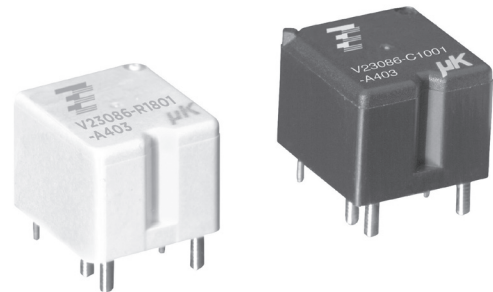


Micro Relay K (THT – THR)

- 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



086C/R1_fw1b

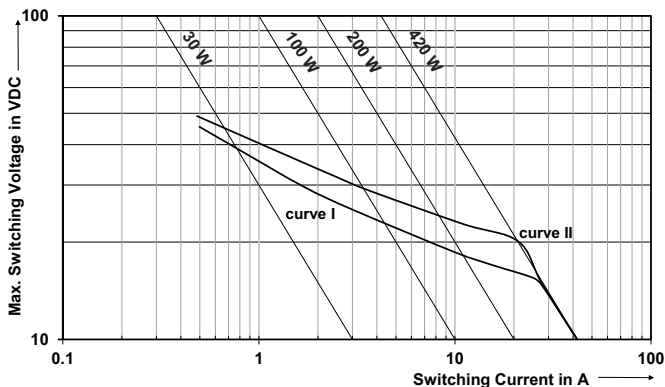
Typical applications

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

Contact Data

| Typical applications | Inductive load V23086-*1*01-A403 | Wiper load V23086-*1*02-A803 | Resistive/inductive load V23086-*1*01-A402 | Lamp load V23086-*1*51-A502 |
|---|--|--|---|--|
| Contact arrangement | 1 form C, 1 CO | 1 form C, 1 CO | 1 form A, 1 NO | 1 form A, 1 NO |
| Rated voltage | 12VDC | 10VDC | 12VDC | 10VDC |
| Rated current ¹⁾ | NO/NC 30/25A | NO/NC 30/25A | 30A | 15A |
| Limiting continuous current ¹⁾ | | | | |
| 23°C | 30/25A | 30/25A | 30A | 15A |
| 85°C | 20/15A | 20/15A | 20A | 10A |
| 105°C | 15/10A | 15/10A | 15A | |
| Limiting making current | 40A ²⁾ | 40A ²⁾ | 40A ²⁾ | 100A ³⁾ |
| Limiting breaking current | 30A | 30A | 30A | 30A |
| Contact material | | AgSnO ₂ | | |
| Min. contact load | | >1A at 5VDC ⁴⁾ | | |
| Initial voltage drop at 10A, typ./max. | | 30/300mV | | |
| Operate/release time | | typ. 3/1.5ms ⁵⁾ | | |
| Electrical endurance | | | | |
| cyclic temperature -40°C, +25°C, +85°C | | | | |
| form C contact (CO) at 14VDC | motor reverse blocked, 25A, 0.77mH >1x10 ⁵ ops. | wiper, 25A make/5A break, generator peak, 20A on NC, 1mH >1x10 ⁶ ops. | | |
| form A contact (NO) at 14VDC | | | resistive 20A >1x10 ⁵ ops. | lamp 100A inrush, 10A steady state >1x10 ⁵ ops. |
| Mechanical endurance | | >5x10 ⁶ 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) Measured on 70x70x1.5mm epoxy PCB FR4 with 25cm² (double layer 105µm) copper area. Connecting cable cross section 6 mm². Boundary conditions: 180°C coil temperature; 130°C solder joint.
- 2) 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.
- 3) Corresponds to the peak inrush current on initial actuation (cold filament).
- 4) See chapter Diagnostics of Relays in our Application Notes or consult the internet at <http://relays.te.com/appnotes/>
- 5) 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.

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 |
| 051/851 | 10 | 6.5 | 1.1 | 90 | 1111 |

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 _{rms} |
| between contact and coil | 500VAC _{rms} |

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) |
| THR: | RT II (61810) |
| 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 ⁶⁾ |
| Shock resistance (functional) | |
| IEC 60068-2-27 (half sine) | 6ms, up to 30g ⁶⁾ |
| 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 60068-1 ⁷⁾ |
| Packaging unit | 2000 pcs. |

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

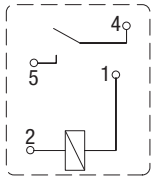
7) For general storage and processing recommendations please refer to our Application Notes and especially to Storage in the Definitions or at <http://relays.te.com/appnotes/>

Micro Relay K (THT – THR) (Continued)

Terminal Assignment

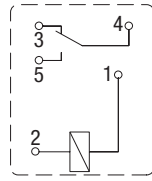
Bottom view on solder pins

1 form A, 1 NO



86ets_ab

1 form C, 1 CO



86etw_ab

Dimensions

Micro Relay K, THT version



TE86etw_se

*) Additional tin tops max. 1 mm

Mounting Hole Layout

Bottom view on solder pins

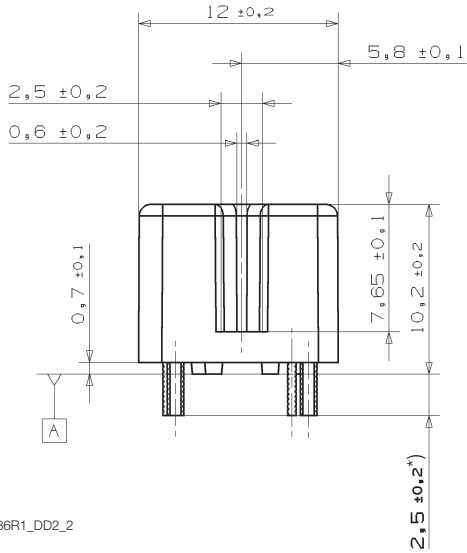


TE86etw_an1

Remark: Positional tolerances according to DIN EN ISO 5458

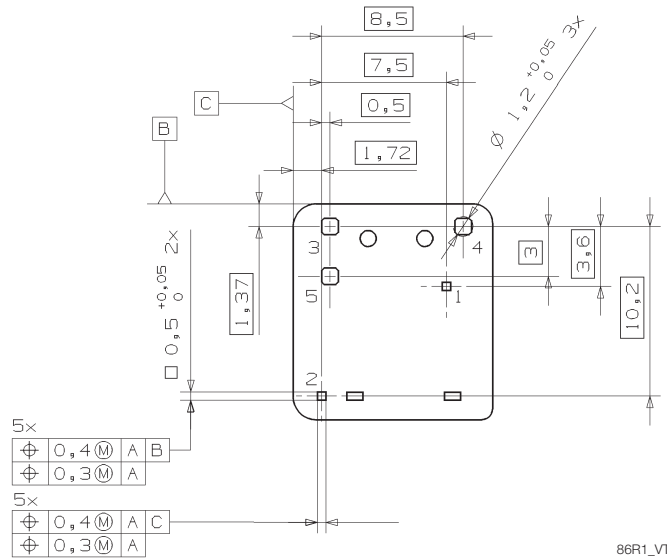
Micro Relay K (THT – THR) (Continued)

Micro Relay K, THR version



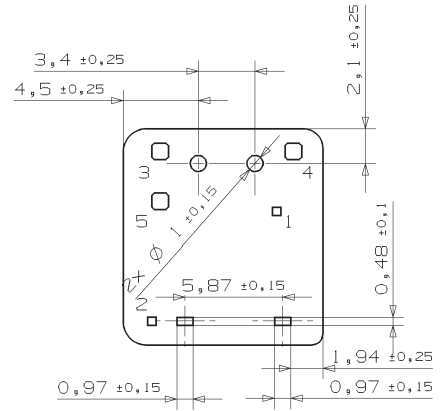
86R1_DD2_2

Mounting Hole Layout
Bottom view on solder pins

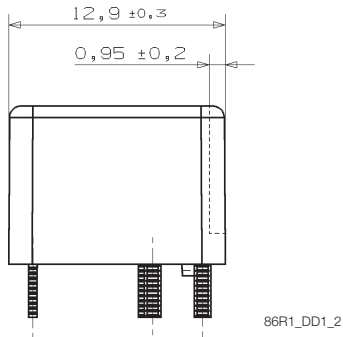


86R1_VT3

View of Stand-Offs
Bottom view on solder pins



86R1_VT1



86R1_DD1_2

*) Additional tin tops max. 1mm

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) | | | |
| 051 | | Lamp load (THT) | | | 851 | | Lamp load (THR) | | | |
| Contact type | | | | | | | | | | |
| A | | Single contact | | | | | | | | |
| Contact material index | | | | | | | | | | |
| 4 | | AgSnO ₂ standard | | | 8 | | AgSnO ₂ wiper load | | | |
| 5 | | AgSnO ₂ lamp load | | | | | | | | |
| Contact arrangement index | | | | | | | | | | |
| 02 | | NO | | | 03 | | CO | | | |

| Product code | Version | Design | Coil | Contact | Cont. material | Arrangement | Part number |
|-------------------|-----------|--------|-----------|---------|-------------------------------|----------------|-------------|
| V23086-C1001-A402 | PCB THT, | Single | Standard | Single | AgSnO ₂ (standard) | 1 form A, 1 NO | 0-1393280-5 |
| V23086-C1001-A403 | cleanable | | | | | 1 form C, 1 CO | 0-1393280-6 |
| V23086-C1051-A502 | | | Lamp load | | AgSnO ₂ (lamp) | 1 form A, 1 NO | 2-1904093-1 |
| V23086-C1002-A803 | | | Sensitive | | AgSnO ₂ (wiper) | 1 form C, 1 CO | 2-1414987-3 |
| V23086-R1801-A402 | PCB THR, | | Standard | | AgSnO ₂ (standard) | 1 form A, 1 NO | 2-1904093-2 |
| V23086-R1801-A403 | vented | | | | | 1 form C, 1 CO | 6-1414920-0 |
| V23086-R1851-A502 | | | Lamp load | | AgSnO ₂ (lamp) | 1 form A, 1 NO | 9-1904064-4 |
| V23086-R1802-A803 | | | Sensitive | | AgSnO ₂ (wiper) | 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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