

## Double Micro Relay K (THT – THR)

- Small power relay
- Limiting continuous current 30A
- Minimal weight
- Low noise operation
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions
- For single version refer to Single Micro Relay K

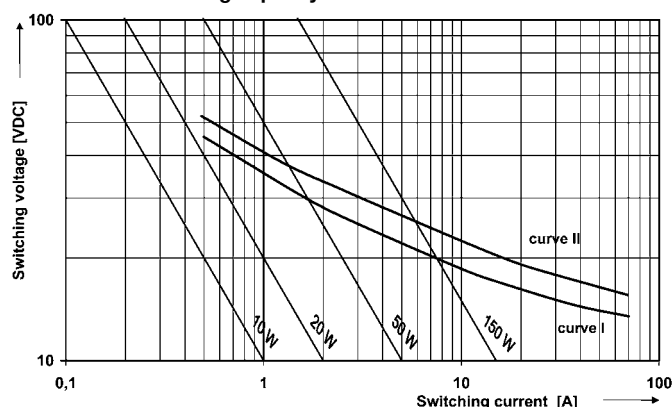
### Typical applications

Car alarm, door control, door lock, hazard warning signal, heated front/rear screen, immobilizer, lamps front/rear/fog light, interior lights, seat control, sun roof, turn signal, window lifter, wiper control.

### Contact Data

|                                                                                                          |                            |
|----------------------------------------------------------------------------------------------------------|----------------------------|
| Contact arrangement                                                                                      | 2 form C, 2 CO             |
| Rated voltage                                                                                            | 10/12VDC                   |
| Rated current, form A/form B                                                                             | NO/NC<br>30A/25A           |
| Limiting continuous current, form A/form B                                                               |                            |
| 23°C                                                                                                     | 30/25A                     |
| 85°C                                                                                                     | 20/15A                     |
| Limiting making current                                                                                  | 40A <sup>1)</sup>          |
| Limiting breaking current                                                                                | 30A                        |
| Contact material                                                                                         | AgSnO <sub>2</sub>         |
| Min. recommended contact load                                                                            | 1A at 5VDC <sup>2)</sup>   |
| Initial voltage drop at 10A, typ./max.                                                                   | 30/300 mV                  |
| Operate/release time                                                                                     | typ. 3/1.5ms <sup>3)</sup> |
| Electrical endurance                                                                                     |                            |
| -40°C, +25°C, +85°C and 14 VDC,<br>form C (CO), cyclic temperature<br>motor reverse blocked, 25A, 0.77mH | >1x10 <sup>5</sup> ops.    |
| wiper 25A make/5A break,<br>generator peak -20A on NC, L=1.0mH                                           | >1x10 <sup>6</sup> ops.    |
| form A contact (NO), cyclic temperature<br>resistive 20A                                                 | >3x10 <sup>5</sup> ops.    |

### Max. DC load breaking capacity



Load limit curve I: safe shutdown, arc extinguishes during transit time.

Load limit curve II: safe shutdown, no stationary arc.

Load limit curves measured with low inductive resistors verified for 1000 switching events.



086C/R2\_fw1b

### Contact Data (continued)

- Mechanical endurance > 5x10<sup>6</sup> ops.
- 1) The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5VDC for 12VDC load voltages. For a load current duration of maximum 3s for a make/break ratio of 1:10.
  - 2) See chapter Diagnostics of Relays in our Application Notes or consult the internet at <http://relays.te.com/appnotes/>
  - 3) Measured at nominal voltage without coil suppression unit. A low resistive suppression device in parallel to the relay coil increases the release time and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding

### Coil Data

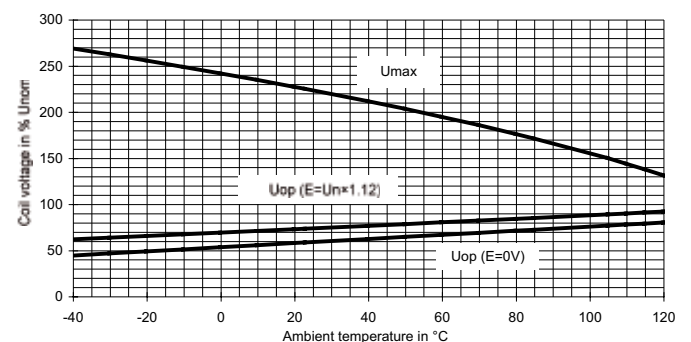
|                    |       |
|--------------------|-------|
| Rated coil voltage | 12VDC |
|--------------------|-------|

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-----------------------------------|---------------------|
| 001       | 12                | 6.9                 | 1.5                 | 254                               | 567                 |
| 002       | 10                | 5.7                 | 1.25                | 181                               | 552                 |

All figures are given for coil without pre-energization, at ambient temperature +23°C.

### Coil operating range



Does not take into account the temperature rise due to the contact current  
E = pre-energization

### Insulation Data

|                             |                       |
|-----------------------------|-----------------------|
| Initial dielectric strength |                       |
| between open contacts       | 500VAC <sub>rms</sub> |
| between contact and coil    | 500VAC <sub>rms</sub> |

### Double Micro Relay K (THT – THR) (Continued)

## Other Data

|                                                                 |                                                           |
|-----------------------------------------------------------------|-----------------------------------------------------------|
| EU RoHS/ELV compliance                                          | compliant                                                 |
| Ambient temperature                                             | -40 to +105°C                                             |
| Cold storage, IEC 60068-2-1                                     | 1000h; -40°C                                              |
| Dry heat, IEC 60068-2-2                                         | 1000h; +125°C                                             |
| Climatic cycling with condensation,<br>EN ISO 6988              | 20 cycles, storage 8/16 h                                 |
| Temperature cycling (shock),<br>IEC 60068-2-14, Na              | 100 cycles; -40/+125°C                                    |
| Temperature cycling,<br>IEC 60068-2-14, Nb                      | 35 cycles; -40/+125°C                                     |
| Damp heat cyclic,<br>IEC 60068-2-30, Db, Variant 1              | 6 cycles 25°C/55°C/93%RH                                  |
| Damp heat constant,<br>IEC 60068-2-3 method Ca                  | 56 days 40°C/95%RH                                        |
| Degree of protection<br>THT:                                    | RT III (61810), IP67 (IEC 60529)                          |
| THR:                                                            | RT II (61810), IP56 (IEC 60529)                           |
| Corrosive gas, IEC 60068-2-17: THT                              | Qc, method 2, 1min, 70°C                                  |
| IEC 60068-2-42                                                  | 10 days                                                   |
| IEC 60068-2-43                                                  | 10 days                                                   |
| Vibration resistance (functional)<br>IEC 60068-2-6 (sine sweep) | 10 to 500Hz; 6g <sup>(6)</sup>                            |
| Shock resistance (functional)<br>IEC 60068-2-27 (half sine)     | 6ms, up to 30g <sup>(6)</sup>                             |
| Terminal type                                                   | PCB:THT, THR                                              |
| Weight                                                          | approx. 8g (0.28oz)                                       |
| Solderability (aging 3: 4h/155°C) THT,<br>IEC 60068-2-20        | Ta, method 1, hot dip 5s, 215°C                           |
| Resistance to soldering heat THT,<br>IEC 60068-2-20             | Tb, method 1A, hot dip 10s, 260°C,<br>with thermal screen |
| Resistance to soldering heat THR,<br>IEC 60068-2-58             | 260°C; preheating min 130°C                               |
| Storage conditions                                              | according IEC 600688 <sup>7)</sup>                        |
| Packaging unit                                                  | 990 pcs.                                                  |

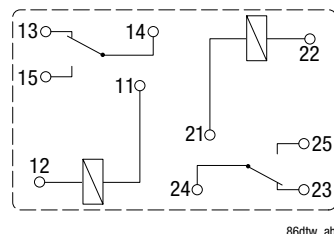
6) Depending on mounting position: no change in the switching state  $>10\mu\text{s}$ .

7) For general storage and processing recommendations please refer to our Application Notes and especially to Storage in the Definitions or at <http://relays.te.com/appnotes/>

## Terminal Assignment

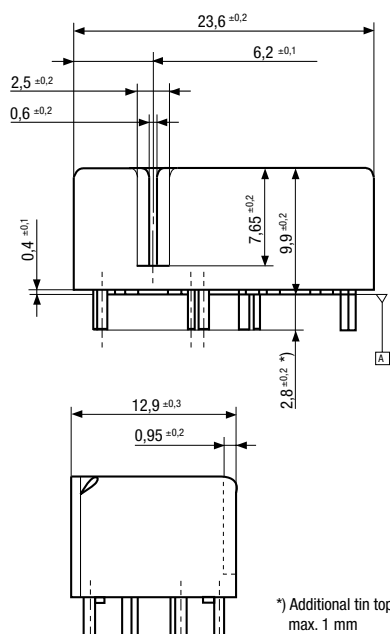
Bottom view on solder pins

2 form C, 2 CO



## Dimensions

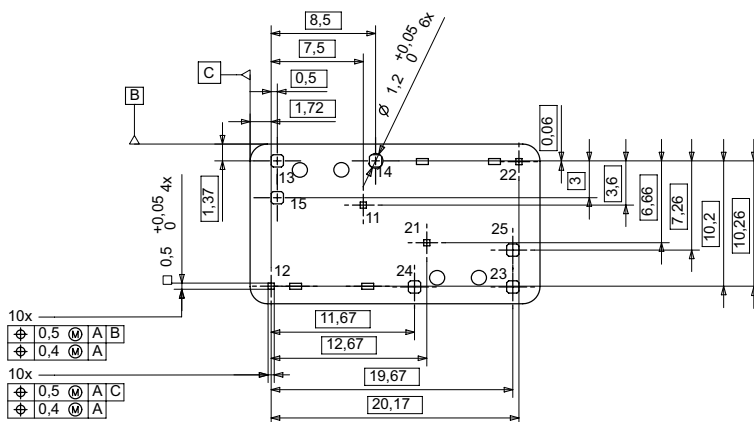
Double Micro Relay THT



\*) Additional tin tops  
max. 1 mm

## View of the Terminals

Bottom view on solder pins



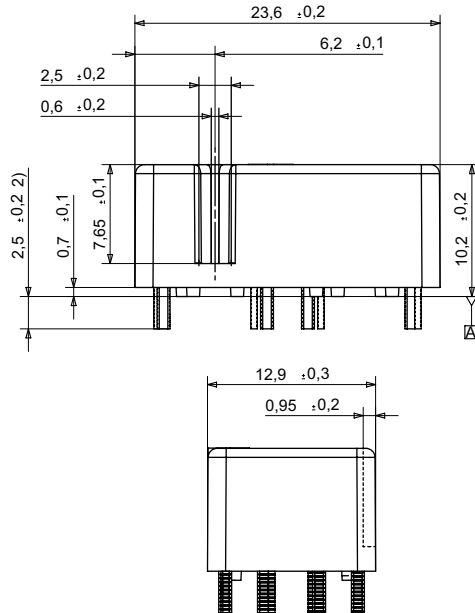
Remark:

Positional tolerances according to DIN EN ISO 5458

## Double Micro Relay K (THT – THR) (Continued)

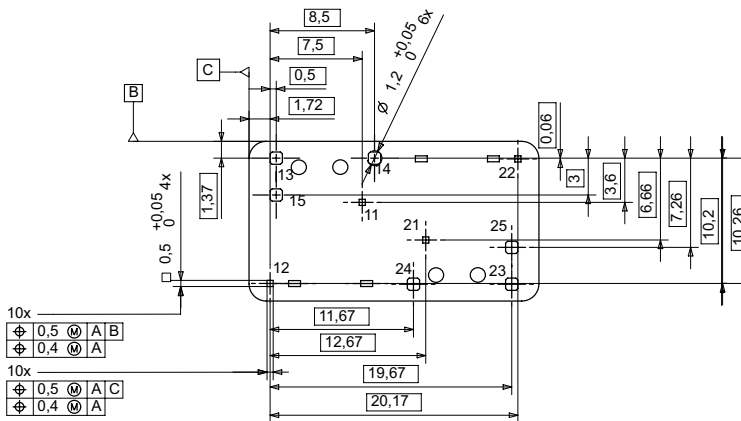
### Dimensions

Double Micro Relay THR



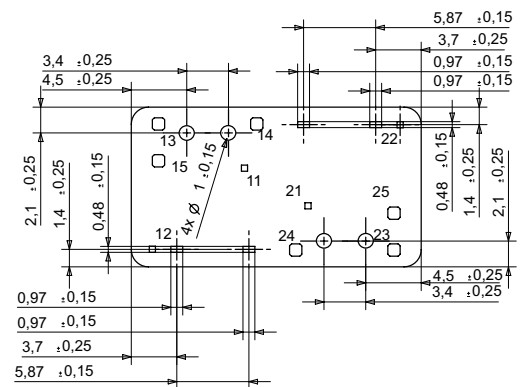
### View of the Terminals

Bottom view on solder pins



### View of Stand-Offs

Bottom view on solder pins



## Double Micro Relay K (THT – THR) (Continued)

### Product code structure

Typical product code **V23086 -C 20 01 -A 4 03**

|                                                                       |  |                                  |  |  |  |  |  |
|-----------------------------------------------------------------------|--|----------------------------------|--|--|--|--|--|
| <b>Type</b><br><b>V2086</b> Micro Relay K (THT-THR)                   |  |                                  |  |  |  |  |  |
| <b>Terminal and enclosure</b><br><b>C</b> PCB version THT, sealed     |  | <b>R</b> PCB version THR, vented |  |  |  |  |  |
| <b>Design</b><br><b>20</b> Double relay (THT)                         |  | <b>28</b> Double relay (THR)     |  |  |  |  |  |
| <b>Coil</b><br><b>01</b> Standard                                     |  | <b>02</b> Sensitive              |  |  |  |  |  |
| <b>Contact type</b><br><b>A</b> Single contact                        |  |                                  |  |  |  |  |  |
| <b>Contact material index</b><br><b>4</b> AgSnO <sub>2</sub> standard |  | <b>8</b> Wiper load              |  |  |  |  |  |
| <b>Contact arrangement index</b><br><b>03</b> form C (CO)             |  |                                  |  |  |  |  |  |

| Product code      | Terminal/Encl.       | Design | Coil      | Contact | Cont. material     | Arrangement                 | Part number |
|-------------------|----------------------|--------|-----------|---------|--------------------|-----------------------------|-------------|
| V23086-C2001-A403 | PCB THT, imm., clean | Double | Standard  | Single  | AgSnO <sub>2</sub> | 2 form C, 2 CO (standard)   | 1413009-9   |
| V23086-R2801-A403 | PCB THR, vented      | relay  |           |         |                    |                             | 6-1414920-1 |
| V23086-R2802-A803 |                      |        | Sensitive |         |                    | 2 form C, 2 CO (wiper load) | 8-1414964-5 |

This list represents the most common types and does not show all variants covered by this datasheet.  
Other types on request.