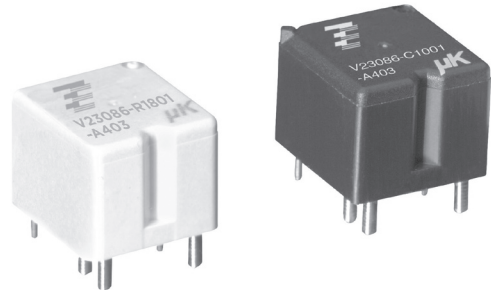


## Micro Relay K (THT – THR)

- Small power relay
- Limiting continuous current 30A
- Minimal weight
- Low noise operation
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions
- For twin version refer to Double 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.

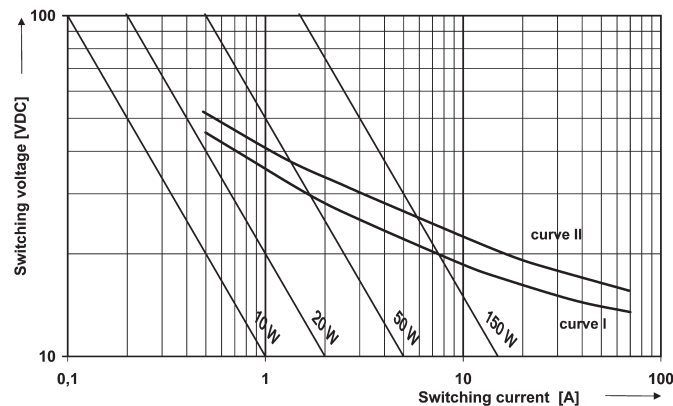


086C/R1\_fw1b

### Contact Data

| Typical applications                   | Resistive/inductive load<br>V23086-*100*-A403                    | Wiper load<br>V23086-*1*02-A803                                                              | Lamp load <sup>5)</sup><br>V23086-***21-A502                                   |
|----------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Contact arrangement                    | 1 form C, 1 CO                                                   | 1 form C, 1 CO                                                                               | 1 form A, 1 NO                                                                 |
| Rated voltage                          | 10/12VDC                                                         | 10/12VDC                                                                                     | 10/12VDC                                                                       |
| Rated current                          | NO/NC<br>30/25A                                                  | NO/NC<br>30/25A                                                                              | 30A                                                                            |
| Limiting continuous current            |                                                                  |                                                                                              |                                                                                |
| 23°C                                   | 30/25A                                                           | 30/25A                                                                                       | 30A                                                                            |
| 85°C                                   | 20/15A                                                           | 20/15A                                                                                       | 20A                                                                            |
| Limiting making current                | 40A <sup>1)</sup>                                                | 40A <sup>1)</sup>                                                                            | 100A <sup>2)</sup>                                                             |
| Limiting breaking current              | 30A                                                              | 30A                                                                                          | 30A                                                                            |
| Contact material                       |                                                                  | AgSnO <sub>2</sub>                                                                           |                                                                                |
| Min. recommended contact load          |                                                                  | 1A at 5VDC <sup>3)</sup>                                                                     |                                                                                |
| Initial voltage drop at 10A, typ./max. |                                                                  | 30/300mV                                                                                     |                                                                                |
| Operate/release time                   |                                                                  | typ. 3/1.5ms <sup>4)</sup>                                                                   |                                                                                |
| Electrical endurance                   |                                                                  |                                                                                              |                                                                                |
| cyclic temperature -40°C, +25°C, +85°C |                                                                  |                                                                                              |                                                                                |
| form C contact (CO) at 14VDC           | motor reverse blocked,<br>25A, 0.77mH<br>>1x10 <sup>5</sup> ops. | wiper,<br>25A make/5A break,<br>generator peak,<br>20A on NC, 1mH<br>>1x10 <sup>6</sup> ops. |                                                                                |
| form A contact (NO) at 14VDC           | resistive 20A<br>>3x10 <sup>5</sup> ops.                         |                                                                                              | lamp 100A inrush,<br>10A steady state<br>>1x10 <sup>5</sup> ops. <sup>5)</sup> |
| Mechanical endurance                   |                                                                  | >5x10 <sup>6</sup> ops.                                                                      |                                                                                |

### Max. DC load breaking capacity



Load limit curve 1: arc extinguishes, during transit time (changeover contact).

Load limit curve 2: safe shutdown, no stationary arc (make contact).

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

- 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) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) See chapter Diagnostics of Relays in our Application Notes or consult the internet at <http://relays.te.com/appnotes/>
- 4) 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.
- 5) Be aware of using right polarity, see Terminal Assignment. Wrong polarity will reduce endurance.

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

### Coil Data

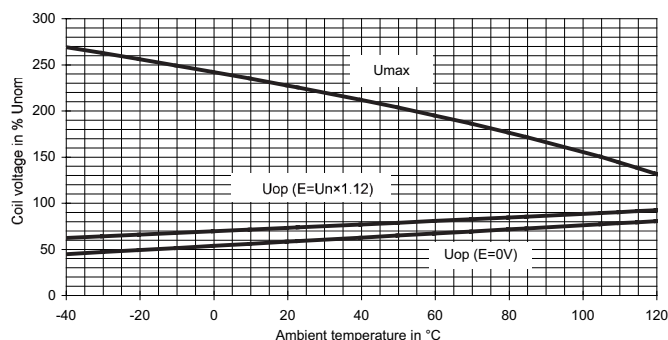
|                    |       |
|--------------------|-------|
| Rated coil voltage | 12VDC |
|--------------------|-------|

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-----------------------------------|---------------------|
| 001/801   | 12                | 6.9                 | 1.5                 | 254                               | 567                 |
| 002/802   | 10                | 5.7                 | 1.25                | 181                               | 552                 |
| 021/821   | 10                | 6.9                 | 1.5                 | 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> |

### Other Data

|                                                 |                                                       |
|-------------------------------------------------|-------------------------------------------------------|
| EU RoHS/ELV compliance                          | compliant                                             |
| Ambient temperature, DC coil                    | -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, EN ISO 6988 | 20 cycles, storage 8/16h                              |
| Temperature cycling (shock), IEC 60068-2-14, Na | 100 cycles; -40/+125°C                                |
| Temperature cycling, IEC 60068-2-14, Nb         | 35 cycles; -40/+125°C                                 |
| Damp heat cyclic, IEC 60068-2-30, Db, variant 1 | 6 cycles 25°C/55°C/93%RH                              |
| Damp heat constant, IEC 60068-2-3 method Ca     | 56 days 40°C/95%RH                                    |
| Degree of protection                            |                                                       |
| THT:                                            | RT III (61810), IP67 (IEC 60529)                      |
| THR:                                            | RT II (61810), IP56 (IEC 60529)                       |
| Sealing test, IEC 60068-2-17: THT               | Qc, method 2, 1min, 70°C                              |
| Corrosive gas                                   |                                                       |
| IEC 60068-2-42                                  | 10 days                                               |
| IEC 60068-2-43                                  | 10 days                                               |
| Vibration resistance (functional)               |                                                       |
| IEC 60068-2-6 (sine sweep)                      | 10 to 500Hz; 6g <sup>6)</sup>                         |
| Shock resistance (functional)                   |                                                       |
| IEC 60068-2-27 (half sine)                      | 6ms, up to 30g <sup>6)</sup>                          |
| Terminal type                                   | PCB:THT, THR                                          |
| Weight                                          | approx. 4g (0.14oz)                                   |
| Solderability (aging 3: 4h/155°C) THT           |                                                       |
| IEC 60068-2-20                                  | Ta, method 1, hot dip 5s, 215°C                       |
| Solderability THR                               |                                                       |
| IEC60068-2-58                                   | hot dip 5s 245°C                                      |
| Resistance to soldering heat THT                |                                                       |
| IEC 60068-2-20                                  | Tb, method 1A, hot dip 10s, 260°C with thermal screen |
| Resistance to soldering heat THR                |                                                       |
| IEC 60068-2-58                                  | 260°C; preheating min 130°C                           |
| Storage conditions                              | according IEC 600688 <sup>7)</sup>                    |
| Packaging unit                                  | 2000 pcs.                                             |

6) Depending on mounting position: no change in the switching state >10μs.

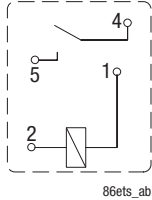
7) For general storage and processing recommendations please refer to our Application Notes and especially to Storage in the Definitions or at <http://relays.te.com/appnotes/>

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

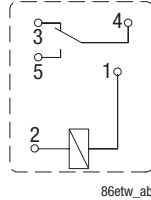
### Terminal Assignment

Bottom view on solder pins

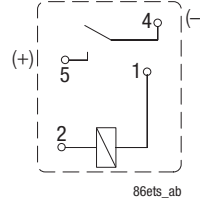
1 form A, 1 NO



1 form C, 1 CO

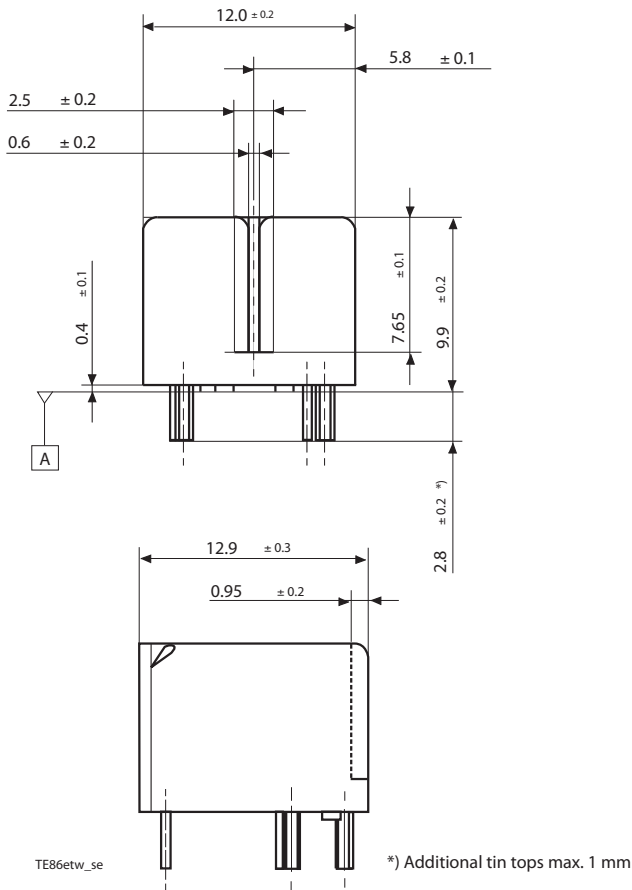


1 form A, 1 NO (lamp load)



### Dimensions

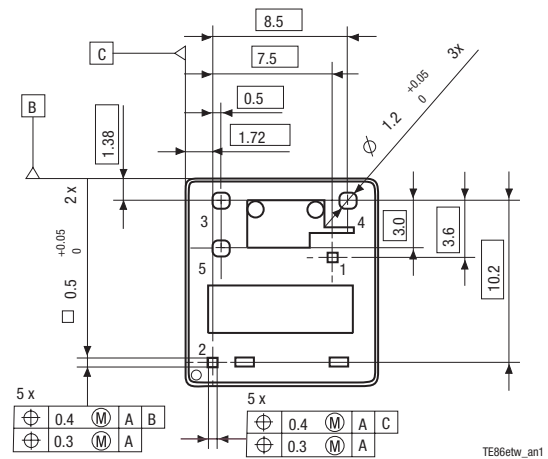
Micro Relay K, THT version



\*) Additional tin tops max. 1 mm

### Mounting Hole Layout

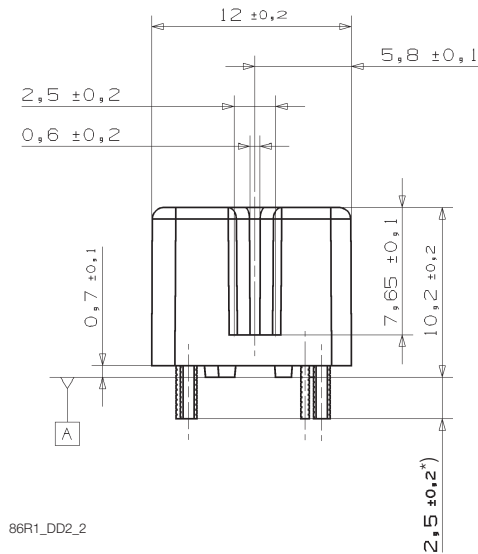
Bottom view on solder pins



Remark: Positional tolerances according to DIN EN ISO 5458

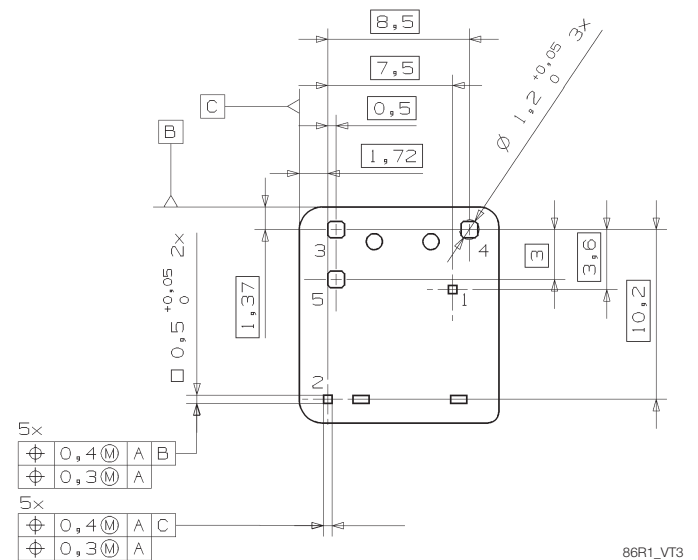
## Micro Relay K (THT – THR) (Continued)

Micro Relay K, THR version



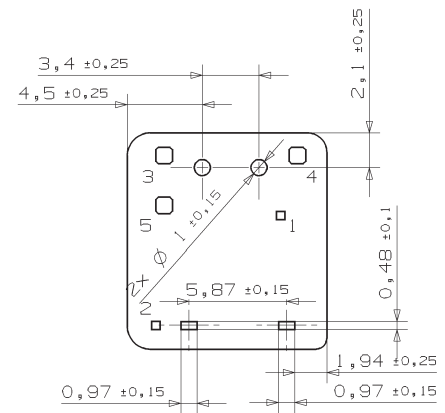
### Mounting Hole Layout

Bottom view on solder pins



### View of Stand-Offs

Bottom view on solder pins



\*) Additional tin tops max. 1mm

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

### Product code structure

Typical product code **V23086 -C 1 001 -A 4 03**

|                                                                                                                |  |                                                                                      |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>Type</b><br><b>V23086</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>1</b> Single relay                                                                         |  |                                                                                      |  |  |  |  |  |  |  |
| <b>Coil</b><br><b>001</b> Standard (THT)<br><b>801</b> Standard (THR)<br><b>021</b> Special (THT)              |  | <b>002</b> Sensitive (THT)<br><b>802</b> Sensitive (THR)<br><b>821</b> Special (THR) |  |  |  |  |  |  |  |
| <b>Contact type</b><br><b>A</b> Single contact                                                                 |  |                                                                                      |  |  |  |  |  |  |  |
| <b>Contact material index</b><br><b>4</b> AgSnO <sub>2</sub> standard<br><b>5</b> AgSnO <sub>2</sub> lamp load |  | <b>8</b> AgSnO <sub>2</sub> wiper load                                               |  |  |  |  |  |  |  |
| <b>Contact arrangement index</b><br><b>02</b> NO                                                               |  | <b>03</b> CO                                                                         |  |  |  |  |  |  |  |

| Product code      | Version            | Design | Coil      | Contact | Cont. material     | Arrangement               | Part number |
|-------------------|--------------------|--------|-----------|---------|--------------------|---------------------------|-------------|
| V23086-C1021-A502 | PCB THT, cleanable | Single | Standard  | Single  | AgSnO <sub>2</sub> | 1 form A, 1 NO (lamp)     | 8-1416000-7 |
| V23086-C1001-A403 |                    |        |           |         |                    | 1 form C, 1 CO (standard) | 0-1393280-6 |
| V23086-C1002-A803 |                    |        | Sensitive |         |                    | 1 form C, 1 CO (standard) | 2-1414987-3 |
| V23086-R1801-A403 | PCB THR, vented    |        | Standard  |         |                    | 1 form C, 1 CO (standard) | 6-1414920-0 |
| V23086-R1802-A803 |                    |        | Sensitive |         |                    | 1 form C, 1 CO (wiper)    | 7-1414967-8 |
| V23086-R1821-A502 |                    |        | Standard  |         |                    | 1 form A, 1 NO (lamp)     | 6-1414918-8 |

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