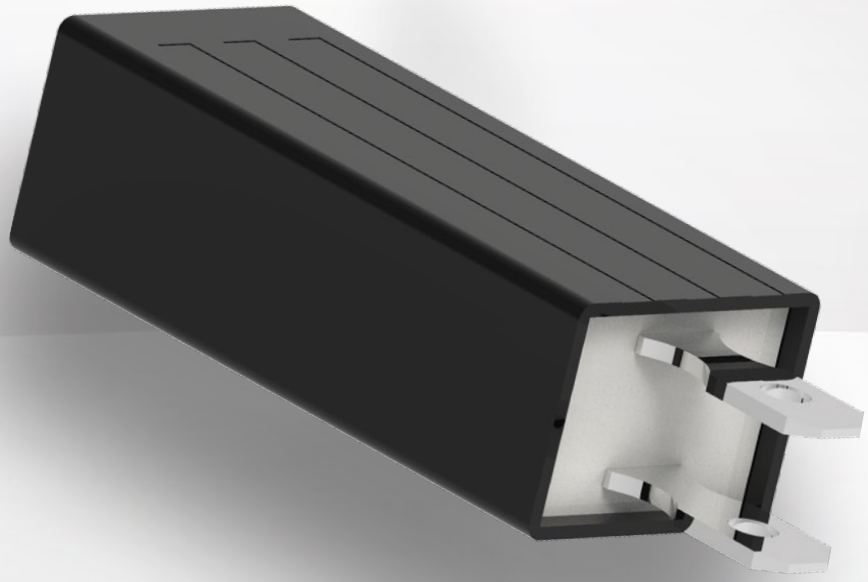
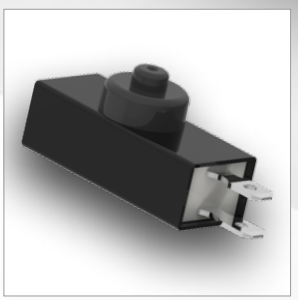
MICROTHERM

Current and time based switch
Temperature limiter
Thermostat



Applications

- Household appliances
- Electronics
- Fan heaters
- Automotive industry

Benefits

- More safety by self hold types
- Various housings
- Manual reset
- Customized ratings

Description






Series D switches are based on a **complex system consisting of a contact spring unit and a thermo-bimetal snap-disc**. When heating up to the fixed switching point, the contact opens and thus interrupts the power circuit.

They are very flexible to use: Due to the different types of reset and the adjustable current sensitivity for quick shutdowns, the D switches offer **high quality solutions**, especially in very specific safety concepts.

Temperature switch with an **automatic reset D10**: After a certain cooling phase (temp. hysteresis) the contact switches back automatically.

Temperature limiter with **manual reset D20**: After opening the contacts and the subsequent cooling the contacts remain open until a manual reset is performed on the reset pin.

Temperature switch with **electr. self-hold D30 (230V) / D40 (120V)**: After opening the contacts the switch is heated by a parallel connected resistor and thus kept open. The automatic reset is only performed through a mains disconnection, or off-switching of the device in which the temperature switch is installed.

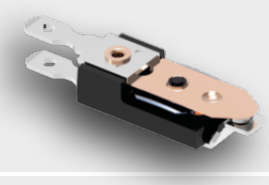
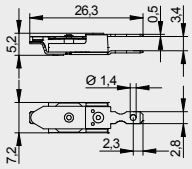
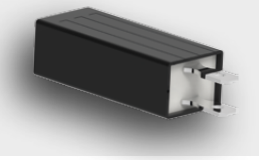
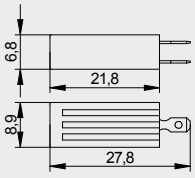
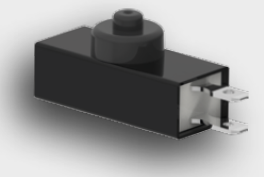
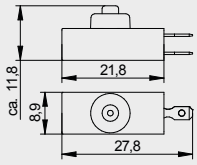
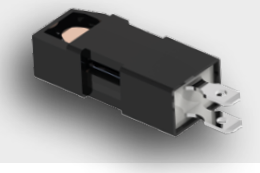
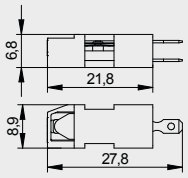
Technical data

type ratings			control			
			D10V	D20V	D30V	D40V
function			automatic	manual	self hold 230 V	self hold 120 V
version			normally closed			
VDE	rated current at 50 / 60 Hz (power factor 0.95 / 0.6)		16 A / 2.5 A (250 V)	16 A / 2.5 A (250 V)	16 A / 2.5 A (230 V)	19.2 A / 2.5 A (120 V)
	switching cycles		10,000	1,000	10,000	8,000
	temperature range T_A (steps in 5 °C)		70 °C ... 160 °C	70 °C ... 130°C / 140 °C	70 °C ... 160 °C	
UL	rated current at 50 / 60 Hz (power factor 1,0 / 0,75)		16 A / 6.3 A (250 V)			16 A / - (125 V)
	switching cycles		6,000			
	temperature range T_A (steps in 5 °C)		70 °C ... 160 °C			
max. current (power factor 0.95)			25 A			
switching cycles under max. current			200			
tolerance			Standard: ± 5 °C			
feature of automatic action			1.B, 2.B	2.B, 2.C	2.C.AK	
contact resistance			< 50 mΩ			
hysteresis / reset temperature [1]			30 °C ± 15 °C / -	- / < -20 °C ; < -10°C	- / < -20 °C [2]	
degree of protection provided by enclosures (EN 60529)			IP00			
suitable for use in protection class			I, II			
approvals	VDE / ENEC		EN 60730-1 / -2-9			
	UL		UL 873			
	CSA		C22.2 No. 24 [3]			
	CQC		GB14536.1-1998 / GB14536.10-1996 [4]			

[1] at the T_A (upper and lower) limits the hysteresis could deviate [2] without air flow [3] different power rating [4] details on request

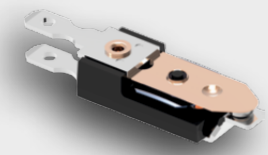
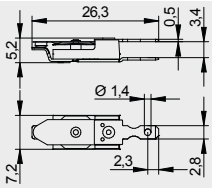
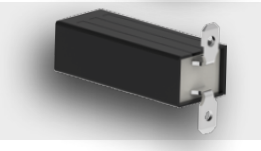
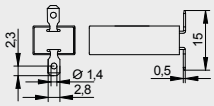
For special applications version P is available with a very low self heating rate.
Manual reset: The maximum operating force must not exceed 6 N. The control should not be reset before the starting conditionsare reached, meaning there should be a satisfactory cooling down time!
Technical data on request.

Versions

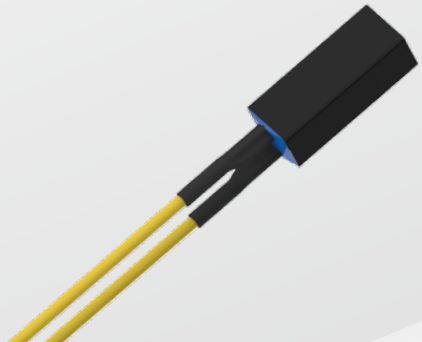
TCO		illustration	drawing dimensions (mm)	technical specification	approvals
standard	current - time based [1]				
D10V	D12V			base of thermoset-ting plastic	VDE, UL, CSA
D10V D30V D40V with housing G115	D12V D32V D42V with housing G115			housing PPS base of thermoset-ting plastic UL: T_A bis 130°C	VDE, UL, CSA
D20V with housing G776	D22V with housing G776			manual reset housing PA/PPS base of thermoset-ting plastic	VDE, UL, CSA
D10V with housing G774	D22V with housing G774			housing PA/PPS base of thermoset-ting plastic	VDE, UL, CSA

[1] For current-time based types (execution D, J, K, L, M, P, R, V) the following information must be provided:

- DC or AC voltage U_N in Volts.
- Continuous operating current I_C in Amps at which the switch must not respond.
- Current level I_0 in Amps at which the switch must respond and the response time t_0 (in seconds ± tolerance).
- Ambient temperatures which could be experienced both in normal operation and in switching conditions.
- Maximum current in Amps.

code	used in TCO	illustration	drawing dimensions (mm)	technical specification	approvals
standard	D10, D12 D20, D22 D30, D32 D40, D42			terminals for soldering CuNi18Zn20 [1]	VDE, UL, CSA
A308	D10, D12 D20, D22 D30, D32 D40, D42			terminals for soldering bent 90° CuNi18Zn20 [1]	VDE, UL

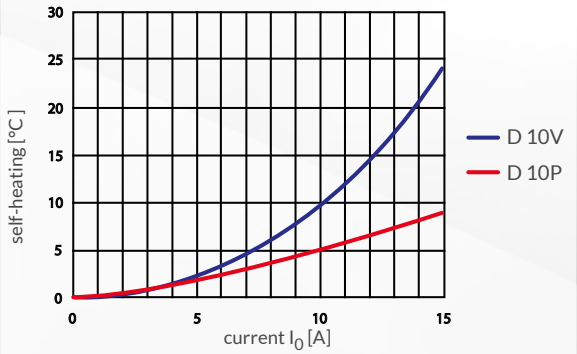
[1] P types have terminals of CuFe2P material



D series switches are also available with lead wires in combination with insulating shrink sleeves.
Technical data on request.

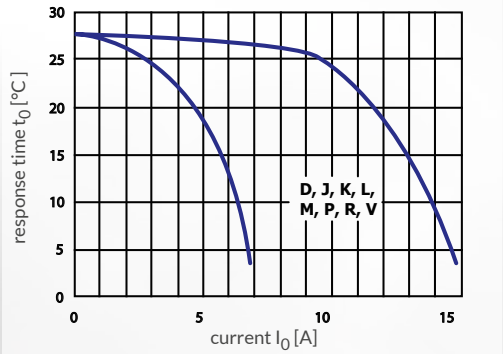
MICROTHERM

Current vs. self heating



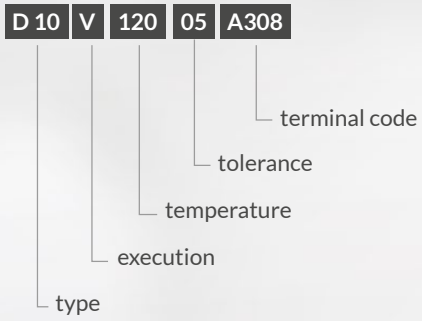
Test conditions:
Measurement in air flow and lead wires of 1.5 mm².

Current vs. response time



TCO variations for current-time based applications.

Ordering example



Marking

D10V	type and execution
E	country (D=Germany)
12005	response temperature (120°C), tolerance (± 5°C)
047	date of manufacture (May 2017)
D12D	type and execution
H	country (H=China)
--123	customized type with drawing number
047	customized type with drawing number

Microtherm GmbH

Täschenwaldstr. 3
75181 Pforzheim
Deutschland

Tel.: +49 7231 787-0
Fax: +49 7231 787-155

info@microtherm.de
www.microtherm.de