

**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 <sup>1)</sup>	NO/NC 30/25A	NO/NC 30/25A	30A	15A
Limiting continuous current <sup>1)</sup>				
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 <sup>2)</sup>	40A <sup>2)</sup>	40A <sup>2)</sup>	100A <sup>3)</sup>
Limiting breaking current	30A	30A	30A	30A
Contact material		AgSnO <sub>2</sub>		
Min. contact load		>1A at 5VDC <sup>4)</sup>		
Initial voltage drop at 10A, typ./max.		30/300mV		
Operate/release time		typ. 3/1.5ms <sup>5)</sup>		
Electrical endurance				
cyclic temperature -40°C, +25°C, +85°C				
form C contact (CO) at 14VDC	motor reverse blocked, 25A, 0.77mH >1x10 <sup>5</sup> ops.	wiper, 25A make/5A break, generator peak, 20A on NC, 1mH >1x10 <sup>6</sup> ops.		
form A contact (NO) at 14VDC			resistive 20A >1x10 <sup>5</sup> ops.	lamp 100A inrush, 10A steady state >1x10 <sup>5</sup> ops.
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) 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) 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
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**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 <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)
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 <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 60068-1 <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



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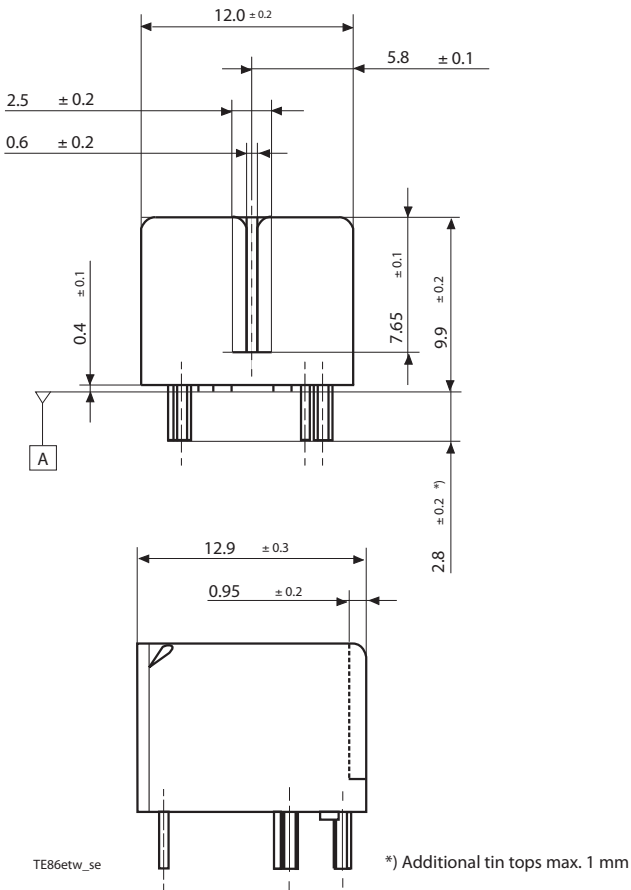
1 form C, 1 CO



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**Dimensions**

Micro Relay K, THT version



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\*) Additional tin tops max. 1 mm

**Mounting Hole Layout**

Bottom view on solder pins

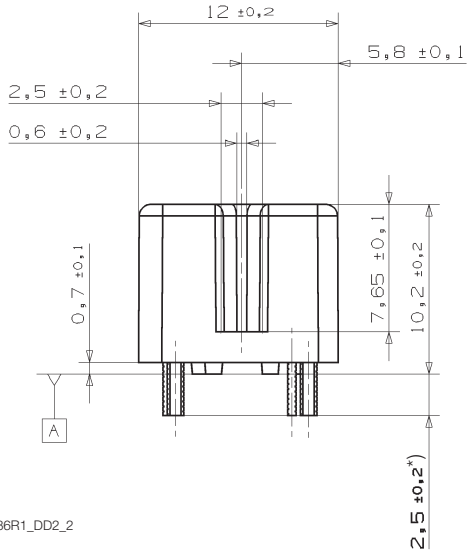


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Remark: Positional tolerances according to DIN EN ISO 5458

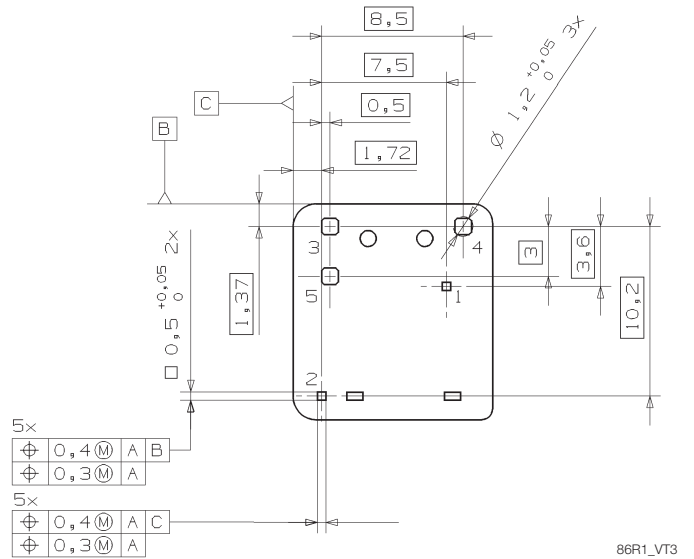
**Micro Relay K (THT – THR)** (Continued)

Micro Relay K, THR version



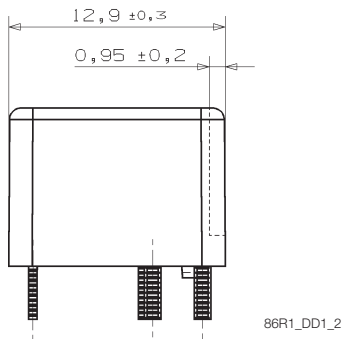
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**Mounting Hole Layout**  
Bottom view on solder pins

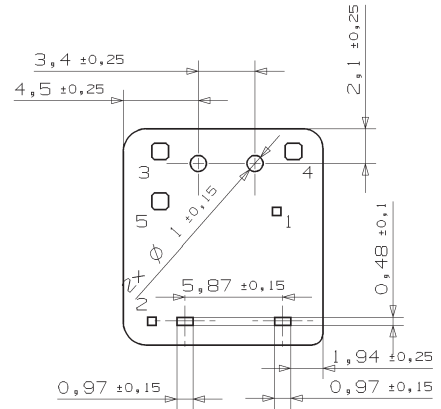


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**View of Stand-Offs**  
Bottom view on solder pins



86R1\_DD1\_2



86R1\_VT1

\*) Additional tin tops max. 1mm

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

<b>Product code structure</b>		Typical product code		<b>V23086</b>	<b>-C</b>	<b>1</b>	<b>001</b>	<b>-A</b>	<b>4</b>	<b>03</b>
<b>Type</b>										
V23086 Micro Relay K (THT – THR)										
<b>Terminal and enclosure</b>										
C		PCB version THT, sealed			R		PCB version THR, vented			
<b>Design</b>										
1		Single relay								
<b>Coil</b>										
001		Standard (THT)			002		Sensitive (THT)			
801		Standard (THR)			802		Sensitive (THR)			
051		Lamp load (THT)			851		Lamp load (THR)			
<b>Contact type</b>										
A		Single contact								
<b>Contact material index</b>										
4		AgSnO <sub>2</sub> standard			8		AgSnO <sub>2</sub> wiper load			
5		AgSnO <sub>2</sub> lamp load								
<b>Contact arrangement index</b>										
02		NO			03		CO			

Product code	Version	Design	Coil	Contact	Cont. material	Arrangement	Part number
V23086-C1001-A402	PCB THT,	Single	Standard	Single	AgSnO <sub>2</sub> (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 <sub>2</sub> (lamp)	1 form A, 1 NO	2-1904093-1
V23086-C1002-A803			Sensitive		AgSnO <sub>2</sub> (wiper)	1 form C, 1 CO	2-1414987-3
V23086-R1801-A402	PCB THR,		Standard		AgSnO <sub>2</sub> (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 <sub>2</sub> (lamp)	1 form A, 1 NO	9-1904064-4
V23086-R1802-A803			Sensitive		AgSnO <sub>2</sub> (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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