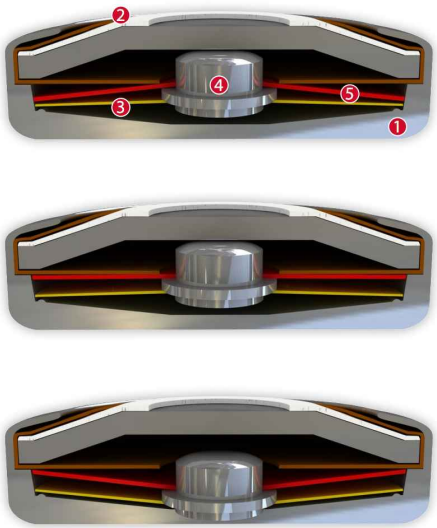
thermik®

DATASHEET

Thermal Protector SM1

Type series F1



Construction and function

The switch mechanism of Type F1 is comprised of five primary parts: 1) a conductive housing, 2) a steel contact cover with stationary contact, 3) a snap-action spring disc, 4) a movable contact, and 5) a bimetallic disc. The conductive housing and steel contact cover form the enclosure, to lock the self-aligning switch mechanism in place. The cover is insulated from the housing, and closes it to appear like a button cell. The snap-action spring disc is the current transfer element and bears the movable contact. It conducts the current flow and self-heating from the bimetallic disc by exercising consistent, steady contact pressure. The bimetallic disc floats within the thermal protector and the movable contact extends through the center of the bimetallic disc without being welded or riveted. When the rated switching temperature is reached, the bimetallic disc snaps into its inverted position and pushes the spring disc downwards. The contact is abruptly opened and the temperature rise of the device being protected is disrupted. If the ambient temperature then falls, the bimetallic disc snaps back into its original position, and the contact is once again closed. The thermal protector may be covered with insulation, mounted into another housing, or left uninsulated. See specifications and ranges described below.

Features:

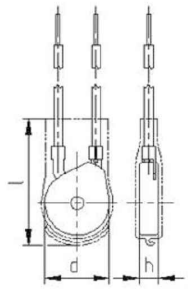
Specially flat design	to fit closely built-up circuits
Quick response sensitivity	Featured by small protector mass and the metal-housing
Excellent long term performance	due to instantaneous switching, fine silver contacts, constant contact resistance and to electrically as well as mechanically unstressed bimetallic disc, reproducible switching temperature values
Instantaneous switching	with always constant contact pressure up to the nominal switching point, resulting in low contact stress
Very short bounce times	< 1 ms
Temperature resistance	by use of high temperature resistant materials and components

Technical Data Type SM1

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

SM1

Type: Normally closed; resets automatically; with connector cables; insulation: Mylar®-Nomex®



Installation height h	from 4,4 mm
Diameter d	10,6 mm
Length of the insulation cap l	19,0 mm

Nominal switching temperature (NST) in 5 °C increments		70 °C - 180 °C
Tolerance (standard)		±2,5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35° C (≤ 80° C NST) -35 K ± 15 K (≥ 85°C ≤ 180° C NST)
	VDE	≥ 35 °C
Installation height		from 4,0 mm
Diameter		10,6 mm
Length of the insulation cap		19,0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0,25 mm^2 / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL
Operational voltage range AC		up until 500 V AC
Rated voltage AC		250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0/cycles		2,5 A / 10.000
Rated current AC cos φ = 0.6/cycles		1,6 A / 10.000
Max. switching current AC cos φ = 1.0/cycles		6,0 A / 3.000
High voltage resistance		2,0 kV
Total bounce time		< 1 ms
Contact resistance (according to MIL-STD. R5757)		≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz		100 m/s^2

Ordering example:

SM1 - 125. 05 0100 / 0100

- Type / version
- NST [°C]
- Tolerance [K]
- Lead lengths [mm] (L_1, L_2)

Marking example:

- Trade mark — **thermik**
- Type / version — **M1**
- NST [°C] . Tolerance [K] — **125.05**

More varieties of the type series F1:

- *SF1 – with or without epoxy; insulation: Mylar®-Nomex®* — *www.thermik.de/data/SF1*
- *UM1 – with crimped/soldered connections (incl. customer specific connections)* — *www.thermik.de/data/UM1*
- *PM1 – with plug connections (incl. customer specific connections)* — *www.thermik.de/data/PM1*
- *CM1 – with connector cables; without insulation* — *www.thermik.de/data/CM1*
- *CF1 – with or without epoxy; without insulation* — *www.thermik.de/data/CF1*

*In accordance with the thermik text • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.