

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


RoHS
COMPLIANT

APPLICATIONS

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

| QUICK REFERENCE DATA | | |
|--|---------------------------|---|
| Rated DC voltage | | 150 V _{DC} |
| Test DC voltage for 1 min | | 300 V _{DC} |
| 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 _{max.} < 20 pF | 1 mNm to 15 mNm |
| | C _{max.} ≥ 20 pF | 1 mNm to 25 mNm |
| Maximum axial thrust | | 2 N |
| Capacitance range (C _{min.} / C _{max.}) | | 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 < 0.65 % minor defects Each capacitor is tested for minimum C _{max.} and is also subjected to the full test voltage. |

DIMENSIONS in millimeters


Trimmers BFC2 808 series, with round head

| CAPACITANCE AND RELEVANT PHYSICAL DIMENSIONS | | | |
|---|---------------------|---------------------|---------------------|
| $C_{\min.} / C_{\max.}$ (pF) | $H_{\max.}$ (mm) | $W_{\max.}$ (mm) | $L_{\max.}$ (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.

| ORDERING INFORMATION | | | |
|---|---|-------------------------------------|--------------------------------------|
| C _{min.} / C _{max.} (pF) | CATALOG NUMBER BFC2 808 | | |
| | TOP AND BOTTOM ADJUSTMENT (P = 5.6 mm) | TOP ADJUSTMENT ONLY (P = 5.6 mm) | TOP ADJUSTMENT ONLY (P = 5.08 mm) |
| POLYTETRAFLUORETHYLENE | | | |
| 0.35 / 1.5 | 22158 | - | - |
| POLYPROPYLENE | | | |
| 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 |

| ELECTRICAL DATA | | | | | | | |
|--|--|---------|---|--|---------------------|-----------------------------------|-------------------------------|
| GUARANTEED MAX. C _{min.} / MIN. C _{max.} AT 200 kHz (pF) | tan δ AT C _{max.} x 10 ⁻⁴ | | TEMP. COEFF. ⁽¹⁾ (10 ⁻⁶ /K) | MIN. f _{res} AT C _{max.} (MHz) | COLOR OF BASE | SMALLEST PACKAGING QUANTITY | CATALOG NUMBER 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 |
| 1.5 / 7 | ≤ 10 | - | -50 ± 550 | - | Grey | 1000 | 808 23508 |
| 3 / 10 | ≤ 10 | ≤ 25 | -250 ± 550 | 500 | Yellow | 1000 | 808 24708 |
| 3 / 15 | ≤ 10 | ≤ 25 | -250 ± 550 | 400 | Blue | 1000 | 808 20109 |
| 4 / 20 | ≤ 10 | ≤ 25 | -250 ± 400 | 300 | Green | 1000 | 808 23109 |
| 4 / 27 | ≤ 10 | ≤ 25 | -250 ± 400 | 300 | Red | 1000 | 808 20159 |
| | | | | | | | 808 23159 |
| | | | | | | | 808 20209 |
| | | | | | | | 808 23209 |
| | | | | | | | 808 20279 |
| | | | | | | | 808 23279 |

Note

⁽¹⁾ C: 60 % to 80 % of C_{max.}; T_{amb.}: 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

| 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: ≤ 3 % for C _{max.} ≤ 10 pF ΔC/C: ≤ 2 % for C _{max.} > 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: $\leq 15 \times 10^{-4}$ $\tan \delta$ for PC foil: $\leq 80 \times 10^{-4}$ $R_{ins.}: \geq 10\,000\ M\Omega$ 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 | $\Delta C/C: \leq 3 \%$ $\tan \delta$ for PP and PTFE foil: $\leq 15 \times 10^{-4}$; $\tan \delta$ for PC foil: $\leq 80 \times 10^{-4}$ $R_{ins.}: \geq 10\,000\ M\Omega$; Rotor contact R: $\leq 10\ m\Omega$ Voltage proof: 300 V for 1 min Visual examination: no mechanical damage 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 Maximum 10 cycles: rotation in 180° only. (The electrical and mechanical performance is not guaranteed if rotated beyond 10 cycles) | $\Delta C/C: \leq 3 \%$ $\Delta C/C$ after axial thrust: $\leq 0.3 \%$; rotor contact R: $\leq 10\ m\Omega$ Voltage proof: 300 V for 1 min Visual examination: no mechanical damage 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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