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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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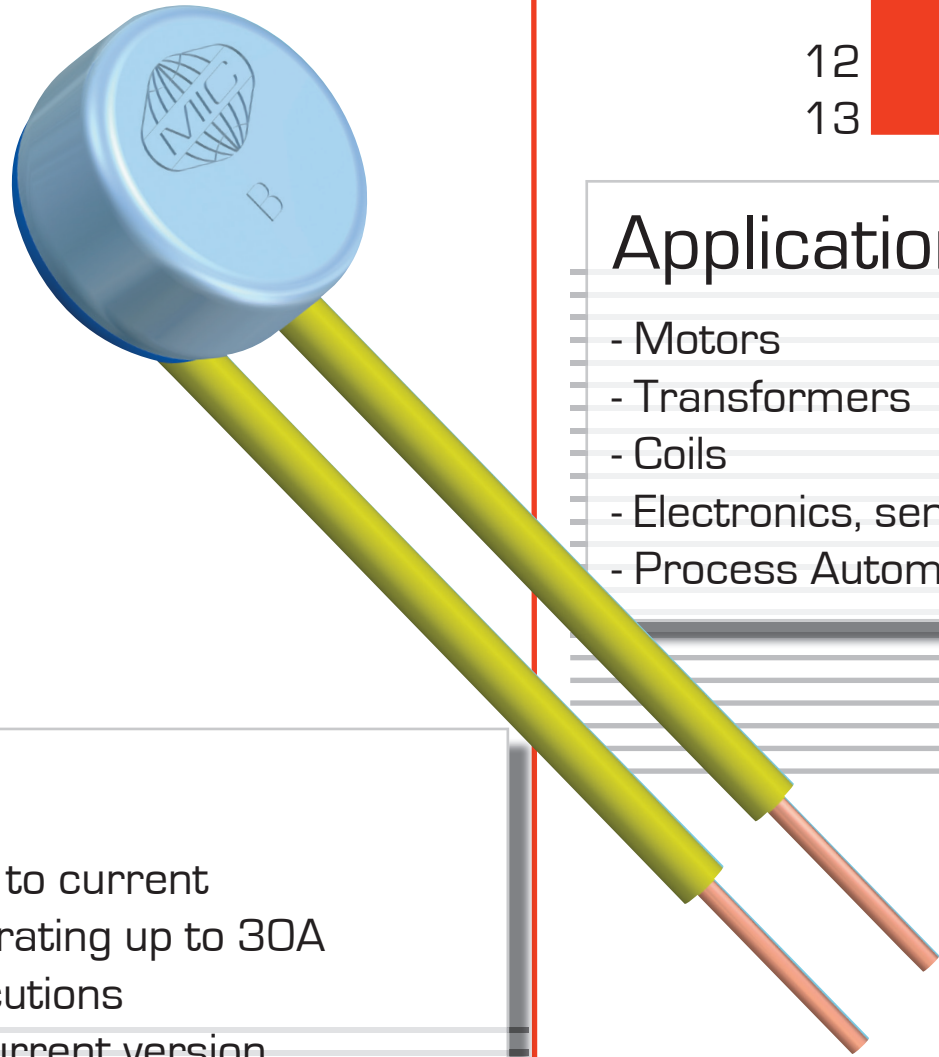
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Thermal motor protector  
Temperature limiter  
Thermal cut-out

# B

12  
13

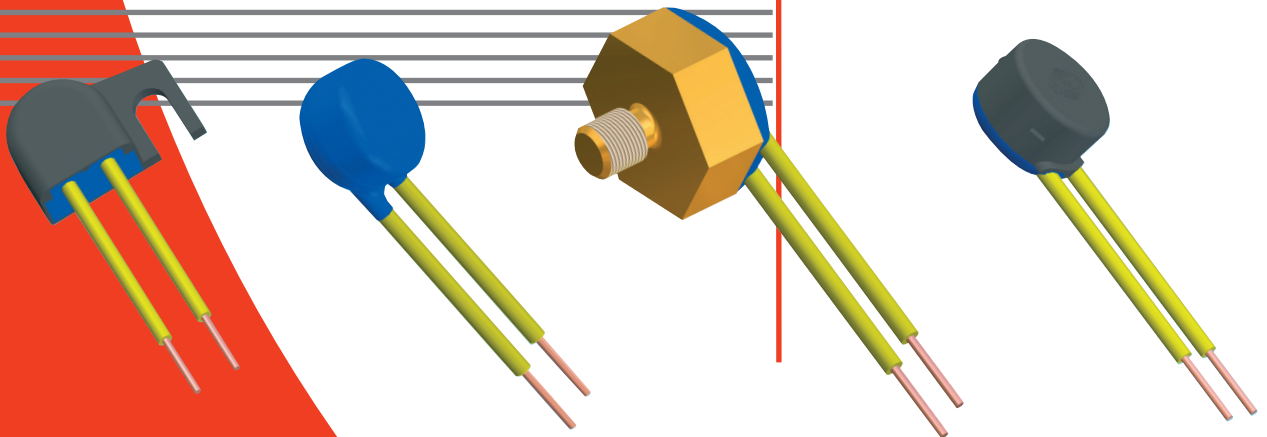


## Applications

- Motors
- Transformers
- Coils
- Electronics, sensors
- Process Automation





## Benefits

- Non-sensitive to current
- High current rating up to 30A
- Manifold executions
- Special low current version



CANTHERM

## Technical data

| type ratings  | control    | B12A / E  |  |                | B12B / G         | B13N / T               |
|---|------------|---|--|----------------|------------------|------------------------|
| version   |            | normally closed   |  |                | normally open    | normally closed/ open  |
| rated current at 250 V 50/60 Hz (cos φ 0.95 / 0.6)      |            | 6.3 A / 6.0 A   | 10.0 A / 6.0 A                                 | 13.0 A / 6.0 A | 5.0 A / 1.6 A    | 1...100 mA (24 Vdc)    |
| switching cycles under rated current                    |            | 10,000  | 5,000  | 1,000          | 5,000            | 10,000                 |
| max. current at 250 V 50/60 Hz (cos φ 0.95)             |            | 30.0 A  |  |                |                  | -                      |
| switching cycles under max. current                     |            | 100   |  |                |                  | -                      |
| temperature rating T <sub>a</sub> (steps in 5 K)        |            | 70 °C ... 190 °C  | 70 °C ... 160 °C                               |                | 70 °C ... 155 °C | 70 °C ... 160 / 155 °C |
| tolerances  |            | standard: ± 5 K   |  |                |                  |                        |
| feature of automatic action                             |            | 1.B.M, 2.B, 1.C   |  |                | 1.B              | -                      |
| contact resistance (incl. wire of 100 mm)               |            | < 50 mΩ   |  |                |                  |                        |
| hysteresis  |            | 30 K ± 15 K <sup>1)</sup>   |  |                |                  |                        |
| dielectric strength (standard insulation)               |            | 2 kV  |  |                |                  | -                      |
| shock / vibration testing (similar to EN 50155)         |            | 400 m/s <sup>2</sup> sine half wave / 100 m/s <sup>2</sup> 5 Hz ... 2.000 Hz sine   |  |                |                  |                        |
| resistances to impregnation                             |            | tight against ordinary resins and lacquers  |  |                |                  |                        |
| degrees of protection provided by enclosures (EN 60529) |            | IP00  |  |                |                  |                        |
| suitable for use in protection category                 |            | I, II   |  |                |                  | -                      |
| approvals   | VDE / ENEC |  | EN 60730-1 / -2-3 <sup>2)</sup> / -2-9         |                |                  |                        |
|   | UL         |  | UL File Number E46827                          |                |                  |                        |
|   | CSA / cUL  |  | C22.2 No. 77 / C22.2 No. 24 <sup>2)</sup>      |                |                  |                        |
|   | CQC        |  | GB14536.1-1998 / GB14536.10-1996 <sup>2)</sup> |                |                  |                        |

<sup>1)</sup> at the T<sub>a</sub> (upper and lower) limits the hysteresis could deviate, for T<sub>a</sub> > 130°C the hysteresis is 30K -15K/+30K <sup>2)</sup> details on request

## Standard wire (length 100 ± 10 mm, stripped 6 ± 1 mm)

| Cantherm lead | Cantherm code      | temperature max. | operating voltage max. | diameter insulation | cross section diameter 1)    | UL style  |
|---------------|--------------------|------------------|------------------------|---------------------|------------------------------|-----------|
| black         | ACDA               | 150 °C           | 300 V                  | 1.57 mm             | AWG24 / 0.24 mm <sup>2</sup> | 3266/3398 |
| yellow        | AEDC               |                  |                        | 1.80 mm             | AWG20 / 0.48 mm <sup>2</sup> |           |
| black         | AFDA               |                  |                        | 2.15 mm             | AWG18 / 0.96 mm <sup>2</sup> |           |
| white         | LCDB               | 200 °C           | 600 V                  | 0.90 mm             | AWG24 / 0.24 mm <sup>2</sup> | 3557      |
| white         | LEDB               |                  |                        | 1.26 mm             | AWG20 / 0.61 mm <sup>2</sup> |           |
| white         | LFDB               |                  |                        | 1.50 mm             | AWG18 / 0.96 mm <sup>2</sup> |           |
| black         | ASDA <sup>2)</sup> | 150 °C           | 300 V                  | 1.65 mm             | AWG20 / 0.81 mm              | 3266/3398 |
| white         | DEDB               | 200 °C           | 300 V                  | 1.51 mm             | AWG20 / 0.81 mm              | 1180      |

<sup>1)</sup> AWG20 is recommended <sup>2)</sup> Solid Wire

Additional wires available upon request.

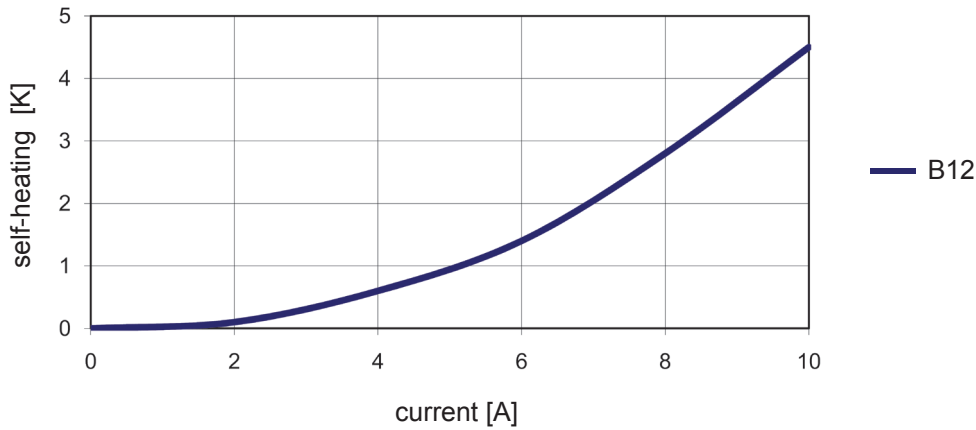
| control type | nc | no | Cantherm code       | illustration | drawing dimensions ( mm ) | technical specification | approvals <sup>1)</sup> |
|--------------|----|----|---------------------|--------------|---------------------------|-------------------------|-------------------------|
| B12          | A  | B  | Class B<br>U103   C |              |                           | shrink cap potted       | VDE, UL, cUL            |
| B13          | N  | T  | Class F<br>U107   G |              |                           | shrink cap potted       | VDE, UL, cUL            |
| B12          | A  | B  | U155   X            |              |                           | cap of PPS potted       | VDE, UL, cUL            |
| B13          | N  | T  | U186   3            |              |                           | cap of PPS potted       | VDE, UL, cUL            |

# Specific variations

| control type | nc | no | Cantherm code      | illustration | drawing dimensions ( mm ) | technical specification              | approvals <sup>1)</sup> |
|--------------|----|----|--------------------|--------------|---------------------------|--------------------------------------|-------------------------|
| B12          | A  | B  | none   0           |              |                           | not insulated potted                 | VDE, UL, cUL, CSA       |
| B13          | N  | T  | none   0           |              |                           | not insulated potted                 | VDE, UL, cUL, CSA       |
| B12          | A  | B  | U112   L           |              |                           | coated                               | VDE, UL, cUL            |
| B13          | N  | T  | U112   L           |              |                           | coated                               | VDE, UL, cUL            |
| B12          | A  | B  | U294   G           |              |                           | housing of PPS potted                | VDE, UL, cUL            |
| B13          | N  | T  | U294   G           |              |                           | housing of PPS potted                | VDE, UL, cUL            |
| B12          | A  | B  | Wire<br>A800   IZA |              |                           | not insulated potted                 | VDE, UL, cUL            |
| B13          | N  | T  | Wire<br>A800   IZA |              |                           | not insulated potted                 | VDE, UL, cUL            |
| B12          | E  | G  | G702   C           |              |                           | aluminium housing thread M4x6 potted | VDE, UL, cUL            |
| B13          | N  | T  | G702   C           |              |                           | T <sub>a</sub> max. 150 °C           | VDE, UL, cUL            |
| B12          | E  | G  | G714   F           |              |                           | brass housing thread M4x5 potted     | VDE, UL, cUL            |
| B13          | N  | T  | G714   F           |              |                           | T <sub>a</sub> max. 150 °C           | VDE, UL, cUL            |

<sup>1)</sup> B12 only

# Heating by current



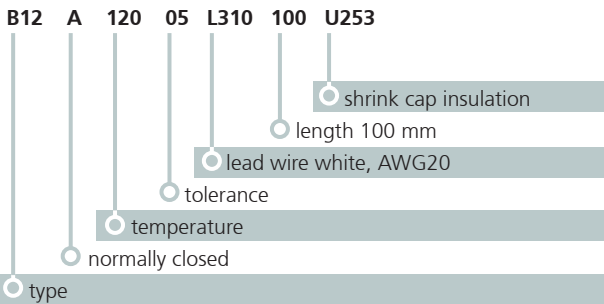
The diagram is measured with a thermal control without any insulation in an oil bath.

Attention:

The heating depends on the thermal conduction of the control to the equipment or part which should be protected.

# Ordering and marking example

## Microtherm Ordering Example



Deviations from standard controls on request.

## Microtherm Marking

- B12A** type (B12 nc)
- 12005** response temperature (120°C), tolerance ( $\pm 5K$ )
- 049D** date of manufacture (April 2009), country (D=Germany)

## Cantherm Ordering Example B12A12005AEDCC0E

| B12  | A               | 120   | 05                  | AE                                   | D              | C               | C                  | 0                 | E             |
|------|-----------------|-------|---------------------|--------------------------------------|----------------|-----------------|--------------------|-------------------|---------------|
| type | normally closed | temp. | tolerance<br>+/-5°C | wire<br>leads<br>UL3398<br>20<br>AWG | length<br>D=4" | color<br>yellow | insulation<br>U103 | housing<br>- none | strip<br>.25" |

## Cantherm Marking

- B12A** type (B12 nc)
- 12005** response temperature (120°C), tolerance ( $\pm 5K$ )
- 124C** date of manufacture (Dec. 2014), country (C = Canada)



**CANTHERM**<sup>TM</sup>

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