Film Dielectric Trimmers

FEATURES

- High temperature type
- Housing dimensions:
  11 mm x 14 mm x 9 mm
- For a basic grid of 2.54 mm
- Top adjustment
- Mounting: radial
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Antennas
- Impedance matching circuits
- Medical
- RF
- For fine adjustment in professional applications

QUICK REFERENCE DATA		
Rated DC voltage		200 V_{DC}
Test DC voltage for 1 min		400 V_{DC}
Maximum contact resistance		5 mΩ
Minimum insulation resistance between stator and rotor		10 000 MΩ
Category temperature range		-40 °C to +125 °C
Climatic category (IEC 60068)		40/125/21
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		1.5 mNm to 25 mNm
Maximum axial thrust		2 N
Capacitance range ($C_{min.}/C_{max.}$)	Single stator type	2.5 pF/20 pF to 7 pF/100 pF
	Differential type	2 pF/12 pF to 7 pF/100 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.

For technical questions, contact: dc-film@vishay.com

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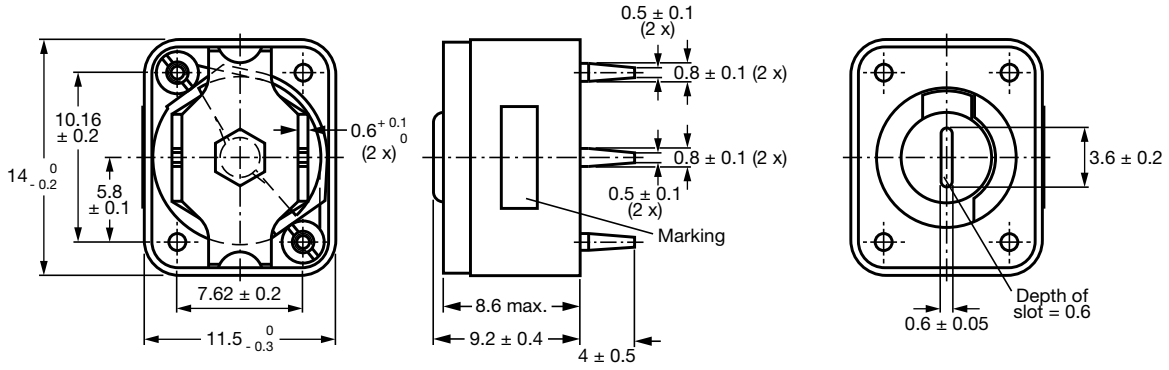
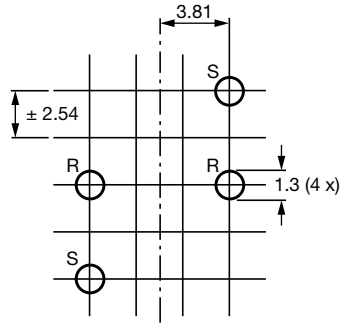
DIMENSIONS in millimeters



Trimmers BFC2 809 070.. series



R = Rotor, S = Stator

Hole pattern

ADJUSTMENT

The trimmers can be adjusted with a screwdriver or trimming key. Capacitance increase is obtained with clockwise rotation.

MARKING

The trimmers are marked with the capacitance value in pF, followed by the letter “E” (single-stator type) or the letter “D” (differential type).

MOUNTING

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

PACKAGING

Blister packs of 70 units each. For smallest packaging quantity (SPQ) see “Electrical Data” table.

ORDERING INFORMATION		
$C_{min.}/C_{max.}$ (pF)	CATALOG NUMBER BFC2 809 070..	
	TOP AND BOTTOM ADJUSTMENT	
	SINGLE STATOR TYPE	DIFFERENTIAL TYPE
2/12	-	018
2.5/20	004	006
4/40	008	009
5/60	011	012
6/80	013	014
7/100	015	016

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ELECTRICAL DATA

GUARANTEED MAX. $C_{min.}$/ MIN. $C_{max.}$ AT 200 kHz (pF)	TYPE	DIEL.	tan δ AT $C_{max.}$ x 10^{-4}		TEMP. COEFF. (2) (10^{-6}/K)	SPQ	CATALOG NUMBER BFC2 ... .
			1 MHz	100 MHz			
2/12	Differential	PTFE (1)	≤ 10	≤ 17	0 ± 200	350	.... 809 07018
2.5/20	Single stator	PTFE	≤ 10	≤ 17	0 ± 200	350	.... 809 07004
	Differential					350	.... 809 07006
4/40	Single stator	PTFE	≤ 10	≤ 17	0 ± 200	350	.... 809 07008
	Differential					350	.... 809 07009
5/60	Single stator	PTFE	≤ 10	≤ 25	0 ± 200	350	.... 809 07011
	Differential					350	.... 809 07012
6/80	Single stator	PTFE	≤ 10	≤ 25	0 ± 200	350	.... 809 07013
	Differential					350	.... 809 07014
7/100	Single stator	PTFE	≤ 10	≤ 25	0 ± 200	350	.... 809 07015
	Differential					350	.... 809 07016

Notes

(1) PTFE = Polytetrafluorethylene

(2) C: 60 % to 80 % of $C_{max.}$; T_{amb}: from +20 °C to +125 °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: ≤ 1 %
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		Bending not allowed
22	Na	Rapid change of temperature	1 cycle; 0.5 h at lower and 0.5 h at upper category temperature	ΔC/C: ≤ 1 %
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	ΔC/C: ≤ 0.2 %; no mechanical damage
25	Fc	Vibration	Frequency 10 Hz to 55 Hz; amplitude 0.35 mm; 1.5 h	ΔC/C: ≤ 0.25 %; no mechanical damage

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TEST PROCEDURES AND REQUIREMENTS				
IEC 60418-1 CLAUSE	**IEC 60068 TEST METHOD**	**TEST**	**PROCEDURE**	**REQUIREMENTS**
26		Climatic sequence:		$\Delta C/C$: ≤ 3
26.1	B	Dry heat	16 h at upper category temperature	tan δ: ≤ 10 x 10^{-4} 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: 400 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: 1.5 mNm to 35 mNm
27	Ca	Damp heat steady state	21 days; +40 °C; 90 % to 95 % RH	$\Delta C/C$: ≤ 3 % tan δ: ≤ 10 x 10^{-4} R_{ins}: ≥ 10 000 MΩ; rotor contact R: ≤ 10 mΩ Voltage proof: 400 V for 1 min Visual examination: no mechanical damage Operating torque: 1.5 mNm to 35 mNm
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)	$\Delta C/C$: ≤ 0.3 % $\Delta C/C$ after axial thrust: ≤ 0.3 %; rotor contact R: ≤ 10 mΩ Voltage proof: 400 V for 1 min Visual examination: no mechanical damage Operating torque: 1 mNm to 50 mNm

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