

Film Dielectric Trimmers

TEST VOLTAGE (DC) FOR 1 MINUTE:

600 V

MAXIMUM CONTACT RESISTANCE:5 m Ω **MINIMUM INSULATION RESISTANCE BETWEEN STATOR AND ROTOR:**10 000 M Ω **CATEGORY TEMPERATURE RANGE:**

- 40 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°

OPERATING TORQUE:**C_{max} < 3.5 pF**

1 to 15 mNm

C_{max} ≥ 3.5 pF

1 to 20 mNm

MAXIMUM AXIAL THRUST:

2 N

FEATURES

- High temperature type
- Housing dimensions:
6 mm x 8 mm x 9 mm
- For a basic grid of 2.54 mm
- Top and bottom adjustment
- Round or hexagonal head
- Vertical version

APPLICATIONS

- For fine adjustment in professional applications

DESCRIPTION:

The trimmers consist of a polysulphone housing, brass rotor and plated brass stator with PTFE film as the dielectric. The stator plate tags are heat sealed to the housing.

The rotor contact surfaces are plated to ensure a long life and a stable contact even under severe climatic conditions. A coloured dot indicates the maximum capacitance.

Cleaning with solvents is not advised.

Versions are available with either a round head or hexagonal head.

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":

< 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.

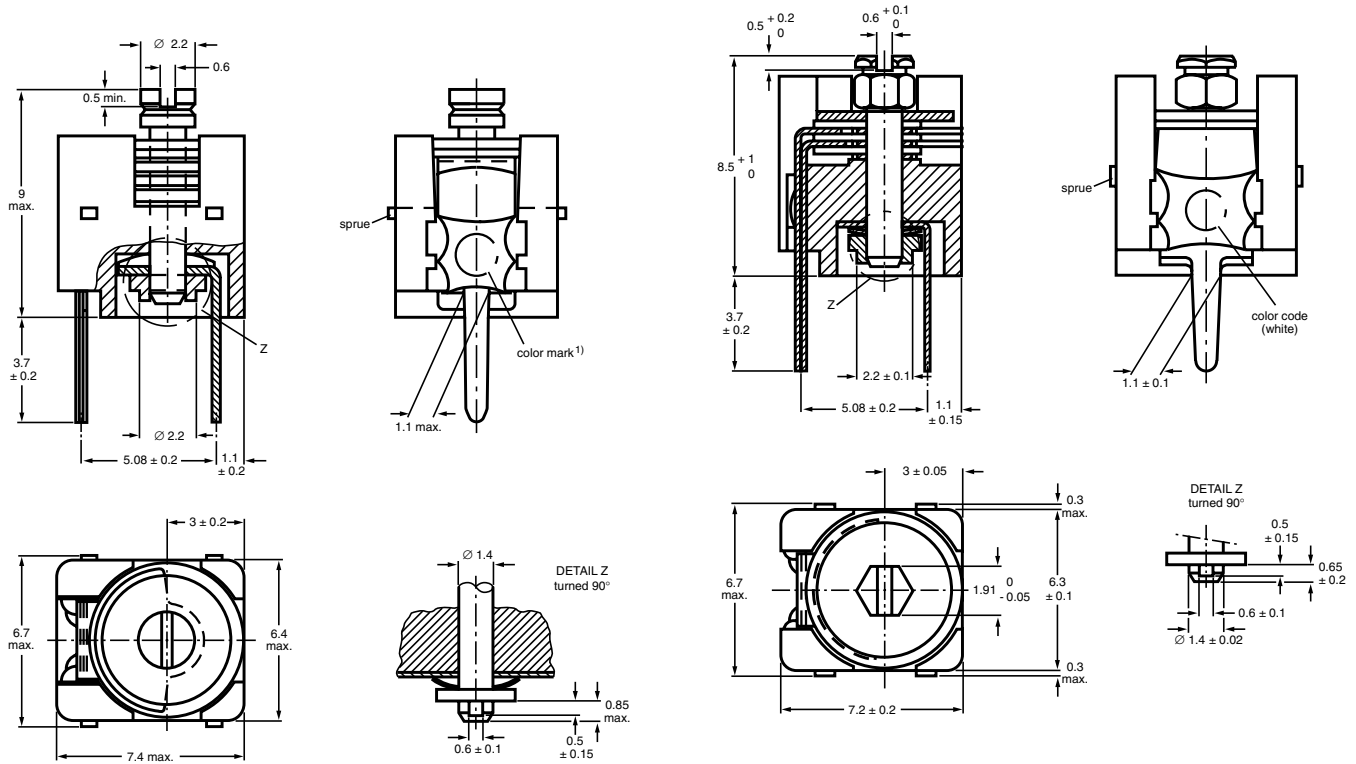
C_{min}/C_{max}:

0.5/2 to 2/18 pF

RATED VOLTAGE (DC):

300 V

**RoHS**
COMPLIANT



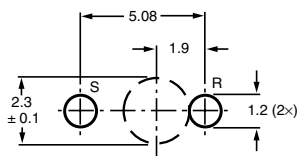
Trimmers 2281 809 05... series, with round heads

Trimmers 2281 808 09... series, with hexagonal heads

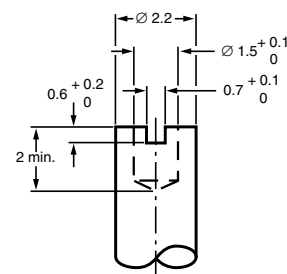
Dimensions in millimeters

ADJUSTMENT

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



Hole pattern



Bottom adjustment key



ORDERING INFORMATION

C _{min} /C _{max} (pF)	CATALOG NUMBER 2281 809 05... OR BFC2 809 05...*		
	TOP AND BOTTOM ADJUSTMENT		
	ROUND HEAD	ROUND HEAD AND FLUX GUARD	HEXAGONAL HEAD
0.5/2	011	-	021
1.2/3.5	215	001	225
1.8/10	216	002	226
2/18	217	003	227

MOUNTING

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

PACKAGING

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

ELECTRICAL DATA

GUARANTEED MAX. C _{min} / MIN. C _{max} AT 200 kHz (pF)	SHAPE OF HEAD	FIG.	TAN δ AT C _{max} × 10 ⁻⁴		TEMP. COEFF. ¹⁾ (10 ⁻⁶ /K)	MIN. f _{res} AT C _{max} (MHz)	COL. OF DOT	SPQ	CATALOG NUMBER 2281 ... or BFC2 ... *	
			1 MHz	100 MHz						
0.5/2	round	1	≤ 10	≤ 20	- 250 ± 350	1200	none	700 809 05011	
	hexag.	2						 809 05021	
1.2/3.5	round	1	≤ 10	≤ 20	- 250 ± 350	850	orange	700 809 05001	
	round	1						 809 05215	
	hexag.	2						 809 05225	
1.8/10	round	1	≤ 10	≤ 20	- 250 ± 350	1200	none	700 809 05002	
	hexag.	2						 809 05216	
	hexag.	2				580	white	700 809 05226	
2/18	round	1	≤ 10	≤ 25	- 250 ± 350	360	red	700 809 05217	
	hexag.	2							700 809 05003
	hexag.	2							700 809 05227

Note

1. C: 60 % to 80 % of C_{max}; T_{amb}: from + 20 °C to + 125 °C

* ordering code for SAP system

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: ≤ 2.5 %; 4 % for 2 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 hours at lower and 0.5 hours at upper category temperature	ΔC/C: ≤ 2.5 %

IEC 60418-1 CLAUSE	IEC 60068 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
23	T Ta Tb	soldering: solderability resistance to heat	solder bath immersion 3 mm; 235 °C; 2 s solder bath: 260 °C; 10 s	good wetting no mechanical damage 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 to 55 Hz; amplitude 0.35 mm; 1.5 hours	$\Delta C/C$: ≤ 0.6 %; no mechanical damage
26 26.1 26.2 26.3 26.5	B D Aa	climatic sequence: dry heat damp heat accelerated, first cycle cold damp heat accelerated, remaining cycles	16 hours at upper category temperature 1 cycle; 24 hours; + 40 °C; 95 to 100 % RH 16 hours; - 40 °C 1 cycle; 24 hours; + 40 °C; 95 to 100 % RH	$\Delta C/C$: ≤ 2.5 tan δ : ≤ 10×10^{-4} for $C_{max} < 18$ pF; tan δ : ≤ 40×10^{-4} for $C_{max} \geq 18$ pF R_{ins} : ≥ 10 000 M Ω ; rotor contact R: ≤ 5 m Ω voltage proof: 600 V for 1 minute visual examination: no mechanical damage operating torque: 1 to 20 mNm
27	Ca	damp heat steady state	21 days; + 40 °C; 90 to 95 % RH	$\Delta C/C$: ≤ 2.5 % tan δ : ≤ 10×10^{-4} for $C_{max} < 18$ pF; tan δ : ≤ 25×10^{-4} for $C_{max} \geq 18$ pF R_{ins} : ≥ 10 000 M Ω ; rotor contact R: ≤ 5 m Ω voltage proof: 600 V for 1 minute visual examination: no mechanical damage operating torque: 1 to 20 mNm
29		mechanical endurance	25 cycles	$\Delta C/C$: ≤ 0.3 %; ≤ 2.5 % for 2 pF $\Delta C/C$ after axial thrust: ≤ 0.3 %; rotor contact R: ≤ 5 m Ω voltage proof: 600 V for 1 minute visual examination: no mechanical damage operating torque: 1 to 20 mNm



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