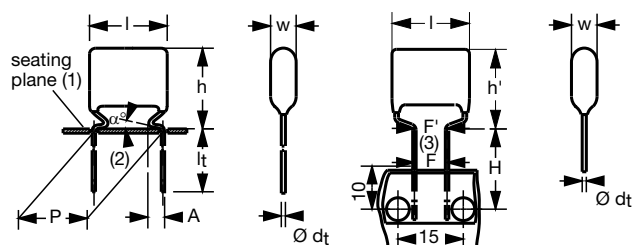


# AC and Pulse Metallized Polypropylene Film Capacitors KP/MKP Radial Lacquered Type



Dimensions in mm

(1) Hole  $\varnothing$  1.3 for  $d_t = 0.8$  mm

(2)  $0 \leq \alpha < 50^\circ$

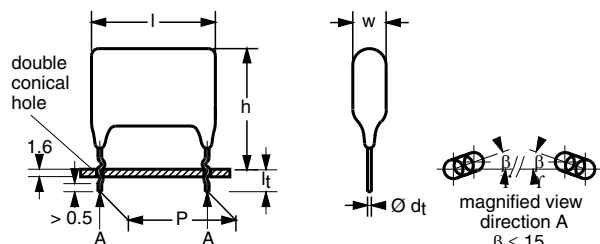
(3)  $|F - F'| < 0.3$  mm

$F = 7.5 + 0.6 / - 0.1$  mm

(4)  $A = 2.0 + 1.0 / - 0.5$  mm for 10 mm pitch

$A = 2.5 + 1.5 / - 0.5$  mm for 15 mm pitch

$A = 2.5 + 1.4 / - 0.5$  mm for pitch  $> 22.5$  mm



Dimensions in mm

## APPLICATIONS

Where high currents and steep pulses occur. For deflection circuits in television sets.

## REFERENCE SPECIFICATIONS

IEC 60384-17

## MARKING

C-value; tolerance; rated voltage; manufacturer's type; manufacturer's location

## DIELECTRIC

Polypropylene film

## ELECTRODES

Metallized and aluminum

## CONSTRUCTION

Internal serial construction

## RATED (DC) VOLTAGE

630 V, 1000 V, 1600 V, 2000 V

## RATED (AC) VOLTAGE

300 V, 400 V, 500 V, 600 V

## RATED PEAK-TO-PEAK VOLTAGE

850 V, 1100 V, 1400 V, 1700 V

## FEATURES

- 10 mm to 27.5 mm pitch
- Supplied loose in box (including lock lead versions) and taped
- Bent back version for automatic insertion available
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## ENCAPSULATION

Flame retardant epoxy material  
(Class UL 94 V-0)

## CLIMATIC TESTING CLASS ACCORDING TO IEC 60068-1

55/105/56

## CAPACITANCE RANGE (E24 SERIES)

0.1 nF to 270 nF

## CAPACITANCE TOLERANCE

$\pm 5\%$ ;  $\pm 3.5\%$

## LEADS

Tinned wire

## RATED TEMPERATURE

85 °C

## MAXIMUM APPLICATION TEMPERATURE

105 °C

## PERFORMANCE GRADE

for  $C > 5.6$  nF: grade 1 (long life)

for  $C \leq 5.6$  nF: grade 2

## STABILITY GRADE

Grade 2

## DETAIL SPECIFICATION

For more detailed data and test requirements contact:

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



## COMPOSITION OF CATALOG NUMBER

| TYPE AND PITCHES |                | CAPACITANCE<br>(numerically; but not<br>for lock lead) |  | MULTIPLIER<br>(nF) |   |
|------------------|----------------|--------------------------------------------------------|--|--------------------|---|
| 375              |                |                                                        |  |                    |   |
|                  | 10.0 mm/7.5 mm |                                                        |  | 0.01               | 1 |
|                  | 15.0 mm/7.5 mm |                                                        |  | 0.1                | 2 |
|                  | 10.0 mm        |                                                        |  | 1                  | 3 |
|                  | 15.0 mm        |                                                        |  | 10                 | 4 |
|                  | 22.5 mm        |                                                        |  |                    |   |
|                  | 27.5 mm        |                                                        |  |                    |   |

|                     |     |    |    |   |
|---------------------|-----|----|----|---|
| BFC2                | 375 | XX | YY | Y |
| 2222 <sup>(1)</sup> | 375 | XX | YY | Y |

(1) old ordering number

Example:  
104 = 10 x 10 = 100 nF

| TYPE                                                   | PACKAGING                                   | LEAD CONFIGURATION                                               | PREFERRED TYPES |                                                        |        |        |        |
|--------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|-----------------|--------------------------------------------------------|--------|--------|--------|
|                                                        |                                             |                                                                  | C-TOL.          | 630 V                                                  | 1000 V | 1600 V | 2000 V |
| 375                                                    | Loose in box                                | Lead length 5.0 mm ± 1.0 mm                                      | ± 5 %           | 14                                                     | 24     | 34     | 44     |
|                                                        |                                             | Lock lead 4.0 mm + 1.0/- 0.5 mm                                  | ± 5 %           | 90                                                     | 90     | 90     | 90     |
|                                                        | Taped on reel <sup>(2)</sup><br>(bent back) | H = 16.0 mm; P <sub>0</sub> = 15.0 mm;<br>Reel diameter 500 mm   | ± 5 %           | 16                                                     | 26     | 36     | 46     |
| Dimensions of this code numbers stays between brackets |                                             |                                                                  |                 |                                                        |        |        |        |
| ON REQUEST                                             |                                             |                                                                  |                 |                                                        |        |        |        |
| 375                                                    | Loose in box                                | Lead length 5.0 ± 1.0 mm                                         | ± 3.5 %         | 15                                                     | 25     | 35     | 45     |
|                                                        |                                             | Lead length 3.5 ± 0.5 mm                                         | ± 5 %           | 10                                                     | 20     | 30     | 40     |
|                                                        |                                             |                                                                  | ± 3.5 %         | 11                                                     | 21     | 31     | 41     |
|                                                        | Taped on reel <sup>(2)</sup>                | H = 16.0 mm; P <sub>0</sub> = 12.7 mm;<br>Reel diameter = 500 mm | ± 5 %           | 12                                                     | 22     | 32     | 42     |
|                                                        |                                             |                                                                  | ± 3.5 %         | 13                                                     | 23     | 33     | 43     |
|                                                        |                                             |                                                                  |                 | 17                                                     | 27     | 37     | 47     |
|                                                        | Taped on reel <sup>(2)</sup><br>(bent back) | H = 16.0 mm; P <sub>0</sub> = 15.0 mm;<br>Reel diameter = 500 mm | ± 3.5 %         | Dimensions of this code numbers stays between brackets |        |        |        |
|                                                        |                                             | H = 16.0 mm; P <sub>0</sub> = 15.0 mm;<br>Reel diameter = 356 mm | ± 5 %           | 18                                                     | 28     | 38     | 48     |

## Note

<sup>(2)</sup> For detailed tape specifications refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139) or end of catalog

SPECIFIC REFERENCE DATA (630 V<sub>DC</sub>)

| DESCRIPTION                                                                                                           | VALUE         |         |
|-----------------------------------------------------------------------------------------------------------------------|---------------|---------|
| Tangent of loss angle at (x 10 <sup>-4</sup> )                                                                        | 10 kHz        | 100 kHz |
| Pitch = 10 mm, 15 mm, and 7.5 mm (bent back)                                                                          | ≤ 6           | ≤ 10    |
| Pitch = 22.5 mm                                                                                                       | ≤ 8           | ≤ 15    |
| Pitch = 27.5 mm                                                                                                       | ≤ 8           | ≤ 20    |
| Rated voltage pulse slope (dU/dt) <sub>R</sub> :                                                                      |               |         |
| Pitch = 10 mm                                                                                                         | 15 000 V/μs   |         |
| Pitch = 15 mm and 7.5 mm (bent back)                                                                                  | 8000 V/μs     |         |
| Pitch = 22.5 mm                                                                                                       | 2800 V/μs     |         |
| Pitch = 27.5 mm                                                                                                       | 1900 V/μs     |         |
| R between leads at 500 V, 1 min                                                                                       | > 100 000 MΩ  |         |
| R between interconnected leads and case, 500 V, 1 min                                                                 | > 100 000 MΩ  |         |
| Ionization (AC) voltage (typical value) at 50 pC peak discharge<br>at 50 pC peak discharge<br>at 20 pC peak discharge | > 400 V       |         |
| Withstanding (DC) voltage (cut off current 10 mA), rise time 1000 V/s<br>for C ≤ 47 nF<br>for C > 47 nF               | 1008 V, 1 min |         |
| Withstanding (DC) voltage between leads and case                                                                      | 2840 V, 1 min |         |
| Maximum application temperature                                                                                       | 105 °C        |         |



**$U_{RDC} = 630\text{ V}$ ;  $U_{RAC} = 300\text{ V}$ ;  $U_{PP} = 850\text{ V (KINKED)}$ ;  $C\text{-TOL.} = \pm 5\%$**

| C                            | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup>  | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |                            |                            |             |                         |
|------------------------------|--------------------------------------------------------------|-----------------------------|---------------------------------------------|----------------------------|----------------------------|-------------|-------------------------|
|                              |                                                              |                             | LEADS<br>5 mm ± 1.0 mm                      | REEL                       |                            |             | C<br>VALUE<br><br>..YYY |
|                              |                                                              |                             |                                             | ORIGINAL PITCH             | PITCH = 7.5 mm (BENT BACK) |             |                         |
|                              |                                                              |                             |                                             | Ø 500 mm                   | Ø 500 mm                   | Ø 356 mm    |                         |
|                              |                                                              |                             | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)                | XX<br>(SPQ) |                         |
| C (pF)                       | PITCH = 10.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm |                             | PITCH = 10.0 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |             |                         |
| 680<br>750                   | 5.0 x 13.0 x 14.5                                            | 0.65                        | 14...<br>(2000)                             | 12...<br>(1200)            |                            |             | 681<br>751              |
| 820<br>910<br>1000           | 5.5 x 13.5 x 14.5                                            | 0.70                        | 14...<br>(2000)                             | 12...<br>(1100)            |                            |             | 821<br>911<br>102       |
| 1100<br>1200<br>1300         |                                                              | 0.75                        |                                             |                            |                            |             | 112<br>122<br>132       |
| 1500<br>1600                 |                                                              | 0.80<br>0.85                |                                             |                            |                            |             | 152<br>162              |
| 1800<br>2000<br>2200<br>2400 |                                                              | 0.80<br>0.85<br>0.90<br>1.0 |                                             |                            |                            |             | 14...<br>(1750)         |
| 2700                         | 6.5 x 14.5 x 14.5                                            | 1.1                         | 14...<br>(1500)                             | 12...<br>(900)             |                            |             | 272                     |

#### Notes

- SPQ = Standard Packing Quantity

<sup>(1)</sup> Net weight for short lead product only



**$U_{RDC} = 630 \text{ V}$ ;  $U_{RAC} = 300 \text{ V}$ ;  $U_{PP} = 850 \text{ (KINKED)}$ ;  $C\text{-TOL.} = \pm 5 \%$**

| C                                                                                                | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                        |                            |                            |                                                                           |       |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------|---------------------------------------------|------------------------|----------------------------|----------------------------|---------------------------------------------------------------------------|-------|
|                                                                                                  |                                                              |                            | LOOSE IN BOX                                | REEL                   |                            |                            | C<br>VALUE                                                                |       |
|                                                                                                  |                                                              |                            |                                             | LEADS<br>5 mm ± 1.0 mm | ORIGINAL PITCH             | PITCH = 7.5 mm (BENT BACK) |                                                                           | ..YYY |
|                                                                                                  |                                                              |                            |                                             |                        | Ø 500 mm                   | Ø 500 mm                   | Ø 356 mm                                                                  |       |
|                                                                                                  |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)            | XX<br>(SPQ)                | XX<br>(SPQ)                |                                                                           |       |
| C (pF)                                                                                           | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |                        | PITCH = 7.5 mm (BENT BACK) |                            |                                                                           |       |
| 3000<br>3300                                                                                     | 5.0 x 14.0 (16.0) x 18.5                                     | 1.0                        | 14...<br>(2000)                             | 12...<br>(1200)        | 16...<br>(1000)            | 18...<br>(550)             | 302<br>332                                                                |       |
| 3600<br>3900<br>4300<br>4700<br>5100<br>5600                                                     | 5.5 x 14.5 (16.0) x 18.5                                     | 1.1                        | 14...<br>(2000)                             | 12...<br>(1100)        | 16...<br>(900)             | 18...<br>(500)             | 362<br>392<br>432<br>472<br>512<br>562                                    |       |
| 6200<br>6800<br>7500<br>8200<br>9100<br>10 000<br>11 000<br>12 000<br>13 000<br>15 000<br>16 000 | 6.0 x 15.0 (16.0) x 18.5                                     | 1.2                        | 14...<br>(2000)                             | 12...<br>(1000)        | 16...<br>(800)             | 18...<br>(450)             | 622<br>682<br>752<br>822<br>912<br>103<br>113<br>123<br>133<br>153<br>163 |       |
| 18 000<br>20 000                                                                                 | 6.5 x 15.5 (17.0) x 18.5                                     | 1.3                        | 14...<br>(1500)                             | 12...<br>(900)         | 16...<br>(750)             | 18...<br>(400)             | 183<br>203                                                                |       |
| 22 000                                                                                           | 7.0 x 16.0 (17.5) x 18.5                                     | 1.5                        | 14...<br>(1500)                             | 12...<br>(800)         | 16...<br>(700)             | 18...<br>(400)             | 223                                                                       |       |
| 24 000                                                                                           | 7.5 x 16.5 (18.0) x 18.5                                     | 1.6                        | 14...<br>(1250)                             | 12...<br>(800)         | 16...<br>(650)             | 18...<br>(350)             | 243                                                                       |       |
| 27 000<br>30 000                                                                                 | 8.0 x 17.0 (18.5) x 18.5                                     | 1.9                        | 14...<br>(1250)                             | 12...<br>(750)         | 16...<br>(600)             | 18...<br>(350)             | 273<br>303                                                                |       |
| 33 000                                                                                           | 8.5 x 17.5 (19.0) x 18.5                                     | 2                          | 14...<br>(1000)                             | 12...<br>(700)         | 16...<br>(550)             | 18...<br>(300)             | 333                                                                       |       |
| 36 000<br>39 000                                                                                 | 9.0 x 18.5 (20.0) x 18.5                                     | 2.3                        | 14...<br>(900)                              | 12...<br>(600)         | 16...<br>(500)             | 18...<br>(300)             | On<br>request                                                             |       |
| C (µF)                                                                                           | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             | PITCH = 22.5 mm        | PITCH = 7.5 mm (BENT BACK) |                            |                                                                           |       |
| 0.036<br>0.039<br>0.043<br>0.047<br>0.051<br>0.056<br>0.062                                      | 7.0 x 20.0 x 26.0                                            | 2.7                        | 14...<br>(650)                              | -                      | -                          | -                          | 363<br>393<br>433<br>473<br>513<br>563<br>623                             |       |
| 0.068                                                                                            | 7.5 x 20.5 x 26.0                                            | 3                          | 14...<br>(600)                              | -                      | -                          | -                          | 683                                                                       |       |
| 0.075<br>0.082                                                                                   | 8.0 x 21.0 x 26.0                                            | 3.3                        | 14...<br>(550)                              | -                      | -                          | -                          | 753<br>823                                                                |       |
| 0.091                                                                                            | 8.5 x 21.5 x 26.0                                            | 3.8                        | 14...<br>(500)                              | -                      | -                          | -                          | 913                                                                       |       |
| 0.1                                                                                              | 9.0 x 22.0 x 26.0                                            | 4                          | 14...<br>(450)                              | -                      | -                          | -                          | 104                                                                       |       |

**Notes**

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only



**$U_{RDC} = 630 \text{ V}$ ;  $U_{RAC} = 300 \text{ V}$ ;  $U_{PP} = 850 \text{ (KINKED)}$ ;  $C\text{-TOL.} = \pm 5 \%$**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                            |                |                            |         |       |          |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------|----------------------------|---------|-------|----------|
|        |                                                              |                            | LOOSE IN BOX                                | REEL                       |                |                            | C VALUE |       |          |
|        |                                                              |                            |                                             | LEADS<br>5 mm ± 1.0 mm     | ORIGINAL PITCH | PITCH = 7.5 mm (BENT BACK) |         | ..YYY |          |
|        |                                                              |                            |                                             |                            | Ø 500 mm       | Ø 500 mm                   |         |       | Ø 356 mm |
|        |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)    | XX<br>(SPQ)                |         |       |          |
| C (µF) | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 22.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                |                            |         |       |          |
| 0.11   | 9.5 x 22.5 x 26.0                                            | 4.3                        | 14...<br>(400)                              | -                          | -              | -                          | 114     |       |          |
| 0.12   | 10.0 x 23.0 x 26.0                                           | 4.7                        | 14...<br>(400)                              |                            |                |                            | 124     |       |          |
| C (µF) | PITCH = 27.5 mm ± 0.5 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 27.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                |                            |         |       |          |
| 0.13   | 9.5 x 22.5 x 30.0                                            | 4.7                        | 14...<br>(500)                              | -                          | -              | -                          | 134     |       |          |
| 0.15   | 10.0 x 23.0 x 30.0                                           | 5.2                        | 14...<br>(500)                              |                            |                |                            | 154     |       |          |
| 0.16   | 10.5 x 23.5 x 30.0                                           | 5.5                        | 14...<br>(450)                              |                            |                |                            | 164     |       |          |
| 0.18   | 11.0 x 24.0 x 30.0                                           | 6                          | 14...<br>(400)                              |                            |                |                            | 184     |       |          |
| 0.2    | 11.5 x 24.5 x 30.0                                           | 6.6                        | 14...<br>(400)                              |                            |                |                            | 204     |       |          |
| 0.22   | 12.5 x 25.5 x 30.0                                           | 7.1                        | 14...<br>(350)                              |                            |                |                            | 224     |       |          |
| 0.24   | 13.0 x 26.0 x 30.0                                           | 7.7                        | 14...<br>(300)                              |                            |                |                            | 244     |       |          |
| 0.27   | 13.5 x 26.5 x 30.0                                           | 8.5                        | 14...<br>(300)                              |                            |                |                            | 274     |       |          |

#### Notes

- Loose in box, all lengths have same SPQ
- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only

**$U_{RDC} = 630 \text{ V}$ ;  $U_{RAC} = 300 \text{ V}$ ;  $U_{PP} = 850 \text{ V (LOCK LEAD)}$ ;  $C\text{-TOL.} = \pm 5 \%$**

| C                                                  | DIMENSIONS<br>w x h (h') x l<br>(mm) | MASS<br>(g) <sup>(1)</sup>                        | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING                                                            |        |
|----------------------------------------------------|--------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------|
|                                                    |                                      |                                                   | LOOSE IN BOX                                                                                           |        |
|                                                    |                                      |                                                   | $l_t = 4.0 \text{ mm} + 1.0 \text{ mm/- } 0.5 \text{ mm}$                                              |        |
|                                                    |                                      |                                                   | (SPQ)                                                                                                  |        |
| <b>C (pF)</b>                                      |                                      |                                                   | <b>PITCH = 10.0 mm <math>\pm</math> 1.0 mm; <math>d_t = 0.60 \text{ mm} \pm 0.06 \text{ mm}</math></b> |        |
| 680<br>750                                         | 5.0 x 16.0 x 14.5                    | 0.65                                              | 90308<br>90309                                                                                         | (2000) |
| 820<br>910<br>1000<br>1100<br>1300<br>1500<br>1600 | 5.5 x 16.5 x 14.5                    | 0.7<br>0.7<br>0.7<br>0.75<br>0.75<br>0.80<br>0.85 | 90311<br>90312<br>90313<br>90314<br>90316<br>90317<br>90318                                            | (2000) |
| 1800<br>2000<br>2200<br>2400                       | 6.0 x 17.0 x 14.5                    | 0.80<br>0.85<br>0.90<br>1.0                       | 90319<br>90321<br>90322<br>90323                                                                       | (1750) |
| 2700                                               | 6.5 x 17.5 x 14.5                    | 1.1                                               | 90324                                                                                                  | (1500) |

#### Notes

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only



**$U_{RDC} = 630 \text{ V}$ ;  $U_{RAC} = 300 \text{ V}$ ;  $U_{PP} = 850 \text{ V (LOCK LEAD)}$ ;  $C\text{-TOL.} = \pm 5 \%$**

| C                                                                                                | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING                                                     |        |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------|--------|
|                                                                                                  |                                                              |                            | LOOSE IN BOX                                                                                    |        |
|                                                                                                  |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm                                                       |        |
|                                                                                                  |                                                              |                            | (SPQ)                                                                                           |        |
| C (pF)                                                                                           | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                                                                                 |        |
| 3000<br>3300                                                                                     | 5.0 x 17.0 x 18.5                                            | 1                          | 90325<br>90326                                                                                  | (2000) |
| 3600<br>3900<br>4300<br>4700<br>5100<br>5600                                                     | 5.5 x 17.5 x 18.5                                            | 1.1                        | 90327<br>90328<br>90329<br>90331<br>90332<br>90333                                              | (2000) |
| 6200<br>6800<br>7500<br>8200<br>9100<br>10 000<br>11 000<br>12 000<br>13 000<br>15 000<br>16 000 | 6.0 x 18.0 x 18.5                                            | 1.3                        | 90334<br>90335<br>90336<br>90337<br>90338<br>90339<br>90236<br>90341<br>90342<br>90343<br>90344 | (2000) |
| 18 000<br>20 000                                                                                 | 6.5 x 18.5 x 18.5                                            | 1.4                        | 90218<br>90345                                                                                  | (1750) |
| 22 000                                                                                           | 7.0 x 19.0 x 18.5                                            | 1.5                        | 90219                                                                                           | (1500) |
| 24 000                                                                                           | 7.5 x 19.5 x 18.5                                            | 1.6                        | 90221                                                                                           | (1400) |
| 27 000<br>30 000                                                                                 | 8.0 x 20.0 x 18.5                                            | 1.9                        | 90223<br>90346                                                                                  | (1250) |
| 33 000                                                                                           | 8.5 x 20.5 x 18.5                                            | 2                          | 90347                                                                                           | (1200) |
| 36 000<br>39 000                                                                                 | 9.0 x 21.5 x 18.5                                            | 2.3                        | On request                                                                                      | (1000) |
| C (µF)                                                                                           | PITCH = 22.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                                                                                 |        |
| 0.036<br>0.039<br>0.043<br>0.047<br>0.051<br>0.056<br>0.062                                      | 7.0 x 23.0 x 26.0                                            | 2.7                        | 90348<br>90349<br>90351<br>90352<br>90353<br>90354<br>90355                                     | (600)  |
| 0.068                                                                                            | 7.5 x 23.5 x 26.0                                            | 3                          | 90356                                                                                           | (550)  |
| 0.075<br>0.082                                                                                   | 8.0 x 24.0 x 26.0                                            | 3.3                        | 90357<br>90358                                                                                  | (500)  |
| 0.091                                                                                            | 8.5 x 24.5 x 26.0                                            | 3.8                        | 90359                                                                                           | (450)  |



| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |       |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|-------|
|        |                                                              |                            | LOOSE IN BOX                                |       |
|        |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |       |
|        |                                                              |                            |                                             | (SPQ) |
| C (μF) | PITCH = 22.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |       |
| 0.1    | 9.0 x 25.0 x 26.0                                            | 4.0                        | 90361                                       | (450) |
| 0.11   | 9.5 x 25.5 x 26.0                                            | 4.3                        | 90362                                       | (400) |
| 0.12   | 10.0 x 26.0 x 26.0                                           | 4.7                        | 90363                                       | (350) |
| C (μF) | PITCH = 27.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |       |
| 0.13   | 9.5 x 25.5 x 30.0                                            | 4.7                        | 90364                                       | (450) |
| 0.15   | 10.0 x 26.0 x 30.0                                           | 5.2                        | 90365                                       | (400) |
| 0.16   | 10.5 x 26.5 x 30.0                                           | 5.5                        | 90366                                       | (350) |
| 0.18   | 11.0 x 27.0 x 30.0                                           | 6.0                        | 90367                                       | (350) |
| 0.2    | 11.5 x 27.5 x 30.0                                           | 6.6                        | 90368                                       | (350) |
| 0.22   | 12.5 x 28.5 x 30.0                                           | 7.1                        | 90369                                       | (300) |
| 0.24   | 13.0 x 29.0 x 30.0                                           | 7.7                        | 90371                                       | (250) |
| 0.27   | 13.5 x 29.5 x 30.0                                           | 8.5                        | 90372                                       | (250) |

**Notes**

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only

**SPECIFIC REFERENCE DATA (1000 V<sub>DC</sub>)**

| DESCRIPTION                                                           | VALUE                                       |         |
|-----------------------------------------------------------------------|---------------------------------------------|---------|
| Tangent of loss angle at (x 10 <sup>-4</sup> )                        | 10 kHz                                      | 100 kHz |
| Pitch = 10 mm, 15 mm, and 7.5 mm (bent back)                          | ≤ 6                                         | ≤ 10    |
| Pitch = 22.5 mm                                                       | ≤ 8                                         | ≤ 15    |
| Pitch = 27.5 mm                                                       | ≤ 8                                         | ≤ 20    |
| Rated voltage pulse slope (dU/dt):                                    |                                             |         |
| Pitch = 10 mm                                                         | 27 000 V/μs                                 |         |
| Pitch = 15 mm and 7.5 mm (bent back)                                  | 15 000 V/μs                                 |         |
| Pitch = 22.5 mm                                                       | 5000 V/μs                                   |         |
| Pitch = 27.5 mm                                                       | 3300 V/μs                                   |         |
| R between leads at 500 V, 1 min                                       | > 100 000 MΩ                                |         |
| R between interconnected leads and case, 500 V, 1 min                 | > 100 000 MΩ                                |         |
| Ionization (AC) voltage (typical value)                               |                                             |         |
| at 50 pC peak discharge                                               | > 500 V                                     |         |
| at 20 pC peak discharge                                               |                                             |         |
| Withstanding (DC) voltage (cut off current 10 mA), rise time 1000 V/s |                                             |         |
| for C ≤ 47 nF                                                         | 1600 V, 1 min                               |         |
| for C > 47 nF                                                         | [1.6 - (0.0364 x (C - 47))] x 1000 V, 1 min |         |
| Withstanding (DC) voltage between leads and case                      | 2840 V, 1 min                               |         |
| Maximum application temperature                                       | 105 °C                                      |         |



**$U_{RDC} = 1000\text{ V}$ ;  $U_{RAC} = 400\text{ V}$ ;  $U_{PP} = 1100\text{ V (KINKED)}$ ;  $C\text{-TOL.} = \pm 5\%$**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |                        |                |                            | C<br>VALUE<br><br>..YYY |          |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|------------------------|----------------|----------------------------|-------------------------|----------|
|        |                                                              |                            | LOOSE IN BOX                                | REEL                   |                |                            |                         |          |
|        |                                                              |                            |                                             | LEADS<br>5 mm ± 1.0 mm | ORIGINAL PITCH | PITCH = 7.5 mm (BENT BACK) |                         |          |
|        |                                                              |                            |                                             |                        | XX<br>(SPQ)    | Ø 500 mm                   |                         | Ø 500 mm |
| C (pF) | PITCH = 10.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm | PITCH = 10.0 mm            | PITCH = 7.5 mm (BENT BACK)                  |                        |                |                            |                         |          |
| 100    | 5.0 x 13.0 x 14.5                                            | 0.5                        | 24...<br>(2000)                             | 22...<br>(1200)        | -              | -                          | 101                     |          |
| 110    |                                                              |                            |                                             |                        |                |                            | 111                     |          |
| 120    |                                                              |                            |                                             |                        |                |                            | 121                     |          |
| 130    |                                                              |                            |                                             |                        |                |                            | 131                     |          |
| 150    |                                                              |                            |                                             |                        |                |                            | 151                     |          |
| 160    | 5.5 x 13.5 x 14.5                                            | 0.55                       | 24...<br>(2000)                             | 22...<br>(1100)        | -              | -                          | 161                     |          |
| 180    |                                                              | 0.55                       |                                             |                        |                |                            | 181                     |          |
| 200    |                                                              | 0.55                       |                                             |                        |                |                            | 201                     |          |
| 220    |                                                              | 0.60                       |                                             |                        |                |                            | 221                     |          |
| 240    |                                                              | 0.60                       |                                             |                        |                |                            | 241                     |          |
| 270    |                                                              | 0.60                       |                                             |                        |                |                            | 271                     |          |
| 300    |                                                              | 0.60                       |                                             |                        |                |                            | 301                     |          |
| 330    |                                                              | 0.60                       |                                             |                        |                |                            | 331                     |          |
| 360    |                                                              | 0.60                       |                                             |                        |                |                            | 361                     |          |
| 390    |                                                              | 0.65                       |                                             |                        |                |                            | 391                     |          |
| 430    |                                                              | 0.70                       |                                             |                        |                |                            | 431                     |          |
| 470    |                                                              | 0.75                       |                                             |                        |                |                            | 471                     |          |
| 510    |                                                              | 0.75                       |                                             |                        |                |                            | 511                     |          |
| 560    |                                                              | 0.80                       |                                             |                        |                |                            | 561                     |          |
| 620    |                                                              | 0.80                       |                                             |                        |                |                            | 621                     |          |
| 680    |                                                              | 0.80                       |                                             |                        |                |                            | 681                     |          |
| 750    |                                                              | 0.70                       |                                             |                        |                |                            | 751                     |          |
| 820    |                                                              | 0.70                       |                                             |                        |                |                            | 821                     |          |
| 910    |                                                              | 0.70                       |                                             |                        |                |                            | 911                     |          |
| 1000   | 6.0 x 14.0 x 14.5                                            | 0.75                       | 24...<br>(1750)                             | 22...<br>(1000)        | -              | -                          | 102                     |          |
| 1100   |                                                              | 0.85                       |                                             |                        |                |                            | 112                     |          |
| 1200   |                                                              | 0.90                       |                                             |                        |                |                            | 122                     |          |
| 1300   |                                                              | 0.85                       |                                             |                        |                |                            | 132                     |          |
| 1500   |                                                              | 0.90                       |                                             |                        |                |                            | 152                     |          |
| C (pF) | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm | PITCH = 15.0 mm            | PITCH = 7.5 mm (BENT BACK)                  |                        |                |                            |                         |          |
| 1600   | 5.5 x 14.5 (16.0) x 18.5                                     | 1.1                        | 24...<br>(2000)                             | 22...<br>(1100)        | 26...<br>(900) | 28...<br>(500)             | 162                     |          |
| 1800   |                                                              |                            |                                             |                        |                |                            | 182                     |          |
| 2000   |                                                              |                            |                                             |                        |                |                            | 202                     |          |
| 2200   |                                                              |                            |                                             |                        |                |                            | 222                     |          |
| 2400   |                                                              |                            |                                             |                        |                |                            | 242                     |          |
| 2700   | 6.0 x 15.0 (16.5) x 18.5                                     | 1.2                        | 24...<br>(2000)                             | 22...<br>(1000)        | 26...<br>(800) | 28...<br>(450)             | 272                     |          |
| 3000   |                                                              |                            |                                             |                        |                |                            | 302                     |          |
| 3300   |                                                              |                            |                                             |                        |                |                            | 332                     |          |
| 3600   |                                                              |                            |                                             |                        |                |                            | 362                     |          |
| 3900   |                                                              |                            |                                             |                        |                |                            | 392                     |          |
| 4300   |                                                              |                            |                                             |                        |                |                            | 432                     |          |
| 4700   |                                                              |                            |                                             |                        |                |                            | 472                     |          |
| 5100   |                                                              |                            |                                             |                        |                |                            | 512                     |          |
| 5600   |                                                              |                            |                                             |                        |                |                            | 562                     |          |

**Notes**

- Loose in box, all lengths have same SPQ
- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only





**$U_{RDC} = 1000 \text{ V}$ ;  $U_{RAC} = 400 \text{ V}$ ;  $U_{PP} = 1100 \text{ V (KINKED)}$ ;  $C\text{-TOL.} = \pm 5 \%$**

| C                    | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                            |                            |                |                   |
|----------------------|--------------------------------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|----------------|-------------------|
|                      |                                                              |                            | LOOSE IN BOX                                | REEL                       |                            |                | C VALUE           |
|                      |                                                              |                            | LEADS<br>5 mm ± 1.0 mm                      | ORIGINAL PITCH             | PITCH = 7.5 mm (BENT BACK) |                | ..YYY             |
|                      |                                                              |                            |                                             | Ø 500 mm                   | Ø 500 mm                   | Ø 356 mm       |                   |
|                      |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)                | XX<br>(SPQ)    |                   |
| C (pF)               | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 15.0 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |                |                   |
| 6200<br>6800         | 6.0 x 15.0 (16.5) x 18.5                                     | 1.2                        | 24...<br>(2000)                             | 22...<br>(1000)            | 26...<br>(800)             | 28...<br>(450) | 622<br>682        |
| 7500<br>8200<br>9100 | 7.0 x 16.0 (17.5) x 18.5                                     | 1.4                        | 24...<br>(1500)                             | 22...<br>(800)             | 26...<br>(700)             | 28...<br>(400) | 752<br>822<br>912 |
| 10 000               | 7.5 x 16.5 (18.0) x 18.5                                     | 1.6                        | 24...<br>(1250)                             | 22...<br>(800)             | 26...<br>(650)             | 28...<br>(350) | 103               |
| 11 000<br>12 000     | 8.0 x 17.0 (18.5) x 18.5                                     | 1.8                        | 24...<br>(1250)                             | 22...<br>(750)             | 26...<br>(600)             | 28...<br>(350) | 113<br>123        |
| 13 000               | 8.5 x 17.5 (19.0) x 18.5                                     | 1.9                        | 24...<br>(1000)                             | 22...<br>(700)             | 26...<br>(550)             | 28...<br>(300) | 133               |
| 15 000               | 9.0 x 18.5 (19.5) x 18.5                                     | 2.1                        | 24...<br>(1000)                             | 22...<br>(650)             | 26...<br>(550)             | 28...<br>(300) | 153               |
| C (µF)               | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 22.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |                |                   |
| 0.016<br>0.018       | 6.0 x 19.0 x 26.0                                            | 2.2                        | 24...<br>(800)                              | -                          | -                          | -              | 163<br>183        |
| 0.02<br>0.022        | 6.5 x 19.5 x 26.0                                            | 2.5                        | 24...<br>(750)                              |                            |                            |                | 203<br>223        |
| 0.024                | 7.0 x 20.0 x 26.0                                            | 2.7                        | 24...<br>(650)                              |                            |                            |                | 243               |
| 0.027<br>0.03        | 7.5 x 20.5 x 26.0                                            | 3.1                        | 24...<br>(600)                              |                            |                            |                | 273<br>303        |
| 0.033                | 8.0 x 21.0 x 26.0                                            | 3.4                        | 24...<br>(550)                              |                            |                            |                | 333               |
| 0.036<br>0.039       | 8.5 x 21.5 x 26.0                                            | 3.7                        | 24...<br>(500)                              |                            |                            |                | 363<br>393        |
| 0.043                | 9.0 x 22.0 x 26.0                                            | 4.1                        | 24...<br>(450)                              |                            |                            |                | 433               |
| C (µF)               | PITCH = 27.5 mm ± 0.5 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 27.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |                |                   |
| 0.047                | 7.0 x 20.0 x 30.0                                            | 3.1                        | 24...<br>(1000)                             | -                          | -                          | -              | 473               |
| 0.051<br>0.056       | 7.5 x 20.5 x 30.0                                            | 3.4                        | 24...<br>(750)                              |                            |                            |                | 513<br>563        |
| 0.062                | 8.0 x 21.0 x 30.0                                            | 3.8                        | 24...<br>(650)                              |                            |                            |                | 623               |
| 0.068                | 8.5 x 21.5 x 30.0                                            | 4.0                        | 24...<br>(550)                              |                            |                            |                | 683               |
| 0.075                | 9.0 x 22.0 x 30.0                                            | 4.4                        | 24...<br>(550)                              |                            |                            |                | 753               |
| 0.082                | 9.5 x 22.5 x 30.0                                            | 4.7                        | 24...<br>(500)                              |                            |                            |                | 823               |
| 0.091                | 10.0 x 23.0 x 30.0                                           | 5.1                        | 24...<br>(500)                              |                            |                            |                | 913               |
| 0.10                 | 10.5 x 23.5 x 30.0                                           | 5.5                        | 24...<br>(450)                              |                            |                            |                | 104               |
| 0.11                 | 11.0 x 24.0 x 30.0                                           | 5.9                        | 24...<br>(400)                              |                            |                            |                | 114               |
| 0.12                 | 11.5 x 24.5 x 30.0                                           | 6.3                        | 24...<br>(400)                              |                            |                            |                | 124               |
| 0.13                 | 12.0 x 25.0 x 30.0                                           | 6.8                        | 24...<br>(350)                              |                            |                            |                | 134               |
| 0.15                 | 12.5 x 25.5 x 30.0                                           | 7.6                        | 24...<br>(350)                              |                            |                            |                | 154               |

#### Notes

- Loose in box, all lengths have same SPQ
- SPQ = Standard Packing Quantity

<sup>(1)</sup> Net weight for short lead product only



**$U_{RDC} = 1000\text{ V}$ ;  $U_{RAC} = 400\text{ V}$ ;  $U_{PP} = 1100\text{ V}$  (LOCK LEAD);  $C\text{-TOL.} = \pm 5\%$**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |        |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|--------|
|        |                                                              |                            | LOOSE IN BOX                                |        |
|        |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |        |
|        |                                                              |                            |                                             | (SPQ)  |
| C (pF) | PITCH = 10.0 mm ± 1.0 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm |                            |                                             |        |
| 100    | 5.0 x 16.0 x 14.5                                            | 0.5                        | 90373                                       | (2000) |
| 110    |                                                              |                            | 90374                                       |        |
| 120    |                                                              |                            | 90375                                       |        |
| 130    |                                                              |                            | 90376                                       |        |
| 150    | 5.5 x 16.5 x 14.5                                            | 0.55                       | 90377                                       | (2000) |
| 160    |                                                              | 0.55                       | 90378                                       |        |
| 180    |                                                              | 0.55                       | 90379                                       |        |
| 200    |                                                              | 0.55                       | 90281                                       |        |
| 220    |                                                              | 0.60                       | 90382                                       |        |
| 240    |                                                              | 0.60                       | 90383                                       |        |
| 270    |                                                              | 0.60                       | 90384                                       |        |
| 300    |                                                              | 0.60                       | 90385                                       |        |
| 330    |                                                              | 0.60                       | 90386                                       |        |
| 360    |                                                              | 0.60                       | 90387                                       |        |
| 390    |                                                              | 0.65                       | 90388                                       |        |
| 430    |                                                              | 0.70                       | 90389                                       |        |
| 470    |                                                              | 0.75                       | 90391                                       |        |
| 510    |                                                              | 0.75                       | 90392                                       |        |
| 560    |                                                              | 0.80                       | 90393                                       |        |
| 620    |                                                              | 0.80                       | 90394                                       |        |
| 680    |                                                              | 0.80                       | 90395                                       |        |
| 750    |                                                              | 0.70                       | 90396                                       |        |
| 820    | 0.70                                                         | 90397                      |                                             |        |
| 910    | 0.70                                                         | 90398                      |                                             |        |
| 1000   | 6.0 x 17.0 x 14.5                                            | 0.75                       | 90399                                       | (1750) |
| 1100   |                                                              | 0.85                       | 90401                                       |        |
| 1200   |                                                              | 0.90                       | 90402                                       |        |
| 1300   |                                                              | 0.85                       | 90403                                       |        |
| 1500   |                                                              | 0.90                       | 90404                                       |        |
| C (pF) | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 1600   | 5.5 x 17.5 x 18.5                                            | 1.1                        | 90405                                       | (2000) |
| 1800   |                                                              |                            | 90406                                       |        |
| 2000   |                                                              |                            | 90407                                       |        |
| 2200   |                                                              |                            | 90408                                       |        |
| 2400   |                                                              |                            | 90409                                       |        |
| 2700   | 6.0 x 18.0 x 18.5                                            | 1.2                        | 90411                                       | (2000) |
| 3000   |                                                              |                            | 90412                                       |        |
| 3300   |                                                              |                            | 90413                                       |        |
| 3600   |                                                              |                            | 90414                                       |        |
| 3900   |                                                              |                            | 90415                                       |        |
| 4300   |                                                              |                            | 90416                                       |        |
| 4700   |                                                              |                            | 90417                                       |        |
| 5100   |                                                              |                            | 90418                                       |        |
| 5600   |                                                              |                            | 90419                                       |        |
| 6200   |                                                              |                            | 90421                                       |        |
| 6800   |                                                              |                            | 90422                                       |        |



| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |        |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|--------|
|        |                                                              |                            | LOOSE IN BOX                                |        |
|        |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |        |
|        |                                                              |                            | (SPQ)                                       |        |
| C (pF) | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 7500   | 7.0 x 19.0 x 18.5                                            | 1.5                        | 90232                                       | (1500) |
| 8200   |                                                              |                            | 90423                                       |        |
| 9100   |                                                              |                            | 90424                                       |        |
| 10 000 | 7.5 x 19.5 x 18.5                                            | 1.6                        | 90425                                       | (1400) |
| 11 000 | 8.0 x 20.0 x 18.5                                            | 1.8                        | 90426                                       | (1250) |
| 12 000 |                                                              |                            | 90427                                       |        |
| 13 000 | 8.5 x 20.5 x 18.5                                            | 1.9                        | 90428                                       | (1200) |
| 15 000 | 9.0 x 21.0 x 18.5                                            | 2.1                        | 90429                                       | (1100) |
| C (μF) | PITCH = 22.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 0.016  | 6.0 x 22.0 x 26.0                                            | 2.2                        | 90431                                       | (750)  |
| 0.018  |                                                              |                            | 90432                                       |        |
| 0.02   | 6.5 x 22.5 x 26.0                                            | 2.5                        | 90433                                       | (700)  |
| 0.022  |                                                              |                            | 90434                                       |        |
| 0.024  | 7.0 x 23.0 x 26.0                                            | 2.7                        | 90435                                       | (600)  |
| 0.027  | 7.5 x 23.5 x 26.0                                            | 3.1                        | 90436                                       | (550)  |
| 0.03   |                                                              |                            | 90437                                       |        |
| 0.033  | 8.0 x 24.0 x 26.0                                            | 3.4                        | 90438                                       | (500)  |
| 0.036  | 8.5 x 24.5 x 26.0                                            | 3.8                        | 90439                                       | (450)  |
| 0.039  |                                                              |                            | 90224                                       |        |
| 0.043  | 9.0 x 25.0 x 26.0                                            | 4.1                        | 90441                                       | (450)  |
| C (μF) | PITCH = 27.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 0.047  | 7.0 x 23.0 x 30.0                                            | 3.1                        | 90442                                       | (800)  |
| 0.051  | 7.5 x 23.5 x 30.0                                            | 3.4                        | 90443                                       | (600)  |
| 0.056  |                                                              |                            | 90444                                       |        |
| 0.062  | 8.0 x 24.0 x 30.0                                            | 3.8                        | 90445                                       | (550)  |
| 0.068  | 8.5 x 24.5 x 30.0                                            | 4.0                        | 90446                                       | (550)  |
| 0.075  | 9.0 x 25.0 x 30.0                                            | 4.4                        | 90447                                       | (450)  |
| 0.082  | 9.5 x 25.5 x 30.0                                            | 4.7                        | 90448                                       | (450)  |
| 0.091  | 10.0 x 26.0 x 30.0                                           | 5.1                        | 90449                                       | (400)  |
| 0.1    | 10.5 x 26.5 x 30.0                                           | 5.5                        | 90451                                       | (350)  |
| 0.11   | 11.0 x 27.0 x 30.0                                           | 5.9                        | 90452                                       | (350)  |
| 0.12   | 11.5 x 27.5 x 30.0                                           | 6.3                        | 90453                                       | (350)  |
| 0.13   | 12.0 x 28.0 x 30.0                                           | 6.8                        | 90454                                       | (350)  |
| 0.15   | 12.0 x 28.5 x 30.0                                           | 7.6                        | 90455                                       | (300)  |

**Notes**

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only

**SPECIFIC REFERENCE DATA (1600 V<sub>DC</sub>)**

| DESCRIPTION                                                           | VALUE                |           |
|-----------------------------------------------------------------------|----------------------|-----------|
| Tangent of loss angle at ( $\times 10^{-4}$ ):                        | 10 kHz               | 100 kHz   |
| Pitch = 10 mm, 15 mm and 7.5 mm (bent back)                           | $\leq 6$             | $\leq 10$ |
| Pitch = 22.5 mm                                                       | $\leq 6$             | $\leq 15$ |
| Pitch = 27.5 mm                                                       | $\leq 6$             | $\leq 20$ |
| Rated voltage pulse slope ( $dU/dt$ ):                                |                      |           |
| Pitch = 10 mm                                                         | 21 000 V/ $\mu$ s    |           |
| Pitch = 15 mm and 7.5 mm (bent back)                                  | 7000 V/ $\mu$ s      |           |
| Pitch = 22.5 mm                                                       | 4700 V/ $\mu$ s      |           |
| Pitch = 27.5 mm                                                       |                      |           |
| R between leads at 500 V, 1 min                                       | > 100 000 M $\Omega$ |           |
| R between interconnected leads and case, 500 V, 1 min                 | > 100 000 M $\Omega$ |           |
| Ionization (AC) voltage (typical value)                               |                      |           |
| at 50 pC peak discharge                                               | > 550 V              |           |
| at 10 pC peak discharge                                               |                      |           |
| Withstanding (DC) voltage (cut off current 10 mA), rise time 1000 V/s |                      |           |
| for $C \leq 47$ nF                                                    | 2560 V, 1 min        |           |
| for $C > 47$ nF                                                       |                      |           |
| Withstanding (DC) voltage between leads and case                      | 2840 V, 1 min        |           |
| Maximum application temperature                                       | 105 °C               |           |

**U<sub>RDC</sub> = 1600 V; U<sub>RAC</sub> = 500 V; U<sub>PP</sub> = 1400 V (KINKED); C-TOL. =  $\pm 5$  %**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                            |                |                            |            |       |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------|----------------------------|------------|-------|
|        |                                                              |                            | LOOSE IN BOX                                | REEL                       |                |                            | C<br>VALUE |       |
|        |                                                              |                            |                                             | LEADS<br>5 mm ± 1.0 mm     | ORIGINAL PITCH | PITCH = 7.5 mm (BENT BACK) |            | ..YYY |
|        |                                                              |                            |                                             |                            | Ø 500 mm       | Ø 500 mm                   | Ø 356 mm   |       |
|        |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)    | XX<br>(SPQ)                |            |       |
| C (pF) | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 15.0 mm                             | PITCH = 7.5 mm (BENT BACK) |                |                            |            |       |
| 680    | 5.5 x 14.5 (15.0) x 18.5                                     | 0.75                       | 34... (2000)                                | 32... (1100)               | 36... (900)    | 38... (500)                | 681        |       |
| 750    |                                                              |                            |                                             |                            |                |                            | 751        |       |
| 820    |                                                              |                            |                                             |                            |                |                            | 821        |       |
| 910    | 6.0 x 15.0 (15.5) x 18.5                                     | 0.8                        | 34... (2000)                                | 32... (1000)               | 36... (800)    | 38... (450)                | 911        |       |
| 1000   |                                                              | 0.85                       |                                             |                            |                |                            | 102        |       |
| 1100   |                                                              | 0.85                       |                                             |                            |                |                            | 112        |       |
| 1200   |                                                              | 0.90                       |                                             |                            |                |                            | 122        |       |
| 1300   |                                                              | 0.95                       |                                             |                            |                |                            | 132        |       |
| 1500   | 5.5 x 14.5 (16.0) x 18.5                                     | 1.1                        | 34... (2000)                                | 32... (1100)               | 36... (900)    | 38... (500)                | 152        |       |
| 1600   |                                                              |                            |                                             |                            |                |                            | 162        |       |
| 1800   | 6.0 x 15.0 (16.5) x 18.5                                     | 1.2                        | 34... (2000)                                | 32... (1000)               | 36... (800)    | 38... (450)                | 182        |       |
| 2000   | 6.5 x 15.5 (17.0) x 18.5                                     | 1.3                        | 34... (1500)                                | 32... (900)                | 36... (750)    | 38... (400)                | 202        |       |
| 2200   |                                                              |                            |                                             |                            |                |                            | 222        |       |
| 2400   | 7.0 x 16.0 (17.5) x 18.5                                     | 1.4                        | 34... (1500)                                | 32... (800)                | 36... (700)    | 38... (400)                | 242        |       |
| 2700   | 7.5 x 16.5 (18.0) x 18.5                                     | 1.6                        | 34... (1250)                                | 32... (800)                | 36... (650)    | 38... (350)                | 272        |       |
| 3000   |                                                              |                            |                                             |                            |                |                            | 302        |       |
| 3300   | 8.0 x 17.0 (18.5) x 18.5                                     | 1.7                        | 34... (1250)                                | 32... (750)                | 36... (600)    | 38... (350)                | 332        |       |
| 3600   | 8.5 x 17.5 (19.0) x 18.5                                     | 1.8                        | 34... (1000)                                | 32... (700)                | 36... (550)    | 38... (300)                | 362        |       |
| 3900   | 9.0 x 18.5 (19.5) x 18.5                                     | 2.0                        | 34... (1000)                                | 32... (650)                | 36... (550)    | 38... (300)                | 392        |       |
| 4300   |                                                              |                            |                                             |                            |                |                            | 432        |       |



| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING                   |                                               |                             |                             |            |  |  |     |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------------------------|-----------------------------------------------|-----------------------------|-----------------------------|------------|--|--|-----|
|        |                                                              |                            | LOOSE IN BOX<br><br>LEADS<br>5 mm ± 1.0 mm<br><br>XX<br>(SPQ) | REEL                                          |                             |                             | C<br>VALUE |  |  |     |
|        |                                                              |                            |                                                               | ORIGINAL PITCH<br>Ø 500 mm<br><br>XX<br>(SPQ) | PITCH = 7.5 mm (BENT BACK)  |                             | ..YYY      |  |  |     |
|        |                                                              |                            |                                                               |                                               | Ø 500 mm<br><br>XX<br>(SPQ) | Ø 356 mm<br><br>XX<br>(SPQ) |            |  |  |     |
| C (µF) | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 22.5 mm                                               | PITCH = 7.5 mm (BENT BACK)                    |                             |                             |            |  |  |     |
| 0.0047 | 6.0 x 19.0 x 26.0                                            | 2.0                        | -                                                             | -                                             | -                           | 472                         |            |  |  |     |
| 0.0051 |                                                              |                            |                                                               |                                               |                             | 512                         |            |  |  |     |
| 0.0056 |                                                              |                            |                                                               |                                               |                             | 562                         |            |  |  |     |
| 0.0062 | 6.5 x 19.5 x 26.0                                            | 2.1                        |                                                               |                                               |                             | 34...<br>(750)              |            |  |  | 622 |
| 0.0068 |                                                              |                            |                                                               |                                               |                             |                             |            |  |  | 682 |
| 0.0075 | 7.0 x 20.0 x 26.0                                            | 2.3                        |                                                               |                                               |                             | 34...<br>(650)              |            |  |  | 752 |
| 0.0082 |                                                              |                            |                                                               |                                               |                             |                             |            |  |  | 822 |
| 0.0091 | 7.5 x 20.5 x 26.0                                            | 2.5                        |                                                               |                                               |                             | 34...<br>(600)              | 912        |  |  |     |
| 0.01   | 8.0 x 21.0 x 26.0                                            | 2.6                        |                                                               |                                               |                             | 34...<br>(550)              | 103        |  |  |     |
| 0.011  | 8.5 x 21.5 x 26.0                                            | 2.9                        |                                                               |                                               |                             | 34...<br>(500)              |            |  |  | 113 |
| 0.012  |                                                              |                            |                                                               |                                               |                             |                             |            |  |  | 123 |
| 0.013  | 9.0 x 22.0 x 26.0                                            | 3.1                        |                                                               |                                               |                             | 34...<br>(450)              | 133        |  |  |     |
| 0.015  | 9.5 x 22.5 x 26.0                                            | 3.5                        |                                                               |                                               |                             | 34...<br>(400)              | 153        |  |  |     |
| 0.016  | 10.0 x 23.0 x 26.0                                           | 3.6                        |                                                               |                                               |                             | 34...<br>(400)              | 163        |  |  |     |
| 0.018  | 10.5 x 23.5 x 26.0                                           | 4.0                        |                                                               |                                               |                             | 34...<br>(350)              | 183        |  |  |     |
| C (µF) | PITCH = 27.5 mm ± 0.5 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 27.5 mm                                               | PITCH = 7.5 mm (BENT BACK)                    |                             |                             |            |  |  |     |
| 0.02   | 9.0 x 22.0 x 30.0                                            | 4.2                        | -                                                             | -                                             | -                           | 203                         |            |  |  |     |
| 0.022  | 9.5 x 22.5 x 30.0                                            | 4.4                        |                                                               |                                               |                             | 223                         |            |  |  |     |
| 0.024  | 10.0 x 23.0 x 30.0                                           | 4.7                        |                                                               |                                               |                             | 243                         |            |  |  |     |
| 0.027  | 10.5 x 23.5 x 30.0                                           | 5.2                        |                                                               |                                               |                             | 273                         |            |  |  |     |
| 0.03   | 11.0 x 24.0 x 30.0                                           | 5.6                        |                                                               |                                               |                             | 303                         |            |  |  |     |
| 0.033  | 11.5 x 24.5 x 30.0                                           | 6.0                        |                                                               |                                               |                             | 333                         |            |  |  |     |
| 0.036  | 12.0 x 25.0 x 30.0                                           | 6.5                        |                                                               |                                               |                             | 363                         |            |  |  |     |
| 0.039  | 12.5 x 25.5 x 30.0                                           | 6.9                        |                                                               |                                               |                             | 393                         |            |  |  |     |

**Notes**

- Loose in box, all lengths have same SPQ
- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only



**$U_{RDC} = 1600\text{ V}$ ;  $U_{RAC} = 500\text{ V}$ ;  $U_{PP} = 1400\text{ V}$  (LOCK LEAD);  $C\text{-TOL.} = \pm 5\%$**

| C                                   | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup>           | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |        |
|-------------------------------------|--------------------------------------------------------------|--------------------------------------|---------------------------------------------|--------|
|                                     |                                                              |                                      | LOOSE IN BOX                                |        |
|                                     |                                                              |                                      | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |        |
|                                     |                                                              |                                      |                                             | (SPQ)  |
| C (pF)                              | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                                      |                                             |        |
| 680<br>750<br>820                   | 5.5 x 17.5 x 18.5                                            | 0.75                                 | 90456<br>90457<br>90458                     | (2000) |
| 910<br>1000<br>1100<br>1200<br>1300 | 6.0 x 18.0 x 18.5                                            | 0.80<br>0.85<br>0.85<br>0.90<br>0.95 | 90459<br>90461<br>90462<br>90463<br>90464   | (2000) |
| 1500<br>1600                        | 5.5 x 17.5 x 18.5                                            | 1.1                                  | 90465<br>90466                              | (2000) |
| 1800                                | 6.0 x 18.0 x 18.5                                            | 1.2                                  | 90467                                       | (2000) |
| 2000<br>2200                        | 6.5 x 18.5 x 18.5                                            | 1.3                                  | 90468<br>90469                              | (1750) |
| 2400                                | 7.0 x 19.0 x 18.5                                            | 1.4                                  | 90471                                       | (1500) |
| 2700<br>3000                        | 7.5 x 19.5 x 18.5                                            | 1.6                                  | 90472<br>90473                              | (1400) |
| 3300                                | 8.0 x 20.0 x 18.5                                            | 1.9                                  | 90141                                       | (1250) |
| 3600                                | 8.5 x 20.5 x 18.5                                            | 2.3                                  | 90142                                       | (1200) |
| 3900<br>4300                        | 9.0 x 21.5 x 18.5                                            | 2.5                                  | 90143<br>90144                              | (1100) |
| C (µF)                              | PITCH = 22.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                                      |                                             |        |
| 0.0047<br>0.0051<br>0.0056          | 6.0 x 22.0 x 26.0                                            | 2.4                                  | 90145<br>90146<br>90147                     | (750)  |
| 0.0062<br>0.0068                    | 6.5 x 22.5 x 26.0                                            | 2.6                                  | 90148<br>90149                              | (700)  |
| 0.0075<br>0.0082<br>0.0083          | 7.0 x 23.0 x 26.0                                            | 2.8                                  | 90151<br>90152<br>90202                     | (600)  |
| 0.0091                              | 7.5 x 23.5 x 26.0                                            | 2.9                                  | 90153                                       | (550)  |
| 0.01                                | 8.0 x 24.0 x 26.0                                            | 3.2                                  | 90154                                       | (500)  |
| 0.011<br>0.012                      | 8.5 x 24.5 x 26.0                                            | 3.4                                  | 90155<br>90156                              | (450)  |
| 0.013                               | 9.0 x 25.0 x 26.0                                            | 3.6                                  | 90157                                       | (450)  |
| 0.015                               | 9.5 x 25.5 x 26.0                                            | 4.0                                  | 90158                                       | (400)  |
| 0.016                               | 10.0 x 26.0 x 26.0                                           | 4.3                                  | 90159                                       | (350)  |
| 0.018                               | 10.5 x 26.5 x 26.0                                           | 4.7                                  | 90161                                       | (350)  |
| C (µF)                              | PITCH = 27.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                                      |                                             |        |
| 0.02                                | 9.0 x 25.0 x 30.0                                            | 4.2                                  | 90474                                       | (450)  |
| 0.022                               | 9.5 x 25.5 x 30.0                                            | 4.4                                  | 90475                                       | (450)  |
| 0.024                               | 10.0 x 26.0 x 30.0                                           | 4.7                                  | 90476                                       | (400)  |
| 0.027                               | 10.5 x 26.5 x 30.0                                           | 5.2                                  | 90477                                       | (350)  |
| 0.03                                | 11.0 x 27.0 x 30.0                                           | 5.6                                  | 90478                                       | (350)  |
| 0.033                               | 11.5 x 27.5 x 30.0                                           | 6.0                                  | 90479                                       | (350)  |
| 0.036                               | 12.0 x 28.0 x 30.0                                           | 6.5                                  | 90481                                       | (300)  |
| 0.039                               | 12.5 x 28.5 x 30.0                                           | 6.9                                  | 90482                                       | (300)  |

#### Notes

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only

SPECIFIC REFERENCE DATA (2000 V<sub>DC</sub>)

| DESCRIPTION                                                           | VALUE                |           |
|-----------------------------------------------------------------------|----------------------|-----------|
| Tangent of loss angle at ( $\times 10^{-4}$ ):                        | 10 kHz               | 100 kHz   |
| Pitch = 10 mm, 15 mm, and 7.5 mm (bent back)                          | $\leq 6$             | $\leq 10$ |
| Pitch = 22.5 mm                                                       | $\leq 6$             | $\leq 10$ |
| Pitch = 27.5 mm                                                       | $\leq 6$             | $\leq 15$ |
| Rated voltage pulse slope ( $dU/dt$ ):                                |                      |           |
| Pitch = 10 mm                                                         | 30 000 V/ $\mu$ s    |           |
| Pitch = 15 mm and 7.5 mm (bent back)                                  | 10 000 V/ $\mu$ s    |           |
| Pitch = 22.5 mm                                                       | 6700 V/ $\mu$ s      |           |
| Pitch = 27.5 mm                                                       |                      |           |
| R between leads at 500 V, 1 min                                       | > 100 000 M $\Omega$ |           |
| R between interconnected leads and case, 500 V, 1 min                 | > 100 000 M $\Omega$ |           |
| Ionization (AC) voltage (typical value)                               |                      |           |
| at 50 pC peak discharge                                               | > 600 V              |           |
| at 20 pC peak discharge                                               |                      |           |
| Withstanding (DC) voltage (cut off current 10 mA), rise time 1000 V/s |                      |           |
| for $C \leq 47$ nF                                                    | 3200 V, 1 min        |           |
| for $C > 47$ nF                                                       |                      |           |
| Withstanding (DC) voltage between leads and case                      | 2840 V, 1 min        |           |
| Maximum application temperature                                       | 105 °C               |           |

**U<sub>RDC</sub> = 2000 V; U<sub>RAC</sub> = 600 V; U<sub>PP</sub> = 1700 (KINKED); C-TOL. =  $\pm 5$  %**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                   |                            |                |                      |             |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|-------------------|----------------------------|----------------|----------------------|-------------|
|        |                                                              |                            | LEADS<br>5 mm ± 1.0 mm                      | ORIGINAL<br>PITCH | PITCH = 7.5 mm (BENT BACK) |                | C VALUE<br><br>..YYY |             |
|        |                                                              |                            |                                             | XX<br>(SPQ)       | XX<br>(SPQ)                | XX<br>(SPQ)    |                      | XX<br>(SPQ) |
|        |                                                              |                            |                                             |                   | XX<br>(SPQ)                | XX<br>(SPQ)    |                      | XX<br>(SPQ) |
| C (pF) | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm | PITCH = 15.0 mm            | PITCH = 7.5 mm (BENT BACK)                  |                   |                            |                |                      |             |
| 100    | 5.5 x 14.5 (15.0) x 18.5                                     | 0.75                       | 44...<br>(2000)                             | 42...<br>(1100)   | 46...<br>(900)             | 48...<br>(500) | 101                  |             |
| 110    |                                                              | 0.75                       |                                             |                   |                            |                | 111                  |             |
| 120    |                                                              | 0.75                       |                                             |                   |                            |                | 121                  |             |
| 130    |                                                              | 0.75                       |                                             |                   |                            |                | 131                  |             |
| 150    |                                                              | 0.75                       |                                             |                   |                            |                | 151                  |             |
| 160    |                                                              | 0.75                       |                                             |                   |                            |                | 161                  |             |
| 180    |                                                              | 0.75                       |                                             |                   |                            |                | 181                  |             |
| 200    |                                                              | 0.75                       |                                             |                   |                            |                | 201                  |             |
| 220    |                                                              | 0.75                       |                                             |                   |                            |                | 221                  |             |
| 240    |                                                              | 0.75                       |                                             |                   |                            |                | 241                  |             |
| 270    |                                                              | 0.75                       |                                             |                   |                            |                | 271                  |             |
| 300    |                                                              | 0.75                       |                                             |                   |                            |                | 301                  |             |
| 330    |                                                              | 0.75                       |                                             |                   |                            |                | 331                  |             |
| 360    |                                                              | 0.75                       |                                             |                   |                            |                | 361                  |             |
| 390    |                                                              | 0.75                       |                                             |                   |                            |                | 391                  |             |
| 430    |                                                              | 0.75                       |                                             |                   |                            |                | 431                  |             |
| 470    | 0.80                                                         | 471                        |                                             |                   |                            |                |                      |             |
| 510    | 0.80                                                         | 511                        |                                             |                   |                            |                |                      |             |
| 560    | 0.80                                                         | 561                        |                                             |                   |                            |                |                      |             |



| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XXYYY AND PACKAGING |                            |                            |                       |            |  |  |  |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|-----------------------|------------|--|--|--|
|        |                                                              |                            | LOOSE IN BOX                                | REEL                       |                            |                       | C VALUE    |  |  |  |
|        |                                                              |                            | LEADS<br>5 mm ± 1.0 mm                      | ORIGINAL<br>PITCH          | PITCH = 7.5 mm (BENT BACK) |                       | ..YYY      |  |  |  |
|        |                                                              |                            |                                             | Ø 500 mm                   | Ø 500 mm                   | Ø 356 mm              |            |  |  |  |
|        |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)                | XX<br>(SPQ)           |            |  |  |  |
| C (pF) | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 15.0 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |                       |            |  |  |  |
| 620    | 6.0 x 15.0 (15.5) x 18.5                                     | 0.85                       | <b>44...</b><br>(2000)                      | <b>42...</b><br>(1000)     | <b>46...</b><br>(800)      | <b>48...</b><br>(450) | <b>621</b> |  |  |  |
| 680    |                                                              | 0.85                       |                                             |                            |                            |                       | <b>681</b> |  |  |  |
| 750    |                                                              | 0.90                       |                                             |                            |                            |                       | <b>751</b> |  |  |  |
| 820    | 6.5 x 15.5 (16.0) x 18.5                                     | 0.95                       | <b>44...</b><br>(1500)                      | <b>42...</b><br>(900)      | <b>46...</b><br>(750)      | <b>48...</b><br>(400) | <b>821</b> |  |  |  |
| 910    | 5.5 x 14.5 (16.0) x 18.5                                     | 1.1                        | <b>44...</b><br>(2000)                      | <b>42...</b><br>(420)      | <b>46...</b><br>(900)      | <b>48...</b><br>(500) | <b>911</b> |  |  |  |
| 1000   | 6.0 x 15.0 (16.5) x 18.5                                     | 1.2                        | <b>44...</b><br>(2000)                      | <b>42...</b><br>(1000)     | <b>46...</b><br>(800)      | <b>48...</b><br>(450) | <b>102</b> |  |  |  |
| 1100   |                                                              |                            |                                             |                            |                            |                       | <b>112</b> |  |  |  |
| 1200   |                                                              |                            |                                             |                            |                            |                       | <b>122</b> |  |  |  |
| 1300   | 6.5 x 15.5 (17.0) x 18.5                                     | 1.3                        | <b>44...</b><br>(1500)                      | <b>42...</b><br>(900)      | <b>46...</b><br>(750)      | <b>48...</b><br>(400) | <b>132</b> |  |  |  |
| 1500   | 7.0 x 16.0 (17.5) x 18.5                                     | 1.4                        | <b>44...</b><br>(1500)                      | <b>42...</b><br>(800)      | <b>46...</b><br>(700)      | <b>48...</b><br>(400) | <b>152</b> |  |  |  |
| 1600   | 7.5 x 16.5 (18.0) x 18.5                                     | 1.5                        | <b>44...</b><br>(1250)                      | <b>42...</b><br>(800)      | <b>46...</b><br>(650)      | <b>48...</b><br>(350) | <b>162</b> |  |  |  |
| 1800   |                                                              |                            |                                             |                            |                            |                       | <b>182</b> |  |  |  |
| 2000   | 8.0 x 17.0 (18.5) x 18.5                                     | 1.6                        | <b>44...</b><br>(1250)                      | <b>42...</b><br>(750)      | <b>46...</b><br>(600)      | <b>48...</b><br>(350) | <b>202</b> |  |  |  |
| 2200   | 8.5 x 17.5 (19.0) x 18.5                                     | 1.7                        | <b>44...</b><br>(1000)                      | <b>42...</b><br>(700)      | <b>46...</b><br>(550)      | <b>48...</b><br>(300) | <b>222</b> |  |  |  |
| 2400   | 9.0 x 18.0 (19.5) x 18.5                                     | 1.8                        | <b>44...</b><br>(1000)                      | <b>42...</b><br>(650)      | <b>46...</b><br>(550)      | <b>48...</b><br>(300) | <b>242</b> |  |  |  |
| 2700   | 9.5 x 18.5 (20.0) x 18.5                                     | 2.0                        | <b>44...</b><br>(900)                       | <b>42...</b><br>(600)      | <b>46...</b><br>(500)      | <b>48...</b><br>(300) | <b>272</b> |  |  |  |
| C (µF) | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 22.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |                       |            |  |  |  |
| 0.003  | 6.0 x 19.0 x 26.0                                            | 2.1                        | <b>44...</b><br>(800)                       | -                          | -                          | -                     | <b>302</b> |  |  |  |
| 0.0033 |                                                              |                            |                                             |                            |                            |                       | <b>332</b> |  |  |  |
| 0.0036 |                                                              |                            |                                             |                            |                            |                       | <b>362</b> |  |  |  |
| 0.0039 |                                                              |                            |                                             |                            |                            |                       | <b>392</b> |  |  |  |
| 0.0043 | 6.5 x 19.5 x 26.0                                            | 2.3                        | <b>44...</b><br>(750)                       |                            |                            |                       | <b>432</b> |  |  |  |
| 0.0047 |                                                              |                            |                                             |                            |                            |                       | <b>472</b> |  |  |  |
| 0.0051 | 7.0 x 20.0 x 26.0                                            | 2.6                        | <b>44...</b><br>(650)                       |                            |                            |                       | <b>512</b> |  |  |  |
| 0.0056 |                                                              |                            |                                             |                            |                            |                       | <b>562</b> |  |  |  |
| 0.0062 | 7.5 x 20.5 x 26.0                                            | 2.8                        | <b>44...</b><br>(600)                       |                            |                            |                       | <b>622</b> |  |  |  |
| 0.0068 | 8.0 x 21.0 x 26.0                                            | 3.0                        | <b>44...</b><br>(550)                       |                            |                            |                       | <b>682</b> |  |  |  |
| 0.0075 |                                                              |                            |                                             |                            |                            |                       | <b>752</b> |  |  |  |
| 0.0082 | 8.5 x 21.5 x 26.0                                            | 3.3                        | <b>44...</b><br>(500)                       |                            |                            |                       | <b>822</b> |  |  |  |
| 0.0091 | 9.0 x 22.0 x 26.0                                            | 3.6                        | <b>44...</b><br>(450)                       |                            |                            |                       | <b>912</b> |  |  |  |
| 0.01   | 9.5 x 22.5 x 26.0                                            | 3.8                        | <b>44...</b><br>(400)                       |                            |                            |                       | <b>103</b> |  |  |  |





| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |                            |                            |             |         |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|-------------|---------|
|        |                                                              |                            | LOOSE IN BOX                                | REEL                       |                            |             | C VALUE |
|        |                                                              |                            | LEADS<br>5 mm ± 1.0 mm                      | ORIGINAL<br>PITCH          | PITCH = 7.5 mm (BENT BACK) |             | ..YYY   |
|        |                                                              |                            |                                             | Ø 500 mm                   | Ø 500 mm                   | Ø 356 mm    |         |
|        |                                                              |                            | XX<br>(SPQ)                                 | XX<br>(SPQ)                | XX<br>(SPQ)                | XX<br>(SPQ) |         |
| C (µF) | PITCH = 27.5 mm ± 0.5 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            | PITCH = 27.5 mm                             | PITCH = 7.5 mm (BENT BACK) |                            |             |         |
| 0.011  | 9.0 x 22.0 x 30.0                                            | 3.8                        | 44...<br>(550)                              | -                          | -                          | -           | 113     |
| 0.012  | 9.5 x 22.5 x 30.0                                            | 4.1                        | 44...<br>(500)                              |                            |                            |             | 123     |
| 0.013  | 10.0 x 23.0 x 30.0                                           | 4.4                        | 44...<br>(500)                              |                            |                            |             | 133     |
| 0.015  | 10.5 x 23.5 x 30.0                                           | 4.9                        | 44...<br>(450)                              |                            |                            |             | 153     |
| 0.016  | 11.0 x 24.0 x 30.0                                           | 5.1                        | 44...<br>(400)                              |                            |                            |             | 163     |
| 0.018  | 11.5 x 24.5 x 30.0                                           | 5.6                        | 44...<br>(400)                              |                            |                            |             | 183     |
| 0.02   | 12.5 x 25.5 x 30.0                                           | 6.1                        | 44...<br>(350)                              |                            |                            |             | 203     |
| 0.022  | 13.0 x 26.0 x 30.0                                           | 6.5                        | 44...<br>(300)                              |                            |                            |             | 223     |

**Notes**

- Loose in box, all lengths have same SPQ
- SPQ = Standard Packing Quantity

<sup>(1)</sup> Net weight for short lead product only

**U<sub>RDC</sub> = 2000 V; U<sub>RAC</sub> = 600 V; U<sub>PP</sub> = 1700 V (LOCK LEAD)**

| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |        |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|--------|
|        |                                                              |                            | LOOSE IN BOX                                |        |
|        |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |        |
|        |                                                              |                            |                                             | (SPQ)  |
| C (pF) | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 100    | 5.5 x 17.5 x 18.5                                            | 0.75                       | 90483                                       | (2000) |
| 110    |                                                              | 0.75                       | 90484                                       |        |
| 120    |                                                              | 0.75                       | 90485                                       |        |
| 130    |                                                              | 0.75                       | 90486                                       |        |
| 150    |                                                              | 0.75                       | 90487                                       |        |
| 160    |                                                              | 0.75                       | 90488                                       |        |
| 180    |                                                              | 0.75                       | 90489                                       |        |
| 200    |                                                              | 0.75                       | 90491                                       |        |
| 220    |                                                              | 0.75                       | 90276                                       |        |
| 240    |                                                              | 0.75                       | 90492                                       |        |
| 270    |                                                              | 0.75                       | 90493                                       |        |
| 300    |                                                              | 0.75                       | 90494                                       |        |
| 330    |                                                              | 0.75                       | 90495                                       |        |
| 360    |                                                              | 0.75                       | 90496                                       |        |
| 390    |                                                              | 0.75                       | 90188                                       |        |
| 430    |                                                              | 0.75                       | 90497                                       |        |
| 470    |                                                              | 0.80                       | 90498                                       |        |
| 510    |                                                              | 0.80                       | 90499                                       |        |
| 560    |                                                              | 0.80                       | 90501                                       |        |



| C      | DIMENSIONS<br>w x h (h') x l<br>(mm)                         | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER BFC2 375 XYYYY AND PACKAGING |        |
|--------|--------------------------------------------------------------|----------------------------|---------------------------------------------|--------|
|        |                                                              |                            | LOOSE IN BOX                                |        |
|        |                                                              |                            | l <sub>t</sub> = 4.0 mm + 1.0 mm/- 0.5 mm   |        |
|        |                                                              |                            | (SPQ)                                       |        |
| C (pF) | PITCH = 15.0 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 620    | 6.0 x 18.0 x 18.5                                            | 0.85                       | 90502                                       | (2000) |
| 680    |                                                              | 0.85                       | 90229                                       |        |
| 750    |                                                              | 0.90                       | 90503                                       |        |
| 820    | 6.5 x 18.5 x 18.5                                            | 0.95                       | 90504                                       | (1750) |
| 910    | 5.5 x 17.5 x 18.5                                            | 1.1                        | 90505                                       | (2000) |
| 1000   | 6.0 x 18.0 x 18.5                                            | 1.3                        | 90225                                       | (2000) |
| 1100   |                                                              |                            | 90506                                       |        |
| 1200   |                                                              |                            | 90226                                       |        |
| 1300   | 6.5 x 18.5 x 18.5                                            | 1.3                        | 90507                                       | (1750) |
| 1500   | 7.0 x 19.0 x 18.5                                            | 1.5                        | 90266                                       | (1500) |
| 1600   | 7.5 x 19.5 x 18.5                                            | 1.7                        | 90508                                       | (1400) |
| 1800   |                                                              |                            | 90237                                       |        |
| 2000   | 8.0 x 20.0 x 18.5                                            | 1.7                        | 90509                                       | (1250) |
| 2200   | 8.5 x 20.5 x 18.5                                            | 2.3                        | 90227                                       | (1200) |
| 2400   | 9.0 x 21.0 x 18.5                                            | 1.8                        | 90511                                       | (1100) |
| 2700   | 9.5 x 21.5 x 18.5                                            | 2.7                        | 90228                                       | (1000) |
| C (μF) | PITCH = 22.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 0.003  | 6.0 x 22.0 x 26.0                                            | 2.2                        | 90512                                       | (750)  |
| 0.0033 |                                                              |                            | 90162                                       |        |
| 0.0036 |                                                              |                            | 90163                                       |        |
| 0.0039 |                                                              |                            | 90164                                       |        |
| 0.0043 | 6.5 x 22.5 x 26.0                                            | 2.4                        | 90165                                       | (700)  |
| 0.0047 |                                                              |                            | 90166                                       |        |
| 0.0051 | 7.0 x 23.0 x 26.0                                            | 2.6                        | 90167                                       | (600)  |
| 0.0056 |                                                              |                            | 90168                                       |        |
| 0.0062 | 7.5 x 23.5 x 26.0                                            | 2.8                        | 90169                                       | (550)  |
| 0.0068 | 8.0 x 24.0 x 26.0                                            | 3.0                        | 90171                                       | (500)  |
| 0.0075 |                                                              |                            | 90172                                       |        |
| 0.0082 | 8.5 x 24.5 x 26.0                                            | 3.2                        | 90173                                       | (450)  |
| 0.0091 | 9.0 x 25.0 x 26.0                                            | 3.5                        | 90174                                       | (450)  |
| 0.01   | 9.5 x 25.5 x 26.0                                            | 3.8                        | 90175                                       | (400)  |
| C (μF) | PITCH = 27.5 mm ± 1.0 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm |                            |                                             |        |
| 0.011  | 9.0 x 25.0 x 30.0                                            | 4.4                        | 90176                                       | (450)  |
| 0.012  | 9.5 x 25.5 x 30.0                                            | 4.6                        | 90177                                       | (450)  |
| 0.013  | 10.0 x 26.0 x 30.0                                           | 5.0                        | 90178                                       | (400)  |
| 0.015  | 10.5 x 26.5 x 30.0                                           | 5.4                        | 90179                                       | (350)  |
| 0.016  | 11.0 x 27.0 x 30.0                                           | 5.8                        | 90181                                       | (350)  |
| 0.018  | 11.5 x 27.5 x 30.0                                           | 6.2                        | 90182                                       | (350)  |
| 0.02   | 12.5 x 28.5 x 30.0                                           | 6.1                        | 90513                                       | (300)  |
| 0.022  | 13.0 x 29.0 x 30.0                                           | 6.5                        | 90514                                       | (250)  |

**Notes**

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Net weight for short lead product only



## **MOUNTING**

### **Normal Use**

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoliers are designed for mounting in printed-circuit boards by means of automatic insertion machines.

For detailed tape specifications refer to “Packaging information” [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139) or end of catalog.

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

- For pitches  $\leq 15$  mm capacitors shall be mechanically fixed by the leads
- For larger pitches the capacitors shall be mounted in the same way and the body clamped

### **Storage Temperature**

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

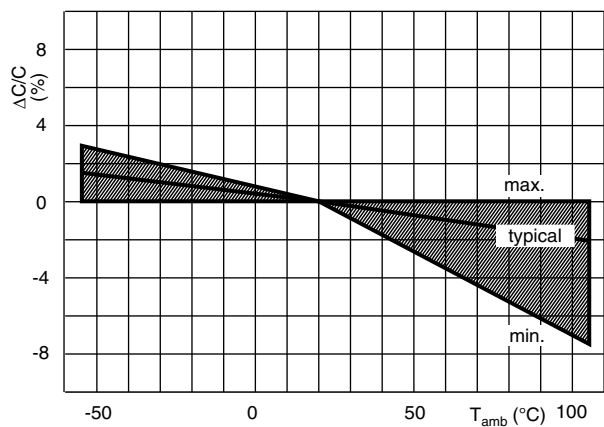
### **Ratings and Characteristics Reference Conditions**

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

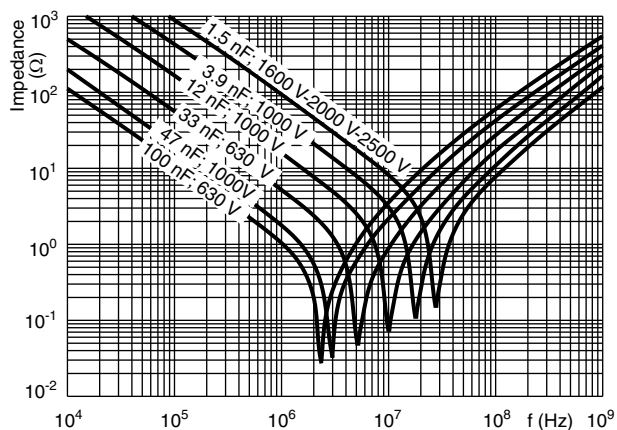
For reference testing, a conditioning period shall be applied over  $96\text{ h} \pm 4\text{ h}$  by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.



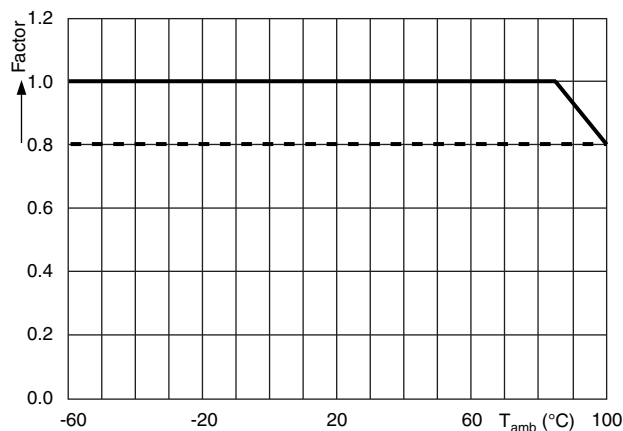
## CHARACTERISTICS



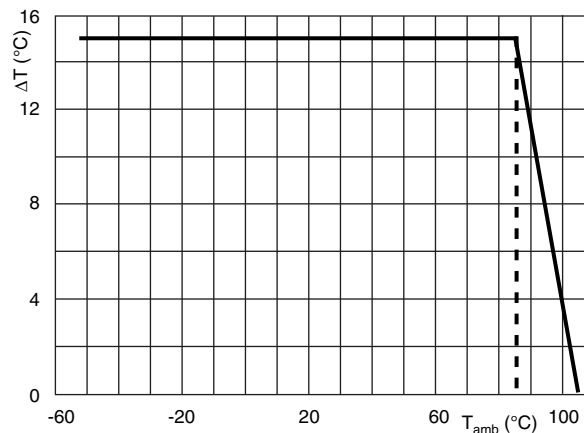
Capacitance as a function of ambient temperature  
(typical curve)



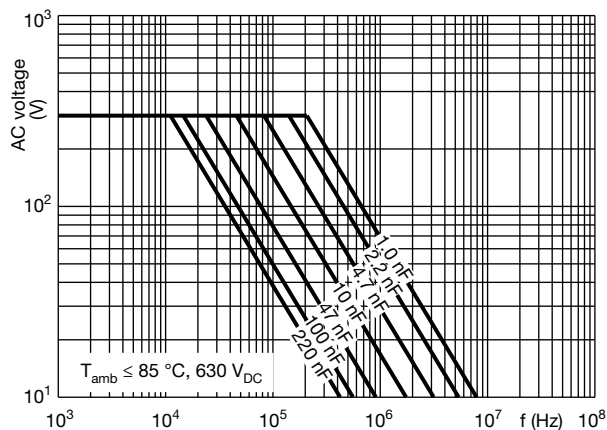
Impedance as a function of frequency  
(typical curve)



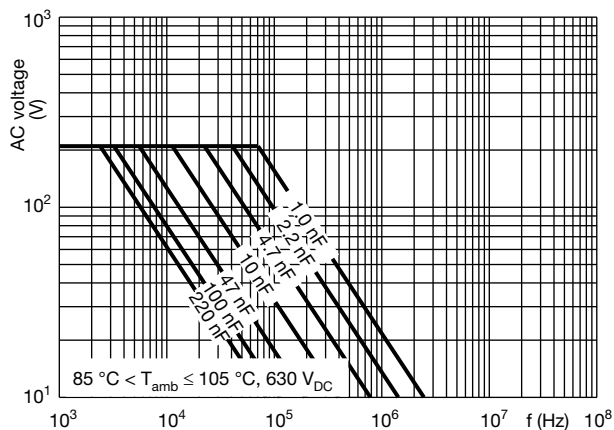
Maximum DC voltage as a function of temperature



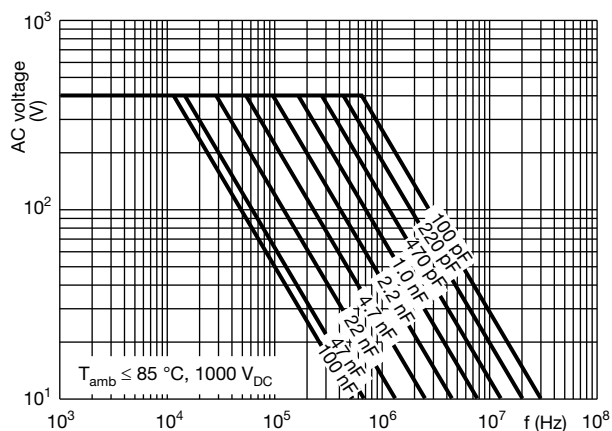
Maximum allowed component temperature rise  
as a function of ambient temperature



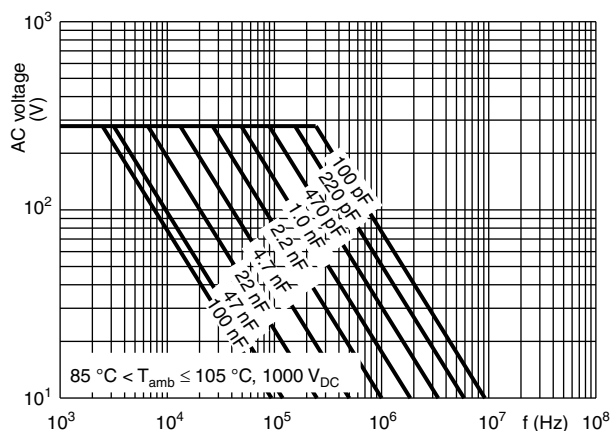
Max. RMS voltage (sinewave) as a function of frequency



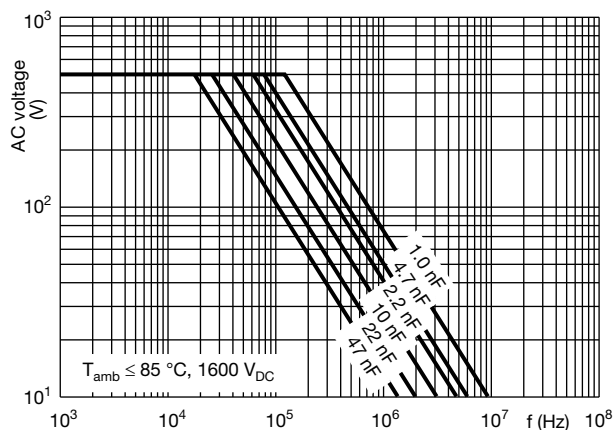
Max. RMS voltage (sinewave) as a function of frequency



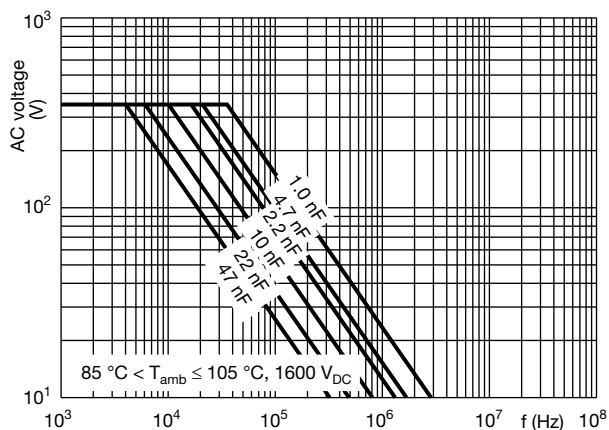
Max. RMS voltage (sinewave) as a function of frequency



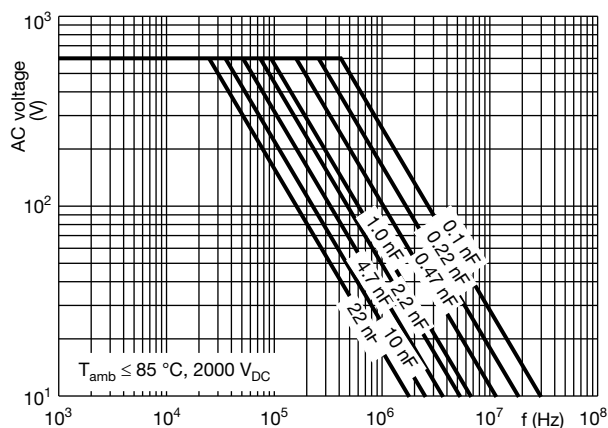
Max. RMS voltage (sinewave) as a function of frequency



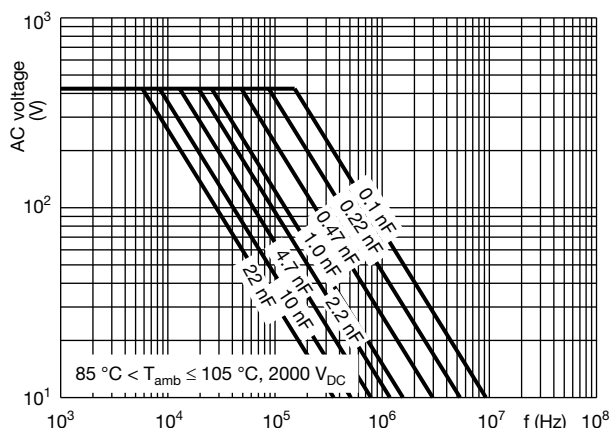
Max. RMS voltage (sinewave) as a function of frequency



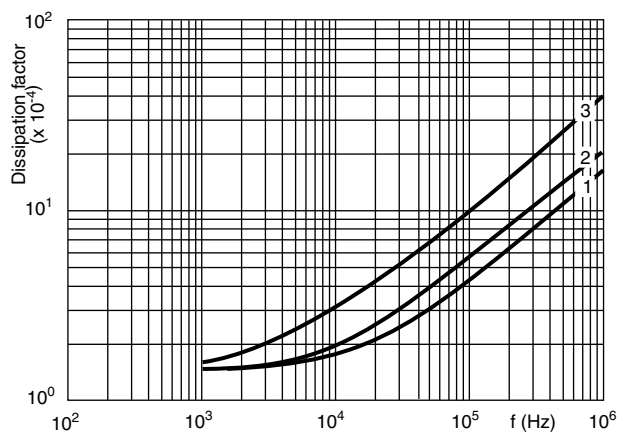
Max. RMS voltage (sinewave) as a function of frequency



Max. RMS voltage (sinewave) as a function of frequency

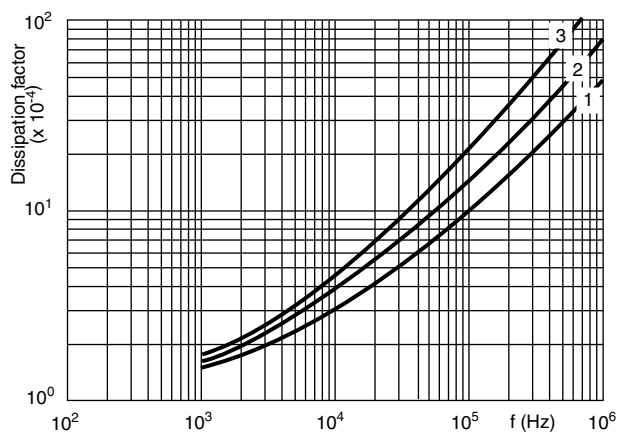


Max. RMS voltage (sinewave) as a function of frequency



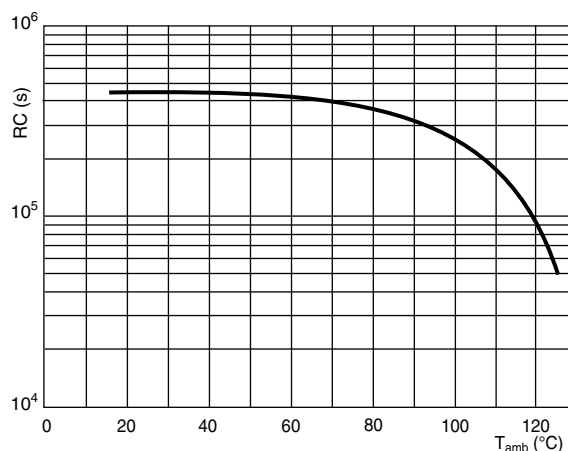
1. KP/MPK 10.0 mm and 15 mm pitch all versions  
22.5 mm pitch, 1000 V, 1600 V, 2000 V and 2500 V versions
2. KP/MPK 22.5 mm pitch, 630 V versions  
27.5 mm pitch, 1000 V, 1600 V and 2000 V versions
3. KP/MPK 27.5 mm pitch, 630 V versions

Tangent of loss angle  
(typical curve)



1. KP/MPK 10.0 mm and 15 mm pitch all versions  
22.5 mm pitch, 1000 V, 1600 V, 2000 V and 2500 V versions
2. KP/MPK 22.5 mm pitch, 630 V versions  
27.5 mm pitch, 1000 V, 1600 V and 2000 V versions
3. KP/MPK 27.5 mm pitch, 630 V versions

Maximum curves



Insulation resistance as a function of ambient temperature

**HEAT CONDUCTIVITY (G) AS A FUNCTION OF (ORIGINAL) PITCH AND CAPACITOR BODY THICKNESS IN mW/°C**

| W <sub>max.</sub><br>(mm) | HEAT CONDUCTIVITY (mW/°C) |             |               |               |
|---------------------------|---------------------------|-------------|---------------|---------------|
|                           | PITCH 10 mm               | PITCH 15 mm | PITCH 22.5 mm | PITCH 27.5 mm |
| 4.0                       | 4.0                       | 5.0         | -             | -             |
| 4.5                       | 4.5                       | 6.0         | -             | -             |
| 5.0                       | 5.0                       | 6.0         | 12.0          | 13.0          |
| 5.5                       | 6.0                       | 6.5         | 13.0          | 15.0          |
| 6.0                       | 6.0                       | 6.5         | 13.0          | 15.0          |
| 6.5                       | 6.5                       | 8.0         | 15.0          | 17.0          |
| 7.0                       | -                         | 8.0         | 15.0          | 17.0          |
| 7.5                       | -                         | 9.0         | 17.0          | 18.0          |
| 8.0                       | -                         | 9.0         | 17.0          | 20.0          |
| 8.5                       | -                         | 11.0        | 18.0          | 20.0          |
| 9.0                       | -                         | 11.0        | 18.0          | 22.0          |
| 9.5                       | -                         | 12.0        | 20.0          | 22.0          |
| 10.0                      | -                         | 12.0        | 20.0          | 23.0          |
| 10.5                      | -                         | -           | 22.0          | 25.0          |
| 11.0                      | -                         | -           | 22.0          | 25.0          |
| 11.5                      | -                         | -           | 23.0          | 27.0          |
| 12.0                      | -                         | -           | -             | 27.0          |
| 12.5                      | -                         | -           | -             | 30.0          |
| 13.0                      | -                         | -           | -             | 30.0          |
| 13.5                      | -                         | -           | -             | 30.0          |
| 14.0                      | -                         | -           | -             | 30.0          |
| 14.5                      | -                         | -           | -             | 33.0          |
| 15.0                      | -                         | -           | -             | 33.0          |
| 15.5                      | -                         | -           | -             | 37.0          |
| 16.0                      | -                         | -           | -             | 37.0          |

**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 ambient temperature.

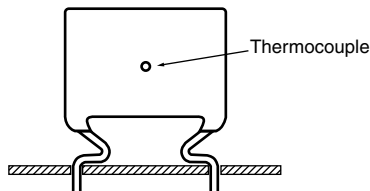
The power dissipation can be calculated according type detail specification "HQN-384-01/101: Technical Information Film Capacitors"

The component temperature rise ( $\Delta T$ ) can be measured (see section "Measuring the component temperature" for more details) or calculated by  $\Delta T = P/G$ :

- $\Delta T$  = component temperature rise (°C)
- P = power dissipation of the component (mW)
- G = heat conductivity of the component (mW/°C)

## MEASURING THE COMPONENT TEMPERATURE

A thermocouple must be attached to the capacitor body as in:



The 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 radiation or convection, the capacitor should be tested in a wind-free box.

## APPLICATION NOTE AND LIMITING CONDITIONS

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

1. The peak voltage ( $U_P$ ) shall not be greater than the rated DC voltage ( $U_{RDC}$ ).
2. The peak-to-peak voltage ( $U_{PP}$ ) shall not be greater than the maximum ( $U_{P-P}$ ) to avoid the ionization inception level.
3. The voltage pulse slope ( $dU/dt$ ) shall not exceed the rated voltage pulse slope in an RC-circuit at rated voltage and without ringing. If the pulse voltage is lower than the rated DC voltage, the rated voltage pulse slope may be multiplied by  $U_{RDC}$  and divided by the applied voltage.

For all other pulses following equation must be fulfilled:

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

T is the pulse duration.

4. The maximum component surface temperature rise must be lower than the limits.

### Example

$C = 10 \text{ nF}$  1600 V, KP/MPK

This is a signal as in the drawing below

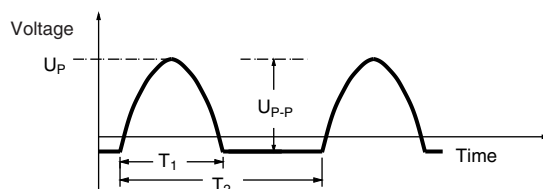
$U_{P-P} = 1200 \text{ V}$ ;  $U_P = 1100 \text{ V}$ ;  $T_1 = 12 \text{ } \mu\text{s}$ ;  $T_2 = 64 \text{ } \mu\text{s}$

The ambient temperature is  $50 \text{ } ^\circ\text{C}$

Checking conditions:

1. The peak voltage  $U_P = 1100 \text{ V}$  is lower than  $1600 \text{ V}_{DC}$
2. The peak-to-peak voltage  $1200 \text{ V}$  is lower than  $2\sqrt{02} \times 550 \text{ V}_{AC} = 1414 \text{ V}_{P-P}$
3. The voltage pulse slope ( $dU/dt$ ) =  $320 \text{ V}$  is much lower than  $7000 \text{ V}/\mu\text{s}$
4. The dissipated power is  $170 \text{ mW}$  as calculated with fourier terms

This gives a temperature rise of  $170 \text{ mW}/(17 \text{ mW}/^\circ\text{C}) = 10 \text{ } ^\circ\text{C}$  which is allowed according Fig. "Max. allowed temperature rise as a function of ambient temperature" for an ambient temperature of  $50 \text{ } ^\circ\text{C}$





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

Sub-clause numbers of tests and performance requirements refer to the “Sectional Specification, Publication IEC 60384-17 and Specific Reference Data”.

**Group C Inspection Requirements**

| SUB-CLAUSE NUMBER AND TEST                          | CONDITIONS                                                                                                                                                                                                                                          | PERFORMANCE REQUIREMENTS                                                          |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1</b> |                                                                                                                                                                                                                                                     |                                                                                   |
| 4.1 Dimensions (detail)                             |                                                                                                                                                                                                                                                     | As specified in chapters “General Data” of this specification                     |
| 4.3.1 Initial measurements                          | Capacitance<br>Tangent of loss angle at 100 kHz                                                                                                                                                                                                     |                                                                                   |
| 4.3 Robustness of terminations                      | Tensile: load 10 N; 10 s<br>Bending: load 5 N; 4 x 90°                                                                                                                                                                                              | No visible damage                                                                 |
| 4.4 Resistance to soldering heat                    | Method: 1A<br>Solder bath: 280 °C ± 5 °C<br>Duration: 10 s                                                                                                                                                                                          |                                                                                   |
| 4.14 Component solvent resistance                   | Isopropylalcohol at room temperature<br>Method: 2<br>Immersion time: 5 min ± 0.5 min<br>Recovery time: min. 1 h, max. 2 h                                                                                                                           |                                                                                   |
| 4.4.2 Final measurements                            | Visual examination                                                                                                                                                                                                                                  | No visible damage<br>Legible marking                                              |
|                                                     | Capacitance                                                                                                                                                                                                                                         | $ \Delta C/C  \leq 1\% + 5 \text{ pF}$ of the value measured initially            |
|                                                     | Tangent of loss angle                                                                                                                                                                                                                               | Increase of $\tan \delta$ : $\leq 0.0005$<br>Compared to values measured in 4.3.1 |
| <b>SUB-GROUP C1B PART OF SAMPLE OF SUB-GROUP C1</b> |                                                                                                                                                                                                                                                     |                                                                                   |
| 4.6.1 Initial measurements                          | Capacitance<br>Tangent of loss angle at 100 kHz                                                                                                                                                                                                     |                                                                                   |
| 4.15 Solvent resistance of the marking              | Isopropylalcohol at room temperature<br>Method: 1<br>Rubbing material: cotton wool<br>Immersion time: 5 min ± 0.5 min                                                                                                                               | No visible damage<br>Legible marking                                              |
| 4.6 Rapid change of temperature                     | $\theta A = -55\text{ °C}$<br>$\theta B = +105\text{ °C}$<br>5 cycles<br>Duration $t = 30 \text{ min}$                                                                                                                                              |                                                                                   |
| 4.7 Vibration                                       | Visual examination<br>Mounting:<br>See section “Mounting” of this specification<br>Procedure B4<br>Frequency range: 10 Hz to 55 Hz<br>Amplitude: 0.75 mm or<br>Acceleration 98 m/s <sup>2</sup><br>(whichever is less severe)<br>Total duration 6 h | No visible damage                                                                 |



| SUB-CLAUSE NUMBER AND TEST                                                 | CONDITIONS                                                                                                                                            | PERFORMANCE REQUIREMENTS                                                                                                                                            |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.7.2 Final inspection                                                     | Visual examination                                                                                                                                    | No visible damage                                                                                                                                                   |
| 4.9 Shock                                                                  | Mounting:<br>see section "Mounting" of this specification<br>Pulse shape: half sine<br>Acceleration: 490 m/s <sup>2</sup><br>Duration of pulse: 11 ms |                                                                                                                                                                     |
| 4.9.3 Final measurements                                                   | Visual examination                                                                                                                                    | No visible damage                                                                                                                                                   |
|                                                                            | Capacitance                                                                                                                                           | For $C > 0.027\mu\text{F}$ : $ \Delta C/C  \leq 2\%$ or<br>for $C \leq 0.027\mu\text{F}$ : $ \Delta C/C  \leq 3\% + 5\text{ pF}$<br>of the value measured in 4.6.1. |
|                                                                            | Tangent of loss angle                                                                                                                                 | Increase of $\tan \delta$ : $\leq 0.0005$<br>Compared to values measured in 4.6.1                                                                                   |
|                                                                            | Insulation resistance                                                                                                                                 | As specified in chapter "General data" of this specification                                                                                                        |
| <b>SUB-GROUP C1 COMBINED SAMPLE OF SPECIMENS OF SUB-GROUPS C1A AND C1B</b> |                                                                                                                                                       |                                                                                                                                                                     |
| 4.10 Climatic sequence                                                     |                                                                                                                                                       |                                                                                                                                                                     |
| 4.10.2 Dry heat                                                            | Temperature: +105 °C<br>Duration: 16 h                                                                                                                |                                                                                                                                                                     |
| 4.10.3 Damp heat cyclic<br>Test Db, first cycle                            |                                                                                                                                                       |                                                                                                                                                                     |
| 4.10.4 Cold                                                                | Temperature: -55 °C<br>Duration: 2 h                                                                                                                  |                                                                                                                                                                     |
| 4.10.6 Damp heat cyclic<br>Test Db, remaining cycles                       |                                                                                                                                                       |                                                                                                                                                                     |
| 4.10.6.2 Final measurements                                                | Voltage proof = $U_{RDC}$ for 1 min within 15 min<br>after removal from testchamber                                                                   | No breakdown of flash-over                                                                                                                                          |
|                                                                            | Visual examination                                                                                                                                    | No visible damage<br>Legible marking                                                                                                                                |
|                                                                            | Capacitance                                                                                                                                           | $ \Delta C/C  \leq 3\%$ of the value measured in<br>4.4.2 or 4.9.3                                                                                                  |
|                                                                            | Tangent of loss angle                                                                                                                                 | Increase of $\tan \delta$ : $\leq 0.001$<br>Compared to values measured in<br>4.3.1 or 4.6.1                                                                        |
|                                                                            | Insulation resistance                                                                                                                                 | $\geq 50\%$ of values specified in chapters<br>"General data" of this specification                                                                                 |



| SUB-CLAUSE NUMBER AND TEST        | CONDITIONS                                                                                                                                                                              | PERFORMANCE REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SUB-GROUP C2</b>               |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.11 Damp heat steady state       | 56 days, 40 °C, 90 % to 95 % RH                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.11.1 Initial measurements       | Capacitance<br>Tangent of loss angle at 1 kHz                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.11.3 Final measurements         | Voltage proof = $U_{RDC}$ for 1 min within 15 min after removal from testchamber<br><br>Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance | No breakdown of flash-over<br><br>No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 1 \% + 5 \text{ pF}$ of the value measured in 4.11.1.<br><br>Increase of $\tan \delta \leq 0.0005$<br>Compared to values measured in 4.11.1<br><br>$\geq 50 \%$ of values specified in section "Insulation Resistance" of this specification                                                                                                                                                             |
| <b>SUB GROUP C3</b>               |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.12.1 Endurance                  | Duration: 2000 h<br>Temperature: 85 °C<br>Voltage: $1.25 \times \max. U_{RDC} V_{RMS}$ , 50 Hz<br>Duration: 2000 h<br>Temperature: 105 °C                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.12.1.1 Initial measurements     | Voltage: $0.875 \times \max. U_{RDC} V_{RMS}$ , 50 Hz<br>Capacitance<br>Tangent of loss angle at 100 kHz                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.12.1.3 Final measurements       | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance                                                                                         | No visible damage<br>Legible marking<br>Temperature: 85 °C<br><br>For $C > 0.056 \mu\text{F}$ : $ \Delta C/C  \leq 2 \% + 5 \text{ pF}$ or<br>for $C > 0.056 \mu\text{F}$ : $ \Delta C/C  \leq 3 \% + 5 \text{ pF}$<br>of the value measured in 4.12.1.1<br>Temperature: 105 °C<br>$ \Delta C/C  \leq 5 \% + 5 \text{ pF}$<br><br>Increase of $\tan \delta: \leq 0.001$<br>Compared to values measured in 4.12.1<br><br>$\geq 50 \%$ of values specified in chapters "General data" of this specification |
| <b>SUB-GROUP C4</b>               |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4.2.6 Temperature characteristics | Capacitance<br><br>Insulation resistance                                                                                                                                                | As specified in section "Capacitance" of this specification<br><br>As specified in chapters "General data" of this specification                                                                                                                                                                                                                                                                                                                                                                          |



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