

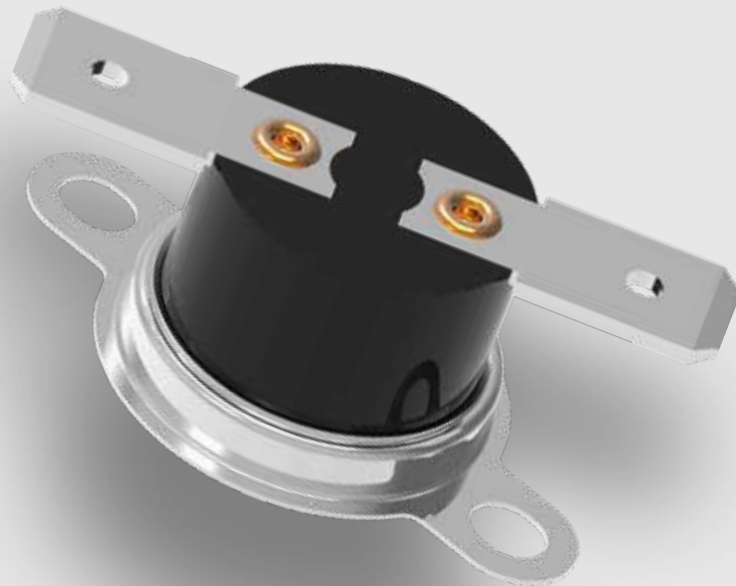
Thermal cut-out thermostat
Automatic or manual reset

R

27

28

29



Applications

- Domestic appliances
- Coffee machines
- Heaters and heating Elements
- Antifreeze
- Diesel preheating (automobile)

Benefits

- Ceramic housing available for high temperatures
- Low tolerances up to $\pm 3K$
- various attachments
- Low hysteresis up to 10K

Description

The R27/R28/R29 temperature switches are very reliable bimetal technology components, offering a long life time. The normally closed contacts open when reaching the predefined temperature by snapping of a bimetal disc. Temperature setting is defined through conditioning (aging, stamping, ...) of the disc. After a corresponding cooling down, the bimetal disc snaps back to the original position and closes the current circuit again or remains in open position until manually reset. These R27/R28/R29 types are perfect **surface mount components**, offering high temperature sensibility and can be used in a wide range of white goods, automotive technology, mechanical engineering, kitchen devices.



Technical data

ratings		type						
		03EN		52N	60EN ¹⁾	05EN	15N	23EN
function		automatic				manual reset		
version		normally closed (n.c.) / normally open (n.o.)				normally closed (n.c.)		
VDE	rated current 250V AC (cos φ 0,95)	16 A	10 A	16 A	250 V AC, 10 A 1.000 switching cycles 0°C ...100°C	16 A	16 A	16 A
	switching cycles	30,000	100,000	10,000		3,000	6,000	3,000
	temperature T _A (steps in 5 K)	max. 150°C	max. 150°C	max. 230°C ²⁾		max. 150°C	max. 250°C	max. 150°C
UL	rated current 240V AC (cos φ 1,0)	---	10 A	250 V, 10 A	0°C ...100°C	10 A	16 A	10 A
	switching cycles	---	100,000	100,000		6,000	6,000	6,000
	temperature T _A (steps in 5 K)	---	max. 150°C	max. 230°C		40°C ..150°C	40°C ..250°C	40°C ..150°C
tolerance		T _A < 100°C: ±3 K / T _A ≥ 100°C: ±4 K / T _A > 140°C: ±5 K / T _A ≥ 170°C: ±8 K / T _A ≥ 200°C: ±10 K				T _A < 100°C: ±4 K / T _A ≥ 100°C: ±5 K / T _A ≥ 150°C: ±8 K / T _A ≥ 200°C: ±10 K		
contact resistance		< 30 mΩ						
hysteresis / reset temperature		T _A < 130°C: 25K / T _A > 130°C: 25 ±15K / T _A > 200°C: 30K ±20K				---		
degree of protection of enclosure (EN 60529)		IP00 (60EN IP64)						
dielectric strength		AC 1.500 V/1min. or AC 1.800 V/1 sec.						
suitable for use in protection class		I, II						
certifications	VDE			EN 60730-1 / -2-9				
	UL			UL873 / UL60730-1A / -2-9 ⁴⁾				
	CSA			C22.2 No. 24 ³⁾				

¹⁾ no certification ²⁾ type 55H only VDE: 7A, 250V AC, 30.000 cycles, up to 260°C ³⁾ different ratings ⁴⁾ type 15N

Caps

	cap code 1 in standard execution (T _A 50°C - 199°C), material aluminium
	cap code T (T _A 0°C - 50°C and T _a ≥ 200°C and all normally open types), material aluminium

Deviations from standard controls (caps, terminals, fixings) on request.

Especially for electronic applications with voltage 6...120 Vac / 6...30 Vdc and current 10...100 mA there are switches with crossbar-contacts available. Controls as single operation device (SOD) up to 150°C and reset temperature minus 35°C are available (Typ 81ES).

Standard types

type	n.c. normally closed = 1	n.o. normally open = 3	code	illustration	drawing dimensions (mm)	technical description
R28 11EN	1	3	low mounting form, housing thermosetting plastic, 9 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R28 03EN	1	3	housing thermosetting plastic, 12 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R28 52N	1	3	housing ceramic, 12 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R27 05EN	1	---	manual, reset pin, housing thermosetting plastic			terminals 6.3 x 0.8, small, loose bracket, aluminium cap, reset pin
R27 15N	1	---	manual, reset pin, housing ceramic			terminals 6.3 x 0.8, small, loose bracket, aluminium cap, ceramic reset pin
R29 23EN	1	---	manual, reset pin, housing thermosetting plastic			terminals 6.3 x 0.8, small, loose bracket, aluminium cap, reset pin
R28 60EN	1	3	tight against humidity, leads, housing thermosetting plastic			lead wire, standard lead length 300 mm, fixed bracket, aluminium cap, degree of protection IP64

Terminals

code	used in type	illustration	drawing dimensions (mm)	technical description
Ms: 05 (0°) Ms: 10 (45°) Ms: 06 (90°)	R27, R28, R29			terminals 4.8 x 0.5, brass nickel plated up to T _A max. 150°C, >150°C steel nickel plated, also available angle 45 / 90 deg.
Ms: 45 (0°) Ms: 46 (90°)	R27, R28, R29			terminals 4.8 x 0.8, brass nickel plated up to T _A max. 150°C, also available angle 90 deg.
Ms: 03 (0°) Ms: 09 (45°) Ms: 04 (90°) St: 93 (0°) St: 94 (90°)	R27, R28, R29			terminals 6.3 x 0.8, brass nickel plated up to T _A max. 150°C, >150°C steel nickel plated, also available angle 45 / 90 deg.
00	R28			solder terminals, T _A max. 140°C
41 (0°) 42 (90°)	R27, R28, R29			solder terminals, nickel plated, also available angle 90 deg. T _A max. 140°C
SA	R27, R28			PCB terminals, solder terminals, T _A max. 140°C

Brackets

code	used in type	illustration	drawing dimensions (mm)	technical description
4	R27, R28, R29			loose bracket, small
3	R27, R28, R29			loose bracket
S	R27, R28, R29			stud of M5 x 6 brass, SW17 (also other variations available)
M, J, E, K, L	R27, R28, R29			pipe mounting bracket, sizes: 2/8", 3/8", 4/8", 5/8", 6/8"
A+B	R27, R28, R29			fixed bracket
Variation angle degrees for fix brackets (A + B)	R27, R28, R29			Possible angles: 0 / 45 / 90 / 135 degrees

Ordering example

R28	03	E	N	1	5	T	03	4	50±3	40±4
									reset temperature	
									response temperature	
									fixing code	
									terminal code	
									cap code	
									housing material (2 ceramic / 5 plastic)	
									contact execution (1 normally closed / 3 normally open)	
									type of contact (N normal contact / P low current)	
									European version	
									base type	
									Microtherm type	

Marking

A100	norm. closed (B norm. open) resp. temperature
03EN XXXX	type manufacture code
XXXX	date of manufacture

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