# Ø 7.5 mm Film Dielectric Trimmers

## FEATURES

- Housing diameter 7.5 mm
- For a basic grid of 2.54 mm (0.1") or 2.50 mm
- Top and bottom or top adjustment
- Vertical and horizontal versions
- Round head
- Mounting: Radial
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

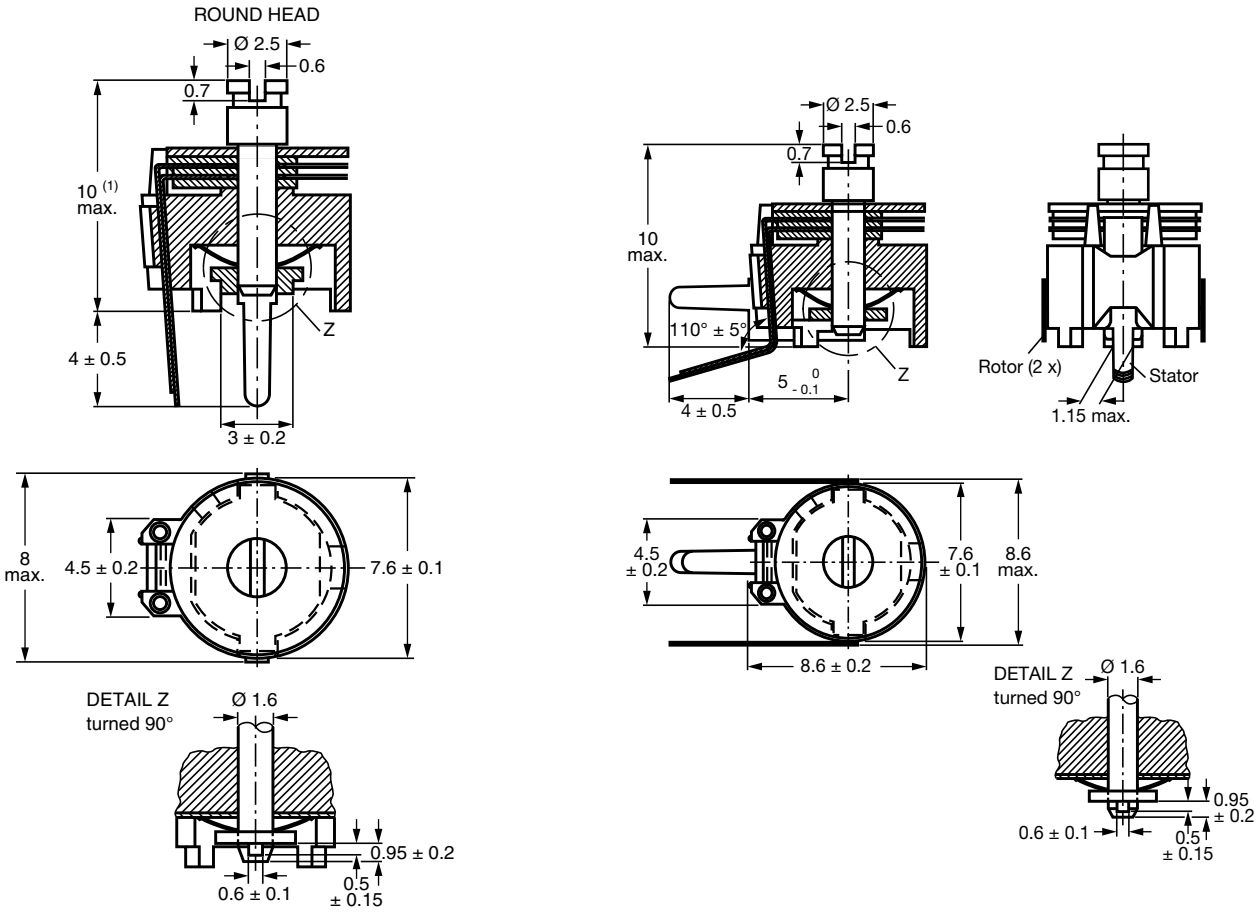
RoHS COMPLIANT

## APPLICATIONS

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

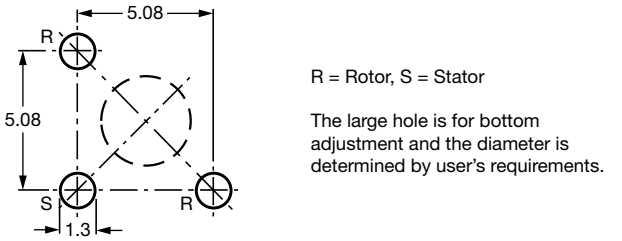
| QUICK REFERENCE DATA | | |
|---|---|---|
| Rated DC voltage | | 250 $V_{DC}$ |
| Test DC voltage for 1 min | | 500 $V_{DC}$ |
| Maximum contact resistance | | 10 mΩ |
| Minimum insulation resistance | | 10 000 MΩ |
| Category temperature range | PP | - 40 °C to + 70 °C |
| | PE, PTFE, PET | - 40 °C to + 85 °C |
| Climatic category (IEC 60068) | PP | 40/070/21 |
| | PE, PTFE, PET | 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 | $C_{max.}$ < 33 pF | 1 mNm to 15 mNm |
| | $C_{max.}$ ≥ 33 pF | 1 mNm to 25 mNm |
| Maximum axial thrust | | 2 N |
| Capacitance range ($C_{min.}/C_{max.}$) | | 1.4 pF/5.5 pF to 3 pF/33 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”*:<br>< 0.15 % major defects<br>< 0.65 % minor defects<br>Each capacitor is tested for minimum $C_{max.}$ and is also subjected to the full test voltage. |

## DIMENSIONS in millimeters



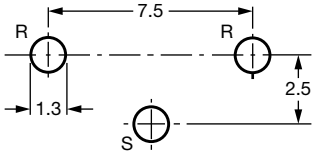

Trimmers BFC2 808 ..... series, vertical version

Trimmers BFC2 808 ..... series, horizontal version




R = Rotor, S = Stator

The large hole is for bottom adjustment and the diameter is determined by user's requirements.

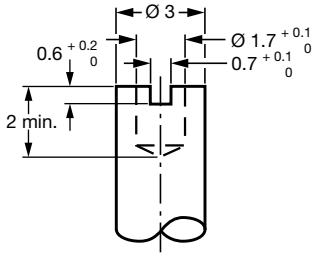



R = Rotor, S = Stator

Hole pattern

## ADJUSTMENT

For top adjustment a screwdriver or trimming key can be used; for bottom adjustment a key is required as shown below.




Bottom adjustment key

## ORDERING INFORMATION

| $C_{min.}/C_{max.}$ (pF) | CATALOG NUMBER BFC2 808 ..... | | |
|---|---|---|---|
| | VERTICAL VERSION | | HORIZONTAL VERSION |
| | ROUND HEAD | | ROUND HEAD |
| | TOP AND BOTTOM ADJUSTMENT | TOP ADJUSTMENT ONLY | TOP AND BOTTOM ADJUSTMENT |
| 1.4/5.5 | 11558 | 00004 | 51558 |
| 2/9 | 00018 | - | - |
| 2/10 | 11109 | 00005 | 51109 |
| 2/10 | - | 11004 | - |
| 2/15 | 11159 | - | - |
| 2/18 | 00016 | - | - |
| 2.5/20 | - | 11006 | - |
| 2.5/22 | 11229 | 00006 | 51229 |
| 3/33 | 11339 | - | - |

## MOUNTING

The trimmer can be mounted on printed-circuit boards with a grid of 2.50 mm or 2.54 mm and a minimum hole diameter of 1.25 mm.

## PACKAGING

Bulk packaged in cardboard boxes lined with expanded plastic. For smallest packaging quantity (SPQ) see “Electrical Data” table.

## ELECTRICAL DATA

| GUARANTEED MAX. $C_{min.}$/ MIN. $C_{max.}$ AT 200 kHz (pF) | SPINDLE | SHAPE OF HEAD | ADJ. MODE | DIEL. | tan δ AT $C_{max.}$ x $10^{-4}$ | | TEMP. COEFF. ($10^{-6}$/K) | MIN. $f_{res}$ AT $C_{max.}$ (MHz) | COL. OF BASE | SPQ | CATALOG NUMBER BFC2 ... ..... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 MHz | 100 MHz | | | | | |
| 1.4/5.5 | Vertical | Round | Top + bottom | PE | ≤ 10 | ≤ 25 | - 250 ± 350 | 850 | Grey | 1400 | .... 808 11558 |
| | | | Top | | | | | | | 1400 | .... 808 00004 |
| | Horizontal | Round | Top + bottom | | | | | | | 1200 | .... 808 51558 |
| 2/9 | Vertical | Round | Top + bottom | PTFE | ≤ 10 | ≤ 15 | - 150 ± 800 | 400 | Yellow | 1400 | .... 808 00018 |
| 2/10 | Vertical | Round | Top + bottom | PP | ≤ 10 | ≤ 25 | - 250 ± 800 | 480 | Yellow | 1400 | .... 808 11109 |
| | | | Top | | | | | | | 1400 | .... 808 00005 |
| | Horizontal | Round | Top + bottom | | | | | | | 1200 | .... 808 51109 |
| 2/15 | Vertical | Round | Top + bottom | PP | ≤ 10 | ≤ 25 | - 250 ± 600 | 450 | Blue | 1400 | .... 808 11159 |
| 2/18 | Vertical | Round | Top + bottom | PTFE | ≤ 10 | ≤ 15 | - 250 ± 350 | 350 | Green | 1400 | .... 808 00016 |
| 2.5/20 | Vertical | Round | Top | PET | ≤ 160 | - | 0 ± 1100 | 250 | Green | 1000 | .... 808 11006 |
| 2.5/22 | Vertical | Round | Top + bottom | PP | ≤ 10 | ≤ 25 | - 200 ± 500 | 350 | Green | 1400 | .... 808 11229 |
| | | | Top | | | | | | | 1400 | .... 808 00006 |
| | Horizontal | Round | Top + bottom | | | | | | | 1200 | .... 808 51229 |
| 3/33 | Vertical | Round | Top + bottom | PP | ≤ 10 | - | - 250 ± 350 | 300 | Brown | 1400 | .... 808 11339 |

## TEST PROCEDURES AND REQUIREMENTS

| IEC 60418-1 CLAUSE | IEC 60068 TEST METHOD | TEST | PROCEDURE | REQUIREMENTS |
|---|---|---|---|---|
| 4.2 | | Method of mounting | Method A | |
| 14 | | Capacitance drift | After TC measurement | ΔC/C: ≤ 1 % for $C_{max.}$ < 40 pF;<br>ΔC/C: ≤ 2.5 % for $C_{max.}$ ≥ 40 pF |
| 19 | | Thrust | Axial thrust of 2 N | ΔC/C: ≤ 0.3 % |
| 21 | | Robustness of terminations: | | |
| 21.1 | Ua | Tensile | 1 N | No damage |
| 21.2 | Ub | Bending | 1 cycle | No damage |
| 22 | Na | Rapid change of temperature | 1 cycle; 0.5 h at lower and 0.5 h at upper category temperature | ΔC/C: ≤ 2 % |

| TEST PROCEDURES AND REQUIREMENTS | | | | |
|---|---|---|---|---|
| **IEC 60418-1 CLAUSE** | **IEC 60068 TEST METHOD** | **TEST** | **PROCEDURE** | **REQUIREMENTS** |
| 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 | $\Delta C/C$: ≤ 0.6 %; no mechanical damage |
| 25 | Fc | Vibration | Frequency 10 Hz to 55 Hz; amplitude 0.35 mm; 1.5 h | $\Delta C/C$: ≤ 0.6 %; no mechanical damage |
| 26 | | Climatic sequence: | | $\Delta C/C$: ≤ 4 % |
| 26.1 | B | Dry heat | 16 h at upper category temperature | tan δ: ≤ 10 x $10^{-4}$ for $C_{max.}$ < 27 pF; tan δ: ≤ 70 x $10^{-4}$ for $C_{max.}$ ≥ 27 pF; tan δ: ≤ 80 x $10^{-4}$ for $C_{max.}$ ≥ 40 pF<br>$R_{ins.}$: ≥ 10 000 MΩ; rotor contact R: ≤ 10 mΩ |
| 26.2 | D | Damp heat accelerated, first cycle | 1 cycle; 24 h; + 40 °C; 95 % to 100 % RH | Voltage proof: 500 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 15 mNm for $C_{max.}$ < 33 pF; 1 mNm to 25 mNm for $C_{max.}$ ≥ 33 pF |
| 27 | Ca | Damp heat steady state | 21 days; + 40 °C; 90 % to 95 % RH | $\Delta C/C$: ≤ 5 %<br>tan δ: ≤ 30 x $10^{-4}$ for $C_{max.}$ < 27 pF; tan δ: ≤ 70 x $10^{-4}$ for $C_{max.}$ ≥ 27 pF; tan δ: ≤ 80 x $10^{-4}$ for $C_{max.}$ ≥ 40 pF<br>$R_{ins.}$: ≥ 10 000 MΩ; rotor contact R: ≤ 10 mΩ<br>Voltage proof: 500 V for 1 min<br>Visual examination: No mechanical damage<br>Operating torque: 1 mNm to 15 mNm for $C_{max.}$ < 33 pF; 1 mNm to 25 mNm for $C_{max.}$ ≥ 33 pF |
| 29 | | Mechanical endurance | 10 cycles<br>Maximum 10 cycles: Rotation in 180° only (the electrical and mechanical performance is not guaranteed if rotated beyond 10 cycles) | $\Delta C/C$: ≤ 1.5 %<br>$\Delta C/C$ after axial thrust: ≤ 0.3 %; rotor contact R: ≤ 10 mΩ<br>Voltage proof: 500 V for 1 min<br>Visual examination: No mechanical damage<br>Operating torque: 1 mNm to 15 mNm for $C_{max.}$ < 33 pF; 1 mNm to 25 mNm for $C_{max.}$ ≥ 33 pF |

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