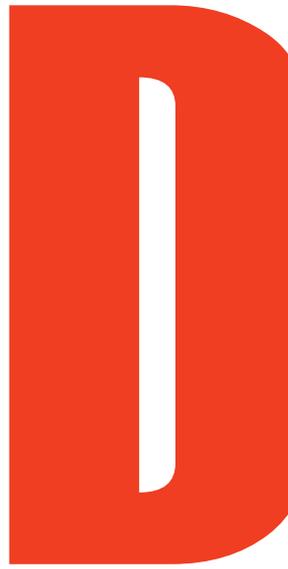


Current and time based switch  
Temperature limiter  
Thermostat



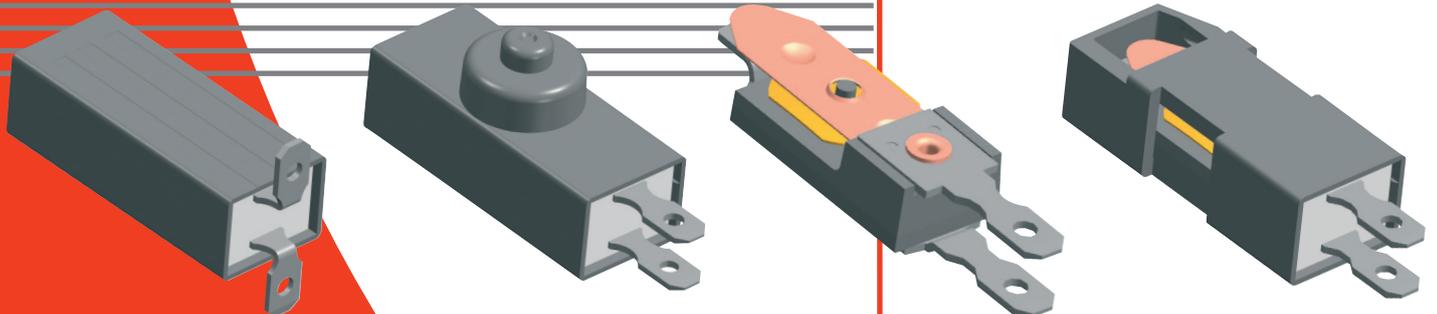
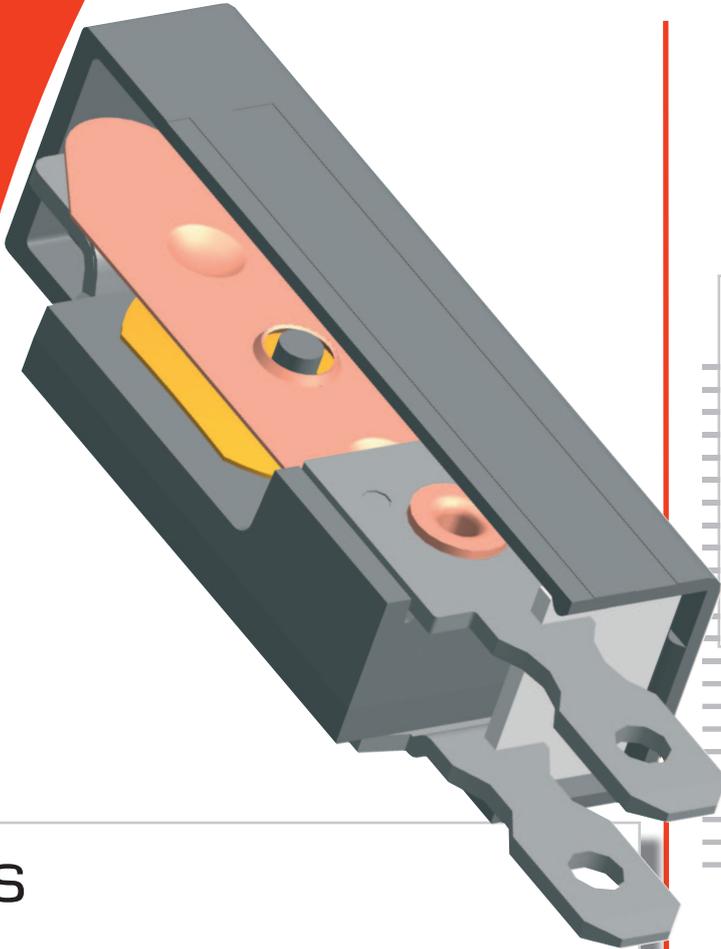
10  
20  
30  
40

## Applications

- Household appliances
- Electronics
- Fan heaters
- Automotive industry

## Benefits

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



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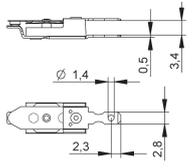
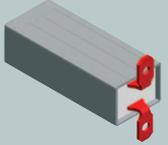
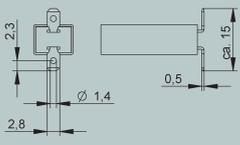
# Technical data ( standard types )

ratings		TCO	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 <sub>a</sub> ( steps in 5 K )		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 <sub>a</sub> ( steps in 5 K )		70 °C ... 160 °C			
max. current ( power factor 0.95 )			25 A			
switching cycles under max. current			200			
tolerance			standard: ± 5 K			
feature of automatic action			1.B, 1.C	2.B, 2.C	2.C.AK	
contact resistance			< 50 mΩ			
hysteresis / reset temperature <sup>1)</sup>			30 K ± 15 K / -	- / < -20 °C ; < -10°C	- / < -20 °C <sup>2)</sup>	
degrees 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 <sup>3)</sup>			
	CQC		GB14536.1-1998 / GB14536.10-1996 <sup>4)</sup>			

<sup>1)</sup> at the T<sub>a</sub> (upper and lower) limits the hysteresis could deviate <sup>2)</sup> without air flow

<sup>3)</sup> different power rating <sup>4)</sup> details on request

## Terminals

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

<sup>1)</sup> P-types have terminals of CuFe2P material

TCO		illustration	drawing dimensions ( mm )	technical specification	approvals
standard	current-time based <sup>1)</sup>				
D10V	D12V			base of thermosetting plastic	VDE, UL, CSA
D10V D30V D40V with housing G115	D12V D32V D42V with housing G115			housing PPS base of thermosetting plastic UL: T <sub>a</sub> up to 130°C	VDE, UL, CSA
D20V with housing G776	D22V with housing G776			manual reset housing PA/PPS base of thermosetting plastic	VDE, UL, CSA
D10V with housing G774	D12V with housing G774			housing PA/PPS base of thermosetting plastic	VDE, UL, CSA

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

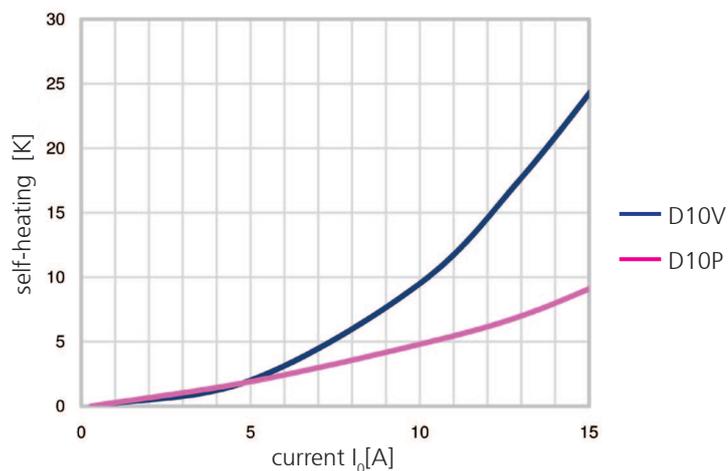
- DC or AC voltage  $U_N$  in Volts.
- Continuous operating current  $I_c$  in Amps at which the switch must not respond.
- Current level  $I_0$  in Amps at which the switch must respond.
- Response time  $t_0$  (in seconds  $\pm$  tolerance) within which the switch must respond after reaching  $I_0$ .
- Ambient temperatures which could be experienced both in normal operation and after the switch has responded.
- Maximum current in Amps.

\* ) temperature sensitive area

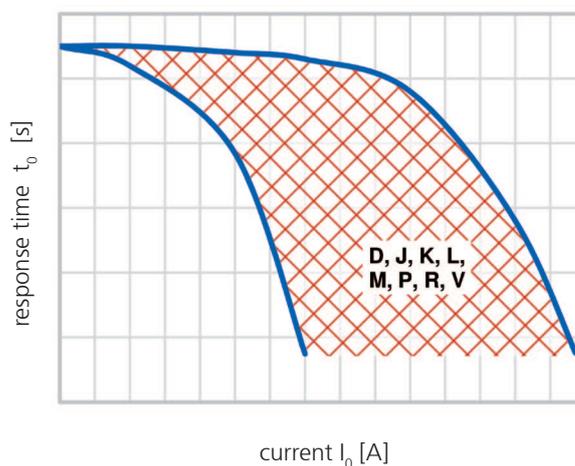
- For special applications version P is available with a very low self heating rate.
- Manual reset: The maximum operating force should not exceed 6 N. The control should not be reset before the starting conditions are reached, meaning there should be a satisfactory cooling down time!

Technical data on request.

## Characteristics of current vs. self heating and current vs. time



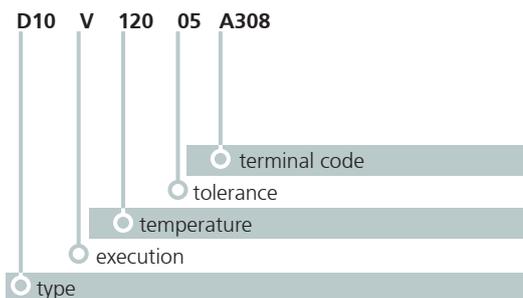
Test conditions:  
Measurement in air flow and lead wires of 1.5 mm<sup>2</sup>.



TCO variations for current-time based applications.

## Ordering and marking example

### Ordering example



### Marking

- D10V** type and execution
- D** country (D=Germany)
- 12005** response temperature (120°C), tolerance ( $\pm 5K$ )
- 051** date of manufacture (May 2011)
- D12D** type and execution
- H** country (H=China)
- 123** customised type with drawing number
- 051** date of manufacture (May 2011)



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Deviations from standard controls on request.

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