

## Ø 5 mm Film Dielectric Trimmers



### FEATURES

- Housing diameter 5 mm
- Top and bottom or top adjustment
- Round head
- Mounting: radial
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### APPLICATIONS

- Impedance matching circuits
- RF
- Medical
- For consumer and industrial equipment

| QUICK REFERENCE DATA   |                           |  |
|--|---------------------------|--|
| Rated DC voltage   |                           | 150 V <sub>DC</sub>  |
| Test DC voltage for 1 min  |                           | 300 V <sub>DC</sub>  |
| Maximum contact resistance   |                           | 10 mΩ  |
| Minimum insulation resistance  |                           | 10 000 MΩ  |
| Category temperature range   | PP                        | -40 °C to +70 °C   |
|  | PTFE                      | -40 °C to +85 °C   |
| Climatic category (IEC 60068)  | PP                        | 40/070/21  |
|  | PTFE                      | 40/085/21  |
| Minimum storage temperature  |                           | -55 °C   |
| Related specification  |                           | IEC 60418-1 and 4  |
| Effective angle of rotation  |                           | 180° (rotation in 180° only, see "Life of Trimmer")  |
| Operating torque   | C <sub>max.</sub> < 20 pF | 1 mNm to 15 mNm  |
|  | C <sub>max.</sub> ≥ 20 pF | 1 mNm to 25 mNm  |
| Maximum axial thrust   |                           | 2 N  |
| Capacitance range (C <sub>min.</sub> / C <sub>max.</sub> )   |                           | 0.35 pF / 1.5 pF to 4 pF / 27 pF   |
| Life of trimmer  |                           | Maximum 10 cycles: rotation in 180° only (the electrical and mechanical performance is not guaranteed if rotated beyond 10 cycles) |
| Quality level  |                           | Sampling and data evaluation for quality level in accordance with "MIL-STD-105D" and "IEC 60410":                                  |
|  |                           | < 0.15 % major defects<br>< 0.65 % minor defects   |
| Each capacitor is tested for minimum C <sub>max.</sub> and is also subjected to the full test voltage. |                           |  |

**DIMENSIONS** in millimeters


Trimmers BFC2 808 ..... series, with round head

| <b>CAPACITANCE AND RELEVANT PHYSICAL DIMENSIONS</b> |                    |                    |                    |
|---|--------------------|--------------------|--------------------|
| $C_{min.} / C_{max.}$<br>(pF)                       | $H_{max.}$<br>(mm) | $W_{max.}$<br>(mm) | $L_{max.}$<br>(mm) |
| 0.35 / 1.5  | 7.0                | 5.5                | 7.3                |
| 1.5 / 5   | 7.0                | 5.5                | 7.3                |
| 3 / 10  | 7.0                | 5.5                | 7.3                |
| 3 / 15  | 8.8                | 5.5                | 7.3                |
| 4 / 20  | 8.8                | 5.5                | 7.3                |
| 4 / 27  | 9.0                | 6.2                | 7.8                |

**MOUNTING**

The trimmer has a lead pitch of 5.08 mm or 5.6 mm and can be mounted on printed-circuit boards with a minimum hole diameter of 1.25 mm.

**PACKAGING**

Bulk packaged in cardboard boxes lined with expanded plastic, 1000 units per box.

| <b>ORDERING INFORMATION</b>                   |   |                                     |                                      |
|---|---|-------------------------------------|--------------------------------------|
| C <sub>min.</sub> / C <sub>max.</sub><br>(pF) | CATALOG NUMBER BFC2 808 .....             |                                     |                                      |
|   | TOP AND BOTTOM ADJUSTMENT<br>(P = 5.6 mm) | TOP ADJUSTMENT ONLY<br>(P = 5.6 mm) | TOP ADJUSTMENT ONLY<br>(P = 5.08 mm) |
| <b>POLYTETRAFLUORETHYLENE</b>                 |   |                                     |                                      |
| 0.35 / 1.5                                    | 22158                                     | -                                   | -                                    |
| <b>POLYPROPYLENE</b>                          |   |                                     |                                      |
| 1.2 / 5                                       | -   | 24508                               | -                                    |
| 1.5 / 5                                       | 23508                                     | -                                   | 20508                                |
| 1.5 / 7                                       | -   | 24708                               | -                                    |
| 3 / 10  | 23109                                     | -                                   | 20109                                |
| 3 / 15  | 23159                                     | -                                   | 20159                                |
| 4 / 20  | 23209                                     | -                                   | 20209                                |
| 4 / 27  | 23279                                     | -                                   | 20279                                |

| <b>ELECTRICAL DATA</b>   |  |         |   |  |                     |                                   |                                  |
|--|--|---------|---|--|---------------------|-----------------------------------|----------------------------------|
| GUARANTEED<br>MAX. C <sub>min.</sub> /<br>MIN. C <sub>max.</sub><br>AT 200 kHz<br>(pF) | tan δ<br>AT C <sub>max.</sub> × 10 <sup>-4</sup> |         | TEMP.<br>COEFF. <sup>(1)</sup><br>(10 <sup>-6</sup> /K) | MIN. f <sub>res</sub><br>AT C <sub>max.</sub><br>(MHz) | COLOR<br>OF<br>BASE | SMALLEST<br>PACKAGING<br>QUANTITY | CATALOG NUMBER<br>BFC2 ... ..    |
|  | 1 MHz  | 100 MHz |   |  |                     |                                   |                                  |
| 0.35 / 1.5   | ≤ 10   | -       | -450 ± 550  | -  | -                   | 1000                              | .... 808 22158                   |
| 1.2 / 5  | ≤ 10   | -       | -200 ± 550  | -  | Grey                | 1000                              | .... 808 24508                   |
| 1.5 / 5  | ≤ 10   | ≤ 25    | -200 ± 550  | 700  | Grey                | 1000                              | .... 808 20508<br>.... 808 23508 |
| 1.5 / 7  | ≤ 10   | -       | -50 ± 550   | -  | Grey                | 1000                              | .... 808 24708                   |
| 3 / 10   | ≤ 10   | ≤ 25    | -250 ± 550  | 500  | Yellow              | 1000                              | .... 808 20109<br>.... 808 23109 |
| 3 / 15   | ≤ 10   | ≤ 25    | -250 ± 550  | 400  | Blue                | 1000                              | .... 808 20159<br>.... 808 23159 |
| 4 / 20   | ≤ 10   | ≤ 25    | -250 ± 400  | 300  | Green               | 1000                              | .... 808 20209<br>.... 808 23209 |
| 4 / 27   | ≤ 10   | ≤ 25    | -250 ± 400  | 300  | Red                 | 1000                              | .... 808 20279<br>.... 808 23279 |

**Note**

<sup>(1)</sup> C: 60 % to 80 % of C<sub>max.</sub>; T<sub>amb.</sub>: from +20 °C to +70 °C

**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)

| <b>TEST PROCEDURES AND REQUIREMENTS</b> |                             |                             |                      |  |
|---|-----------------------------|-----------------------------|----------------------|--|
| IEC<br>60418-1<br>CLAUSE                | IEC 60068<br>TEST<br>METHOD | TEST                        | PROCEDURE            | REQUIREMENTS   |
| 4.2                                     |                             | Method of mounting          | Method A             |  |
| 14                                      |                             | Capacitance drift           | After TC measurement | ΔC/C: ≤ 3 % for C <sub>max.</sub> ≤ 10 pF<br>ΔC/C: ≤ 2 % for C <sub>max.</sub> > 10 pF |
| 19                                      |                             | Thrust                      | Axial thrust of 2 N  | ΔC/C: ≤ 0.4 %  |
| 21                                      |                             | Robustness of terminations: |                      |  |
| 21.1                                    | Ua                          | Tensile                     | 1 N                  | No damage  |
| 21.2                                    | Ub                          | Bending                     | 1 cycle              | No damage  |



| TEST PROCEDURES AND REQUIREMENTS |                       |   |  |  |
|----------------------------------|-----------------------|---|--|--|
| IEC 60418-1 CLAUSE               | IEC 60068 TEST METHOD | TEST                                    | PROCEDURE  | REQUIREMENTS   |
| 22                               | Na                    | Rapid change of temperature             | 1 cycle; 0.5 h at lower and 0.5 h at upper category temperature  | $\Delta C/C: \leq 2.5 \%$  |
| 23                               | T                     | Soldering:                              |  |  |
|                                  | Ta                    | Solderability                           | Solder bath immersion 3 mm; 235 °C; 2 s  | Good wetting; no mechanical damage   |
|                                  | Tb                    | Resistance to heat                      | Solder bath: 260 °C; 10 s  | No mechanical damage   |
| 24                               | Eb                    | Impact bump                             | 4000 ± 10 bumps; 40 g; 6 ms  | $\Delta C/C: \leq 1 \%$ ; no mechanical damage   |
| 25                               | Fc                    | Vibration                               | Frequency 10 Hz to 55 Hz; amplitude 0.75 mm; 1.5 h   | $\Delta C/C: \leq 1 \%$ ; no mechanical damage   |
| 26                               |                       | Climatic sequence:                      |  | $\Delta C/C: \leq 4 \%$  |
| 26.1                             | B                     | Dry heat                                | 16 h at upper category temperature   | $\tan \delta$ or PP and PTFE foil: $\leq 15 \times 10^{-4}$<br>$\tan \delta$ for PC foil: $\leq 80 \times 10^{-4}$<br><br>$R_{ins.}: \geq 10\,000\ M\Omega$<br>Rotor contact R: $\leq 10\ m\Omega$   |
| 26.2                             | D                     | Damp heat accelerated, first cycle      | 1 cycle; 24 h; +40 °C; 95 % to 100 % RH  | Voltage proof: 300 V for 1 min   |
| 26.3                             | Aa                    | Cold                                    | 16 h; -40 °C   | Visual examination: no mechanical damage   |
| 26.5                             |                       | Damp heat accelerated, remaining cycles | 1 cycle; 24 h; +40 °C; 95 % to 100 % RH  | Operating torque: 1 mNm to 20 mNm for $C_{max.} < 20\ pF$ ; 1 mNm to 30 mNm for $C_{max.} \geq 20\ pF$   |
| 27                               | Ca                    | Damp heat steady state                  | 21 days; +40 °C; 90 % to 95 % RH   | $\Delta C/C: \leq 3 \%$<br><br>$\tan \delta$ for PP and PTFE foil: $\leq 15 \times 10^{-4}$ ; $\tan \delta$ for PC foil: $\leq 80 \times 10^{-4}$<br><br>$R_{ins.}: \geq 10\,000\ M\Omega$ ; Rotor contact R: $\leq 10\ m\Omega$<br><br>Voltage proof: 300 V for 1 min<br><br>Visual examination: no mechanical damage<br><br>Operating torque: 1 mNm to 20 mNm for $C_{max.} < 20\ pF$ ; 1 mNm to 30 mNm for $C_{max.} \geq 20\ pF$ |
| 29                               |                       | Mechanical endurance                    | 10 cycles<br><br>Maximum 10 cycles: rotation in 180° only. (The electrical and mechanical performance is not guaranteed if rotated beyond 10 cycles) | $\Delta C/C: \leq 3 \%$<br><br>$\Delta C/C$ after axial thrust: $\leq 0.3 \%$ ; rotor contact R: $\leq 10\ m\Omega$<br><br>Voltage proof: 300 V for 1 min<br><br>Visual examination: no mechanical damage<br><br>Operating torque: 0.5 mNm to 22.5 mNm for $C_{max.} < 20\ pF$ ; 0.5 mNm to 30 mNm for $C_{max.} \geq 20\ pF$  |



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