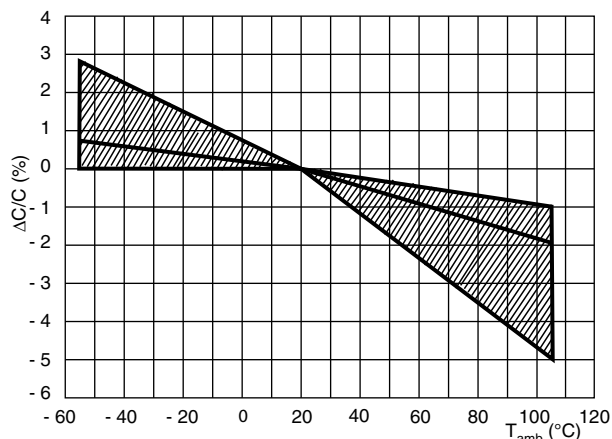
### Ratings and Characteristics Reference Conditions

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

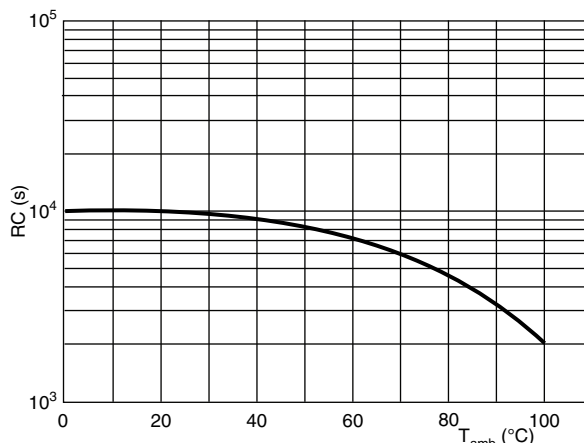
For reference testing, a conditioning period shall be applied over 96 h ± 4 h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.



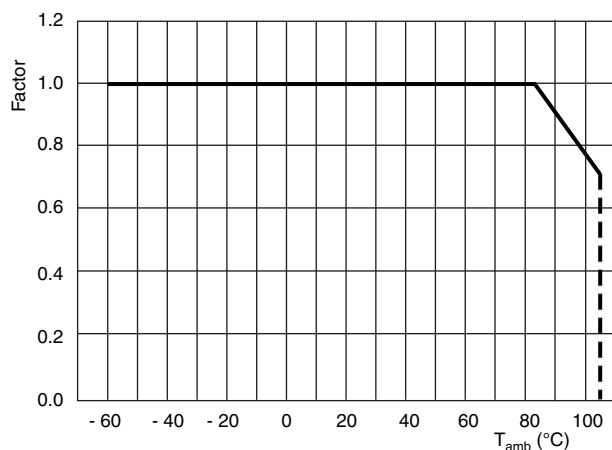
## CHARACTERISTICS



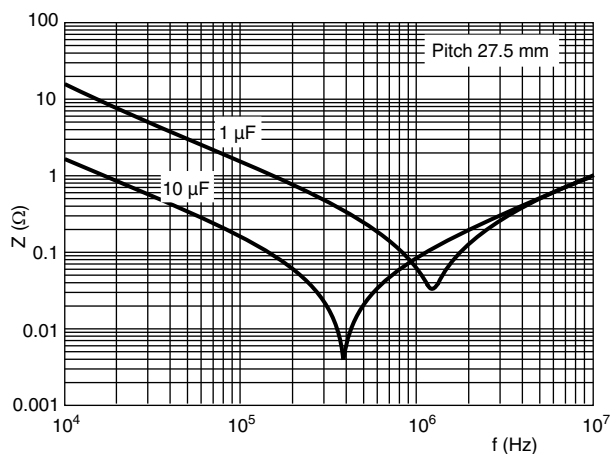
Capacitance as a function of ambient temperature (typical curve)



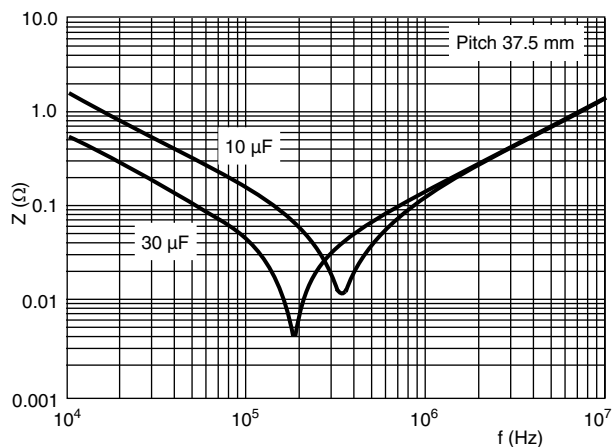
Insulation resistance as a function of ambient temperature (typical curve)



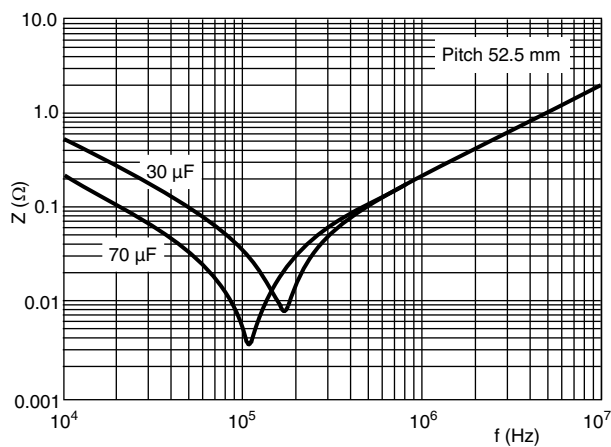
RMS voltage in function of temperature



Impedance vs. frequency (typical curve)



Impedance vs. frequency (typical curve)



Impedance vs. frequency (typical curve)

| HEAT CONDUCTIVITY |      |      |                           |               |               |
|-------------------|------|------|---------------------------|---------------|---------------|
| DIMENSIONS (mm)   |      |      | HEAT CONDUCTIVITY (mW/°C) |               |               |
| w                 | h    | l    | PITCH 27.5 mm             | PITCH 37.5 mm | PITCH 52.5 mm |
| 9.0               | 19.0 | 32.0 | 16                        | -             | -             |
| 11.0              | 21.0 | 32.0 | 19                        | -             | -             |
| 13.0              | 23.0 | 32.0 | 22                        | -             | -             |
| 15.0              | 25.0 | 32.0 | 25                        | -             | -             |
| 18.0              | 28.0 | 32.0 | 30                        | -             | -             |
| 21.0              | 31.0 | 32.0 | 35                        | -             | -             |
| 18.5              | 35.5 | 43.0 | -                         | 45            | -             |
| 21.5              | 38.5 | 43.0 | -                         | 51            | -             |
| 24.0              | 44.0 | 42.0 | -                         | 59            | -             |
| 30.0              | 45.0 | 42.0 | -                         | 68            | -             |
| 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 | -                         | -             | 108           |

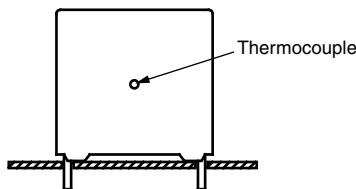
## Power Dissipation and Maximum Component Temperature Rise

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  $\Delta T = P/G$ :

- $\Delta T$  = Component temperature rise (°C) with a maximum of 15 °C
- P = Power dissipation of the component (mW)
- G = Heat conductivity of the component (mW/°C)

## MEASURING THE COMPONENT TEMPERATURE



The case temperature is measured in unloaded ( $T_{amb}$ ) and maximum loaded condition ( $T_C$ ).

The temperature rise is given by  $\Delta T = T_C - T_{amb}$ .

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

## APPLICATION NOTE AND LIMITING CONDITIONS

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

These mains applications are strictly regulated in safety standards and therefore electromagnetic interference suppression capacitors conforming the standards must be used.

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

- The peak voltage ( $U_{P+}$ ) shall not be greater than  $\sqrt{2} \times U_{RMS}$
- The peak-to-peak ripple voltage ( $U_{PP}$ ) shall not be greater than  $0.2 \times \sqrt{2} \times U_{RMS}$
- The voltage pulse slope ( $dU/dt$ ) shall not exceed the rated 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  $U_{NDC}$  and divided by the applied voltage.

For all other pulses following equation must be fulfilled:

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

T is the pulse duration

- The maximum component surface temperature must be lower than 105 °C and maximum temperature rise between case and free air ambient shall be lower than 15 °C.

**INSPECTION REQUIREMENTS****General Notes**

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

| SUB-CLAUSE NUMBER AND TEST                              | CONDITIONS                                                                                                                                                                                                                                                                                                                                                                                                  | PERFORMANCE REQUIREMENTS                                                                                        |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>ROUTINE TEST-FINAL INSPECTION</b>                    |                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                 |
| 5.14.2.1 External inspection, visual examination        |                                                                                                                                                                                                                                                                                                                                                                                                             | Legible marking as specified                                                                                    |
| 5.14.2.2 Dimensions                                     |                                                                                                                                                                                                                                                                                                                                                                                                             | See specification drawing                                                                                       |
| 5.3.1 Capacitance                                       | 1 kHz at room temperature                                                                                                                                                                                                                                                                                                                                                                                   | See specific reference data                                                                                     |
| 5.3.2 $\tan \delta$                                     | 1 kHz at room temperature<br>10 kHz at room temperature                                                                                                                                                                                                                                                                                                                                                     | See specific reference data                                                                                     |
| 5.5.1.2 Voltage test between terminal                   | $1.5 \times U_{NDC}$ at $T_{amb}$<br>Duration 10 s                                                                                                                                                                                                                                                                                                                                                          | No visible damage or puncture<br>No flashover                                                                   |
| 5.7 Insulation resistance                               | Measuring voltage 100 V at room temperature<br><br>Duration 1 min                                                                                                                                                                                                                                                                                                                                           | See specific reference data                                                                                     |
| <b>TYPE TESTS</b>                                       |                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                 |
| 5.14.2 External inspection                              | Check for finish, marking and overall dimensions                                                                                                                                                                                                                                                                                                                                                            | Legible marking and finish as specified<br>Dimensions: See specific drawing                                     |
| 5.14.0 Initial measurements                             | Capacitance at 1 kHz<br>$\tan \delta$ at 10 kHz                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                 |
| 5.14.1.1.4 Robustness of terminations<br>IEC 60068-2-21 | Tensile $U_{a1}$<br>Wire diameter      Section      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      Load<br>$\leq 0.8$ mm $\leq 0.05$ mm <sup>3</sup> 10 N<br>$\leq 1.25$ mm $\leq 0.019$ mm <sup>3</sup> 20 N<br>4 x 90 °,<br>Duration 2 s to 3 s/bend |                                                                                                                 |
| 5.14.1.6 Resistance to soldering heat<br>IEC 60068-2-20 | No predrying, method 1A<br>Solder bath: 280 °C<br>Duration 10 s $\pm$ 1 s                                                                                                                                                                                                                                                                                                                                   |                                                                                                                 |
| 5.14.4 Final measurements                               | Capacitance<br>$\tan \delta$                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                 |
| 5.14.0 Initial measurements                             | Capacitance at 1 kHz<br>$\tan \delta$ at 10 kHz                                                                                                                                                                                                                                                                                                                                                             | [ $\Delta C/C$ ] $\leq$ 0.5 %<br>Increase of $\tan \delta \leq 0.0050$<br>Compared to values measured in 5.14.0 |
| 5.14.3.1 Vibration<br>IEC 60068-2-6                     | 10 Hz to 55 Hz: Amplitude $\pm$ 0.35 mm or<br>acceleration 98 m/s <sup>2</sup><br><br>Test duration: 10 frequency cycles, 3 axes<br>offset from each other by 90°<br>1 octave/min<br>Visual examination                                                                                                                                                                                                     |                                                                                                                 |
|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                             | No visible damage                                                                                               |



| SUB-CLAUSE NUMBER AND TEST                              | CONDITIONS                                                                                                                                                                                                                         | PERFORMANCE REQUIREMENTS                                                                                                          |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE TESTS</b>                                       |                                                                                                                                                                                                                                    |                                                                                                                                   |
| 5.14.3.2 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>Visual examination                                                                                                                     | No visible damage                                                                                                                 |
| 5.14.4 Final measurements                               | Capacitance<br>tan $\delta$                                                                                                                                                                                                        | $ \Delta C/C  \leq 0.5 \%$<br>Increase of tan $\delta \leq 0.0050$<br>Compared to values measured in 5.14.0                       |
| 5.5.3.1 Initial measurements                            | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz<br>R insulation                                                                                                                                                                     | $ \Delta C/C  \leq 0.5 \%$<br>Increase of tan $\delta \leq 0.0050$<br>R insulation $\geq 50 \%$ of specified values               |
| 5.5.3.2 DC voltage test between terminal                | $1.5 \times U_{NDC}$ at $T_{amb}$<br>Duration 60 s                                                                                                                                                                                 |                                                                                                                                   |
| 5.5.3.3 Final measurements                              | Capacitance<br>tan $\delta$<br>R insulation                                                                                                                                                                                        |                                                                                                                                   |
| 5.9.1 Initial measurements                              | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz                                                                                                                                                                                     | $ \Delta C/C  \leq 1.0 \%$<br>tan $\delta \leq 1.2$ initial tan $\delta + 0.0001$<br>Compared to values measured in 5.9.1         |
| 5.9.2 Surge discharge test                              | $1.1 \times U_{NDC}$<br>Number of discharges: 5<br>Time lapse: Every 2 min (10 min total)                                                                                                                                          |                                                                                                                                   |
| 5.9.3 DC voltage test between terminal                  | Within 5 min after the surge discharge test<br>Duration 10 s<br>$1.5 \times U_{NDC}$ at $T_{amb}$                                                                                                                                  |                                                                                                                                   |
| 5.9.3 Final measurements                                | Capacitance<br>tan $\delta$ at 10 kHz                                                                                                                                                                                              |                                                                                                                                   |
| 5.11.1 Initial measurements                             | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz                                                                                                                                                                                     | $ \Delta C/C  \leq 0.5 \%$<br>tan $\delta \leq 1.2 \times$ initial tan $\delta + 0.0001$<br>Compared to values measured in 5.11.1 |
| 5.11.2 Self healing test                                | $1.5 \times U_{NDC}$<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 $2.5 \times U_{NDC}$<br>for a duration of 10 s |                                                                                                                                   |
| 5.11.3 Final measurements                               | Capacitance<br>tan $\delta$                                                                                                                                                                                                        |                                                                                                                                   |
| 5.13.0 Initial measurements                             | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz                                                                                                                                                                                     |                                                                                                                                   |
| 5.13.1 Change of temperature acc. to<br>IEC 60068-2-14  | Test Nb<br>$T_{max.} = 85 \text{ }^{\circ}\text{C}$<br>$T_{min.} = -40 \text{ }^{\circ}\text{C}$<br>Transition time: 1 h, equivalent to $1 \text{ }^{\circ}\text{C/min}$<br>5 cycles                                               |                                                                                                                                   |
| 5.13.2 Damp heat steady state<br>acc. to IEC 60068-2-78 | Test Ca<br>$T = 40 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$<br>RH = $93 \% \pm 3 \%$<br>Duration 56 days                                                                                                           |                                                                                                                                   |
| 5.5.3.2 DC voltage test between terminal                | $1.5 \times U_{NDC}$ at ambient temperature<br>Duration 10 s                                                                                                                                                                       |                                                                                                                                   |



| SUB-CLAUSE NUMBER AND TEST                                 | CONDITIONS                                                                                                                                                                                                                                                                                                                                                                                  | PERFORMANCE REQUIREMENTS                                                                                                                                                              |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE TESTS</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                       |
| 5.13.3 Final measurements                                  | Visual examination<br><br>Capacitance<br>tan $\delta$ at 10 kHz                                                                                                                                                                                                                                                                                                                             | No puncturing or flashover<br>Self healing punctures are permitted<br><br>$ \Delta C/C  \leq 2.0 \%$<br>Increase of tan $\delta \leq 0.0150$<br>Compared to values measured in 5.13.0 |
| 5.10.0 Initial measurements                                | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz                                                                                                                                                                                                                                                                                                                                              | Temperature rise $< 1^\circ\text{C}$<br>$ \Delta C/C  \leq 2 \%$<br>Increase of tan $\delta \leq 1.2 \times \text{initial } \delta + 0.0150$                                          |
| 5.10.1 Thermal stability test under overload conditions    | Natural cooling $T_{\text{amb}} \pm 5^\circ\text{C}$<br>$1.21 \times P_{\text{max.}} = (U_2/2) \times W_2 \times C \times \tan \delta =$<br>$121 \times (I_2^2 \text{ max.} / W_2 \times C) \times \tan \delta_2$ with<br>$W_2 = 2 \times \pi \times f_2$<br>for $I_{\text{max.}}$ (see specific reference data)<br>$f_2 = 10 \text{ kHz}$<br>Duration 48 h                                 |                                                                                                                                                                                       |
| 5.10.2 Final measurements                                  | Measure the temperature every 1.5 h during the last 6 h<br>Capacitance<br>tan $\delta$ at 10 kHz                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                       |
| 5.12 Resonance frequency measurement                       | Impedance analyser at $T_{\text{amb}}$                                                                                                                                                                                                                                                                                                                                                      | $< 0.9$ times the value as specified in typical curve "Resonant frequency" of this specification                                                                                      |
| 5.15.0 Initial measurements                                | Capacitance at 1 kHz<br>tan $\delta$ at 10 kHz                                                                                                                                                                                                                                                                                                                                              | $ \Delta C/C  \leq 3 \%$<br>Increase of tan $\delta \leq 0.0150$<br>Compared to values measured in 5.15.0                                                                             |
| 5.15.1 Endurance test between terminals                    | Sequence<br>$1.25 \times U_N$ at $T_{\text{max.}} = 85^\circ\text{C}$<br>$1.0 \times U_N$ at $T_{\text{max.}} = 105^\circ\text{C}$<br>Duration 500 h<br>$1000 \times$ discharge at $1.4 \times \hat{i}$ (maximum repetitive peak current in continuous operation)<br>$1.25 \times U_N$ at $T_{\text{max.}} = 85^\circ\text{C}$<br>$1.0 \times U_N$ at $T_{\text{max.}} = 105^\circ\text{C}$ |                                                                                                                                                                                       |
| 5.15.2 Final measurements                                  | Duration 500 h<br><br>Capacitance<br>tan $\delta$                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                       |
| 5.16.3.0 Initial measurements                              | Capacitance at 1 kHz                                                                                                                                                                                                                                                                                                                                                                        | No burning of the cheese cloth.<br>The dielectric must withstand the test sequence conducted.                                                                                         |
| 5.16.3.1 Destruction test sequence<br>High DC voltage test | The capacitors must be put in an oven at $T_{\text{max.}} = 105^\circ\text{C}/2 \text{ h}$ and cooled down<br>Product enveloped with cheese cloth                                                                                                                                                                                                                                           |                                                                                                                                                                                       |
| High DC voltage test<br>(limited to 200 mA)                | $3 \times U_{\text{NDC}}$ with minimum 2000 $V_{\text{DC}}$<br>Duration 1 min<br><br>Discharge the capacitor<br>Duration 1 min<br>$AC_{\text{RMS}}$ voltage = $U_{\text{NDC}}/2 \times \sqrt{2}$<br>Duration = 15 s                                                                                                                                                                         |                                                                                                                                                                                       |
| High AC voltage test                                       | The above sequence shall be repeated until the test sample capacitance loss 5 % of its initial measurement in 5.16.3-0.                                                                                                                                                                                                                                                                     |                                                                                                                                                                                       |
| 5.16.3.2 Final measurements                                | Visual examination                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                       |



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