

# Metallized Polypropylene Film Capacitors

## MKP Radial Potted Type



Dimensions in mm

### APPLICATIONS

Low losses due to low contact resistance and low loss dielectric result in applications where high frequency occur or high stability is preferred. Their small dimensions make them suitable for circuits with high packaging density.

### MARKING

C-value; rated voltage; tolerance; code for manufacturer; year and week of manufacture; manufacturers type designation

### DIELECTRIC

Polypropylene film

### ELECTRODES

Vacuum deposited aluminum

### ENCAPSULATION

Flame retardant plastic case and epoxy resin (UL-class 94 V-0)

### CONSTRUCTION

Wound mono construction

### LEADS

Tinned wire

### CAPACITANCE RANGE (E24 SERIES)

0.001 to 1.2  $\mu$ F

### FEATURES

5, 10 and 15 mm lead pitch. Supplied loose in box, in ammpack and taped on reel. Intermediate values are available of the E96 series

Lead (Pb)-free product

RoHS-compliant product

### CAPACITANCE TOLERANCE

$\pm 5\%$ ;  $\pm 2\%$

### RATED (DC) VOLTAGE

63 V; 160 V; 250 V; 400 V; 630 V

### RATED (AC) VOLTAGE

25 V; 63 V; 100 V; 125 V; 160 V

### RATED PEAK-TO-PEAK VOLTAGE

70 V; 180 V; 280 V; 350 V; 450 V

### CLIMATIC CATEGORY

55/085/56

### RATED TEMPERATURE (DC)

85 °C

### RATED TEMPERATURE (AC)

85 °C

### MAXIMUM APPLICATION TEMPERATURE

85 °C

### REFERENCE SPECIFICATIONS

IEC 60384-16

### PERFORMANCE GRADE

Grade 1 (long life)

### STABILITY GRADE

Grade 1

### DETAIL SPECIFICATION

For more detailed data and test requirements contact: [filmcaps.roeselare@vishay.com](mailto:filmcaps.roeselare@vishay.com)



**RoHS**  
COMPLIANT

## COMPOSITION OF CATALOG NUMBER

| TYPE AND PITCHES |                  |
|------------------|------------------|
| 416              | 5.0/10.0/15.0 mm |
| 417              | 5.0/10.0/15.0 mm |
| 418              | 5.0/10.0/15.0 mm |
| 419              | 5.0/10.0/15.0 mm |
| 420              | 5.0/10.0/15.0 mm |

**CAPACITANCE**  
(numerically)

| MULTIPLIER<br>(nF) |   |
|--------------------|---|
| 0.01               | 2 |
| 0.1                | 3 |
| 1                  | 4 |

|       |     |    |    |   |
|-------|-----|----|----|---|
| 2222  | 4.. | XX | XX | X |
| BFC2* | 4.. | XX | XX | X |

Example:  
1004 = 100 x 1 = 100 nF

\* Use this partnumber for those with access to the Vishay's SAP system and Partners website within the Americas

| TYPE | PACKAGING       | PITCH<br>(mm) | LEAD CONFIGURATION                    | PREFERRED TYPES |            |       |       |       |       |  |
|------|-----------------|---------------|---------------------------------------|-----------------|------------|-------|-------|-------|-------|--|
|      |                 |               |                                       | C-TOL           | 63 V       | 160 V | 250 V | 400 V | 630 V |  |
| 416  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 2 %           | 1          |       |       |       |       |  |
|      | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 7          |       |       |       |       |  |
| 417  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 2 %           |            | 1     |       |       |       |  |
|      | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           |            | 7     |       |       |       |  |
| 418  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 2 %           |            |       | 1     |       |       |  |
|      | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           |            |       | 7     |       |       |  |
| 419  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 2 %           |            |       |       | 1     |       |  |
|      | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           |            |       |       | 7     |       |  |
| 420  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 2 %           |            |       |       |       | 1     |  |
|      | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           |            |       |       |       | 7     |  |
|      |                 |               |                                       |                 | ON REQUEST |       |       |       |       |  |
| 416  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 5 %           | 0          |       |       |       |       |  |
|      | Loose in box    | 5/10          | lead length 4.0 + 1.0/- 0.5 mm        | ± 5 %           | 3          |       |       |       |       |  |
|      |                 | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 4          |       |       |       |       |  |
| 417  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 5 %           |            | 0     |       |       |       |  |
|      | Loose in box    | 5/10          | lead length 4.0 + 1.0/- 0.5 mm        | ± 5 %           |            | 3     |       |       |       |  |
|      |                 | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 4          |       |       |       |       |  |
| 418  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 5 %           |            |       | 0     |       |       |  |
|      | Loose in box    | 5/10          | lead length 4.0 + 1.0/- 0.5 mm        | ± 5 %           |            |       | 3     |       |       |  |
|      |                 | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 4          |       |       |       |       |  |
| 419  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 5 %           |            |       |       | 0     |       |  |
|      | Loose in box    | 5/10          | lead length 4.0 + 1.0/- 0.5 mm        | ± 5 %           |            |       |       | 3     |       |  |
|      |                 | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 4          |       |       |       |       |  |
| 420  | Taped; see note | 5/10/15       | H = 18.5 mm; P <sub>0</sub> = 12.7 mm | ± 5 %           |            |       |       |       | 0     |  |
|      | Loose in box    | 5/10          | lead length 4.0 + 1.0/- 0.5 mm        | ± 5 %           |            |       |       |       | 3     |  |
|      |                 | 15            | lead length 3.5 ± 0.3 mm              | ± 2 %           | 4          |       |       |       |       |  |
| 420  | Loose in box    | 15            | lead length 3.5 ± 0.3 mm              | ± 5 %           |            |       |       |       | 6     |  |

**Note:**

Pitch = 5 and 10 mm: taped on ammpack

Pitch = 15 mm: taped on reel with diameter = 356 mm



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**SPECIFIC REFERENCE DATA**

| DESCRIPTION   | VALUE                   |                  |                         |                  |                  |
|---|-------------------------|------------------|-------------------------|------------------|------------------|
|   | at 10 kHz               |                  | at 100 kHz              |                  |                  |
| Tangent of loss angle:  |                         |                  |                         |                  |                  |
| C ≤ 0.0091 μF   | ≤ 5 × 10 <sup>-4</sup>  |                  | ≤ 10 × 10 <sup>-4</sup> |                  |                  |
| 0.0091 μF < C ≤ 0.027 μF  | ≤ 5 × 10 <sup>-4</sup>  |                  | ≤ 15 × 10 <sup>-4</sup> |                  |                  |
| 0.027 μF < C ≤ 0.075 μF   | ≤ 5 × 10 <sup>-4</sup>  |                  | ≤ 20 × 10 <sup>-4</sup> |                  |                  |
| 0.075 μF < C ≤ 0.11 μF  | ≤ 5 × 10 <sup>-4</sup>  |                  | ≤ 25 × 10 <sup>-4</sup> |                  |                  |
| 0.11 μF < C ≤ 0.18 μF   | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 30 × 10 <sup>-4</sup> |                  |                  |
| 0.18 μF < C ≤ 0.27 μF   | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 35 × 10 <sup>-4</sup> |                  |                  |
| 0.27 μF < C ≤ 0.39 μF   | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 40 × 10 <sup>-4</sup> |                  |                  |
| 0.39 μF < C ≤ 0.56 μF   | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 45 × 10 <sup>-4</sup> |                  |                  |
| 0.56 μF < C ≤ 0.75 μF   | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 50 × 10 <sup>-4</sup> |                  |                  |
| 0.75 μF < C ≤ 1.1 μF  | ≤ 10 × 10 <sup>-4</sup> |                  | ≤ 60 × 10 <sup>-4</sup> |                  |                  |
| Rated voltage pulse slope (dU/dt) <sub>R</sub> :                        | at 63 V (DC)            | at 100 V (DC)    | at 250 V (DC)           | at 400 V (DC)    | at 630 V (DC)    |
| P = 5 mm  | 50 V/μs                 | 50 V/μs          | 50 V/μs                 | 50 V/μs          | 50 V/μs          |
| P = 10 mm   | 20 V/μs                 | 20 V/μs          | 20 V/μs                 | 20 V/μs          | 50 V/μs          |
| P = 15 mm   | 50 V/μs                 | 50 V/μs          | 50 V/μs                 | 50 V/μs          | 50 V/μs          |
| R between leads, for C ≤ 0.33 μF:                                       |                         |                  |                         |                  |                  |
| at 50 V; 1 minute   | > 100000 MΩ             |                  |                         |                  |                  |
| at 100 V; 1 minute  |                         | > 100000 MΩ      | > 100000 MΩ             | > 100000 MΩ      | > 100000 MΩ      |
| RC between leads, for C > 0.33 μF at 10 V;<br>1 minute                  | > 30000 s               | >30000 s         | >30000 s                | >30000 s         |                  |
| R between interconnecting leads and casing;<br>50 V; 1 minute           | > 100000 MΩ             | > 100000 MΩ      | > 100000 MΩ             | > 100000 MΩ      | > 100000 MΩ      |
| Withstanding (DC) voltage (cut off current 10 mA);<br>rise time 100 V/s | 100 V; 1 minute         | 260 V; 1 minute  | 400 V; 1 minute         | 640 V; 1 minute  | 1000 V; 1 minute |
| Withstanding (DC) voltage between leads and case                        | 2840 V; 1 minute        | 2840 V; 1 minute | 2840 V; 1 minute        | 2840 V; 1 minute | 1260 V; 1 minute |

# MKP 416 to 420



## Vishay BCcomponents Metallized Polypropylene Film Capacitors MKP Radial Potted Type

$U_{Rdc} = 63 V$ ;  $U_{Rac} = 25 V$ ;  $U_{p-p} = 70 V$

| C<br>(E 24)<br>( $\mu F$ )                                   | DIMENSIONS<br>$w \times h \times l$<br>(mm) | MASS<br>(g)                           | CATALOG NUMBER 2222 416 ..... AND PACKAGING |       |                            |      |  |      |                      |     |
|--|---|---------------------------------------|---|-------|----------------------------|------|--|------|----------------------|-----|
|  |   |                                       | AMMOPACK                                    |       | LOOSE IN BOX               |      | REEL                                     |      | LOOSE IN BOX         |     |
|  |   |                                       | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |       | It =<br>4.0 + 1.0/- 0.5 mm |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm |      | It =<br>3.5 ± 0.3 mm |     |
|  |   |                                       | C-tol = ± 2 %                               | SPQ   | C-tol = ± 2 %              | SPQ  | C-tol = ± 2 %                            | SPQ  | C-tol = ± 2 %        | SPQ |
| last 5 digits of<br>catalog<br>number                        | last 5 digits of<br>catalog<br>number       | last 5 digits of<br>catalog<br>number | last 5 digits of<br>catalog<br>number       |       |                            |      |  |      |                      |     |
| <b>Pitch = 5.0 ± 0.3 mm; d<sub>t</sub> = 0.50 ± 0.05 mm</b>  |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.036  | 4.5 × 9.0 × 7.2                             | 0.45                                  | 13603                                       | 1000  | 43603                      | 2000 |  |      |                      |     |
| 0.039  |   |                                       | 13903                                       |       | 43903                      |      |  |      |                      |     |
| 0.043  |   |                                       | 14303                                       |       | 44303                      |      |  |      |                      |     |
| 0.047  |   |                                       | 14703                                       |       | 44703                      |      |  |      |                      |     |
| 0.051  | 6.0 × 11.0 × 7.2                            | 0.60                                  | 15103                                       | 750   | 45103                      | 1500 |  |      |                      |     |
| 0.056  |   |                                       | 15603                                       |       | 45603                      |      |  |      |                      |     |
| 0.062  |   |                                       | 16203                                       |       | 46203                      |      |  |      |                      |     |
| 0.068  |   |                                       | 16803                                       |       | 46803                      |      |  |      |                      |     |
| 0.075  |   |                                       | 17503                                       |       | 47503                      |      |  |      |                      |     |
| 0.082  |   |                                       | 18203                                       |       | 48203                      |      |  |      |                      |     |
| 0.091  |   |                                       | 19103                                       |       | 49103                      |      |  |      |                      |     |
| 0.1  |   |                                       | 11004                                       |       | 41004                      |      |  |      |                      |     |
| 0.11   |   |                                       | 11104                                       |       | 41104                      |      |  |      |                      |     |
| 0.12   |   |                                       | 11204                                       |       | 41204                      |      |  |      |                      |     |
| <b>Pitch = 10.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.13   | 5.0 × 11.0 × 12.5                           | 0.85                                  | 11304                                       | 600   | 41304                      | 1000 |  |      |                      |     |
| 0.15   |   |                                       | 11504                                       |       | 41504                      |      |  |      |                      |     |
| 0.16   | 6.0 × 12.0 × 12.5                           | 1.10                                  | 11604                                       | 500   | 41604                      | 750  |  |      |                      |     |
| 0.18   |   |                                       | 11804                                       |       | 41804                      |      |  |      |                      |     |
| 0.20   |   |                                       | 12004                                       |       | 42004                      |      |  |      |                      |     |
| 0.22   |   |                                       | 12204                                       |       | 42204                      |      |  |      |                      |     |
| 0.24   |   |                                       | 12404                                       |       | 42404                      |      |  |      |                      |     |
| 0.27   |   |                                       | 12704                                       |       | 42704                      |      |  |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.3  | 6.0 × 12.0 × 17.5                           | 1.4                                   |   |       | 13004                      | 900  | 73004                                    | 1000 |                      |     |
| 0.33   |   |                                       | 13304                                       | 73304 |                            |      |  |      |                      |     |
| 0.36   |   |                                       | 13604                                       | 73604 |                            |      |  |      |                      |     |
| 0.39   |   |                                       | 13904                                       | 73904 |                            |      |  |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.43   | 7.0 × 13.5 × 17.5                           | 1.9                                   |   |       | 14304                      | 800  | 74304                                    | 750  |                      |     |
| 0.47   |   |                                       | 14704                                       | 74704 |                            |      |  |      |                      |     |
| 0.51   |   |                                       | 15104                                       | 75104 |                            |      |  |      |                      |     |
| 0.56   |   |                                       | 15604                                       | 75604 |                            |      |  |      |                      |     |
| 0.62   | 8.5 × 15.0 × 17.5                           | 2.6                                   |   |       | 16204                      | 650  | 76204                                    | 750  |                      |     |
| 0.68   |   |                                       | 16804                                       | 76804 |                            |      |  |      |                      |     |
| 0.75   |   |                                       | 17504                                       | 77504 |                            |      |  |      |                      |     |
| 0.82   |   |                                       | 18204                                       | 78204 |                            |      |  |      |                      |     |
| 0.91   | 10.0 × 16.5 × 17.5                          | 3.1                                   |   |       | 19104                      | 600  | 79104                                    | 500  |                      |     |
| 1.0  |   |                                       | 11005                                       | 71005 |                            |      |  |      |                      |     |
| 1.1  |   |                                       | 11105                                       | 71105 |                            |      |  |      |                      |     |



Metallized Polypropylene Film Capacitors Vishay BCcomponents  
MKP Radial Potted Type

$U_{Rdc} = 160\text{ V}$ ;  $U_{Rac} = 63\text{ V}$ ;  $U_{p-p} = 180\text{ V}$

| C<br>(E 24)<br>( $\mu\text{F}$ )                             | DIMENSIONS<br>$w \times h \times l$<br>(mm) | MASS<br>(g)                           | CATALOG NUMBER 2222 417 ..... AND PACKAGING |       |                            |      |  |      |                      |     |
|--|---|---------------------------------------|---|-------|----------------------------|------|--|------|----------------------|-----|
|  |   |                                       | AMMOPACK                                    |       | LOOSE IN BOX               |      | REEL                                     |      | LOOSE IN BOX         |     |
|  |   |                                       | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |       | It =<br>4.0 + 1.0/- 0.5 mm |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm |      | It =<br>3.5 ± 0.3 mm |     |
|  |   |                                       | C-tol = ± 2 %                               | SPQ   | C-tol = ± 2 %              | SPQ  | C-tol = ± 2 %                            | SPQ  | C-tol = ± 2 %        | SPQ |
| last 5 digits of<br>catalog<br>number                        | last 5 digits of<br>catalog<br>number       | last 5 digits of<br>catalog<br>number | last 5 digits of<br>catalog<br>number       |       |                            |      |  |      |                      |     |
| <b>Pitch = 5.0 ± 0.3 mm; d<sub>t</sub> = 0.50 ± 0.05 mm</b>  |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.024  | 4.5 × 9.0 × 7.2                             | 0.45                                  | 12403                                       | 1000  | 42403                      | 2000 |  |      |                      |     |
| 0.027  |   |                                       | 12703                                       |       | 42703                      |      |  |      |                      |     |
| 0.03   |   |                                       | 13003                                       |       | 43003                      |      |  |      |                      |     |
| 0.033  |   |                                       | 13303                                       |       | 43303                      |      |  |      |                      |     |
| 0.036  | 6.0 × 11.0 × 7.2                            | 0.60                                  | 13603                                       | 750   | 43603                      | 1500 |  |      |                      |     |
| 0.039  |   |                                       | 13903                                       |       | 43903                      |      |  |      |                      |     |
| 0.043  |   |                                       | 14303                                       |       | 44303                      |      |  |      |                      |     |
| 0.047  |   |                                       | 14703                                       |       | 44703                      |      |  |      |                      |     |
| 0.051  |   |                                       | 15103                                       |       | 45103                      |      |  |      |                      |     |
| 0.056  |   |                                       | 15603                                       |       | 45603                      |      |  |      |                      |     |
| 0.062  |   |                                       | 16203                                       |       | 46203                      |      |  |      |                      |     |
| 0.068  |   |                                       | 16803                                       |       | 46803                      |      |  |      |                      |     |
| <b>Pitch = 10.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.075  | 4.0 × 10.0 × 12.5                           | 0.60                                  | 17503                                       | 750   | 47503                      | 1000 |  |      |                      |     |
| 0.082  |   |                                       | 18203                                       |       | 48203                      |      |  |      |                      |     |
| 0.091  |   |                                       | 19103                                       |       | 49103                      |      |  |      |                      |     |
| 0.1  |   |                                       | 11004                                       |       | 41004                      |      |  |      |                      |     |
| 0.11   | 5.0 × 11.0 × 12.5                           | 0.85                                  | 11104                                       | 600   | 41104                      | 1000 |  |      |                      |     |
| 0.12   |   |                                       | 11204                                       |       | 41204                      |      |  |      |                      |     |
| 0.13   |   |                                       | 11304                                       |       | 41304                      |      |  |      |                      |     |
| 0.15   |   |                                       | 11504                                       |       | 41504                      |      |  |      |                      |     |
| 0.16   | 6.0 × 12.0 × 12.5                           | 1.10                                  | 11604                                       | 500   | 41604                      | 750  |  |      |                      |     |
| 0.18   |   |                                       | 11804                                       |       | 41804                      |      |  |      |                      |     |
| 0.20   |   |                                       | 12004                                       |       | 42004                      |      |  |      |                      |     |
| 0.22   |   |                                       | 12204                                       |       | 42204                      |      |  |      |                      |     |
| 0.24   |   |                                       | 12404                                       |       | 42404                      |      |  |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.27   | 5.0 × 11.0 × 17.5                           | 1.2                                   |   |       | 12704                      | 1100 | 72704                                    | 1250 |                      |     |
| 0.3  | 6.0 × 12.0 × 17.5                           | 1.4                                   |   |       | 13004                      | 900  | 73004                                    | 1000 |                      |     |
| 0.33   |   |                                       | 13304                                       | 73304 |                            |      |  |      |                      |     |
| 0.36   |   |                                       | 13604                                       | 73604 |                            |      |  |      |                      |     |
| 0.39   |   |                                       | 13904                                       | 73904 |                            |      |  |      |                      |     |
|  |   |                                       |   |       |                            |      |  |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b> |   |                                       |   |       |                            |      |  |      |                      |     |
| 0.43   | 7.0 × 13.5 × 17.5                           | 1.9                                   |   |       | 14304                      | 800  | 74304                                    | 750  |                      |     |
| 0.47   |   |                                       | 14704                                       | 74704 |                            |      |  |      |                      |     |
| 0.51   |   |                                       | 15104                                       | 75104 |                            |      |  |      |                      |     |
| 0.56   |   |                                       | 15604                                       | 75604 |                            |      |  |      |                      |     |
| 0.62   | 8.5 × 15.0 × 17.5                           | 2.6                                   |   |       | 16204                      | 650  | 76204                                    | 750  |                      |     |
| 0.68   |   |                                       | 16804                                       | 76804 |                            |      |  |      |                      |     |
| 0.75   |   |                                       | 17504                                       | 77504 |                            |      |  |      |                      |     |
| 0.82   |   |                                       | 18204                                       | 78204 |                            |      |  |      |                      |     |
| 0.91   | 10.0 × 16.5 × 17.5                          | 3.1                                   |   |       | 19104                      | 600  | 79104                                    | 500  |                      |     |
| 1.0  |   |                                       | 11005                                       | 71005 |                            |      |  |      |                      |     |
| 1.1  |   |                                       | 11105                                       | 71105 |                            |      |  |      |                      |     |

# MKP 416 to 420



## Vishay BCcomponents Metallized Polypropylene Film Capacitors MKP Radial Potted Type

$U_{Rdc} = 250 \text{ V}$ ;  $U_{Rac} = 25 \text{ V}$ ;  $U_{p-p} = 70 \text{ V}$

| C<br>(E 24)<br>( $\mu\text{F}$ )                             | DIMENSIONS<br>$w \times h \times l$<br>(mm) | MASS<br>(g)                           | CATALOG NUMBER 2222 418 ..... AND PACKAGING |      |                            |      |  |      |                      |     |
|--|---|---------------------------------------|---|------|----------------------------|------|--|------|----------------------|-----|
|  |   |                                       | AMMOPACK                                    |      | LOOSE IN BOX               |      | REEL                                     |      | LOOSE IN BOX         |     |
|  |   |                                       | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |      | It =<br>4.0 + 1.0/- 0.5 mm |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm |      | It =<br>3.5 ± 0.3 mm |     |
|  |   |                                       | C-tol = ± 2 %                               | SPQ  | C-tol = ± 2 %              | SPQ  | C-tol = ± 2 %                            | SPQ  | C-tol = ± 2 %        | SPQ |
| last 5 digits of<br>catalog<br>number                        | last 5 digits of<br>catalog<br>number       | last 5 digits of<br>catalog<br>number | last 5 digits of<br>catalog<br>number       |      |                            |      |  |      |                      |     |
| <b>Pitch = 5.0 ± 0.3 mm; d<sub>t</sub> = 0.50 ± 0.05 mm</b>  |   |                                       |   |      |                            |      |  |      |                      |     |
| 0.01   | 3.5 × 8.0 × 7.2                             | 0.35                                  | 11003                                       | 1500 | 41003                      | 3000 |  |      |                      |     |
| 0.011  |   |                                       | 11103                                       |      | 41103                      |      |  |      |                      |     |
| 0.012  |   |                                       | 11203                                       |      | 41203                      |      |  |      |                      |     |
| 0.013  |   |                                       | 11303                                       |      | 41303                      |      |  |      |                      |     |
| 0.015  |   |                                       | 11503                                       |      | 41503                      |      |  |      |                      |     |
| 0.016  | 4.5 × 9.0 × 7.2                             | 0.45                                  | 11603                                       | 1000 | 41603                      | 2000 |  |      |                      |     |
| 0.018  |   |                                       | 11803                                       |      | 41803                      |      |  |      |                      |     |
| 0.02   |   |                                       | 12003                                       |      | 42003                      |      |  |      |                      |     |
| 0.022  |   |                                       | 12203                                       |      | 42203                      |      |  |      |                      |     |
| 0.024  |   |                                       | 12403                                       |      | 42403                      |      |  |      |                      |     |
| 0.027  | 6.0 × 11.0 × 7.2                            | 0.60                                  | 12703                                       | 750  | 42703                      | 1500 |  |      |                      |     |
| 0.03   |   |                                       | 13003                                       |      | 43003                      |      |  |      |                      |     |
| 0.033  |   |                                       | 13303                                       |      | 43303                      |      |  |      |                      |     |
| 0.036  |   |                                       | 13603                                       |      | 43603                      |      |  |      |                      |     |
| 0.039  |   |                                       | 13903                                       |      | 43903                      |      |  |      |                      |     |
| 0.043  |   |                                       | 14303                                       |      | 44303                      |      |  |      |                      |     |
| <b>Pitch = 10.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |      |                            |      |  |      |                      |     |
| 0.047  | 4.0 × 10.0 × 12.5                           | 0.60                                  | 14703                                       | 750  | 44703                      | 1000 |  |      |                      |     |
| 0.051  |   |                                       | 15103                                       |      | 45103                      |      |  |      |                      |     |
| 0.056  |   |                                       | 15603                                       |      | 45603                      |      |  |      |                      |     |
| 0.062  |   |                                       | 16203                                       |      | 46203                      |      |  |      |                      |     |
| 0.068  |   |                                       | 16803                                       |      | 46803                      |      |  |      |                      |     |
| 0.075  | 5.0 × 11.0 × 12.5                           | 0.85                                  | 17503                                       | 600  | 47503                      | 1000 |  |      |                      |     |
| 0.082  |   |                                       | 18203                                       |      | 48203                      |      |  |      |                      |     |
| 0.091  |   |                                       | 19103                                       |      | 49103                      |      |  |      |                      |     |
| 0.1  | 6.0 × 12.0 × 12.5                           | 1.10                                  | 11004                                       | 500  | 41004                      | 750  |  |      |                      |     |
| 0.11   |   |                                       | 11104                                       |      | 41104                      |      |  |      |                      |     |
| 0.12   |   |                                       | 11204                                       |      | 41204                      |      |  |      |                      |     |
| 0.13   |   |                                       | 11304                                       |      | 41304                      |      |  |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |                                       |   |      |                            |      |  |      |                      |     |
| 0.15   | 5.0 × 11.0 × 17.5                           | 1.2                                   |   |      | 11504                      | 1100 | 71504                                    | 1250 |                      |     |
| 0.16   |   |                                       |   |      | 11604                      |      | 71604                                    |      |                      |     |
| 0.18   | 6.0 × 12.0 × 17.5                           | 1.4                                   |   |      | 11804                      | 900  | 71804                                    | 1000 |                      |     |
| 0.2  |   |                                       |   |      | 12004                      |      | 72004                                    |      |                      |     |
| 0.22   |   |                                       |   |      | 12204                      |      | 72204                                    |      |                      |     |
| 0.24   |   |                                       |   |      | 12404                      |      | 72404                                    |      |                      |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b> |   |                                       |   |      |                            |      |  |      |                      |     |
| 0.27   | 7.0 × 13.5 × 17.5                           | 1.9                                   |   |      | 12704                      | 800  | 72704                                    | 750  |                      |     |
| 0.3  |   |                                       |   |      | 13004                      |      | 73004                                    |      |                      |     |
| 0.33   |   |                                       |   |      | 13304                      |      | 73304                                    |      |                      |     |
| 0.36   |   |                                       |   |      | 13604                      |      | 73604                                    |      |                      |     |
| 0.39   | 8.5 × 15.0 × 17.5                           | 2.6                                   |   |      | 13904                      | 650  | 73904                                    | 750  |                      |     |
| 0.43   |   |                                       |   |      | 14304                      |      | 74304                                    |      |                      |     |
| 0.47   |   |                                       |   |      | 14704                      |      | 74704                                    |      |                      |     |
| 0.51   |   |                                       |   |      | 15104                      |      | 75104                                    |      |                      |     |
| 0.56   | 10.0 × 16.5 × 17.5                          | 3.1                                   |   |      | 15604                      | 600  | 75604                                    | 500  |                      |     |
| 0.62   |   |                                       |   |      | 16204                      |      | 76204                                    |      |                      |     |
| 0.68   |   |                                       |   |      | 16804                      |      | 76804                                    |      |                      |     |



Metallized Polypropylene Film Capacitors Vishay BCcomponents  
MKP Radial Potted Type

$U_{Rdc} = 400\text{ V}$ ;  $U_{Rac} = 125\text{ V}$ ;  $U_{p-p} = 350\text{ V}$

| C<br>(E 24)<br>( $\mu\text{F}$ )                             | DIMENSIONS<br>$w \times h \times l$<br>(mm) | MASS<br>(g) | CATALOG NUMBER 2222 419 ..... AND PACKAGING |      |                                       |      |  |      |                                       |      |
|--|---|-------------|---|------|---------------------------------------|------|--|------|---------------------------------------|------|
|  |   |             | AMMOPACK                                    |      | LOOSE IN BOX                          |      | REEL                                     |      | LOOSE IN BOX                          |      |
|  |   |             | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |      | It =<br>4.0 + 1.0/- 0.5 mm            |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm |      | It =<br>3.5 ± 0.3 mm                  |      |
|  |   |             | C-tol = ± 2 %                               |      | C-tol = ± 2 %                         |      | C-tol = ± 2 %                            |      | C-tol = ± 2 %                         |      |
|  |   |             | last 5 digits of<br>catalog<br>number       | SPQ  | last 5 digits of<br>catalog<br>number | SPQ  | last 5 digits of<br>catalog<br>number    | SPQ  | last 5 digits of<br>catalog<br>number | SPQ  |
| <b>Pitch = 5.0 ± 0.3 mm; d<sub>t</sub> = 0.50 ± 0.05 mm</b>  |   |             |   |      |                                       |      |  |      |                                       |      |
| 0.001  | 3.5 × 8.0 × 7.2                             | 0.35        | 11002                                       | 1500 | 41002                                 | 3000 |  |      |                                       |      |
| 0.0011   |   |             | 11102                                       |      | 41102                                 |      |  |      |                                       |      |
| 0.0012   |   |             | 11202                                       |      | 41202                                 |      |  |      |                                       |      |
| 0.0013   |   |             | 11302                                       |      | 41302                                 |      |  |      |                                       |      |
| 0.0015   |   |             | 11502                                       |      | 41502                                 |      |  |      |                                       |      |
| 0.0016   |   |             | 11602                                       |      | 41602                                 |      |  |      |                                       |      |
| 0.0018   |   |             | 11802                                       |      | 41802                                 |      |  |      |                                       |      |
| 0.002  |   |             | 12002                                       |      | 42002                                 |      |  |      |                                       |      |
| 0.0022   |   |             | 12202                                       |      | 42202                                 |      |  |      |                                       |      |
| 0.0024   |   |             | 12402                                       |      | 42402                                 |      |  |      |                                       |      |
| 0.0027   |   |             | 12702                                       |      | 42702                                 |      |  |      |                                       |      |
| 0.003  |   |             | 13002                                       |      | 43002                                 |      |  |      |                                       |      |
| 0.0033   |   |             | 13302                                       |      | 43302                                 |      |  |      |                                       |      |
| 0.0036   |   |             | 13602                                       |      | 43602                                 |      |  |      |                                       |      |
| 0.0039   |   |             | 13902                                       |      | 43902                                 |      |  |      |                                       |      |
| 0.0043   |   |             | 4.5 × 9.0 × 7.2                             |      | 0.45                                  |      | 14302                                    | 1000 | 44302                                 | 2000 |
| 0.0047   | 14702                                       | 44702       |   |      |                                       |      |  |      |                                       |      |
| 0.0051   | 15102                                       | 45102       |   |      |                                       |      |  |      |                                       |      |
| 0.0056   | 15602                                       | 45602       |   |      |                                       |      |  |      |                                       |      |
| 0.0062   | 16202                                       | 46202       |   |      |                                       |      |  |      |                                       |      |
| 0.0068   | 16802                                       | 46802       |   |      |                                       |      |  |      |                                       |      |
| 0.0075   | 17502                                       | 47502       |   |      |                                       |      |  |      |                                       |      |
| 0.0082   | 18202                                       | 48202       |   |      |                                       |      |  |      |                                       |      |
| 0.0091   | 19102                                       | 49102       |   |      |                                       |      |  |      |                                       |      |
| 0.01   | 11003                                       | 41003       |   |      |                                       |      |  |      |                                       |      |
| 0.011  | 11103                                       | 41103       |   |      |                                       |      |  |      |                                       |      |
| 0.012  | 11203                                       | 41203       |   |      |                                       |      |  |      |                                       |      |
| 0.013  | 6.0 × 11.0 × 7.2                            | 0.60        | 11303                                       | 750  | 41303                                 | 1500 |  |      |                                       |      |
| 0.015  |   |             | 11503                                       |      | 41503                                 |      |  |      |                                       |      |
| 0.016  |   |             | 11603                                       |      | 41603                                 |      |  |      |                                       |      |
| 0.018  |   |             | 11803                                       |      | 41803                                 |      |  |      |                                       |      |
| 0.02   |   |             | 12003                                       |      | 42003                                 |      |  |      |                                       |      |
| <b>Pitch = 10.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |             |   |      |                                       |      |  |      |                                       |      |
| 0.022  | 4.0 × 10.0 × 12.5                           | 0.60        | 12203                                       | 750  | 42203                                 | 1000 |  |      |                                       |      |
| 0.024  |   |             | 12403                                       |      | 42403                                 |      |  |      |                                       |      |
| 0.027  |   |             | 12703                                       |      | 42703                                 |      |  |      |                                       |      |
| 0.03   |   |             | 13003                                       |      | 43003                                 |      |  |      |                                       |      |
| 0.033  |   |             | 13303                                       |      | 43303                                 |      |  |      |                                       |      |
| 0.036  | 5.0 × 11.0 × 12.5                           | 0.85        | 13603                                       | 600  | 43603                                 | 1000 |  |      |                                       |      |
| 0.039  |   |             | 13903                                       |      | 43903                                 |      |  |      |                                       |      |
| 0.043  |   |             | 14303                                       |      | 44303                                 |      |  |      |                                       |      |
|  |   |             |   |      |                                       |      |  |      |                                       |      |

# MKP 416 to 420



## Vishay BCcomponents Metallized Polypropylene Film Capacitors MKP Radial Potted Type

| C<br>(E 24)<br>( $\mu$ F)                                    | DIMENSIONS<br>w × h × l<br>(mm)       | MASS<br>(g)                           | CATALOG NUMBER 2222 419 ..... AND PACKAGING |     |   |     |   |      |   |      |
|--|---------------------------------------|---------------------------------------|---|-----|---|-----|---|------|---|------|
|  |                                       |                                       | AMMOPACK                                    |     | LOOSE IN BOX                              |     | REEL                                      |      | LOOSE IN BOX                              |      |
|  |                                       |                                       | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |     | It =<br>4.0 + 1.0/– 0.5 mm                |     | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm  |      | It =<br>3.5 ± 0.3 mm                      |      |
|  |                                       |                                       | C-tol = ± 2 %                               | SPQ | C-tol = ± 2 %                             | SPQ | C-tol = ± 2 %                             | SPQ  | C-tol = ± 2 %                             | SPQ  |
| last 5 digits of<br>catalog<br>number                        | last 5 digits of<br>catalog<br>number | last 5 digits of<br>catalog<br>number | last 5 digits of<br>catalog<br>number       |     |   |     |   |      |   |      |
| 0.047<br>0.051<br>0.056<br>0.062<br>0.068                    | 6.0 × 12.0 × 12.5                     | 1.10                                  | 14703<br>15103<br>15603<br>16203<br>16803   | 500 | 44703<br>45103<br>45603<br>46203<br>46803 | 750 |   |      |   |      |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |                                       |                                       |   |     |   |     |   |      |   |      |
| 0.075<br>0.082   | 5.0 × 11.0 × 17.5                     | 1.2                                   |   |     |   |     | 17503<br>18203                            | 1100 | 77503<br>78203                            | 1250 |
| 0.091<br>0.1<br>0.11<br>0.12<br>0.13                         | 6.0 × 12.0 × 17.5                     | 1.4                                   |   |     |   |     | 19103<br>11004<br>11104<br>11204<br>11304 | 900  | 79103<br>71004<br>71104<br>71204<br>71304 | 1000 |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b> |                                       |                                       |   |     |   |     |   |      |   |      |
| 0.15<br>0.16<br>0.18   | 7.0 × 13.5 × 17.5                     | 1.9                                   |   |     |   |     | 11504<br>11604<br>11804                   | 800  | 71504<br>71604<br>71804                   | 750  |
| 0.2<br>0.22<br>0.24<br>0.27                                  | 8.5 × 15.0 × 17.5                     | 2.6                                   |   |     |   |     | 12004<br>12204<br>12404<br>12704          | 650  | 72004<br>72204<br>72404<br>72704          | 750  |
| 0.3<br>0.33<br>0.36  | 10.0 × 16.5 × 17.5                    | 3.1                                   |   |     |   |     | 13004<br>13304<br>13604                   | 600  | 73004<br>73304<br>73604                   | 500  |



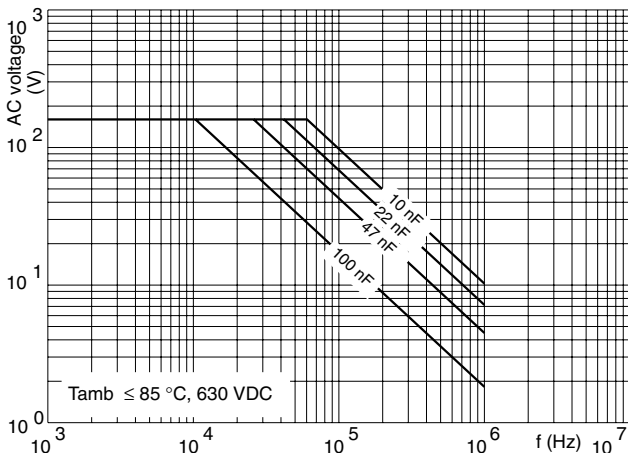
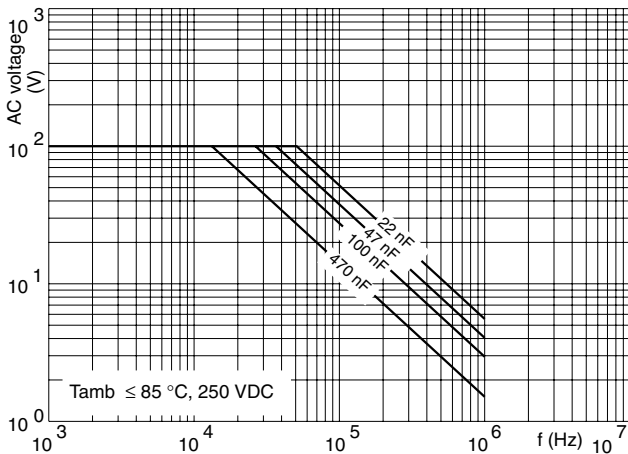
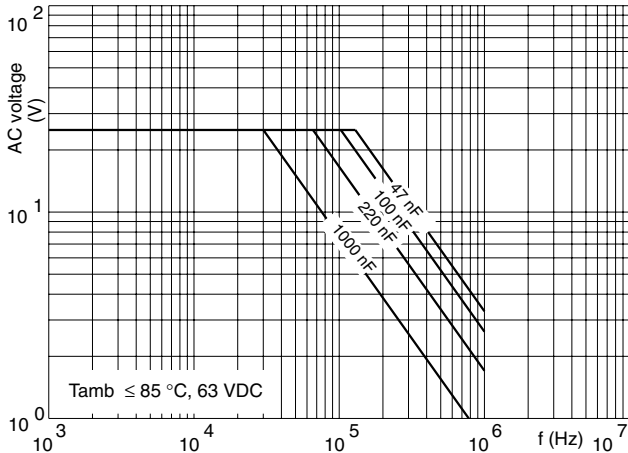


Metallized Polypropylene Film Capacitors Vishay BCcomponents  
MKP Radial Potted Type

$U_{Rdc} = 630\text{ V}$ ;  $U_{Rac} = 160\text{ V}$ ;  $U_{p-p} = 450\text{ V}$

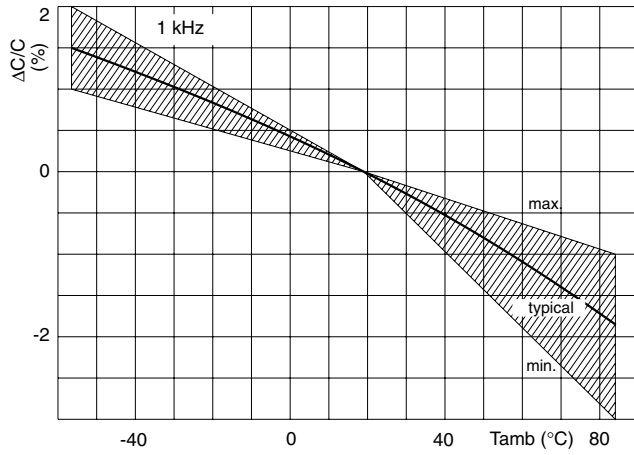
| C<br>(E 24)<br>( $\mu\text{F}$ )                             | DIMENSIONS<br>$w \times h \times l$<br>(mm) | MASS<br>(g) | CATALOG NUMBER 2222 420 ..... AND PACKAGING |      |                                       |      |  |      |                                       |     |
|--|---|-------------|---|------|---------------------------------------|------|--|------|---------------------------------------|-----|
|  |   |             | AMMOPACK                                    |      | LOOSE IN BOX                          |      | REEL                                     |      | LOOSE IN BOX                          |     |
|  |   |             | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm    |      | It =<br>4.0 + 1.0/- 0.5 mm            |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm |      | It =<br>3.5 ± 0.3 mm                  |     |
|  |   |             | C-tol = ± 2 %                               |      | C-tol = ± 2 %                         |      | C-tol = ± 2 %                            |      | C-tol = ± 2 %                         |     |
|  |   |             | last 5 digits of<br>catalog<br>number       | SPQ  | last 5 digits of<br>catalog<br>number | SPQ  | last 5 digits of<br>catalog<br>number    | SPQ  | last 5 digits of<br>catalog<br>number | SPQ |
| <b>Pitch = 5.0 ± 0.3 mm; d<sub>t</sub> = 0.50 ± 0.05 mm</b>  |   |             |   |      |                                       |      |  |      |                                       |     |
| 0.0015   | 3.5 × 8.0 × 7.2                             | 0.35        | 11502                                       | 1500 | 41502                                 | 3000 |  |      |                                       |     |
| 0.0016   |   |             | 11602                                       |      | 41602                                 |      |  |      |                                       |     |
| 0.0018   |   |             | 11802                                       |      | 41802                                 |      |  |      |                                       |     |
| 0.002  |   |             | 12002                                       |      | 42002                                 |      |  |      |                                       |     |
| 0.0022   |   |             | 12202                                       |      | 42202                                 |      |  |      |                                       |     |
| 0.0024   |   |             | 12402                                       |      | 42402                                 |      |  |      |                                       |     |
| 0.0027   |   |             | 12702                                       |      | 42702                                 |      |  |      |                                       |     |
| 0.003  | 4.5 × 9.0 × 7.2                             | 0.45        | 13002                                       | 1000 | 43002                                 | 2000 |  |      |                                       |     |
| 0.0033   |   |             | 13302                                       |      | 43302                                 |      |  |      |                                       |     |
| 0.0036   |   |             | 13602                                       |      | 43602                                 |      |  |      |                                       |     |
| 0.0039   |   |             | 13902                                       |      | 43902                                 |      |  |      |                                       |     |
| 0.0043   | 6.0 × 11.0 × 7.2                            | 0.60        | 14302                                       | 750  | 44302                                 | 1500 |  |      |                                       |     |
| 0.0047   |   |             | 14702                                       |      | 44702                                 |      |  |      |                                       |     |
| 0.0051   |   |             | 15102                                       |      | 45102                                 |      |  |      |                                       |     |
| 0.0056   |   |             | 15602                                       |      | 45602                                 |      |  |      |                                       |     |
| 0.0062   |   |             | 16202                                       |      | 46202                                 |      |  |      |                                       |     |
| 0.0068   |   |             | 16802                                       |      | 46802                                 |      |  |      |                                       |     |
| <b>Pitch = 10.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |             |   |      |                                       |      |  |      |                                       |     |
| 0.01   | 4.0 × 10.0 × 12.5                           | 0.60        | 11003                                       | 750  | 41003                                 | 1000 |  |      |                                       |     |
| 0.011  |   |             | 11103                                       |      | 41103                                 |      |  |      |                                       |     |
| 0.012  |   |             | 11203                                       |      | 41203                                 |      |  |      |                                       |     |
| 0.013  |   |             | 11303                                       |      | 41303                                 |      |  |      |                                       |     |
| 0.015  |   |             | 11503                                       |      | 41503                                 |      |  |      |                                       |     |
| 0.016  |   |             | 11603                                       |      | 41603                                 |      |  |      |                                       |     |
| 0.018  | 5.0 × 11.0 × 12.5                           | 0.85        | 11803                                       | 600  | 41803                                 | 1000 |  |      |                                       |     |
| 0.02   |   |             | 12003                                       |      | 42003                                 |      |  |      |                                       |     |
| 0.022  |   |             | 12203                                       |      | 42203                                 |      |  |      |                                       |     |
| 0.024  |   |             | 12403                                       |      | 42403                                 |      |  |      |                                       |     |
| 0.027  | 6.0 × 12.0 × 12.5                           | 1.10        | 12703                                       | 500  | 42703                                 | 750  |  |      |                                       |     |
| 0.03   |   |             | 13003                                       |      | 43003                                 |      |  |      |                                       |     |
| 0.033  |   |             | 13303                                       |      | 43303                                 |      |  |      |                                       |     |
| 0.036  |   |             | 13603                                       |      | 43603                                 |      |  |      |                                       |     |
| 0.039  |   |             | 13903                                       |      | 43903                                 |      |  |      |                                       |     |
| 0.043  |   |             | 14303                                       |      | 44303                                 |      |  |      |                                       |     |
| 0.047  |   |             | 14703                                       |      | 44703                                 |      |  |      |                                       |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.60 ± 0.06 mm</b> |   |             |   |      |                                       |      |  |      |                                       |     |
| 0.051  | 6.0 × 12.0 × 17.5                           | 1.4         |   |      | 15103                                 | 900  | 75103                                    | 1000 |                                       |     |
| 0.056  |   |             |   |      | 15603                                 |      | 75603                                    |      |                                       |     |
| <b>Pitch = 15.0 ± 0.4 mm; d<sub>t</sub> = 0.80 ± 0.08 mm</b> |   |             |   |      |                                       |      |  |      |                                       |     |
| 0.062  | 7.0 × 13.5 × 17.5                           | 1.9         |   |      | 16203                                 | 800  | 76203                                    | 750  |                                       |     |
| 0.068  |   |             |   |      | 16803                                 |      | 76803                                    |      |                                       |     |
| 0.075  |   |             |   |      | 17503                                 |      | 77503                                    |      |                                       |     |
| 0.082  |   |             |   |      | 18203                                 |      | 78203                                    |      |                                       |     |
| 0.091  | 8.5 × 15.0 × 17.5                           | 2.6         |   |      | 19103                                 | 650  | 79103                                    | 750  |                                       |     |
| 0.1  |   |             |   |      | 11004                                 |      | 71004                                    |      |                                       |     |
| 0.11   |   |             |   |      | 11104                                 |      | 71104                                    |      |                                       |     |
| 0.12   |   |             |   |      | 11204                                 |      | 71204                                    |      |                                       |     |
| 0.13   | 10.0 × 16.5 × 17.5                          | 3.1         |   |      | 11304                                 | 600  | 71304                                    | 500  |                                       |     |
| 0.15   |   |             |   |      | 11504                                 |      | 71504                                    |      |                                       |     |
| 0.16   |   |             |   |      | 11604                                 |      | 71604                                    |      |                                       |     |

## MAXIMUM RMS VOLTAGE (SENEAUE) AS A FUNCTION OF FREQUENCY

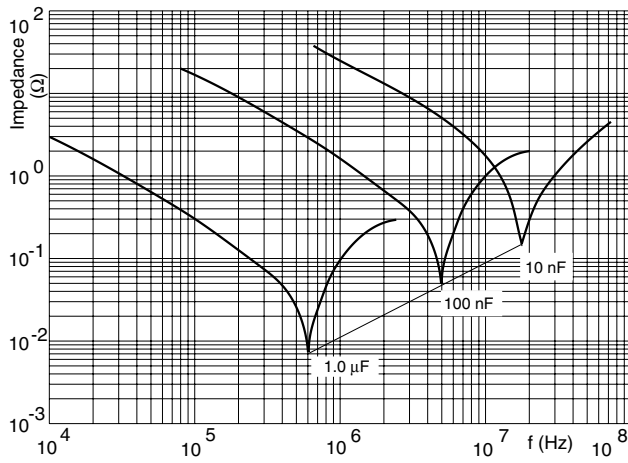




CAPACITANCE



IMPEDANCE





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