MICROTHERM
sentronic

F

13

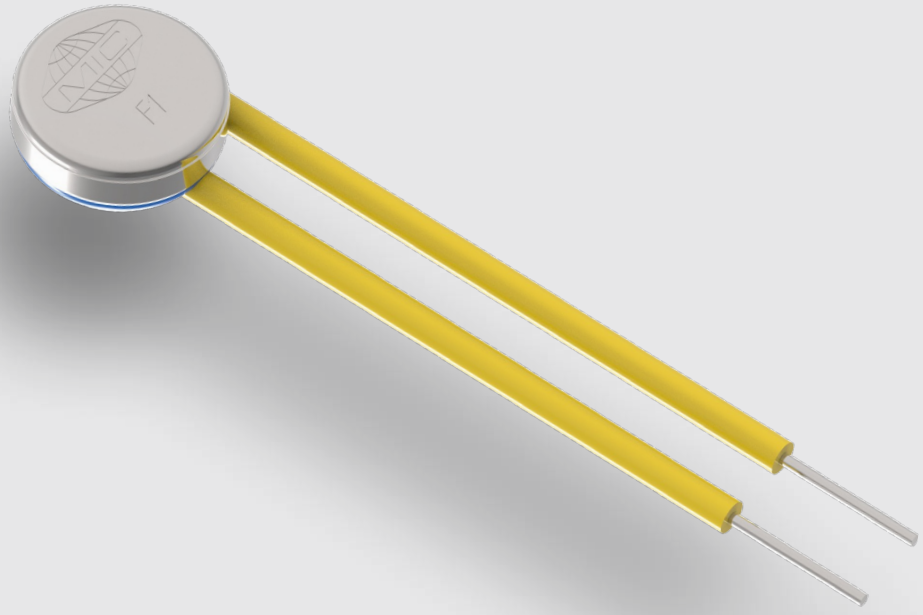
20

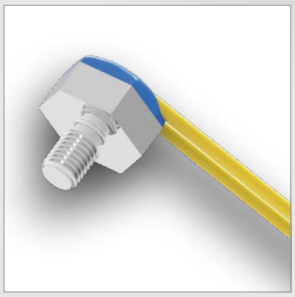
23

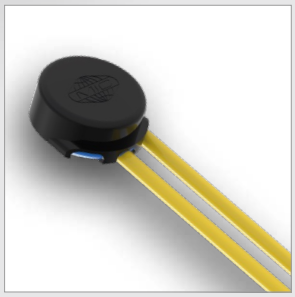
Thermal motor protector

Temperature limiter

Thermal cut-out







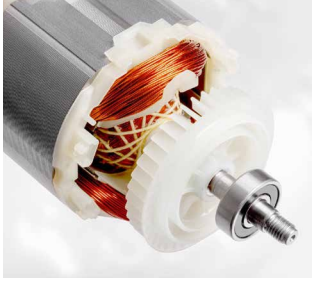
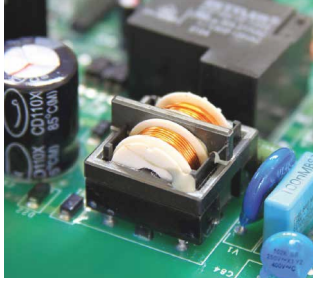
Applications

- Motors
- Transformers
- Coils
- Electronics, sensors

Benefits

- Small dimensions
- Shock and vibration tested
- Leadframe version
- Various kinds of insulations

Description

Switches of the **F series** with a minimum size are very suitable for the **installation in confined conditions**. The switching principle consists of a central contact which opens or closes the circuit of the application when there is a temperature input by means of a pressure spring and a thermo-bimetal snap-disc.

Due to the low mass, a **very fast response** of the switch is possible. The heat is thereby preferably absorbed by the round contact surface of the switch and transmitted to the bimetallic element.

In addition to the direct protection of smaller electrical drives and devices with a rated power of up to approx. 750W, F series switches are often used as **thermal sensors**. In twin or triple configurations, they provide a triggering element in the control circuit for contactors, thus also able to thermally protect **larger three-phase Motors**.

Technical data

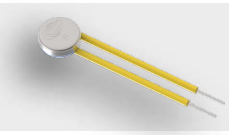
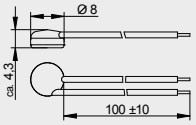
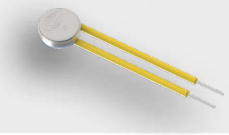
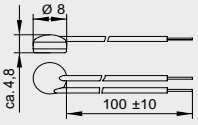
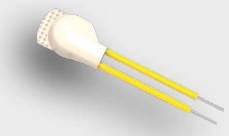
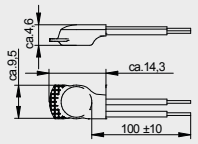
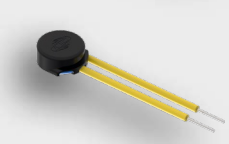
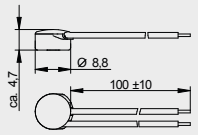
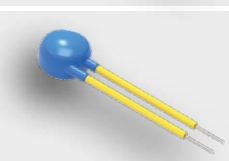
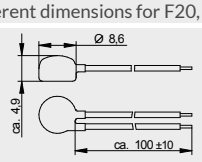
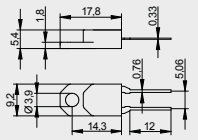
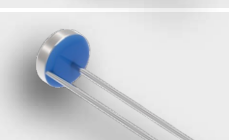
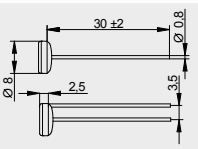
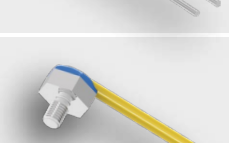
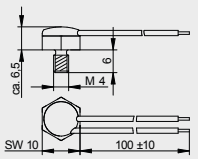
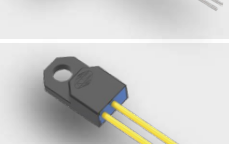
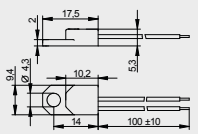
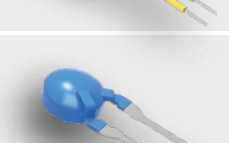
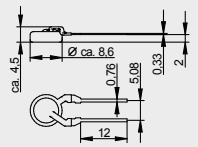
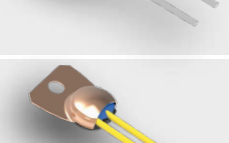
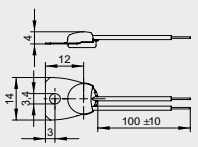
type ratings			control		
			F13A	F23A / E	F20B / G
version			normally closed		normally open
rated current at 250 V 50/60 Hz (power factor 0.95 / 0.6)			3.0 A / 2.5 A	3.0 A / 3.0 A	2.0 A / 1.6 A
switching cycles under rated current			10,000	10,000	7,000
max. current under failure conditions at 250 V 50/60 Hz (power factor 0.95)			4.0 A	6.0 A	4.0 A
switching cycles under max. current			3,000		
temperature rating T_A (steps in 5 °C)			70°C ... 190°C / ... 160°C (CQC)		70°C ... 185°C
tolerances			standard: ± 5 °K		
feature of automatic action			2.C, 1.C		
contact resistance (incl. wire of 100 mm)			< 50 mΩ		
hysteresis			30 K ± 15 °K [1]		
dielectric strength (standard insulation)			2 kV		
vibration resistance (10 to 60 Hz)			100 m/s²		
resistances to impregnation			tight against ordinary resins and lacquers		
degrees of protection provided by enclosures (EN 60529)			IP00		
suitable for use in protection category			I, II		
approvals	VDE / ENEC		EN 60730-1 / -2-9		
	UL		UL 2111 / UL 873 [2]		
	cUL		C22.2 No. 77 / C22.2 No. 24 [2]		
	CQC		GB14536.1-2008 / GB14536.10-2008 [3]		-

[1] at the T_A (upper and lower) limits the hysteresis could deviate 2) on request 3) different power rating

The variety of our product variations is nearly infinite. Microtherm distinguishes itself by a high expert's know-how in the area of customised developments. We will be pleased to give you specific advice during a personal consultation and present you all the options suitable for your application:

- application of plug connectors
- unique packaging and overmolding variations
- specific cable assemblies and many more

Versions

control type	n.c.	n.o.	code	illustration	drawing dimensions (mm)	technical specification	approvals
F13	A					not insulated, potted	VDE, UL, cUL
F20 F23	 A	B			 different dimensions for F20	not insulated, potted	VDE, UL, cUL
F13 F20 F23	A A	B	U254		 different dimensions for F20, F23	shrink cap, potted	VDE, UL, cUL
F13	A		U198		 different dimensions for F20, F23	cap of PPS, potted	VDE, UL, cUL
F20 F23	 A	B	U185				
F13 F20 F23	A A	B	U112		 different dimensions for F20, F23	coated T_A max. 160 °C	VDE, UL, cUL
F20 F23	 A	B	A150 U280			housing of PPS leadframe leads grid dimension 5.08 potted	VDE, UL, cUL
F13 F20 F23	A A	B	A800		 different dimensions for F20, F23	not insulated, potted	VDE, UL, cUL
F20 F23	 E	G	G700			alluminium housing thread M4x6 potted T_A max. 150 °C	VDE, UL, cUL
F13	A		U282			housing of PPS, potted	VDE, UL, cUL
F13 F20 F23	A A	B	A150 U112		 different dimensions for F20, F23	leadframe leads grid dimension 5.08 coated T_A max. 160 °C	VDE, UL, cUL
F13	A	B	B224			CuBe mounting cap combined with U198 / U112	VDE, UL, cUL

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