

## Ø 7.5 mm Film Dielectric Trimmers

**TEST VOLTAGE (DC) FOR 1 MINUTE:**

500 V

**MAXIMUM CONTACT RESISTANCE:**

10 mΩ

**MINIMUM INSULATION RESISTANCE:**

10 000 MΩ

**CATEGORY TEMPERATURE RANGE:****PP**

- 40 to + 70 °C

**PE, PC, PTFE, PET**

- 40 to + 85 °C

**CLIMATIC CATEGORY (IEC 60068):****PP**

40/070/21

**PE, PC, 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<sub>max</sub> < 33 pF**

1 to 15 mNm

**C<sub>max</sub> ≥ 33 pF**

1 to 25 mNm

**MAXIMUM AXIAL THRUST:**

2 N

**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

**RoHS**  
COMPLIANT**APPLICATIONS**

- For consumer and industrial equipment

**DESCRIPTION:**

The vanes of the trimmer are stacked on a sturdy plastic base. The color of the base indicates the maximum capacitance (see Electrical Data Table). The dielectric is a film of polypropylene (PP), polyethylene (PE), polycarbonate (PC), polytetrafluorethylene (PTFE), or polyethyleneterephthalate (PET) which supports the vanes in such a way that good stability is ensured and no microphony can occur.

Flux absorption between the vanes is prevented.

Cleaning with solvents is not advised.

Versions are available with either a vertical spindle, or a horizontal spindle (see dimensional outlines). Both versions have top adjustment by means of a screwdriver or trimming key and bottom adjustment by means of a key.

**QUALITY LEVEL:**

Sampling and data evaluation for quality level in accordance with "MIL-STD-105D" and "IEC 60410":

&lt; 0.15 % major defects

&lt; 0.65 % minor defects

Each capacitor is tested for minimum C<sub>max</sub> and is also subjected to the full test voltage.

**C<sub>min</sub> / C<sub>max</sub>:**

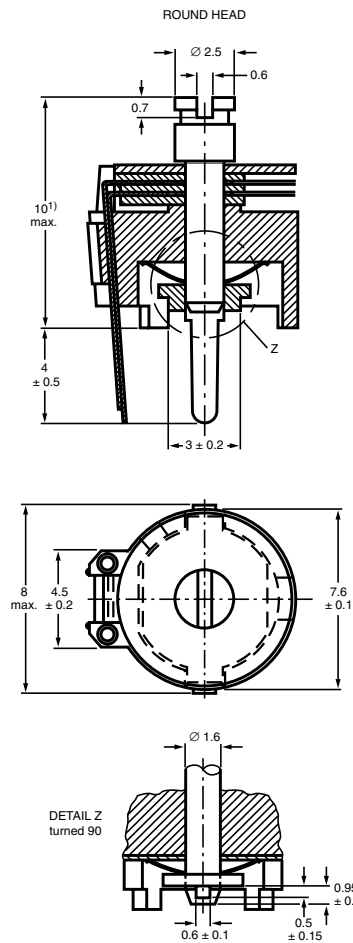
1.4/5.5 to 3/50 pF

**RATED VOLTAGE (DC):**

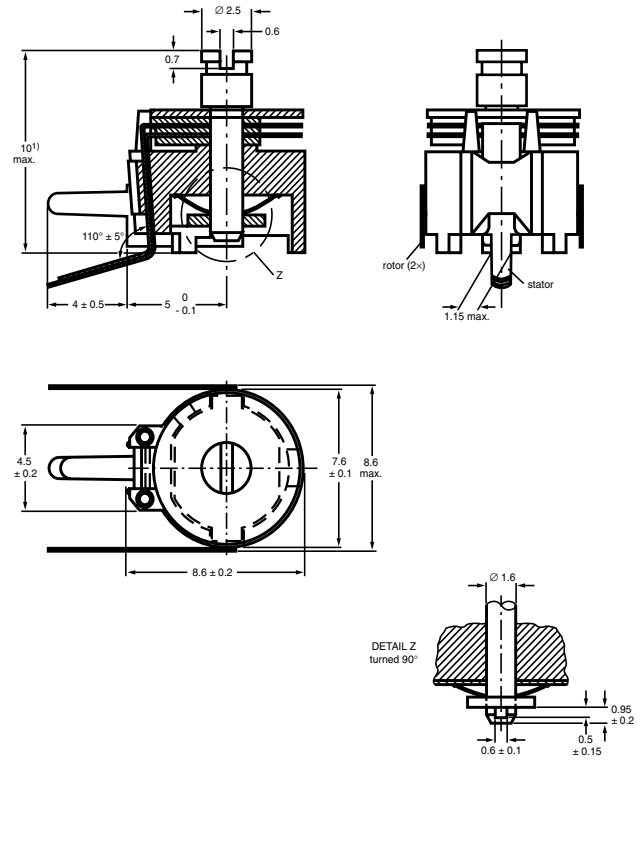
250 V

**LIFE OF TRIMMER:**

Maximum 10 cycles: rotation in 180° only (the electrical and mechanical performance is not guaranteed if rotated beyond 10 cycles)



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

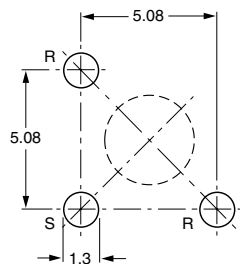


Trimmers BFC2 808 ..... series, horizontal version

Dimensions in millimeters

### ADJUSTMENT

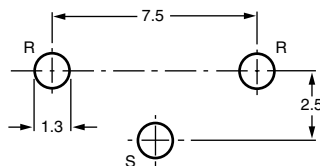
For top adjustment a screwdriver or trimming key can be used; for bottom adjustment a key is required as shown below



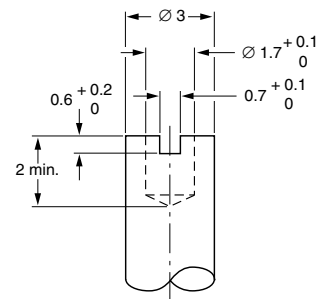
R = rotor, S = stator

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

Hole pattern



R = rotor, S = stator



Bottom adjustment key

## ORDERING INFORMATION

| $C_{min}/C_{max}$<br>(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                     |
| 2.5/27                    | 11279                         | –                   | 51279                     |
| 3/33                      | 11339                         | –                   | –                         |
| 3/40                      | 11409                         | –                   | 51409                     |
| 3/50                      | 11509                         | –                   | 51509                     |

## 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<br>MAX. $C_{min}$ /<br>MIN. $C_{max}$<br>AT 200 kHz<br>(pF) | SPINDLE    | SHAPE<br>OF<br>HEAD | FIG. | ADJ.<br>MODE | DIEL. | TAN $\delta$ AT<br>$C_{max} \times 10^{-4}$ |            | TEMP.<br>COEFF.<br>( $10^{-6}/K$ ) | MIN. $f_{res}$<br>at $C_{max}$<br>(MHz) | COL.<br>OF<br>BASE | SPQ  | CATALOG<br>NUMBER<br>BFC2 ... .. |
|------------------------------------------------------------------------|------------|---------------------|------|--------------|-------|---------------------------------------------|------------|------------------------------------|-----------------------------------------|--------------------|------|----------------------------------|
|                                                                        |            |                     |      |              |       | 1 MHz                                       | 100 MHz    |                                    |                                         |                    |      |                                  |
| 1.4/5.5                                                                | vertical   | round               | 1    | top + bottom | PE    | $\leq 10$                                   | $\leq 25$  | $-250 \pm 350$                     | 850                                     | grey               | 1400 | .... 808 11558                   |
|                                                                        |            |                     | 1    | top          |       |                                             |            |                                    |                                         |                    | 1400 | .... 808 00004                   |
|                                                                        | horizontal | round               | 2    | top + bottom |       |                                             |            |                                    |                                         |                    | 1200 | .... 808 51558                   |
| 2/9                                                                    | vertical   | round               | 1    | top + bottom | PTFE  | $\leq 10$                                   | $\leq 15$  | $-150 \pm 800$                     | 400                                     | yellow             | 1400 | .... 808 00018                   |
| 2/10                                                                   | vertical   | round               | 1    | top + bottom | PP    | $\leq 10$                                   | $\leq 25$  | $-250 \pm 800$                     | 480                                     | yellow             | 1400 | .... 808 11109                   |
|                                                                        |            |                     | 1    | top          |       |                                             |            |                                    |                                         |                    | 1400 | .... 808 00005                   |
|                                                                        | horizontal | round               | 2    | top + bottom | PC    | $\leq 70$                                   | $\leq 100$ | $-150 \pm 800$                     | 250                                     | yellow             | 1200 | .... 808 51109                   |
|                                                                        | vertical   | round               | 1    | top          |       |                                             |            |                                    |                                         |                    | 1000 | .... 808 11004                   |
| 2/15                                                                   | vertical   | round               | 1    | top + bottom | PP    | $\leq 10$                                   | $\leq 25$  | $-250 \pm 600$                     | 450                                     | blue               | 1400 | .... 808 11159                   |
| 2/18                                                                   | vertical   | round               | 1    | top + bottom | PTFE  | $\leq 10$                                   | $\leq 15$  | $-250 \pm 350$                     | 350                                     | green              | 1400 | .... 808 00016                   |
| 2.5/20                                                                 | vertical   | round               | 1    | top          | PET   | $\leq 160$                                  | –          | $0 \pm 1100$                       | 250                                     | green              | 1000 | .... 808 11006                   |
| 2.5/22                                                                 | vertical   | round               | 1    | top + bottom | PP    | $\leq 10$                                   | $\leq 25$  | $-200 \pm 500$                     | 350                                     | green              | 1400 | .... 808 11229                   |
|                                                                        |            |                     | 1    | top          |       |                                             |            |                                    |                                         |                    | 1400 | .... 808 00006                   |
|                                                                        | horizontal | round               | 2    | top + bottom |       |                                             |            |                                    |                                         |                    | 1200 | .... 808 51229                   |
| 2.5/27                                                                 | vertical   | round               | 1    | top + bottom | PC    | $\leq 70$                                   | –          | $-50 \pm 500$                      | 350                                     | red                | 1400 | .... 808 11279                   |
|                                                                        | horizontal | round               | 2    | top + bottom |       |                                             |            |                                    |                                         |                    | 1200 | .... 808 51279                   |
| 3/33                                                                   | vertical   | round               | 1    | top + bottom | PP    | $\leq 10$                                   | –          | $-250 \pm 350$                     | 300                                     | brown              | 1400 | .... 808 11339                   |
| 3/40                                                                   | vertical   | round               | 1    | top + bottom | PC    | $\leq 70$                                   | –          | $-50 \pm 400$                      | 300                                     | violet             | 1400 | .... 808 11409                   |
|                                                                        | horizontal | round               | 2    | top + bottom |       |                                             |            |                                    |                                         |                    | 1200 | .... 808 51409                   |
| 3/50                                                                   | vertical   | round               | 1    | top + bottom | PC    | $\leq 70$                                   | –          | $-50 \pm 500$                      | 250                                     | black              | 1400 | .... 808 11509                   |
|                                                                        | horizontal | round               | 2    | top + bottom |       |                                             |            |                                    |                                         |                    | 1200 | .... 808 51509                   |

**TEST PROCEDURES AND REQUIREMENTS**

| IEC 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                                                                                                                                                  | $\Delta C/C: \leq 1\%$ for $C_{\max} < 40\text{ pF}$ ;<br>$\Delta C/C: \leq 2.5\%$ for $C_{\max} \geq 40\text{ pF}$                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 19                                     |                             | thrust                                                                                                                                | axial thrust of 2 N                                                                                                                                                   | $\Delta C/C: \leq 0.3\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 21<br>21.1<br>21.2                     | Ua<br>Ub                    | robustness of terminations:<br>tensile<br>bending                                                                                     | 1 N<br>1 cycle                                                                                                                                                        | no damage<br>no damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 22                                     | Na                          | rapid change of temperature                                                                                                           | 1 cycle; 0.5 hours at lower and 0.5 hours at upper category temperature                                                                                               | $\Delta C/C: \leq 2\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 23                                     | T<br>Ta<br>Tb               | soldering:<br>solderability<br>resistance to heat                                                                                     | solder bath immersion 3 mm;<br>235 °C; 2 s<br>solder bath: 260 °C; 10 s                                                                                               | good wetting<br>no mechanical damage<br>no mechanical damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 24                                     | Eb                          | impact bump                                                                                                                           | 4000 ± 10 bumps; 40 g; 6 ms                                                                                                                                           | $\Delta C/C: \leq 0.6\%$ ;<br>no mechanical damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 25                                     | Fc                          | vibration                                                                                                                             | frequency 10 to 55 Hz;<br>amplitude 0.35 mm;<br>1.5 hours                                                                                                             | $\Delta C/C: \leq 0.6\%$ ;<br>no mechanical damage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 26<br>26.1<br><br>26.2<br>26.3<br>26.5 | B<br><br>D<br>Aa            | climatic sequence:<br>dry heat<br><br>damp heat accelerated,<br>first cycle<br>cold<br><br>damp heat accelerated,<br>remaining cycles | 16 hours at upper category temperature<br><br>1 cycle; 24 hours; + 40 °C;<br>95 to 100 % RH<br>16 hours; - 40 °C<br><br>1 cycle; 24 hours; + 40 °C;<br>95 to 100 % RH | $\Delta C/C: \leq 4$<br>$\tan \delta: \leq 10 \times 10^{-4}$ for $C_{\max} < 27\text{ pF}$ ;<br>$\tan \delta: \leq 70 \times 10^{-4}$ for $C_{\max} \geq 27\text{ pF}$ ;<br>$\tan \delta: \leq 80 \times 10^{-4}$ for $C_{\max} \geq 40\text{ pF}$<br>$R_{\text{ins}}: \geq 10\,000\text{ M}\Omega$ ;<br>rotor contact R: $\leq 10\text{ m}\Omega$<br>voltage proof:<br>500 V for 1 minute<br>visual examination:<br>no mechanical damage<br>operating torque:<br>1 to 15 mNm for $C_{\max} < 33\text{ pF}$ ;<br>1 to 25 mNm for $C_{\max} \geq 33\text{ pF}$   |
| 27                                     | Ca                          | damp heat steady state                                                                                                                | 21 days; + 40 °C;<br>90 to 95 % RH                                                                                                                                    | $\Delta C/C: \leq 5\%$<br>$\tan \delta: \leq 30 \times 10^{-4}$ for $C_{\max} < 27\text{ pF}$ ;<br>$\tan \delta: \leq 70 \times 10^{-4}$ for $C_{\max} \geq 27\text{ pF}$ ;<br>$\tan \delta: \leq 80 \times 10^{-4}$ for $C_{\max} \geq 40\text{ pF}$<br>$R_{\text{ins}}: \geq 10\,000\text{ M}\Omega$ ;<br>rotor contact R: $\leq 10\text{ m}\Omega$<br>voltage proof:<br>500 V for 1 minute<br>visual examination:<br>no mechanical damage<br>operating torque:<br>1 to 15 mNm for $C_{\max} < 33\text{ pF}$ ;<br>1 to 25 mNm for $C_{\max} \geq 33\text{ pF}$ |
| 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)                   | $\Delta C/C: \leq 1.5\%$<br>$\Delta C/C$ after axial thrust: $\leq 0.3\%$ ;<br>rotor contact R: $\leq 10\text{ m}\Omega$<br>voltage proof:<br>500 V for 1 minute<br>visual examination:<br>no mechanical damage<br>operating torque:<br>1 to 15 mNm for $C_{\max} < 33\text{ pF}$ ;<br>1 to 25 mNm for $C_{\max} \geq 33\text{ pF}$                                                                                                                                                                                                                              |



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