

## Ø 5 mm Film Dielectric Trimmers

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

300 V

### MAXIMUM CONTACT RESISTANCE:

10 mΩ

### MINIMUM INSULATION RESISTANCE:

10 000 MΩ

### CATEGORY TEMPERATURE RANGE:

#### PP

- 40 to + 70 °C

#### PC, PTFE

- 40 to + 85 °C

### CLIMATIC CATEGORY (IEC 60068):

#### PP

40/070/21

#### PC, 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 to 15 mNm

**C<sub>MAX</sub> ≥ 20 pF**

1 to 25 mNm

### MAXIMUM AXIAL THRUST:

2 N

### FEATURES

- Housing diameter 5 mm
- Top and bottom or top adjustment
- Round head
- Vertical version



**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 Tables). The dielectric is a film of polypropylene (PP) or polytetrafluorethylene (PTFE) for the standard versions and polycarbonate (PC) for the economic and hexagonal head versions. The dielectric 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.

### 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<sub>max</sub> and is also subjected to the full test voltage.

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

0.35/1.5 to 4/27 pF

### RATED VOLTAGE (DC):

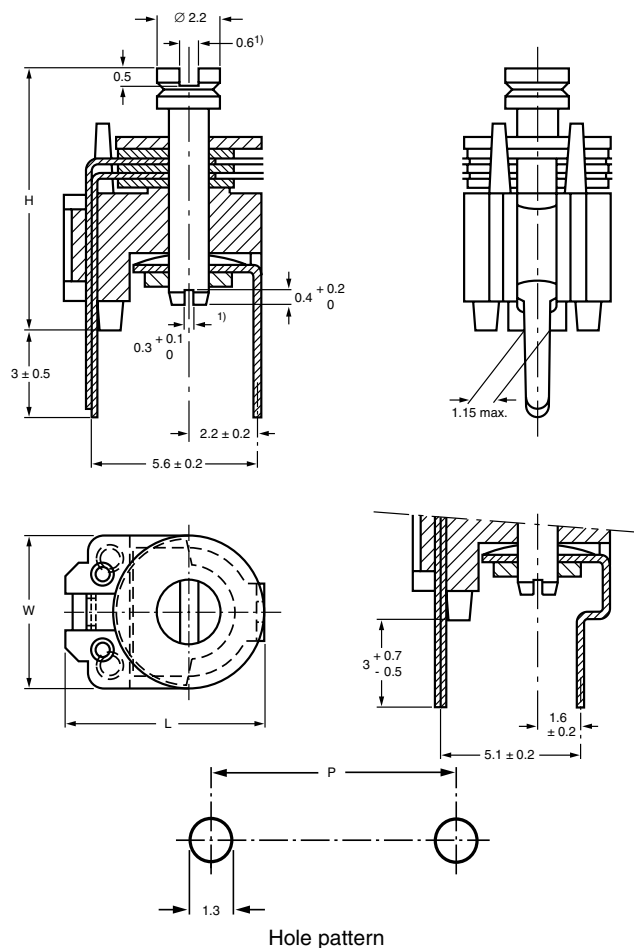
150 V

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

300 V

### LIFE OF TRIMMER:

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



Hole pattern

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

Dimensions in millimeters

**STANDARD VERSIONS; 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

**ECONOMIC VERSIONS; RELEVANT PHYSICAL DIMENSIONS**

TYPE OF HEAD	$H_{\max}$ (mm)	$W_{\max}$ (mm)	$L_{\max}$ (mm)
Round	7.7	5.5	7.3

**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)
<b>STANDARD VERSIONS: POLYTETRAFLUORETHYLENE, ROUND HEAD</b>			
0.35/1.5	22158	-	-
<b>STANDARD VERSIONS: POLYPROPYLENE, ROUND HEAD</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>ECONOMIC VERSIONS: POLYCARBONATE, ROUND HEAD</b>			
1.5/7	-	20126	-
1.6/15	-	20127	-
3/20	-	20123	-
3.5/27	-	20128	-

**ELECTRICAL DATA STANDARD VERSIONS WITH ROUND HEAD**

GUARANTEED MAX. $C_{min}/$ MIN. $C_{max}$ AT 200 KHz (pF)	TAN $\delta$ AT $C_{max} \times 10^{-4}$		TEMP. COEFF. <sup>1)</sup> ( $10^{-6}/K$ )	MIN. $f_{res}$ AT $C_{max}$ (MHz)	COLOUR OF BASE	SMALLEST PACKAGING QUANTITY	CATALOG NUMBER BFC2 ... ..
	1 MHz	100 MHz					
0.35/1.5	$\leq 10$	-	- 450 $\pm$ 550	-	-	1000	.... 808 22158
1.2/5	$\leq 10$	-	- 200 $\pm$ 550	-	grey	1000	.... 808 24508
1.5/5	$\leq 10$	$\leq 25$	- 200 $\pm$ 550	700	grey	1000	.... 808 20508
							.... 808 23508
1.5/7	$\leq 10$	-	- 50 $\pm$ 550	-	grey	1000	.... 808 24708
3/10	$\leq 10$	$\leq 25$	- 250 $\pm$ 550	500	yellow	1000	.... 808 20109
							.... 808 23109
3/15	$\leq 10$	$\leq 25$	- 250 $\pm$ 550	400	blue	1000	.... 808 20159
							.... 808 23159
4/20	$\leq 10$	$\leq 25$	- 250 $\pm$ 400	300	green	1000	.... 808 20209
							.... 808 23209
4/27	$\leq 10$	$\leq 25$	- 250 $\pm$ 400	300	red	1000	.... 808 20279
							.... 808 23279

**Note:**

1. C: 60 % to 80 % of  $C_{max}$ ;  $T_{amb}$ : from + 20 °C to + 70 °C

## ECONOMIC VERSIONS WITH ROUND HEAD

REFERENCE $C_{min}/C_{max}$ (pF)	TAN $\delta$ AT $C_{max} \times 10^{-4}$ (1 MHz)	TEMP. COEFF. ( $10^{-6}/K$ )	COLOUR OF BASE	SMALLEST PACKAGING QUANTITY	CATALOG NUMBER BFC2 ... ..
1.5/7	$\leq 70$	- 50 $\pm$ 550	grey	1000	.... 808 20126
1.6/15	$\leq 70$	- 50 $\pm$ 550	blue	1000	.... 808 20127
3/20	$\leq 70$	- 50 $\pm$ 550	green	1000	.... 808 20123
3.5/27	$\leq 70$	- 100 $\pm$ 400	red	1000	.... 808 20128

## 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	$\Delta C/C: \leq 3\%$ for $C_{max} \leq 10$ pF $\Delta C/C: \leq 2\%$ for $C_{max} > 10$ pF
19		thrust	axial thrust of 2 N	$\Delta C/C: \leq 0.4\%$
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 hours at lower and 0.5 hours 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 $\pm$ 10 bumps; 40 g; 6 ms	$\Delta C/C: \leq 1\%$ ; no mechanical damage
25	Fc	vibration	frequency 10 to 55 Hz; amplitude 0.75 mm; 1.5 hours	$\Delta C/C: \leq 1\%$ ; no mechanical damage
26		climatic sequence:		$\Delta C/C: \leq 4\%$
26.1	B	dry heat	16 hours 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 hours; + 40 °C; 95 to 100 % RH	voltage proof: 300 V for 1 minute
26.3	Aa	cold	16 hours; - 40 °C	visual examination: no mechanical damage
26.5		damp heat accelerated, remaining cycles	1 cycle; 24 hours; + 40 °C; 95 to 100% RH	operating torque: 1 to 20 mNm for $C_{max} < 20$ pF; 1 to 30 mNm for $C_{max} \geq 20$ pF



IEC 60418-1 CLAUSE	IEC 60068 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
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 minute  visual examination: no mechanical damage  operating torque: 1 to 20 mNm for $C_{max} < 20\,pF$ ; 1 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 minute  visual examination: no mechanical damage  operating torque: 0.5 to 22.5 mNm for $C_{max} < 20\,pF$ ; 0.5 to 30 mNm for $C_{max} \geq 20\,pF$



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