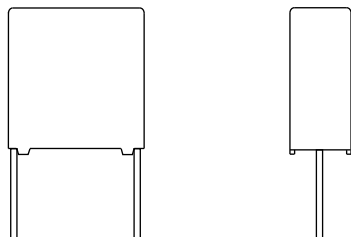


# Interference Suppression Film Capacitor - Class Y2

## Radial MKP 300 V<sub>AC</sub> - Line to Ground Application



### FEATURES

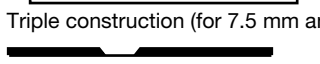
- AEC-Q200 qualified (rev. C) up to 105 °C
- Compliant with IEC 60381-14: AMD1 grade IIB for pitch ≥ 15 mm
  - THB: 85 °C / 85 % RH, 500 h at U<sub>RAC</sub>
- Compliant with IEC 60381-14: AMD1 grade IA for pitch < 15 mm
  - THB: 40 °C / 93 % RH, 21 days at U<sub>RAC</sub>
- High temperature capabilities, up to 125 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?299912](http://www.vishay.com/doc?299912)

AUTOMOTIVE  
GRADE

**RoHS**  
COMPLIANT

### APPLICATIONS

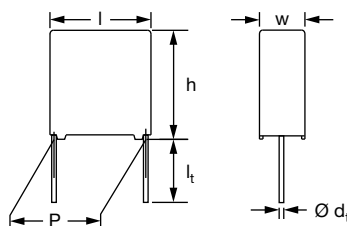
- Standard line bypass (between line and ground) Y2 applications
  - Line bypass application for continuous operation
- See also application note: [www.vishay.com/doc?28153](http://www.vishay.com/doc?28153)

| QUICK REFERENCE DATA                       |                                                                                                                                                                                                                                                                           |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Capacitance range (E12 series)             | 0.001 µF to 0.47 µF<br>(preferred values acc. to E6)                                                                                                                                                                                                                      |
| Capacitance tolerance                      | ± 20 %, ± 10 %, ± 5 %                                                                                                                                                                                                                                                     |
| Rated AC voltage                           | 300 V <sub>AC</sub> ; 50 Hz to 60 Hz                                                                                                                                                                                                                                      |
| Permissible DC voltage                     | 1000 V <sub>DC</sub> at 105 °C<br>1500 V <sub>DC</sub> at 85 °C                                                                                                                                                                                                           |
| Climatic testing class acc. to IEC 60068-1 | 55/105/56/C for product volumes ≤ 1750 mm <sup>3</sup><br>55/105/56/B for volumes > 1750 mm <sup>3</sup>                                                                                                                                                                  |
| Rated temperature                          | 105 °C                                                                                                                                                                                                                                                                    |
| Maximum permissible temperature            | 125 °C for limited time                                                                                                                                                                                                                                                   |
| Reference standards                        | IEC 60384-14:2013; IEC 60384-14:2013 / AMD1:2016<br>EN 60384-14:2013 + AMD1:2016<br>IEC 60065 requires pass. flamm. class B for volumes > 1750 mm <sup>3</sup><br>UL 60384-14 2 <sup>nd</sup> edition; ENEC; CSA E60384-1:14 3 <sup>rd</sup> edition                      |
| Dielectric                                 | Polypropylene film                                                                                                                                                                                                                                                        |
| Electrodes                                 | Metallized film                                                                                                                                                                                                                                                           |
| Construction                               | Series construction (for > 10 mm pitch)<br><br>Triple construction (for 7.5 mm and 10 mm pitch)<br> |
| Encapsulation                              | Plastic case, epoxy resin sealed, flame retardant class UL 94 V-0                                                                                                                                                                                                         |
| Leads                                      | Tinned wire                                                                                                                                                                                                                                                               |
| Marking                                    | C-value; tolerance; rated voltage; sub-class; manufacturer's type designation; code for dielectric material; manufacturer location, year and week; manufacturer's logo or name; safety approvals                                                                          |

### Note

- For more detailed data and test requirements, contact [rfi@vishay.com](mailto:rfi@vishay.com)

### DIMENSIONS



**COMPOSITION OF CATALOG NUMBER**

| TYPE AND PITCHES |                    | CAPACITANCE<br>(numerically) |  |  |  |  | MULTIPLIER (nF) |   |
|------------------|--------------------|------------------------------|--|--|--|--|-----------------|---|
| 338 6<br>Y2      | 7.5 mm             |                              |  |  |  |  | 0.1             | 2 |
|                  | 7.5 mm (bent back) |                              |  |  |  |  | 1               | 3 |
|                  | 10.0 mm            |                              |  |  |  |  | 10              | 4 |
|                  | 15.0 mm            |                              |  |  |  |  | 100             | 5 |
|                  | 22.5 mm            |                              |  |  |  |  |                 |   |
|                  | 27.5 mm            |                              |  |  |  |  |                 |   |

Example:  
104 = 10 x 10 = 100 nF  
(except special numbers)

|          |     |    |    |   |
|----------|-----|----|----|---|
| BFC2     | 338 | 6X | XX | X |
| 2222 (*) | 338 | 6X | XX | X |

(\*) old ordering code

| TYPE                                                                                      | PACKAGING                 | LEAD CONFIGURATION (see tables for details)                                                                  | C-TOL. | PREFERRED TYPES       |
|-------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------|--------|-----------------------|
| 338 6<br>Y2                                                                               | Loose in box              | Lead length 3.5 mm + 1 mm / - 0.5 mm (pitch 7.5 mm and 10 mm)<br>Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm) | ± 20 % | BFC2 338 60...        |
|                                                                                           |                           | Lead length 5.0 mm ± 1.0 mm                                                                                  |        | BFC2 338 62...        |
|                                                                                           |                           | Lead length 25.0 mm ± 2.0 mm                                                                                 |        | BFC2 338 64...        |
|                                                                                           | Taped ammo <sup>(1)</sup> | Pitch = 7.5 mm<br>H = 18.5 mm; P <sub>0</sub> = 12.7 mm                                                      |        | BFC2 338 66...        |
|                                                                                           | Taped reel                | Pitch 7.5 mm only to 15 mm; H = 18.5 mm                                                                      |        | BFC2 338 68...        |
| ALTERNATIVE PITCH SIZES                                                                   |                           |                                                                                                              |        | ON REQUEST            |
| 338 6<br>Y2                                                                               | Loose in box              | Lead length 3.5 mm + 1 mm / - 0.5 mm (pitch 7.5 mm and 10 mm)<br>Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm) | ± 20 % | See tables for detail |
|                                                                                           |                           | Lead length 5.0 mm ± 1.0 mm                                                                                  |        |                       |
|                                                                                           |                           | Lead length 25.0 mm ± 2.0 mm                                                                                 |        |                       |
|                                                                                           |                           | ALTERNATIVE TAPED VERSIONS                                                                                   |        |                       |
| 338 6<br>Y2                                                                               | Taped reel <sup>(1)</sup> | Pitch = 7.5 mm and 10.0 mm<br>H = 18.5 mm; P <sub>0</sub> = 12.7 mm; reel diameter = 500 mm                  | ± 20 % | See tables for detail |
|                                                                                           |                           | Pitch bent back to 7.5 mm<br>H = 16.0 mm; P <sub>0</sub> = 15.0 mm; reel diameter = 500 mm                   |        |                       |
|                                                                                           |                           | ALTERNATIVE C-TOL.                                                                                           |        |                       |
| 338 6<br>Y2                                                                               | Loose in box              | Lead length 3.5 mm + 1 mm / - 0.5 mm (pitch 7.5 mm and 10 mm)<br>Lead length 3.5 mm ± 0.3 mm (pitch > 10 mm) | ± 10 % | See tables for detail |
|                                                                                           |                           |                                                                                                              | ± 5 %  |                       |
|                                                                                           |                           | Lead length 5.0 mm ± 1.0 mm                                                                                  | ± 10 % |                       |
|                                                                                           |                           |                                                                                                              | ± 5 %  |                       |
|                                                                                           |                           | Lead length 25.0 mm ± 2.0 mm                                                                                 | ± 10 % |                       |
|                                                                                           |                           | ± 5 %                                                                                                        |        |                       |
|                                                                                           | Taped ammo <sup>(1)</sup> | Pitch = 7.5 mm<br>H = 18.5 mm; P <sub>0</sub> = 12.7 mm                                                      | ± 10 % |                       |
|                                                                                           |                           |                                                                                                              | ± 5 %  |                       |
|                                                                                           | Taped reel <sup>(1)</sup> | Pitch bent back to 7.5 mm<br>H = 16.0 mm; P <sub>0</sub> = 15.0 mm; reel diameter = 500 mm                   | ± 10 % |                       |
|                                                                                           |                           |                                                                                                              | ± 5 %  |                       |
| Pitch = 7.5 mm and 10 mm<br>H = 18.5 mm; P <sub>0</sub> = 12.7 mm; reel diameter = 500 mm |                           | ± 10 %                                                                                                       |        |                       |
|                                                                                           |                           | ± 5 %                                                                                                        |        |                       |

**Note**

<sup>(1)</sup> For detailed tape specification refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)



| SPECIFIC REFERENCE DATA                                                                                                                                         |                                                                                          |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------|
| DESCRIPTION                                                                                                                                                     | VALUE                                                                                    |                          |
| Rated AC voltage ( $U_{RAC}$ )                                                                                                                                  | 300 V                                                                                    |                          |
| Permissible DC voltage ( $U_{RDC}$ )                                                                                                                            | 1000 V <sub>DC</sub> at 105 °C<br>1500 V <sub>DC</sub> at 85 °C                          |                          |
| Tangent of loss angle                                                                                                                                           | at 1 kHz                                                                                 | at 10 kHz                |
| $C \leq 470$ nF                                                                                                                                                 | $\leq 10 \times 10^{-4}$                                                                 | $\leq 20 \times 10^{-4}$ |
| Rated voltage pulse slope (dU/dt) <sub>R</sub> at 420 V <sub>DC</sub><br>Pitch = 7.5 mm<br>Pitch = 10 mm<br>Pitch = 15 mm<br>Pitch = 22.5 mm<br>Pitch = 27.5 mm | 1500 V/ $\mu$ s<br>1000 V/ $\mu$ s<br>750 V/ $\mu$ s<br>600 V/ $\mu$ s<br>450 V/ $\mu$ s |                          |
| R between leads, for $C \leq 0.33$ $\mu$ F at 100 V; 1 min                                                                                                      | > 15 000 M $\Omega$                                                                      |                          |
| RC between leads, for $C > 0.33$ $\mu$ F at 100 V; 1 min                                                                                                        | > 5000 s                                                                                 |                          |
| R between leads and case; 100 V; 1 min                                                                                                                          | > 30 000 M $\Omega$                                                                      |                          |
| Withstanding (DC) voltage (cut off current 10 mA) <sup>(1)</sup> ; rise time $\leq 1000$ V/s                                                                    | 3400 V; 1 min                                                                            |                          |
| Withstanding (AC) voltage between leads and case                                                                                                                | 2100 V; 1 min                                                                            |                          |
| Rated temperature                                                                                                                                               | 105 °C                                                                                   |                          |
| Maximum permissible temperature                                                                                                                                 | 125 °C up to 500 h                                                                       |                          |

**Note**

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

| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 7.5 mm |                                                                                                          |                                                |                            |                                                 |                                     |      |                                         |      |                                          |          |                                          |                                      |  |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|-------------------------------------------------|-------------------------------------|------|-----------------------------------------|------|------------------------------------------|----------|------------------------------------------|--------------------------------------|--|
| U <sub>RAC</sub><br>(V)                                 | CAP.<br>(μF)                                                                                             | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING    |                                     |      |                                         |      |                                          |          |                                          |                                      |  |
|                                                         |                                                                                                          |                                                |                            | LOOSE IN BOX                                    |                                     |      |                                         |      |                                          | AMMOPACK |                                          | REEL<br>Ø = 500 mm <sup>(1)(2)</sup> |  |
|                                                         |                                                                                                          |                                                |                            | SHORT LEADS                                     |                                     |      | LONG LEADS                              |      |                                          |          |                                          |                                      |  |
|                                                         |                                                                                                          |                                                |                            | l <sub>t</sub> = 3.5 mm<br>+ 1 mm /<br>- 0.5 mm | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ  | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ                                  |  |
| 300                                                     | PITCH = 7.5 mm ± 0.4 mm; d <sub>t</sub> = 0.50 mm ± 0.05 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                 |                                     |      |                                         |      |                                          |          |                                          |                                      |  |
|                                                         | 0.0010                                                                                                   | 4.0 x 9.0 x 10.0                               | 0.4                        | 60102                                           | 62102                               | 1500 | 64102                                   | 1000 | 66102                                    | 1250     | 68129                                    | 2500                                 |  |
|                                                         | 0.0012                                                                                                   |                                                |                            | 60122                                           | 62122                               |      | 64122                                   |      | 66122                                    |          | 68131                                    |                                      |  |
|                                                         | 0.0015                                                                                                   |                                                |                            | 60152                                           | 62152                               |      | 64152                                   |      | 66152                                    |          | 68132                                    |                                      |  |
|                                                         | 0.0018                                                                                                   |                                                |                            | 60182                                           | 62182                               |      | 64182                                   |      | 66182                                    |          | 68133                                    |                                      |  |
|                                                         | 0.0022                                                                                                   |                                                |                            | 60222                                           | 62222                               |      | 64222                                   |      | 66222                                    |          | 68134                                    |                                      |  |
|                                                         | 0.0027                                                                                                   |                                                |                            | 60272                                           | 62272                               |      | 64272                                   |      | 66272                                    |          | 68135                                    |                                      |  |
|                                                         | 0.0033                                                                                                   | 5.0 x 10.5 x 10.0                              | 0.4                        | 60332                                           | 62332                               | 1000 | 64332                                   | 1250 | 66332                                    | 1000     | 68136                                    | 2000                                 |  |
|                                                         | 0.0039                                                                                                   |                                                |                            | 60392                                           | 62392                               |      | 64392                                   |      | 66392                                    |          | 68137                                    |                                      |  |
|                                                         | 0.0047                                                                                                   | 6.0 x 11.5 x 10.0                              | 0.8                        | 60472                                           | 62472                               | 750  | 64472                                   | 1000 | 66472                                    | 750      | 68138                                    | 1900                                 |  |
|                                                         | 0.0056                                                                                                   |                                                |                            | 60562                                           | 62562                               |      | 64562                                   |      | 66562                                    |          | 68139                                    |                                      |  |
|                                                         | PITCH = 7.5 mm ± 0.4 mm; d <sub>t</sub> = 0.50 mm ± 0.05 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                 |                                     |      |                                         |      |                                          |          |                                          |                                      |  |
|                                                         | 0.0010                                                                                                   | 4.0 x 9.0 x 10.0                               | 0.4                        | 61102                                           | 63102                               | 1500 | 65102                                   | 1000 | 67102                                    | 1250     | 68179                                    | 2500                                 |  |
|                                                         | 0.0012                                                                                                   |                                                |                            | 61122                                           | 63122                               |      | 65122                                   |      | 67122                                    |          | 68181                                    |                                      |  |
|                                                         | 0.0015                                                                                                   |                                                |                            | 61152                                           | 63152                               |      | 65152                                   |      | 67152                                    |          | 68182                                    |                                      |  |
|                                                         | 0.0018                                                                                                   |                                                |                            | 61182                                           | 63182                               |      | 65182                                   |      | 67182                                    |          | 68183                                    |                                      |  |
|                                                         | 0.0022                                                                                                   |                                                |                            | 61222                                           | 63222                               |      | 65222                                   |      | 67222                                    |          | 68184                                    |                                      |  |
|                                                         | 0.0027                                                                                                   |                                                |                            | 61272                                           | 63272                               |      | 65272                                   |      | 67272                                    |          | 68185                                    |                                      |  |
|                                                         | 0.0033                                                                                                   | 5.0 x 10.5 x 10.0                              | 0.4                        | 61332                                           | 63332                               | 1000 | 65332                                   | 1250 | 67332                                    | 1000     | 68186                                    | 2000                                 |  |
|                                                         | 0.0039                                                                                                   |                                                |                            | 61392                                           | 63392                               |      | 65392                                   |      | 67392                                    |          | 68187                                    |                                      |  |
|                                                         | 0.0047                                                                                                   | 6.0 x 11.5 x 10.0                              | 0.8                        | 61472                                           | 63472                               | 750  | 65472                                   | 1000 | 67472                                    | 750      | 68188                                    | 1900                                 |  |
| 0.0056                                                  | 61562                                                                                                    |                                                |                            | 63562                                           | 65562                               |      | 67562                                   |      | 68189                                    |          |                                          |                                      |  |

**ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 7.5 mm**

| ELECTRICAL DATA AND ORDERING INFORMATION FROM TOSHIBA |                                                                                                         |                                                |                            |                                                 |                                     |      |                                         |      |                                          |      |                                          |      |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|-------------------------------------------------|-------------------------------------|------|-----------------------------------------|------|------------------------------------------|------|------------------------------------------|------|
| U <sub>RAC</sub><br>(V)                               | CAP.<br>(μF)                                                                                            | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING    |                                     |      |                                         |      |                                          |      |                                          |      |
|                                                       |                                                                                                         |                                                |                            | LOOSE IN BOX                                    |                                     |      |                                         |      | AMMOPACK                                 |      | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |      |
|                                                       |                                                                                                         |                                                |                            | SHORT LEADS                                     |                                     |      | LONG LEADS                              |      |                                          |      |                                          |      |
|                                                       |                                                                                                         |                                                |                            | l <sub>t</sub> = 3.5 mm<br>+ 1 mm /<br>- 0.5 mm | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ  | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ  |
| 300                                                   | PITCH = 7.5 mm ± 0.4 mm; d <sub>t</sub> = 0.50 mm ± 0.05 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                 |                                     |      |                                         |      |                                          |      |                                          |      |
|                                                       | 0.0010                                                                                                  | 4.0 x 9.0 x 10.0                               | 0.4                        | 68215                                           | 68225                               | 1500 | 68235                                   | 1000 | 68335                                    | 1250 | 68346                                    | 2500 |
|                                                       | 0.0012                                                                                                  |                                                |                            | 68216                                           | 68226                               |      | 68236                                   |      | 68336                                    |      | 68347                                    |      |
|                                                       | 0.0015                                                                                                  |                                                |                            | 68217                                           | 68227                               |      | 68237                                   |      | 68337                                    |      | 68348                                    |      |
|                                                       | 0.0018                                                                                                  |                                                |                            | 68218                                           | 68228                               |      | 68238                                   |      | 68338                                    |      | 68349                                    |      |
|                                                       | 0.0022                                                                                                  |                                                |                            | 68219                                           | 68229                               |      | 68239                                   |      | 68339                                    |      | 68351                                    |      |
|                                                       | 0.0027                                                                                                  | 5.0 x 10.5 x 10.0                              | 0.4                        | 68221                                           | 68231                               | 1000 | 68241                                   | 1250 | 68341                                    | 1000 | 68352                                    | 2000 |
|                                                       | 0.0033                                                                                                  |                                                |                            | 68222                                           | 68232                               |      | 68242                                   |      | 68342                                    |      | 68353                                    |      |
|                                                       | 0.0039                                                                                                  | 6.0 x 11.5 x 10.0                              | 0.8                        | 68223                                           | 68233                               | 750  | 68243                                   | 1000 | 68343                                    | 750  | 68354                                    | 1900 |
| 0.0047                                                | 68224                                                                                                   |                                                |                            | 68234                                           | 68244                               |      | 68344                                   |      | 68355                                    |      |                                          |      |

**Notes**

- SPQ = Standard Packing Quantity

(1) H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

(2) Reel diameter = 365 mm is available on request

(3) Weight for short lead product only

(4) For tolerances see section "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"

**ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 10 mm**

| U <sub>RAC</sub><br>(V) | CAP.<br>(μF)                                                                                              | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING                         |                                                                      |      |                                                                      |      |                                          |     |                                                                      |      |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|-------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|------|----------------------------------------------------------------------|------|------------------------------------------|-----|----------------------------------------------------------------------|------|------|----------------------------------------------------------------------|------|-------------------------|------|----------------------------------------------------------------------|----------------|------|----------------|------|----------------|------|-----|----------------|-----|----------------|-----|
|                         |                                                                                                           |                                                |                            | LOOSE IN BOX                                                         |                                                                      |      |                                                                      |      | AMMOPACK                                 |     | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>                                 |      |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         |                                                                                                           |                                                |                            | SHORT LEADS                                                          |                                                                      |      | LONG LEADS                                                           |      |                                          |     |                                                                      |      |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         |                                                                                                           |                                                |                            | l <sub>t</sub> = 3.5 mm<br>+ 1 mm /<br>- 0.5 mm                      | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm                                  | SPQ  | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm                              | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm                             | SPQ  |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
| 300                     | PITCH = 10.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                                      |                                                                      |      |                                                                      |      |                                          |     |                                                                      |      |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         | 0.0010<br>0.0012<br>0.0015<br>0.0018<br>0.0022<br>0.0027<br>0.0033<br>0.0039                              | 4.0 x 10.0 x 12.5                              | 0.6                        | 68392<br>68393<br>68394<br>68395<br>68396<br>68397<br>68398<br>68399 | 68401<br>68402<br>68403<br>68404<br>68405<br>68406<br>68407<br>68408 | 1000 | 68409<br>68411<br>68412<br>68413<br>68414<br>68415<br>68416<br>68417 | 1250 | -                                        | -   | 68418<br>68419<br>68421<br>68422<br>68423<br>68424<br>68425<br>68426 | 1400 |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         | 0.0047<br>0.0056<br>0.0068                                                                                |                                                |                            | 5.0 x 11.0 x 12.5                                                    | 0.82                                                                 |      | 68101<br>68102<br>68103                                              |      |                                          |     | 68106<br>68107<br>68108                                              |      | 1000 | 68112<br>68113<br>68114                                              | 1000 | 68141<br>68142<br>68143 | 1100 |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         | 0.0082<br>0.010                                                                                           |                                                |                            |                                                                      |                                                                      |      | 6.0 x 12.0 x 12.5                                                    |      |                                          |     | 1.1                                                                  |      |      | 68104<br>68105                                                       |      | 68109<br>68111          |      | 750                                                                  | 68115<br>68116 | 750  | 68144<br>68145 | 900  |                |      |     |                |     |                |     |
|                         | PITCH = 10.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                                      |                                                                      |      |                                                                      |      |                                          |     |                                                                      |      |      |                                                                      |      |                         |      |                                                                      |                |      |                |      |                |      |     |                |     |                |     |
|                         | 0.0010<br>0.0012<br>0.0015<br>0.0018<br>0.0022<br>0.0027<br>0.0033<br>0.0039                              |                                                |                            | 4.0 x 10.0 x 12.5                                                    | 0.6                                                                  |      | 68436<br>68437<br>68438<br>68439<br>68441<br>68442<br>68443<br>68444 |      |                                          |     | 68445<br>68446<br>68447<br>68448<br>68449<br>68451<br>68452<br>68453 |      | 1000 | 68454<br>68455<br>68456<br>68457<br>68458<br>68459<br>68461<br>68462 | 1250 | -                       | -    | 68463<br>68464<br>68465<br>68466<br>68467<br>68468<br>68469<br>68471 | 1400           |      |                |      |                |      |     |                |     |                |     |
|                         | 0.0047<br>0.0056                                                                                          |                                                |                            |                                                                      |                                                                      |      | 5.0 x 11.0 x 12.5                                                    |      |                                          |     | 0.82                                                                 |      |      | 68159<br>68161                                                       |      |                         |      | 68164<br>68165                                                       |                | 1000 | 68168<br>68169 | 1000 | 68191<br>68192 | 1100 |     |                |     |                |     |
|                         | 0.0068<br>0.0082                                                                                          |                                                |                            |                                                                      |                                                                      |      |                                                                      |      |                                          |     |                                                                      |      |      | 6.0 x 12.0 x 12.5                                                    |      |                         |      | 1.1                                                                  |                |      | 68162<br>68163 |      | 68166<br>68167 |      | 750 | 68171<br>68172 | 750 | 68193<br>68194 | 900 |

| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 10 mm |                                                                                                          |                                                |                            |                                                 |                                     |       |                                         |      |                                          |      |                                          |      |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|-------------------------------------------------|-------------------------------------|-------|-----------------------------------------|------|------------------------------------------|------|------------------------------------------|------|
| U <sub>RAC</sub><br>(V)                                | CAP.<br>(μF)                                                                                             | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING    |                                     |       |                                         |      |                                          |      |                                          |      |
|                                                        |                                                                                                          |                                                |                            | LOOSE IN BOX                                    |                                     |       |                                         |      | AMMOPACK                                 |      | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |      |
|                                                        |                                                                                                          |                                                |                            | SHORT LEADS                                     |                                     |       | LONG LEADS                              |      |                                          |      |                                          |      |
|                                                        |                                                                                                          |                                                |                            | l <sub>t</sub> = 3.5 mm<br>+ 1 mm /<br>- 0.5 mm | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ   | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ  | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ  |
| 300                                                    | PITCH = 10.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                                 |                                     |       |                                         |      |                                          |      |                                          |      |
|                                                        | 0.0010                                                                                                   | 4.0 x 10.0 x 12.5                              | 0.6                        | 68481                                           | 68489                               |       | 68498                                   |      | -                                        | -    | 68507                                    | 1400 |
|                                                        | 0.0012                                                                                                   |                                                |                            | 68482                                           | 68491                               |       | 68499                                   |      |                                          |      | 68508                                    |      |
|                                                        | 0.0015                                                                                                   |                                                |                            | 68483                                           | 68492                               |       | 68501                                   |      |                                          |      | 68509                                    |      |
|                                                        | 0.0018                                                                                                   |                                                |                            | 68484                                           | 68493                               | 1000  | 68502                                   | 1250 |                                          |      | 68511                                    |      |
|                                                        | 0.0022                                                                                                   |                                                |                            | 68485                                           | 68494                               |       | 68503                                   |      |                                          |      | 68512                                    |      |
|                                                        | 0.0027                                                                                                   |                                                |                            | 68486                                           | 68495                               |       | 68504                                   |      |                                          |      | 68513                                    |      |
|                                                        | 0.0033                                                                                                   |                                                |                            | 68487                                           | 68496                               |       | 68505                                   |      |                                          |      | 68514                                    |      |
|                                                        | 0.0039                                                                                                   |                                                |                            | 68488                                           | 68497                               | 68506 | 68515                                   |      |                                          |      |                                          |      |
|                                                        | 0.0047                                                                                                   | 5.0 x 11.0 x 12.5                              | 0.82                       | 68245                                           | 68249                               | 1000  | 68254                                   | 1000 | 68357                                    | 1100 |                                          |      |
|                                                        | 0.0056                                                                                                   |                                                |                            | 68246                                           | 68251                               |       | 68255                                   |      | 68358                                    |      |                                          |      |
|                                                        | 0.0068                                                                                                   | 6.0 x 12.0 x 12.5                              | 1.1                        | 68247                                           | 68252                               | 750   | 68256                                   | 750  | 68359                                    | 900  |                                          |      |
| 0.0082                                                 | 68248                                                                                                    |                                                |                            | 68253                                           | 68257                               |       | 68361                                   |      |                                          |      |                                          |      |

**Notes**

- SPQ = Standard Packing Quantity

(1) H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

(2) Reel diameter = 365 mm is available on request

(3) Weight for short lead product only

(4) For tolerances see section "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"

| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 15 mm |                                                                                                           |                                                |                            |                                              |                                     |      |                                         |      |                                          |     |                                          |      |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|----------------------------------------------|-------------------------------------|------|-----------------------------------------|------|------------------------------------------|-----|------------------------------------------|------|
| U <sub>RAC</sub><br>(V)                                | CAP.<br>(μF)                                                                                              | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING |                                     |      |                                         |      |                                          |     |                                          |      |
|                                                        |                                                                                                           |                                                |                            | LOOSE IN BOX                                 |                                     |      |                                         |      | AMMOPACK                                 |     | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |      |
|                                                        |                                                                                                           |                                                |                            | SHORT LEADS                                  |                                     |      | LONG LEADS                              |      | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ  |
|                                                        |                                                                                                           |                                                |                            | l <sub>t</sub> = 3.5 mm<br>± 0.3 mm          | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ  | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ  |                                          |     |                                          |      |
| 300                                                    | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |      |                                         |      |                                          |     |                                          |      |
|                                                        | 0.0068                                                                                                    | 5.0 x 11.0 x 17.5                              | 1.0                        | 60682                                        | 62682                               | 1000 | 64682                                   | 1000 | -                                        | -   | 68146                                    | 1100 |
|                                                        | 0.0082                                                                                                    |                                                |                            | 60822                                        | 62822                               |      | 64822                                   |      |                                          |     | 68147                                    |      |
|                                                        | 0.010                                                                                                     |                                                |                            | 60103                                        | 62103                               |      | 64103                                   |      |                                          |     | 68148                                    |      |
|                                                        | 0.012                                                                                                     |                                                |                            | 60123                                        | 62123                               |      | 64123                                   |      |                                          |     | 68149                                    |      |
|                                                        | 0.015                                                                                                     | 6.0 x 12.0 x 17.5                              | 1.4                        | 60153                                        | 62153                               | 1000 | 64153                                   | 1000 |                                          |     | 68151                                    | 900  |
|                                                        | 0.018                                                                                                     |                                                |                            | 60183                                        | 62183                               |      | 64183                                   |      |                                          |     | 68152                                    |      |
|                                                        | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |      |                                         |      |                                          |     |                                          |      |
|                                                        | 0.022                                                                                                     | 7.0 x 13.5 x 17.5                              | 1.8                        | 60223                                        | 62223                               | 750  | 64223                                   | 500  | -                                        | -   | 68153                                    | 800  |
|                                                        | 0.027                                                                                                     |                                                |                            | 60273                                        | 62273                               |      | 64273                                   |      |                                          |     | 68154                                    |      |
|                                                        | 0.033                                                                                                     | 8.5 x 15.0 x 17.5                              | 2.4                        | 60333                                        | 62333                               | 750  | 64333                                   | 500  |                                          |     | 68155                                    | 650  |
|                                                        | 0.039                                                                                                     |                                                |                            | 60393                                        | 62393                               |      | 64393                                   |      |                                          |     | 68156                                    |      |
|                                                        | 0.047                                                                                                     | 10.0 x 16.5 x 17.5                             | 3.0                        | 60473                                        | 62473                               | 500  | 64473                                   | 450  |                                          |     | 68157                                    | 600  |
|                                                        | 0.056                                                                                                     |                                                |                            | 60563                                        | 62563                               |      | 64563                                   |      |                                          |     | 68158                                    |      |



| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 15 mm |                                                                                                           |                                                |                            |                                              |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|----------------------------------------------|-------------------------------------|-------|-----------------------------------------|-------|------------------------------------------|-----|------------------------------------------|-------|-------|-----|--|--|
| U <sub>RAC</sub><br>(V)                                | CAP.<br>(μF)                                                                                              | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|                                                        |                                                                                                           |                                                |                            | LOOSE IN BOX                                 |                                     |       |                                         |       | AMMOPACK                                 |     | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |       |       |     |  |  |
|                                                        |                                                                                                           |                                                |                            | SHORT LEADS                                  |                                     |       | LONG LEADS                              |       |                                          |     |                                          |       |       |     |  |  |
|                                                        |                                                                                                           |                                                |                            | l <sub>t</sub> = 3.5 mm<br>± 0.3 mm          | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ   | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ   | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ   |       |     |  |  |
| 300                                                    | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|                                                        | 0.0068                                                                                                    | 5.0 x 11.0 x 17.5                              | 1.0                        | 61682                                        | 63682                               | 1000  | 65682                                   | 1000  | -                                        | -   | 68202                                    | 1100  |       |     |  |  |
|                                                        | 0.0082                                                                                                    |                                                |                            | 61822                                        | 63822                               |       | 65822                                   |       |                                          |     | 68203                                    |       |       |     |  |  |
|                                                        | 0.010                                                                                                     |                                                |                            | 61103                                        | 63103                               |       | 65103                                   |       |                                          |     | 68204                                    |       |       |     |  |  |
|                                                        | 0.012                                                                                                     |                                                |                            | 61123                                        | 63123                               |       | 65123                                   |       |                                          |     | 68205                                    |       |       |     |  |  |
|                                                        | 0.015                                                                                                     | 6.0 x 12.0 x 17.5                              | 1.4                        | 61153                                        | 63153                               |       | 65153                                   |       |                                          |     | 68206                                    | 900   |       |     |  |  |
|                                                        | 0.018                                                                                                     |                                                |                            | 61183                                        | 63183                               |       | 65183                                   |       |                                          |     | 68207                                    |       |       |     |  |  |
|                                                        | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|                                                        | 0.022                                                                                                     | 7.0 x 13.5 x 17.5                              | 1.8                        | 61223                                        | 63223                               | 750   | 65223                                   | 500   | -                                        | -   | 68208                                    | 800   |       |     |  |  |
|                                                        | 0.027                                                                                                     | 8.5 x 15.0 x 17.5                              | 2.4                        | 61273                                        | 63273                               |       | 65273                                   |       |                                          |     | 68209                                    |       |       |     |  |  |
|                                                        | 0.033                                                                                                     |                                                |                            | 61333                                        | 63333                               | 500   | 65333                                   | 68211 |                                          |     | 650                                      |       |       |     |  |  |
|                                                        | 0.039                                                                                                     | 10.0 x 16.5 x 17.5                             | 3                          | 61393                                        | 63393                               |       | 500                                     | 65393 |                                          |     | 450                                      | 68212 | 600   |     |  |  |
|                                                        | 0.047                                                                                                     |                                                |                            | 61473                                        | 63473                               | 65473 |                                         | 68213 |                                          |     |                                          |       |       |     |  |  |
|                                                        | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V)  |                                                |                            |                                              |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|                                                        | 0.0068                                                                                                    | 5.0 x 11.0 x 17.5                              | 1.0                        | 68258                                        | 68284                               | 1000  | 68309                                   | 1000  | -                                        | -   | 68381                                    | 1100  |       |     |  |  |
|                                                        | 0.0082                                                                                                    |                                                |                            | 68259                                        | 68285                               |       | 68311                                   |       |                                          |     | 68382                                    |       |       |     |  |  |
|                                                        | 0.010                                                                                                     |                                                |                            | 68261                                        | 68286                               |       | 68312                                   |       |                                          |     | 68383                                    |       |       |     |  |  |
|                                                        | 0.012                                                                                                     | 6.0 x 12.0 x 17.5                              | 1.4                        | 68262                                        | 68287                               |       | 68313                                   |       |                                          |     | 68384                                    | 900   |       |     |  |  |
|                                                        | 0.015                                                                                                     |                                                |                            | 68263                                        | 68288                               |       | 68314                                   |       |                                          |     | 68385                                    |       |       |     |  |  |
|                                                        | PITCH = 15.0 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V)  |                                                |                            |                                              |                                     |       |                                         |       |                                          |     |                                          |       |       |     |  |  |
|                                                        | 0.018                                                                                                     | 7.0 x 13.5 x 17.5                              | 1.8                        | 68264                                        | 68289                               | 750   | 68315                                   | 500   |                                          |     | -                                        | -     | 68386 | 800 |  |  |
|                                                        | 0.022                                                                                                     |                                                |                            | 68265                                        | 68291                               |       | 68316                                   |       |                                          |     |                                          |       | 68387 |     |  |  |
|                                                        | 0.027                                                                                                     | 8.5 x 15.0 x 17.5                              | 2.4                        | 68266                                        | 68292                               |       | 68317                                   |       |                                          |     |                                          |       | 68388 | 650 |  |  |
|                                                        | 0.033                                                                                                     |                                                |                            | 68267                                        | 68293                               |       | 68318                                   |       |                                          |     |                                          |       | 68389 |     |  |  |
|                                                        | 0.039                                                                                                     | 10.0 x 16.5 x 17.5                             | 3.0                        | 68268                                        | 68294                               | 500   | 68319                                   | 450   |                                          |     |                                          |       | 68391 | 600 |  |  |

**Notes**

- SPQ = Standard Packing Quantity

(1) H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

(2) Reel diameter = 365 mm is available on request

(3) Weight for short lead product only

(4) For tolerances see section "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"

| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 22.5 mm |                                                                                                           |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|----------------------------------------------|-------------------------------------|-----|-----------------------------------------|----------------|------------------------------------------|-----|------------------------------------------|-----|
| U <sub>RAC</sub><br>(V)                                  | CAP.<br>(μF)                                                                                              | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING |                                     |     |                                         |                |                                          |     |                                          |     |
|                                                          |                                                                                                           |                                                |                            | LOOSE IN BOX                                 |                                     |     |                                         |                | AMMOPACK                                 |     | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |     |
|                                                          |                                                                                                           |                                                |                            | SHORT LEADS                                  |                                     |     | LONG LEADS                              |                |                                          |     |                                          |     |
|                                                          |                                                                                                           |                                                |                            | l <sub>t</sub> = 3.5 mm<br>± 0.3 mm          | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ            | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ |
| 300                                                      | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |
|                                                          | 0.047<br>0.056                                                                                            | 7.0 x 16.5 x 26.0                              | 2.9                        | 68123<br>68124                               | 68125<br>68126                      | 200 | 68127<br>68128                          | 250            | -                                        | -   | -                                        | -   |
|                                                          | 0.068<br>0.082                                                                                            | 8.5 x 18.0 x 26.0                              | 3.8                        | 60683<br>60823                               | 62683<br>62823                      | 200 | 64683<br>64823                          | 250            |                                          |     |                                          |     |
|                                                          | 0.10                                                                                                      | 10.0 x 19.5 x 26.0                             | 6.8                        | 60104                                        | 62104                               | 200 | 64104                                   | 200            |                                          |     |                                          |     |
|                                                          | 0.12<br>0.15                                                                                              | 12.0 x 22.0 x 26.0                             | 7.8                        | 60124<br>60154                               | 62124<br>62154                      | 150 | 64124<br>64154                          | 200            |                                          |     |                                          |     |
|                                                          | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |
|                                                          | 0.047                                                                                                     | 7.0 x 16.5 x 26.0                              | 2.9                        | 68173                                        | 68175                               | 200 | 68177                                   | 250            | -                                        | -   | -                                        | -   |
|                                                          | 0.056<br>0.068                                                                                            | 8.5 x 18.0 x 26.0                              | 3.8                        | 68174<br>61683                               | 68176<br>63683                      |     | 68178<br>65683                          |                |                                          |     |                                          |     |
|                                                          | 0.082<br>0.10                                                                                             | 10.0 x 19.5 x 26.0                             | 6.8                        | 61823<br>61104                               | 63823<br>63104                      |     | 65823<br>65104                          |                |                                          |     |                                          |     |
|                                                          | 0.12<br>0.15                                                                                              | 12.0 x 22.0 x 26.0                             | 7.8                        | 61124<br>61154                               | 63124<br>63154                      |     | 150                                     | 65124<br>65154 |                                          |     |                                          |     |
|                                                          | PITCH = 22.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V)  |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |
|                                                          | 0.047                                                                                                     | 7.0 x 16.5 x 26.0                              | 2.9                        | 68269                                        | 68295                               | 200 | 68321                                   | 250            | -                                        | -   | -                                        | -   |
|                                                          | 0.056<br>0.068                                                                                            | 8.5 x 18.0 x 26.0                              | 3.8                        | 68271<br>68272                               | 68296<br>68297                      |     | 68322<br>68323                          |                |                                          |     |                                          |     |
|                                                          | 0.082                                                                                                     | 10.0 x 19.5 x 26.0                             | 6.8                        | 68273                                        | 68298                               |     | 68324                                   |                |                                          |     |                                          |     |
|                                                          | 0.10<br>0.12                                                                                              | 12.0 x 22.0 x 26.0                             | 7.8                        | 68274<br>68275                               | 68299<br>68301                      | 150 | 68325<br>68326                          |                |                                          |     |                                          |     |

**Notes**

- SPQ = Standard Packing Quantity

<sup>(1)</sup> H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

<sup>(2)</sup> Reel diameter = 365 mm is available on request

<sup>(3)</sup> Weight for short lead product only

<sup>(4)</sup> For tolerances see section "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"

| ELECTRICAL DATA AND ORDERING INFORMATION - PITCH 27.5 mm |                                                                                                           |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |     |   |   |   |  |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|----------------------------------------------|-------------------------------------|-----|-----------------------------------------|----------------|------------------------------------------|-----|------------------------------------------|-----|-----|---|---|---|--|
| U <sub>RAC</sub><br>(V)                                  | CAP.<br>(μF)                                                                                              | DIMENSIONS<br>w x h x l<br>(mm) <sup>(4)</sup> | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER BFC2 338 6X XXX AND PACKAGING |                                     |     |                                         |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          |                                                                                                           |                                                |                            | LOOSE IN BOX                                 |                                     |     |                                         |                | AMMOPACK                                 |     | REEL<br>Ø = 500 mm <sup>(1)(2)</sup>     |     |     |   |   |   |  |
|                                                          |                                                                                                           |                                                |                            | SHORT LEADS                                  |                                     |     | LONG LEADS                              |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          |                                                                                                           |                                                |                            | l <sub>t</sub> = 3.5 mm<br>± 0.3 mm          | l <sub>t</sub> = 5.0 mm<br>± 1.0 mm | SPQ | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ            | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ | H = 18.5 mm;<br>P <sub>0</sub> = 12.7 mm | SPQ |     |   |   |   |  |
| 300                                                      | PITCH = 27.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.18<br>0.22                                                                                              | 13.0 x 23.0 x 31.0                             | 9.2                        | 60184<br>60224                               | 62184<br>62224                      | 100 | 64184<br>64224                          | 125            | -                                        | -   | -                                        | -   |     |   |   |   |  |
|                                                          | 0.27                                                                                                      | 15.0 x 25.0 x 31.0                             | 12.3                       | 60274                                        | 62274                               | 100 | 64274                                   | 125            |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.33<br>0.39                                                                                              | 18.0 x 28.0 x 31.0                             | 16.1                       | 60334<br>60394                               | 62334<br>62394                      | 100 | 64334<br>64394                          | 100            |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.47                                                                                                      | 21.0 x 31.0 x 31.0                             | 20.3                       | 60474                                        | 62474                               | 50  | 64474                                   | 75             |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | PITCH = 27.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 % (U <sub>RDC</sub> = 1000 V) |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.18<br>0.22                                                                                              | 13.0 x 23.0 x 31.0<br>15.0 x 25.0 x 31.0       | 9.2<br>12.3                | 61184<br>61224                               | 63184<br>63224                      | 100 | 65184<br>65224                          | 125            | -                                        | -   | -                                        | -   |     |   |   |   |  |
|                                                          | 0.27<br>0.33                                                                                              | 18.0 x 28.0 x 31.0                             | 16.1                       | 61274<br>61334                               | 63274<br>63334                      |     | 65274<br>65334                          |                |                                          |     |                                          |     | 100 |   |   |   |  |
|                                                          | 0.39<br>0.47                                                                                              | 21.0 x 31.0 x 31.0                             | 20.3                       | 61394<br>61474                               | 63394<br>63474                      | 50  | 65394<br>65474                          | 75             |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | PITCH = 27.5 mm ± 0.4 mm; d <sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 % (U <sub>RDC</sub> = 1000 V)  |                                                |                            |                                              |                                     |     |                                         |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.15<br>0.18                                                                                              | 13.0 x 23.0 x 31.0                             | 9.2                        | 68276<br>68277                               | 68302<br>68303                      | 100 | 68327<br>68328                          | 125            |                                          |     |                                          |     | -   | - | - | - |  |
|                                                          | 0.22                                                                                                      | 15.0 x 25.0 x 31.5                             | 12.3                       | 68278                                        | 68304                               |     | 68329                                   |                |                                          |     |                                          |     |     |   |   |   |  |
|                                                          | 0.27<br>0.33                                                                                              | 18.0 x 28.0 x 31.5                             | 16.1                       | 68279<br>68281                               | 68305<br>68306                      |     | 50                                      | 68331<br>68332 | 100                                      |     |                                          |     |     |   |   |   |  |
|                                                          | 0.39                                                                                                      | 21.0 x 31.0 x 31.0                             | 20.3                       | 68282                                        | 68307                               |     |                                         | 68333          | 75                                       |     |                                          |     |     |   |   |   |  |

**Notes**

- SPQ = Standard Packing Quantity
- (1) H = in-tape height; P<sub>0</sub> = sprocket hole distance; for detailed specifications refer to packaging information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)
- (2) Reel diameter = 365 mm is available on request
- (3) Weight for short lead product only
- (4) For tolerances see section "Space Requirements for Printed-Circuit Board Applications and Dimension Tolerances"

| <b>APPROVALS</b>                                                                                                                                                                                                                                                                                                                                            |                     |                |                       |                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|-----------------------|------------------------------------------------------------------------|
| <b>SAFETY APPROVALS Y2</b>                                                                                                                                                                                                                                                                                                                                  | <b>VOLTAGE</b>      | <b>VALUE</b>   | <b>FILE NUMBERS</b>   | <b>LINK</b>                                                            |
| EN 60384-14 (ENEC)<br>(= IEC 60384-14 ed-4 (2013))                                                                                                                                                                                                                                                                                                          | 300 V <sub>AC</sub> | 1 nF to 470 nF | ENEC16/FI/21/01048/A2 | <a href="http://www.vishay.com/doc?28212">www.vishay.com/doc?28212</a> |
| UL 60384-14 2 <sup>nd</sup> edition                                                                                                                                                                                                                                                                                                                         | 300 V <sub>AC</sub> | 1 nF to 470 nF | E354331               | <a href="http://www.vishay.com/doc?28189">www.vishay.com/doc?28189</a> |
| CSA E60384-1:14 3 <sup>rd</sup> edition                                                                                                                                                                                                                                                                                                                     | 300 V <sub>AC</sub> | 1 nF to 470 nF | E354331               |                                                                        |
| CB-test certificate                                                                                                                                                                                                                                                                                                                                         | 300 V <sub>AC</sub> | 1 nF to 470 nF | FI-39810/A1           | <a href="http://www.vishay.com/doc?28213">www.vishay.com/doc?28213</a> |
| The ENEC-approval together with the CB-certificate replace all national marks of the following countries (they have already signed the ENEC-agreement): Austria; Belgium; Czech. Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Luxembourg; Netherlands; Norway; Portugal; Slovenian; Spain; Switzerland and United Kingdom. |                     |                |                       |                                                                        |
|                                                                                                                                                                                      |                     |                |                       |                                                                        |

## MOUNTING

### Normal Use

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoleers 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)

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

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

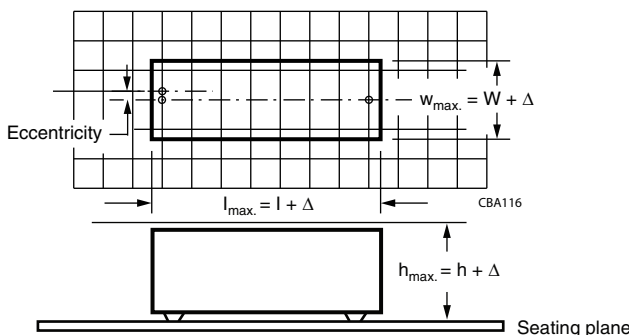
- For pitches  $\leq 15$  mm capacitors shall be mechanically fixed by the leads
- For larger pitches the capacitors shall be mounted in the same way and the body clamped

## SPACE REQUIREMENTS FOR PRINTED-CIRCUIT BOARD APPLICATIONS AND DIMENSION TOLERANCES

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

- For products with pitch  $\leq 15$  mm,  $\Delta w = \Delta l = 0.3$  mm;  $\Delta h = 0.1$  mm
- For products with  $15$  mm  $<$  pitch,  $\leq 27.5$  mm,  $\Delta w = \Delta l = 0.5$  mm;  $\Delta h = 0.1$  mm

Eccentricity defined as in drawing. The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.



For the minimum product dimensions for length ( $l_{min.}$ ), width ( $w_{min.}$ ), and height ( $h_{min.}$ ) following tolerances of the components are valid:

$l_{min.} = l - \Delta l$ ,  $w_{min.} = w - \Delta w$ , and  $h_{min.} = h - \Delta h$  following

- For products with pitch  $\leq 10$  mm,  $\Delta l = 0.3$  mm and  $\Delta w = \Delta h = 0.3$  mm
- For products with pitch = 15 mm,  $\Delta l = 0.5$  mm and  $\Delta w = \Delta h = 0.5$  mm
- For products with  $15$  mm  $<$  pitch  $\leq 27.5$  mm,  $\Delta l = 1.0$  mm and  $\Delta w = \Delta h = 0.5$  mm

## SOLDERING CONDITIONS

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

“Soldering Guidelines for Film Capacitors”: [www.vishay.com/doc?28171](http://www.vishay.com/doc?28171)

### Storage Temperature

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

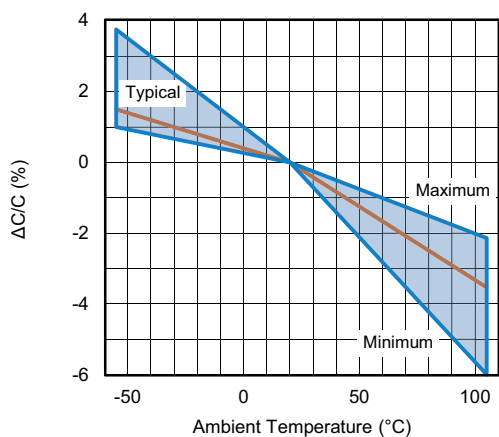
### Ratings and Characteristics Reference Conditions

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

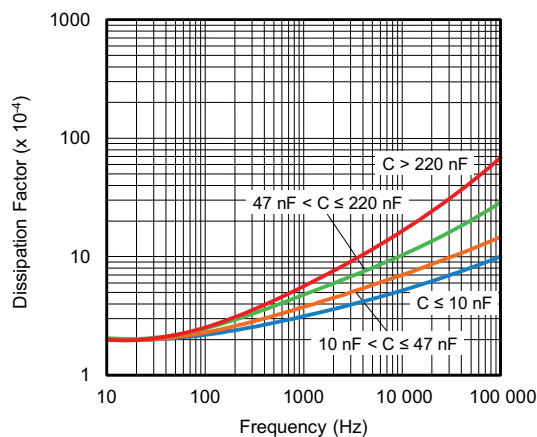
For reference testing, a conditioning period shall be applied over  $96$  h  $\pm 4$  h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.



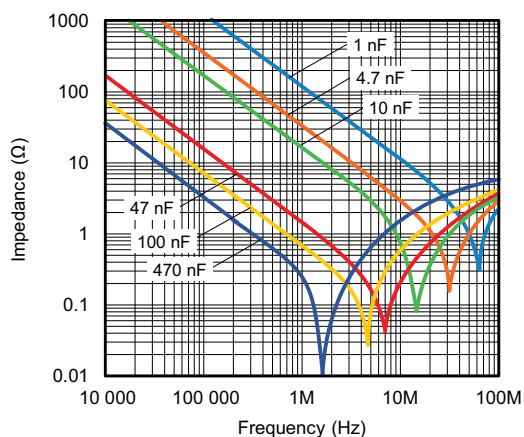
## CHARACTERISTICS



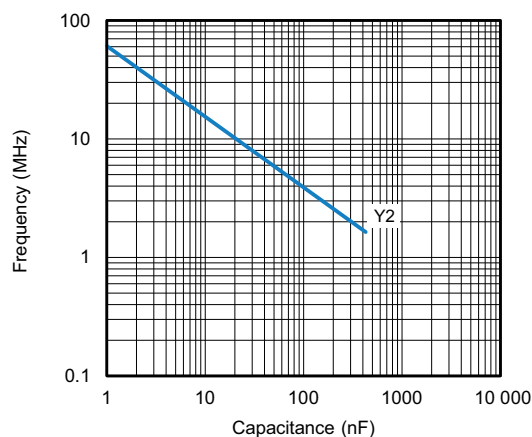
Capacitance as a function of ambient temperature (typical curve)



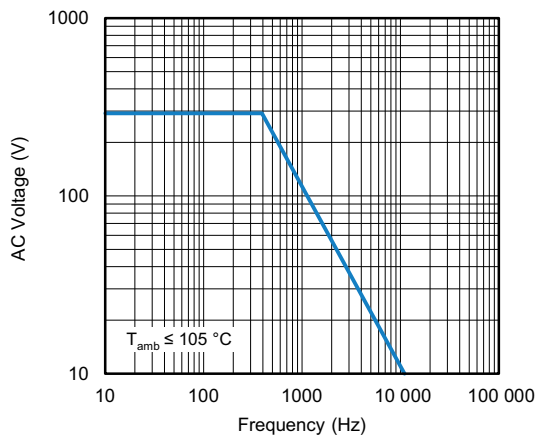
Tangent of loss angle as a function of frequency (typical curve)



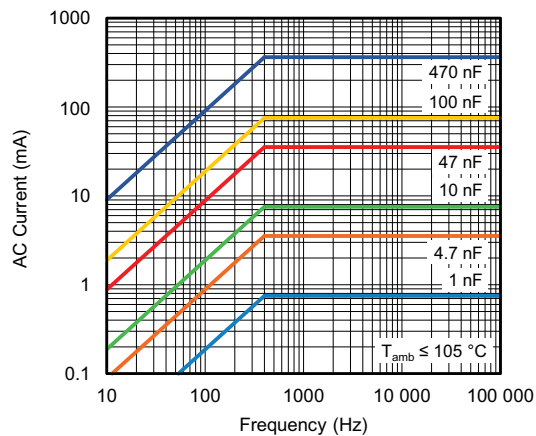
Impedance as a function of frequency (typical curve)



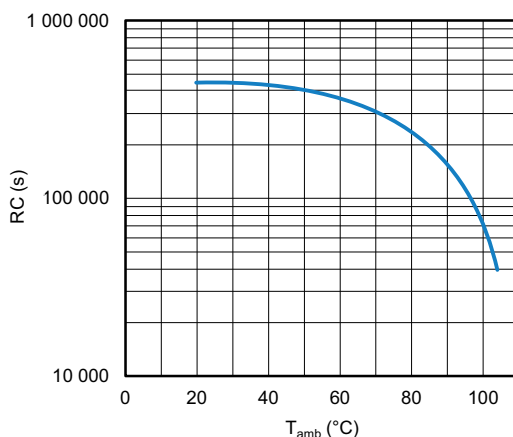
Resonant frequency as a function of capacitance (typical curve)



Max. RMS voltage as a function of frequency



Max. RMS current as a function of frequency



Insulation resistance as a function of ambient temperature

## APPLICATION NOTES

- For Y2 electromagnetic interference suppression in **standard line bypass applications** (between line and ground) (50 Hz / 60 Hz) with a maximum mains voltage of 300 V<sub>AC</sub>.
- For series impedance applications we refer to the application note: [www.vishay.com/doc?28153](http://www.vishay.com/doc?28153)
- For capacitors connected in parallel, normally the proof voltage and possibly the rated voltage must be reduced. For information depending of the capacitance value and the number of parallel connections contact [rfi@vishay.com](mailto:rfi@vishay.com)
- These capacitors are not intended for continuous pulse applications. For these situations, capacitors of the AC and pulse program must be used.
- The maximum ambient temperature must not exceed 105 °C.
- Rated voltage pulse slope:  
if the pulse voltage is lower than the rated voltage, the values of the specific reference data can be multiplied by 420 V<sub>DC</sub> and divided by the applied voltage.

## INSPECTION REQUIREMENTS

### General Notes

Sub-clause numbers of tests and performance requirements refer to the "Sectional Specification, Publication IEC 60384-14 ed-4 (2013) and Specific Reference Data."

| GROUP C INSPECTION REQUIREMENTS              |                                                                             |                                                               |
|----------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------|
| SUB-CLAUSE NUMBER AND TEST                   | CONDITIONS                                                                  | PERFORMANCE REQUIREMENTS                                      |
| SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1 |                                                                             |                                                               |
| 4.1 Dimensions (detail)                      |                                                                             | As specified in chapters "General Data" of this specification |
| Initial measurements                         | Capacitance<br>Tangent of loss angle:<br>at 10 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             | No pre-drying<br>Method: 1A<br>Solder bath: 280 °C ± 5 °C<br>Duration: 10 s |                                                               |



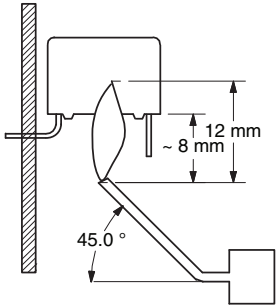
| GROUP C INSPECTION REQUIREMENTS                     |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SUB-CLAUSE NUMBER AND TEST                          | CONDITIONS                                                                                                                                                                                                                | PERFORMANCE REQUIREMENTS                                                                                                                                                                                                                                              |
| <b>SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1</b> |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                       |
| 4.19 Component solvent resistance                   | Isopropylalcohol at room temperature<br>Method: 2<br>Immersion time: 5 min ± 0.5 min<br>Recovery time:<br>min. 1 h, max. 2 h                                                                                              |                                                                                                                                                                                                                                                                       |
| 4.4.2 Final measurements                            | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance                                                                                                                           | No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 5\%$ of the value measured initially<br><br>Increase of $\tan \delta \leq 0.008$<br>Compared to values measured initially<br><br>As specified in section "Insulation Resistance" of this specification |
| <b>SUB-GROUP C1B PART OF SAMPLE OF SUB-GROUP C1</b> |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                       |
| Initial measurements                                | Capacitance<br>Tangent of loss angle:<br>at 10 kHz                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| 4.20 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                     | $\theta A = -55\text{ }^{\circ}\text{C}$<br>$\theta B = +105\text{ }^{\circ}\text{C}$<br>5 cycles<br>Duration $t = 30\text{ min}$                                                                                         |                                                                                                                                                                                                                                                                       |
| 4.6.1 Inspection                                    | Visual examination                                                                                                                                                                                                        | No visible damage                                                                                                                                                                                                                                                     |
| 4.7 Vibration                                       | Mounting: 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 $98\text{ m/s}^2$<br>(whichever is less severe)<br>Total duration 6 h |                                                                                                                                                                                                                                                                       |
| 4.7.2 Final inspection                              | Visual examination                                                                                                                                                                                                        | No visible damage                                                                                                                                                                                                                                                     |
| 4.9 Shock                                           | Mounting: see section "Mounting" for more information<br>Pulse shape: half sine<br>Acceleration: $490\text{ m/s}^2$<br>Duration of pulse: 11 ms                                                                           |                                                                                                                                                                                                                                                                       |
| 4.9.2 Final measurements                            | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance                                                                                                                           | No visible damage<br><br>$ \Delta C/C  \leq 5\%$ of the value measured initially<br><br>Increase of $\tan \delta \leq 0.008$<br>Compared to values measured initially<br><br>As specified in section "Insulation Resistance" of this specification                    |



| GROUP C INSPECTION REQUIREMENTS                                            |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SUB-CLAUSE NUMBER AND TEST                                                 | CONDITIONS                                                                                                                                                                | PERFORMANCE REQUIREMENTS                                                                                                                                                                                                                                                                                                                  |
| <b>SUB-GROUP C1 COMBINED SAMPLE OF SPECIMENS OF SUB-GROUPS C1A AND C1B</b> |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
| 4.11 Climatic sequence                                                     |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.1 Initial measurements                                                | Capacitance<br>measured in 4.4.2 and 4.9.2<br>Tangent of loss angle:<br>measured initially in C1A and C1B                                                                 |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.2 Dry heat                                                            | Temperature: 105 °C<br>Duration: 16 h                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.3 Damp heat cyclic<br>Test Db<br>First cycle                          |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.4 Cold                                                                | Temperature: -55 °C<br>Duration: 2 h                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.5 Damp heat cyclic<br>Test Db<br>remaining cycles                     |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
| 4.11.6 Final measurements                                                  | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Voltage proof<br>2250 V <sub>DC</sub> ; 1 min between terminations<br><br>Insulation resistance | No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 5\%$ of the value measured in 4.11.1.<br><br>Increase of $\tan \delta \leq 0.008$<br>Compared to values measured in 4.11.1<br><br>No permanent breakdown or flash-over<br><br>$\geq 50\%$ of values specified in section<br>"Insulation Resistance" of this specification  |
| <b>SUB-GROUP C2</b>                                                        |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                           |
| 4.12 Damp heat steady state                                                | 56 days, 40 °C, 90 % to 95 % RH, no load<br>Capacitance                                                                                                                   |                                                                                                                                                                                                                                                                                                                                           |
| 4.12.1 Initial measurements                                                | Tangent of loss angle at 1 kHz                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                           |
| 4.12.3 Final measurements                                                  | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Voltage proof<br>2250 V <sub>DC</sub> ; 1 min between terminations<br><br>Insulation resistance | No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 5\%$ of the value measured in 4.12.1.<br><br>Increase of $\tan \delta \leq 0.007$<br>Compared to values measured in 4.12.1.<br><br>No permanent breakdown or flash-over<br><br>$\geq 50\%$ of values specified in section<br>"Insulation Resistance" of this specification |



| GROUP C INSPECTION REQUIREMENTS     |                                                                                                                                                                   |                                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| SUB-CLAUSE NUMBER AND TEST          | CONDITIONS                                                                                                                                                        | PERFORMANCE REQUIREMENTS                                                                      |
| <b>SUB-GROUP C3</b>                 |                                                                                                                                                                   |                                                                                               |
| 4.13.1 Initial measurements         | Capacitance<br>Tangent of loss angle:<br>at 10 kHz                                                                                                                |                                                                                               |
| 4.13 Impulse voltage                | 3 successive impulses, full wave, peak voltage:<br>X1: 5 kV<br>Max. 24 pulses                                                                                     | No selfhealing breakdowns or flash-over                                                       |
| 4.14 Endurance                      | Duration: 1000 h<br>1.7 x U <sub>RAC</sub> at 105 °C<br>Once in every hour the voltage is increased to 1000 V <sub>RMS</sub> for 0.1 s via resistor of 47 Ω ± 5 % |                                                                                               |
| 4.14.7 Final measurements           | Visual examination                                                                                                                                                | No visible damage<br>Legible marking                                                          |
|                                     | Capacitance                                                                                                                                                       | $ \Delta C/C  \leq 10\%$ compared to values measured in 4.13.1.                               |
|                                     | Tangent of loss angle                                                                                                                                             | Increase of $\tan \delta \leq 0.008$<br>Compared to values measured in 4.13.1.                |
|                                     | Voltage proof<br>2250 V <sub>DC</sub> ; 1 min between terminations<br>2100 V <sub>AC</sub> ; 1 min between terminations and case                                  | No permanent breakdown or flash-over                                                          |
|                                     | Insulation resistance                                                                                                                                             | $\geq 50\%$ of values specified in section "Insulation Resistance" of this specification      |
| <b>SUB-GROUP C4</b>                 |                                                                                                                                                                   |                                                                                               |
| 4.15 Charge and discharge           | 10 000 cycles<br>charged to 420 V <sub>DC</sub><br>Discharge resistance:<br>$R = \frac{420 V_{DC}}{1.5 \times C (dU/dt)}$                                         |                                                                                               |
| 4.15.1 Initial measurements         | Capacitance<br>Tangent of loss angle:<br>at 10 kHz                                                                                                                |                                                                                               |
| 4.15.3 Final measurements           | Capacitance                                                                                                                                                       | $ \Delta C/C  \leq 10\%$ compared to values measured in 4.15.1.                               |
|                                     | Tangent of loss angle                                                                                                                                             | Increase of $\tan \delta \leq 0.008$<br>Compared to values measured in 4.15.1.                |
|                                     | Insulation resistance                                                                                                                                             | $\geq 50\%$ of values specified in section "Insulation Resistance" of this specification      |
| <b>SUB-GROUP C5</b>                 |                                                                                                                                                                   |                                                                                               |
| 4.16 Radio frequency characteristic | Resonance frequency                                                                                                                                               | $\geq 0.9$ times the value as specified in section "Resonant Frequency" of this specification |

| GROUP C INSPECTION REQUIREMENTS                      |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SUB-CLAUSE NUMBER AND TEST                           | CONDITIONS                                                                                                                                                                                                                                                                                                                   | PERFORMANCE REQUIREMENTS                                                                                                                                                                                                                                                                                                                          |
| <b>SUB-GROUP C6</b>                                  |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
| 4.17 Passive flammability<br>Class B                 | <p>Bore of gas jet: Ø 0.5 mm<br/> Fuel: Butane<br/> Test duration for actual volume V in mm<sup>3</sup>:<br/> V ≤ 250: 10 s<br/> 250 &lt; V ≤ 500: 20 s<br/> 500 &lt; V ≤ 1750: 30 s<br/> V &gt; 1750: 60 s<br/> One flame application</p>  | After removing test flame from capacitor, the capacitor must not continue to burn for more than 10 s. No burning particle must drop from the sample.                                                                                                                                                                                              |
| <b>SUB-GROUP C7</b>                                  |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
| 4.18 Active flammability                             | 20 cycles of 5 kV discharges on the test capacitor connected to U <sub>RAC</sub> .                                                                                                                                                                                                                                           | The cheese cloth around the capacitors shall not burn with a flame.<br>No electrical measurements are required.                                                                                                                                                                                                                                   |
| <b>SUB-GROUP ADDITIONAL TEST (FOR PITCH ≥ 15 mm)</b> |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
| Damp heat steady state with voltage                  | RH: 85 %, temperature: 85 °C;<br>Voltage: 300 V <sub>AC</sub> , duration: 500 h                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
| Initial measurements                                 | Capacitance<br>Tangent of loss angle:<br>at 10 kHz                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                   |
| Final measurements                                   | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance                                                                                                                                                                                                                              | <p>No visible damage<br/> Legible marking</p> <p><math> \Delta C/C  \leq 10\%</math> of the value with initial measurement</p> <p>Increase of <math>\tan \delta \leq 0.024</math><br/> Compared to values with initial measurement</p> <p><math>\geq 50\%</math> of values specified in section "Insulation Resistance" of this specification</p> |
| <b>SUB-GROUP ADDITIONAL TEST</b>                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                   |
| Damp heat steady state with voltage                  | RH: 40 %, temp.: 93 °C<br>Voltage: 300 V <sub>AC</sub> , duration: 21 days                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                   |
| Initial measurements                                 | Capacitance<br><br>Tangent of loss angle: at 10 kHz                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                   |
| Final measurements                                   | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance                                                                                                                                                                                                                              | <p>No visible damage<br/> Legible marking</p> <p><math> \Delta C/C  \leq 10\%</math> of the value with initial measurement</p> <p>Increase of <math>\tan \delta \leq 0.024</math><br/> Compared to values with initial measurement</p> <p><math>\geq 50\%</math> of values specified in section "Insulation Resistance" of this specification</p> |



| TEST CONDITIONS AND REQUIREMENTS ACCORDING AEC-Q200 REVISION C |                                      |                        |                                                                       |                                                                                                                                                    |
|----------------------------------------------------------------|--------------------------------------|------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| NO.                                                            | TEST NAME                            | REFERENCE              | TEST CONDITIONS                                                       | PERFORMANCE REQUIREMENTS                                                                                                                           |
| 1                                                              | Pre- and post-stress electrical test | -                      | -                                                                     | User spec.                                                                                                                                         |
| 2                                                              | High temperature exposure (storage)  | MIL-STD 202 method 108 | 1000 h; 105 °C; unpowered                                             | $ \Delta C/C  \leq \pm 5 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR \geq 50 \%$ of initial requirement  |
| 3                                                              | Temperature cycling                  | JESD22 method JA-104   | 1000 cycles: -55 °C to +105 °C<br>10 min. dwell time each             | $ \Delta C/C  \leq \pm 5 \%$<br>Increase of $\tan \delta = 0.008$ at 10 kHz<br>$IR \geq 50 \%$ of initial requirement                              |
| 4                                                              | Moisture resistance                  | MIL-STD 202 method 106 | 10 cycles at 24 h/cycle, unpowered                                    | $ \Delta C/C  \leq \pm 5 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR \geq 50 \%$ of initial requirement  |
| 5                                                              | Biased humidity                      | MIL-STD 202 method 103 | 1000 h; 40 °C; 93 % RH with $U_{RAC}$                                 | $ \Delta C/C  \leq \pm 10 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR \geq 50 \%$ of initial requirement |
| 6                                                              | Operational life                     | MIL-STD 202 method 108 | $T_{amb} = 105 \text{ °C}$ ;<br>1000 h; $U_{test} = 1 \times U_{RAC}$ | $ \Delta C/C  \leq \pm 10 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR \geq 50 \%$ of initial requirement |
| 7                                                              | Terminal strength (lead)             | MIL-STD 202 method 211 | Leaded device lead integrity only.                                    | $ \Delta C/C  \leq \pm 5 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR = \text{initial requirement}$       |
| 8                                                              | Resistance to solvents               | MIL-STD 202 method 215 | Short term                                                            | No visual damage<br>Legible marking                                                                                                                |
| 9                                                              | Mechanical shock                     | MIL-STD 202 method 213 | Figure a of method 213, condition C                                   | No visual damage                                                                                                                                   |
| 10                                                             | Vibration                            | MIL-STD 202 method 204 | 5 g's for 20 min;<br>12 cycles, 3 orientations                        | No visual damage                                                                                                                                   |
| 11                                                             | Resistance to soldering heat         | MIL-STD 202 method 210 | 260 °C; 10 s                                                          | $ \Delta C/C  \leq \pm 5 \%$<br>Increase of $\tan \delta$<br>0.008 for $C \leq 1 \mu\text{F}$ at 10 kHz<br>$IR = \text{initial requirement}$       |
| 12                                                             | Solderability                        | J-STD-002              | 235 °C / 5 s                                                          | Good tinning as evidence by free flowing of the solder with wetting of terminations > 95 %                                                         |
| 13                                                             | Electrical characterization          | User spec.             | -                                                                     | User spec.                                                                                                                                         |
| 14                                                             | Flammability                         | UL 94                  | Electrical test not required                                          | Maximum permitted burning time < 10 s                                                                                                              |



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