

# Thermal Cutouts

## Temperature Protection for Electronics

### ADVANTAGES

- broad product range for many applications and loads
- widest selection of connections and housings
- minimal contact resistance

E-Type

### DESCRIPTION

Types E 05, E 11, E 15, E 16, E 18, E 21, E 22, E 23 and E 26 are **thermal cutouts**. Within limits they can also be used as temperature regulators.

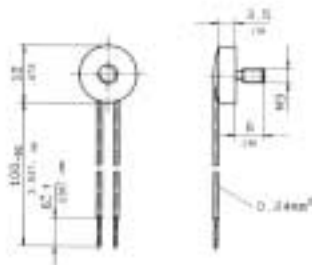
A bimetal snap disc with single or double contact opens or closes an electric circuit when reaching a pre-set temperature. Reset follows after a substantial drop in temperature.

Heat transfer from all sides results from heat conduction or radiation onto the base of the housing.

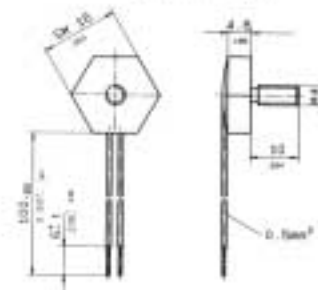
Standard version: aluminium, black anodised.

### DIMENSIONS

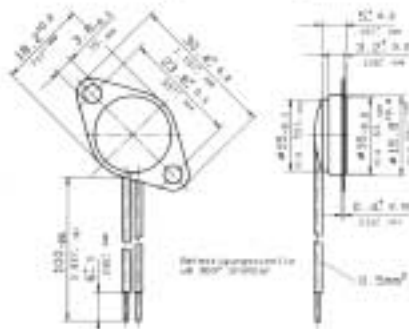
E 05 (Standard)



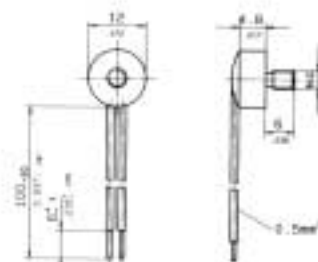
E 11 (Standard)



E 18 (Standard)



E 21 (Standard)



# MICROTHERM



Microtherm International Corporation

## APPLICATIONS

Temperature monitoring, control and signalling in electronic and electrical equipment.

### Examples:

Electronic components such as transistors, thyristors, diodes, triacs  
 Power resistors  
 Heat sinks  
 Printed circuits  
 Amplifiers  
 Projectors  
 Electrical machinery and apparatus  
 Generating sets  
 Heat exchangers  
 Plastic and metal housings

## RESPONSE TEMPERATURES




When selecting the response temperature, the heating and cooling characteristics of the housing should be considered. Temperature testing is carried out with a rate of rise 0.1 °C/min.

For cutout types E 05, E 11 and E 18 with response temperatures under 71 °C, the published electrical loading should be reduced by upto 50 %, as these types are current sensitive.

Close tolerances on the response temperature or reset temperature, as well as smaller differentials are all possible on request.

Reset differential as standard is between 10 °C and 50 °C. Minimum rate of temperature change 0.1 K/min.

## TECHNICAL DATA

Type	E 05 / E23	E 15 / E 16	E 11 / E 18 / E 21 / E 22 / E 26
Voltage rating* 50 – 60 Hz*	250 V	250 V	250 V
Current rating cos $\varphi = 1,0^*$	2.0 A	2.0 A	6.3 A
Current rating cos $\varphi = 0,6^*$	1.2 A	1.6 A	4.0 A
Max. load at cos $\varphi = 1,0$ without damage			
250 V AC	3.0 A	6.3 A	10.0 A
110 V AC	3.5 A	8.0 A	12.0 A
60 V DC	0.6 A	1.0 A	3.0 A
42 V DC	0.8 A	1.2 A	4.2 A
6/12/24 V DC	1.0 A	1.5 A	5.5 A
Contact arrangement			
Switching operations at rated current*	Test Class I	Test Class I	Test Class I
Contact resistance	< 60 m $\Omega$	< 60 m $\Omega$	< 60 m $\Omega$
Dielectric strength across open contacts	650 V <sub>ac</sub> 50 Hz	1500 V <sub>ac</sub> 50 Hz	1000 V <sub>ac</sub> 50 Hz
Response temperature range	from +80 °C to +150 °C (353 to 423 K)	from +50 °C to +150 °C (323 to 423 K)	from +50 °C to +150 °C (323 to 423 K)
Standard tolerance	$\pm 3$ K $\pm 5$ K $\pm 10$ K	$\pm 3$ K $\pm 5$ K $\pm 10$ K	$\pm 3$ K $\pm 5$ K $\pm 10$ K
Dielectric strength housing to earth		P 300 500 V <sub>ac</sub> 50/60 Hz P 301 1000 V P 302 2000 V P 303 2500 V P 304 4000 V	
Max. continuous temperature		150 °C	
Possible acceleration		3 g (vibration proof)	
Protection	sealed against external elements e. g. dust oil, lacquer, resin et		
Connections standard	Leads 0,25 mm <sup>2</sup> (AWG 24) black	Leads T 11 normally closed 0.5 mm <sup>2</sup> (AWG 22), yellow T 10 normally open 0.25 mm <sup>2</sup> (AWG 24), black	Leads 0,6 mm <sup>2</sup> (AWG 22) yellow
Switch element	F 11	normally closed T 11 / normally open T 10	B11

Note: \*Approved ratings – Other values on request.

## INSTALLATION HINTS

It is important to ensure good heat transfer to the cutout: it should be placed directly onto the heat source.

Housings are voltage-free (except G 800) and can be installed without additional insulation.

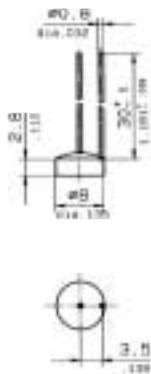
The cutouts can be attached to metal surfaces or housings and, depending on the exact version, can be screwed, clipped, clamed or soldered on.

G 800 version can be positioned direct onto a circuit board.

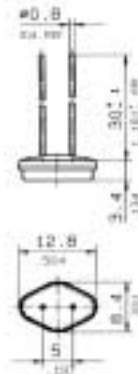
# HOUSINGS

Style	Description
G 254	E 18 $\varnothing$ 16x5 Al black as E 18 but without mounting flange
G 700	E 05 SW10x3,7 M4x6 Al black threaded stud mounting
G 701	E 05 as E 05 G 800 however only 1 wire connection $\varnothing$ 1.5
G 702	E 05 $\varnothing$ 12x3,5 M4x6 CuZn threaded stud mounting
G 703	E 11 $\varnothing$ 16x4,8 M4x6 Al black threaded stud with solid wire leads
G 707	E 11 $\varnothing$ 15,7x4,4 M5x6 CuZn central fixing
G 711	E 11 as G 703 but with leads
G 714	E 21 SW12x4,8 M4x5 CuZn threaded stud
G 716	E 21 as G 703 but with 2.8x0.5 tabs
G 718	E 11 SW 16x4,8 M4x10 Al black threaded stud and leads
G 722	E 18 as E 18 but with narrow flange
G 723	E 18 as E 18 but with 2.8x0.5 tabs
G 724	E 18 as E 18 but with narrow flange and 2,8x0,5 tabs
G 726	E 11 $\varnothing$ 16x4,8 M4x6 Al black threaded stud and leads
G 800	E 05 E 11 E 21 tinned Cu lead wires

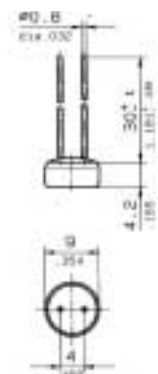
**E 05  
G 800**



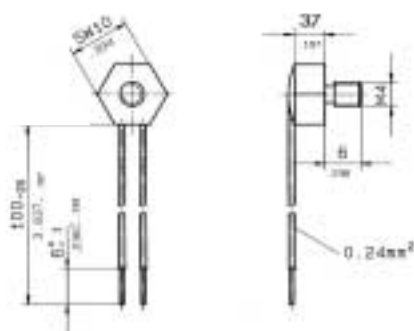
**E 11  
G 800**



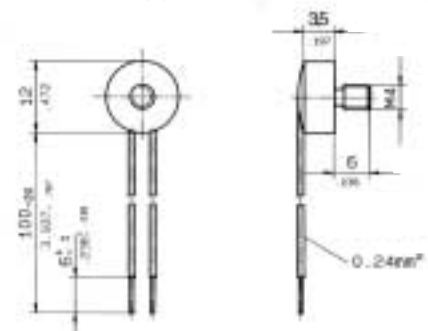
**E 21  
G 800**



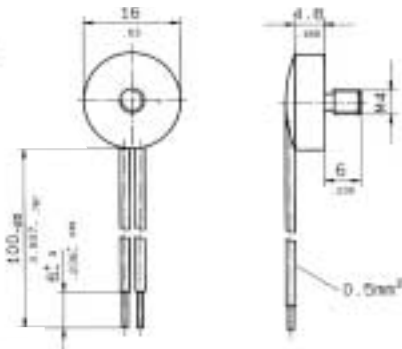
**E 05  
G 700**



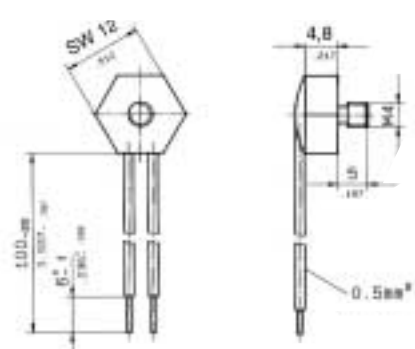
**E 05  
G 702**



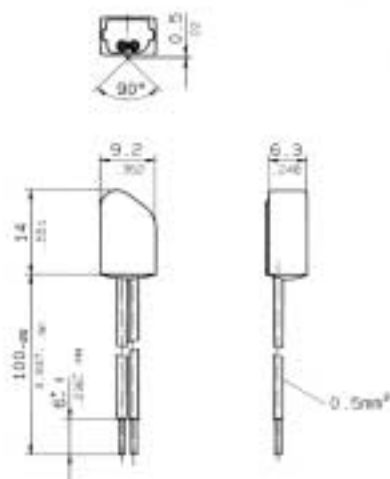
**E 11  
G 703/711**



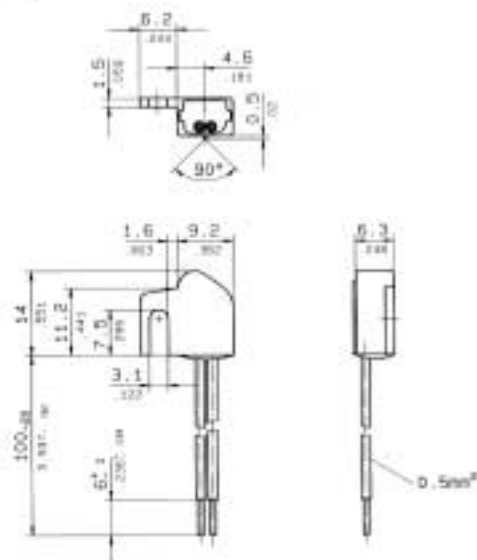
**E 21  
G 714**



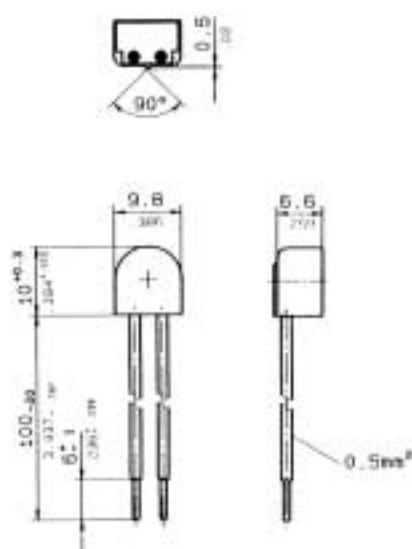
E 15



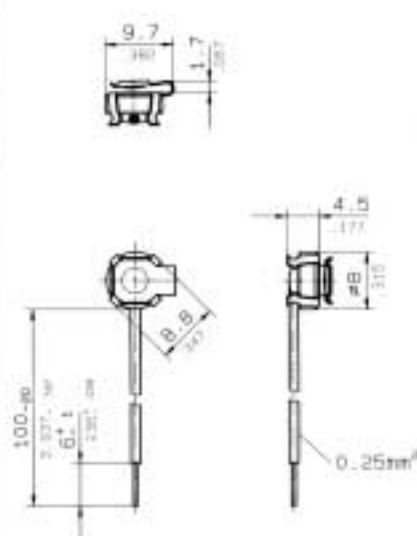
E 16



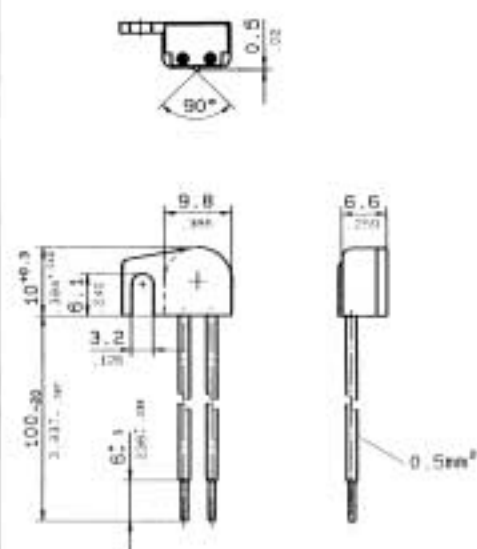
E 22



E 23



E 26



### SPECIAL CONNECTIONS

Leads or single wire from 0,25 mm<sup>2</sup> to 1,0 mm<sup>2</sup>, Lengths from 40 mm to 10 000 mm with or without stripped ends. Leads fitted with DIN push-on terminations or crimp connectors. Freon or oil resistant leads, or PTFE, PVF<sup>2</sup>, Nomex or Silicone leads available from stock.

### IMPORTANT

Leads are specified according to insulation class and dielectric strength.

### MARKING

Response temperature in clear text (5 °C steps).  
Normally closed = blue (epoxy)  
Normally open = red (epoxy)  
Special markings available on request.

### APPROVALS

Life expectancy, nominal voltage and current ratings according to VDE 0631 or EN 60730. Further approvals – Information on request.

### STANDARD QUALITY

Production item testing  
Voltage test, Switch function test,  
Nominal switching temperature.

### ORDERING INFORMATION

Quality	Type	Response temperature	Version
100	E 11	125 °C ±10 K	G 703

We reserve the right to change specifications without prior notice.

Company Address:  
Microtherm GmbH  
Taschenwaldstraße 3  
D-75181 Pforzheim

Postal address:  
Microtherm GmbH  
Postfach 1208  
D-75112 Pforzheim

Phone +49 (0) 72 31 787-0  
Fax +49 (0) 72 31 787-155  
Internet: <http://www.microtherm.de>  
eMail: [mic-pforzheim@microtherm.de](mailto:mic-pforzheim@microtherm.de)