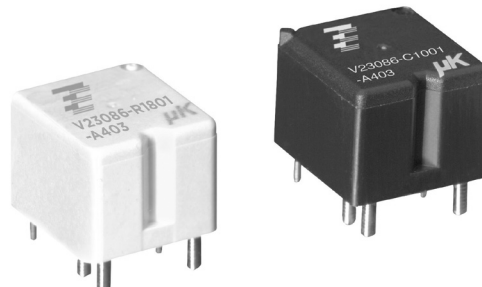




# THE DATASHEET OF 1393280-6

## Micro Relay K (THT – THR)

- Small power relay
- Limiting continuous current 20A at 85°C
- Low weight
- Low noise operation
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions
- For double version refer to Double Micro Relay K



### Typical applications

Door lock, heated front/rear screen, interior lights, seat control, sun roof, window lifter, wiper control.

### Contact Data

| Typical load                              | Inductive load<br>V23086-*1*01-A403 | Wiper load<br>V23086-*1*02-A803 | Resistive/inductive load<br>V23086-*1*01-A402 |
|-------------------------------------------|-------------------------------------|---------------------------------|-----------------------------------------------|
| Contact arrangement                       | 1 form C, 1 CO                      | 1 form C, 1 CO                  | 1 form A, 1 NO                                |
| Rated voltage                             | 12VDC                               | 12VDC                           | 12VDC                                         |
| Maximum switching voltage                 | 16VDC                               | 16VDC                           | 16VDC                                         |
| Rated current <sup>1)</sup>               | NO/NC<br>30/25A                     | NO/NC<br>30/25A                 | NO<br>30A                                     |
| Limiting continuous current <sup>1)</sup> |                                     |                                 |                                               |
| 23°C                                      | 30/25A                              | 30/25A                          | 30A                                           |
| 85°C                                      | 20/15A                              | 20/15A                          | 20A                                           |
| 105°C                                     | 15/10A                              | 15/10A                          | 15A                                           |
| 125°C                                     | on request                          | on request                      | on request                                    |
| Contact material                          | silver alloy                        | silver alloy                    | silver alloy                                  |
| Min. contact load <sup>2)</sup>           | 1A 5VDC                             | 1A 5VDC                         | 1A 5VDC                                       |
| Initial voltage drop                      |                                     |                                 |                                               |
| NO contact at 10A, typ./max.              | 30/300mV                            | 30/300mV                        | 30/300mV                                      |
| NC contact at 10A, typ./max.              | 30/300mV                            | 30/300mV                        |                                               |
| Operate time <sup>3)</sup>                | typ. 3ms                            | typ. 3ms                        | typ. 3ms                                      |
| Release time <sup>3)</sup>                | typ. 1.5ms                          | typ. 1.5ms                      | typ. 1.5ms                                    |
| Mechanical endurance                      | >5x10 <sup>6</sup> ops.             | >5x10 <sup>6</sup> ops.         | >5x10 <sup>6</sup> ops.                       |

### Electrical Endurance 12VDC Coil

| Load voltage/<br>coil voltage | Load type                |          |       |          | Load current |     | On / off ratio | Electrical<br>endurance <sup>4)</sup> |
|-------------------------------|--------------------------|----------|-------|----------|--------------|-----|----------------|---------------------------------------|
|                               |                          |          |       | 1 form A | 1 form C     |     |                |                                       |
|                               |                          |          |       | NO       | NO           | NC  |                |                                       |
| 14VDC                         | resistive                |          | make  | 20A      |              |     | 0.12s/4.88s    | >1x10 <sup>5</sup> ops.               |
|                               |                          |          | break | 20A      |              |     |                |                                       |
|                               | Motor reverse<br>blocked | L=0.77mH | make  |          | 25A          |     | 0.12s/4.88s    | >1x10 <sup>5</sup> ops.               |
|                               |                          |          | break |          | 25A          |     |                |                                       |
|                               | Wiper                    | L=1mH    | make  |          | 25A          | 20A | 0.12s/4.88s    | >1x10 <sup>6</sup> ops.               |
|                               |                          |          | break |          | 5A           | 0A  |                |                                       |

All tests performed with cyclic temperature -40 to 85°C

1) Measured on 70x70x1.5mm epoxy PCB FR4 with 25cm<sup>2</sup> (double layer 105µm) copper area. Connecting cable cross section 6 mm<sup>2</sup>. Boundary conditions: 180°C coil temperature; 130°C solder joint.

2) See Definitions for automotive relays <https://relays.te.com/definitions/> and chapter Diagnostics of Relays in our Application Notes at <https://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.

4) According Weibull

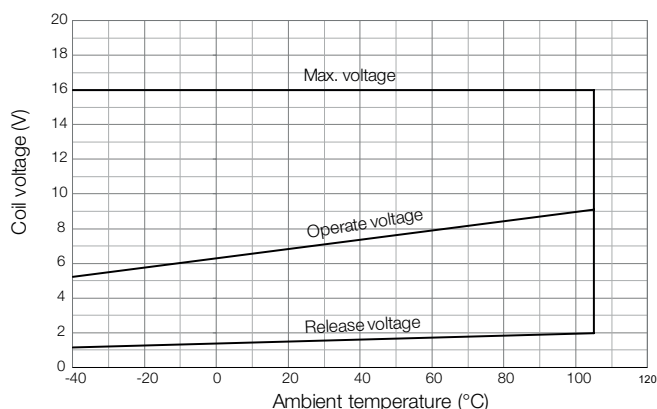
## Micro Relay K (THT – THR) (Continued)

### Coil Data

| Coil code | Rated voltage<br>[VDC] | Must Operate voltage<br>[VDC] | Must Release voltage<br>[VDC] | Coil resist.<br>±10%<br>[Ω] | Rated coil power<br>[W] |
|-----------|------------------------|-------------------------------|-------------------------------|-----------------------------|-------------------------|
| 001/801   | 12                     | 6.9                           | 1.50                          | 254                         | 0.57                    |
| 002/802   | 12                     | 5.7                           | 1.25                          | 181                         | 0.80                    |

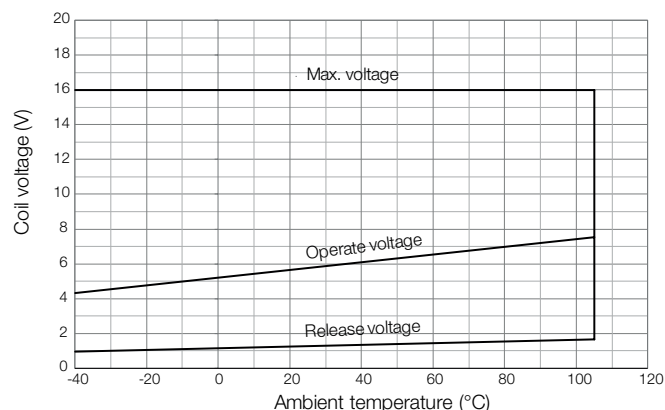
All figures are given for coil without pre-energization, at ambient temperature +23°C.

### Coil operating range coil 001/801



Does not take into account the temperature rise due to the contact current

### Coil operating range coil 002/802



Does not take into account the temperature rise due to the contact current

### Insulation Data

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

### Other Data

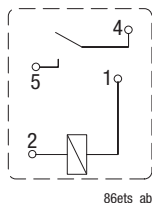
|                                                                                                                                                                                                                            |                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| EU RoHS/ELV compliance                                                                                                                                                                                                     | compliant                                               |
| Ambient temperature                                                                                                                                                                                                        | -40 to +105°C                                           |
| Cold storage                                                                                                                                                                                                               |                                                         |
| IEC 60068-2-1 (2007-03)                                                                                                                                                                                                    | 1000h; -40°C                                            |
| Dry heat                                                                                                                                                                                                                   |                                                         |
| IEC 60068-2-2 (2007-07)                                                                                                                                                                                                    | 1000h; +125°C                                           |
| Rapid change of temperature (thermal shock), IEC 60068-2-14 (2009-01)                                                                                                                                                      |                                                         |
| Na                                                                                                                                                                                                                         | 100 cycles, -40°C / +125°C                              |
| Damp heat cyclic, IEC 60068-2-30 (1985-08)                                                                                                                                                                                 |                                                         |
| Db, variant 1                                                                                                                                                                                                              | 6 cycles 25°C/55°C/93%RH                                |
| Category of environmental protection                                                                                                                                                                                       |                                                         |
| IEC 61810 (2008-01)                                                                                                                                                                                                        | THT: RT III<br>THR: RT II                               |
| Sealing test                                                                                                                                                                                                               |                                                         |
| IEC 60068-2-17 (1994-07)                                                                                                                                                                                                   | THT: Qc, method 2, 1min, 70°C<br>THR: n.a. - vented     |
| Vibration resistance (functional)                                                                                                                                                                                          |                                                         |
| IEC 60068-2-6 (2007-12)                                                                                                                                                                                                    | 10 to 500Hz, 6g                                         |
| sine sweep                                                                                                                                                                                                                 | No change of switching state >10μs                      |
| Shock resistance (functional) half sine                                                                                                                                                                                    |                                                         |
| IEC 60068-2-27 (2008-02)                                                                                                                                                                                                   |                                                         |
| open NO contact will not close >10μs                                                                                                                                                                                       | 6ms, up to 30g <sup>5)</sup>                            |
| Solderability (aging 3: 4h/155°C)                                                                                                                                                                                          |                                                         |
| IEC 60068-2-20 (2008-07)                                                                                                                                                                                                   | Ta, method 1, hot dip 5s, 215°C                         |
| Resistance to soldering heat THT                                                                                                                                                                                           | Tb, method 1A, hot dip 10s, 260°C with thermal screen   |
| IEC 60068-2-20 (2008-07)                                                                                                                                                                                                   |                                                         |
| Resistance to soldering heat THR                                                                                                                                                                                           | Tb, method 1A, hot dip 10s, 260°C; preheating min 130°C |
| IEC 60068-2-58 (2017-07)                                                                                                                                                                                                   |                                                         |
| Terminal type                                                                                                                                                                                                              | PCB:THT, THR                                            |
| Weight                                                                                                                                                                                                                     | approx. 4g (0.14oz)                                     |
| Storage conditions <sup>6)</sup>                                                                                                                                                                                           | according IEC 60068-1 (2017-07)                         |
| Packaging unit                                                                                                                                                                                                             | 2000 pcs.                                               |
| 5) Depending on mounting position: no change in switching state >10μs.                                                                                                                                                     |                                                         |
| 6) For general storage and processing recommendations please refer to our Application Notes and especially to Storage in the Definitions or at <a href="http://relays.te.com/appnotes/">http://relays.te.com/appnotes/</a> |                                                         |

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

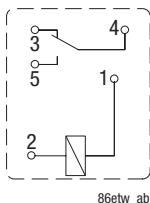
## Terminal Assignment

Bottom view on solder pins

1 form A, 1 NO

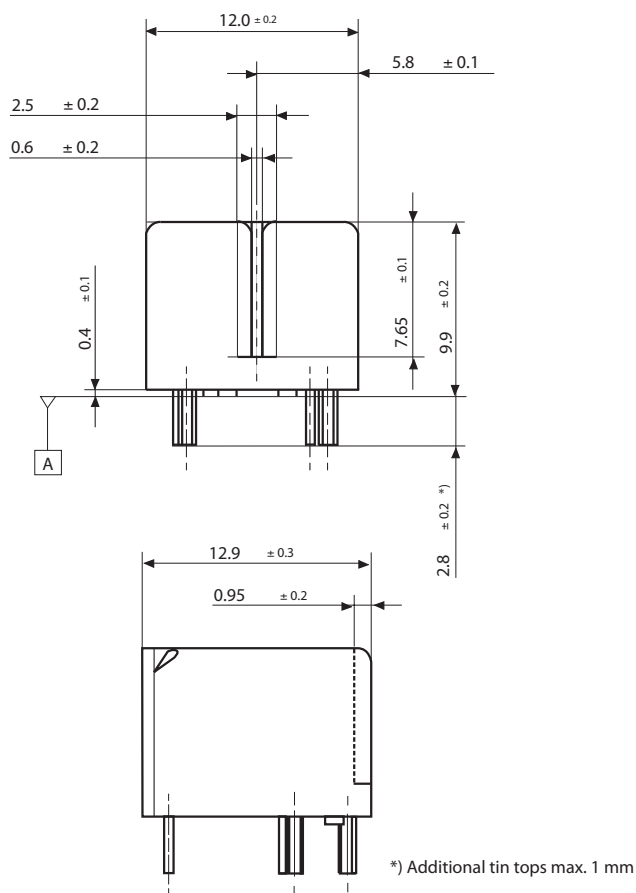


1 form C, 1 CO



## Dimensions

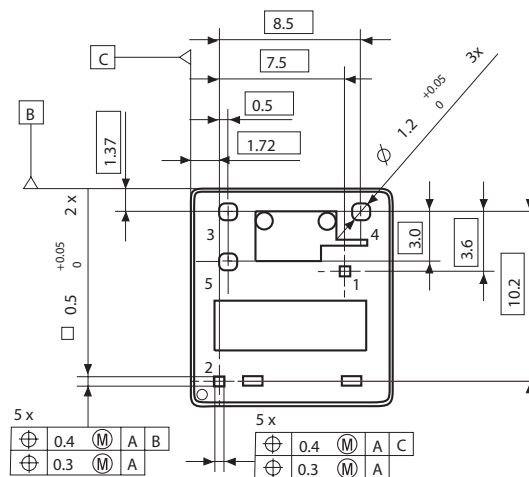
### Micro Relay K, THT version



\*) Additional tin tops max. 1mm

### Mounting Hole Layout

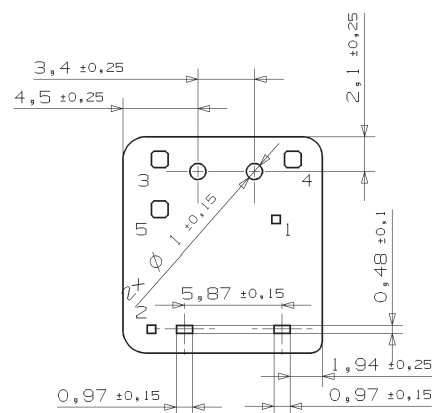
Bottom view on solder pins



Remark: Positional tolerances according to DIN EN ISO 5458

### View of Stand-Offs

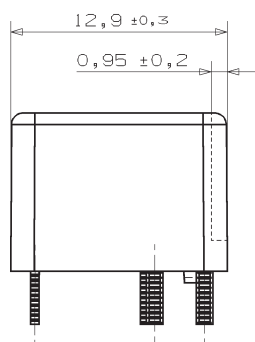
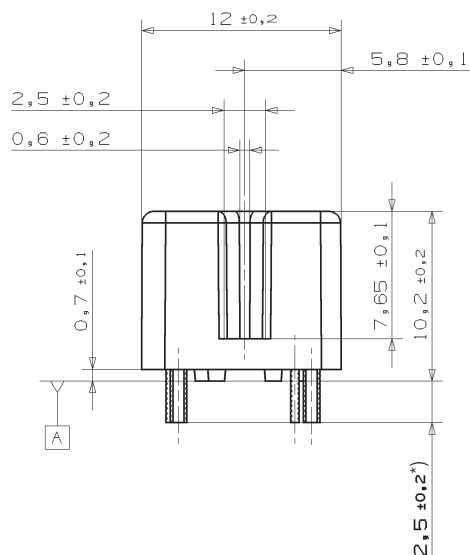
Bottom view on solder pins



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

## Dimensions

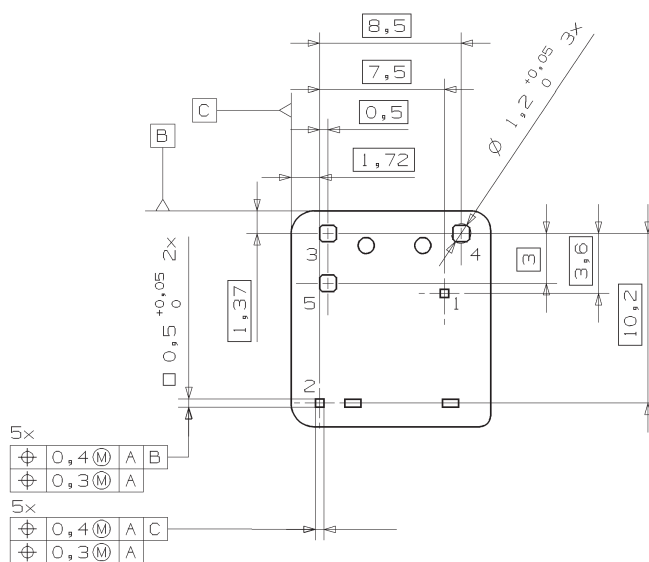
### Micro Relay K, THR version



\*) Additional tin tops max. 1mm

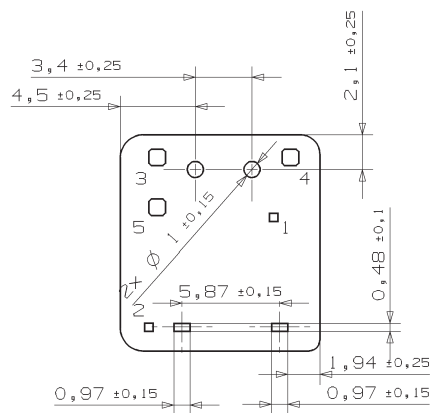
### Mounting Hole Layout

Bottom view on solder pins



### View of Stand-Offs

Bottom view on solder pins



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

#### Product Code Structure

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

|                           |                                  |     |                         |
|---------------------------|----------------------------------|-----|-------------------------|
| Type                      | V23086 Micro Relay K (THT – THR) |     |                         |
| Terminal and enclosure    |                                  |     |                         |
| C                         | PCB version THT, sealed          | R   | PCB version THR, vented |
| Design                    |                                  |     |                         |
| 1                         | Single relay                     |     |                         |
| Coil                      |                                  |     |                         |
| 001                       | Standard (THT)                   | 002 | Sensitive (THT)         |
| 801                       | Standard (THR)                   | 802 | Sensitive (THR)         |
| Contact type              |                                  |     |                         |
| A                         | Single contact                   |     |                         |
| Contact material index    |                                  |     |                         |
| 4                         | Silver alloy standard            | 8   | Silver alloy wiper load |
| Contact arrangement index |                                  |     |                         |
| 02                        | NO                               | 03  | CO                      |

| Product Code      | Version            | Design | Coil      | Contact | Arrangement    | Part Number |
|-------------------|--------------------|--------|-----------|---------|----------------|-------------|
| V23086-C1001-A402 | PCB THT, cleanable | Single | Standard  | Single  | 1 form A, 1 NO | 0-1393280-5 |
| V23086-C1001-A403 |                    |        |           |         | 1 form C, 1 CO | 0-1393280-6 |
| V23086-C1002-A803 |                    |        | Sensitive |         | 1 form C, 1 CO | 2-1414987-3 |
| V23086-R1801-A402 | PCB THR,           |        | Standard  |         | 1 form A, 1 NO | 2-1904093-2 |
| V23086-R1801-A403 | vented             |        |           |         | 1 form C, 1 CO | 6-1414920-0 |
| V23086-R1802-A803 |                    |        | Sensitive |         | 1 form C, 1 CO | 7-1414967-8 |

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

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 [TE Connectivity](#) Information

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