Micro Relay K (THT – THR)

Features

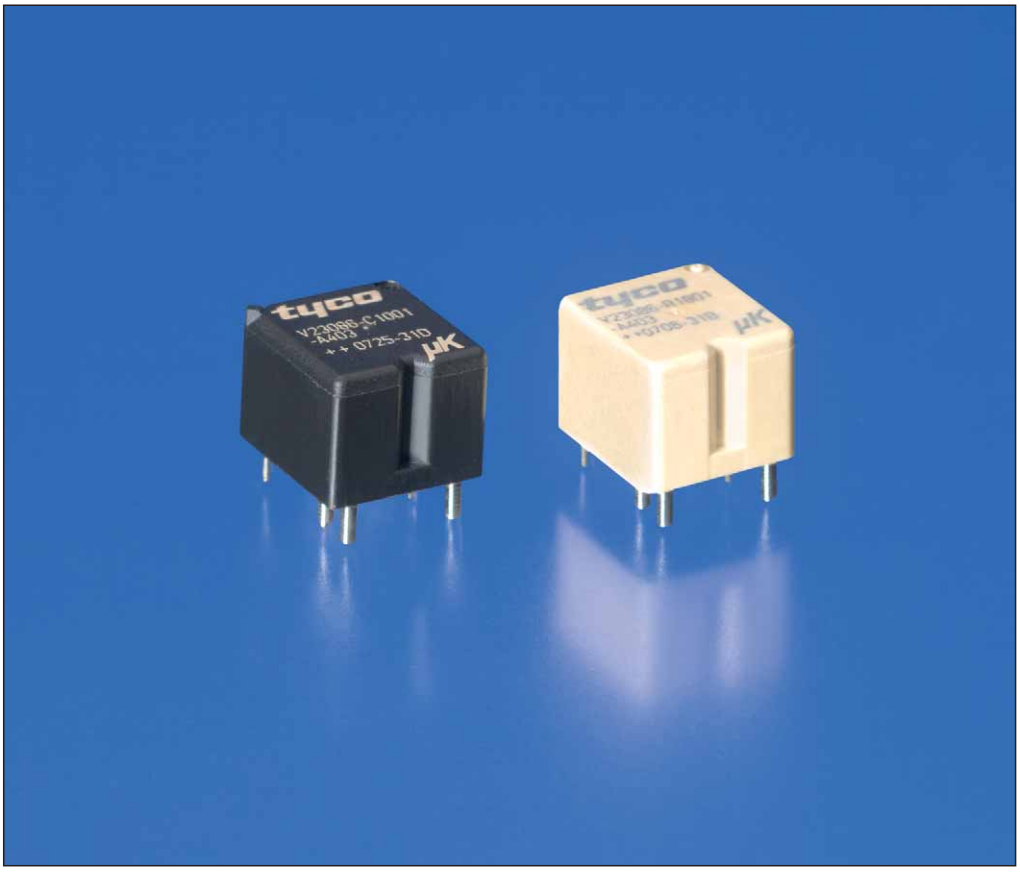
- Small power relay
- Limiting continuous current 30 A
- Minimal weight
- Low noise operation
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions

- For twin version refer to Double Micro Relay K
- For latching (bistable) version refer to Micro Relay K Latching
- For surface mounted technology refer to SMD versions

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

Please contact Tyco Electronics for relay application support.



86CR1_3Dco1

Design

- ELV/RoHS/WEEE compliant
- THT: sealed type washable
- THR: sealed type open vent hole

Weight

Approx. 4 g (0.14 oz.)

Nominal Voltage

10 V or 12 V; other nominal voltages available on request

Terminals

PCB terminals for assembly on printed circuit boards

Conditions

All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23°C ambient temperature,
20 - 50% RH, 998.9 ±33.9 hPa.

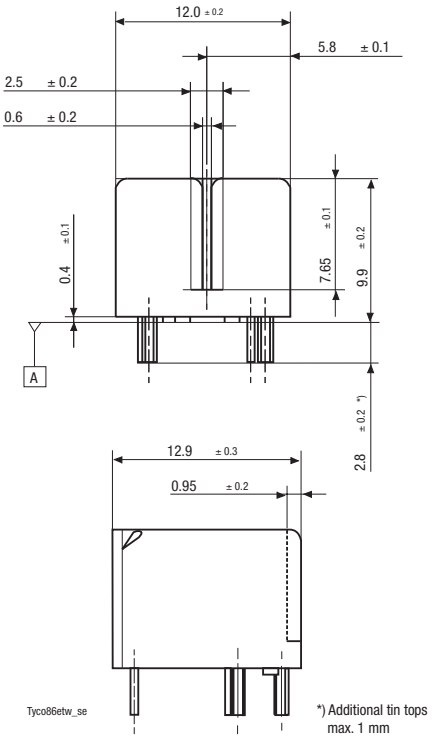
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the “Glossary” page 23 or at http://relays.tycoelectronics.com/appnotes/

Disclaimer

Micro Relay K (THT)

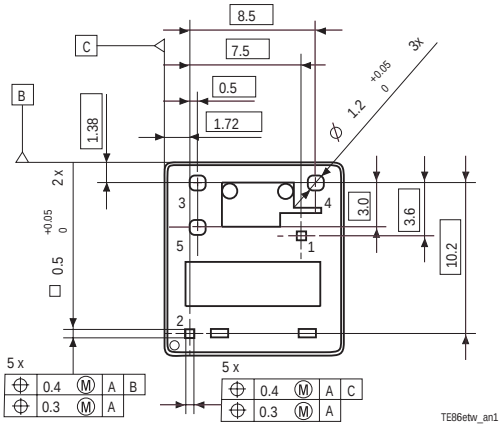
Dimensional Drawing

Micro Relay K THT



*) Additional tin tops max. 1 mm

View of the Terminals (bottom view)

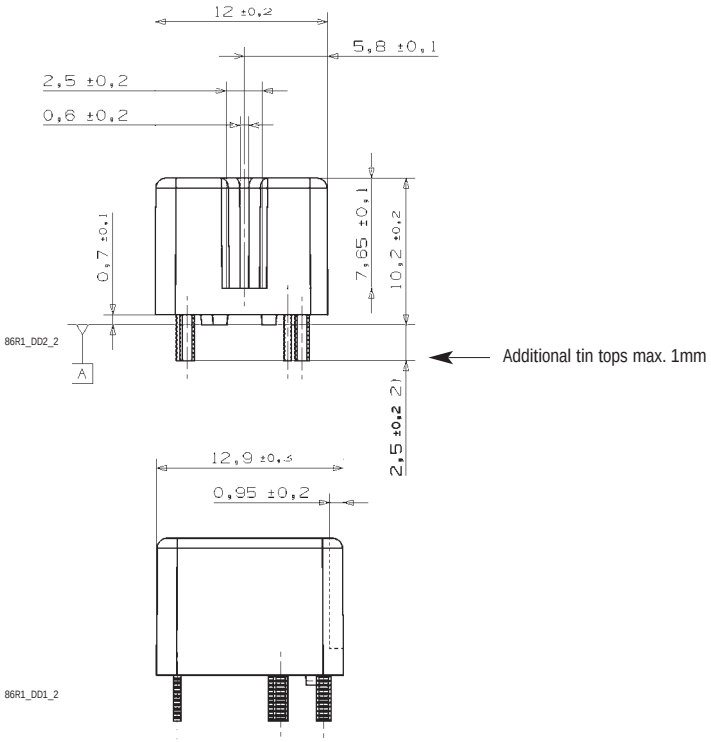


Remark: Positional tolerances according to DIN EN ISO 5458

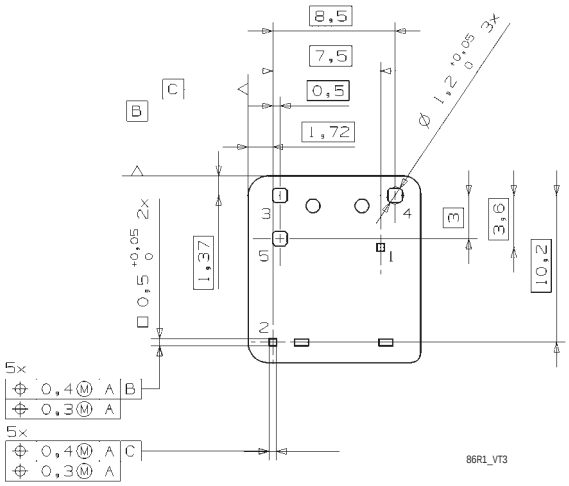
Micro Relay K (THR)

Dimensional Drawing

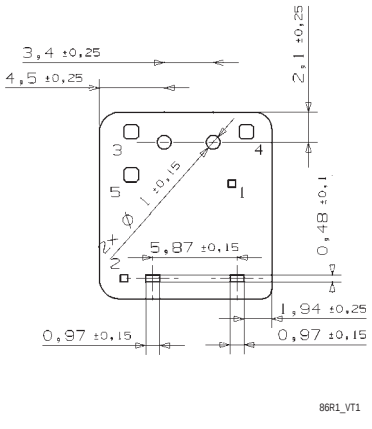
Micro Relay K THR



View of the Terminals (bottom view)



View of the Terminals (stand off dimension)

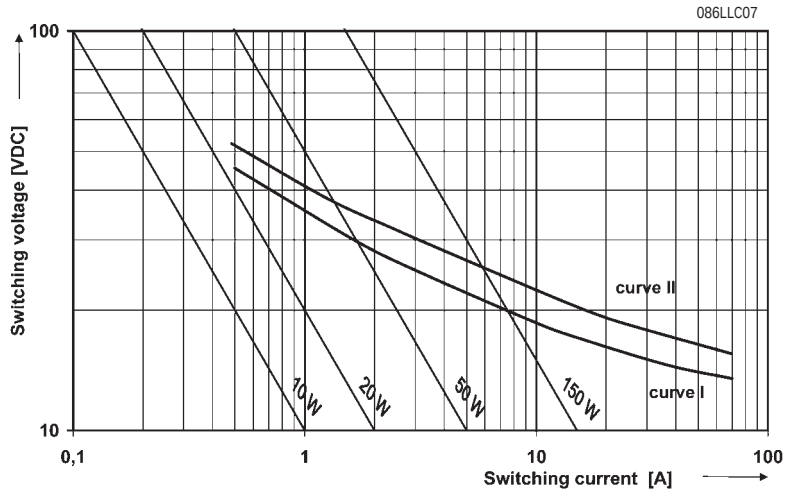


Micro Relay K (THT – THR)

Contact Data	**THT / THR**			**THT**	**THT / THR**
Typical areas of application	Resistive/ inductive load		Wiper load[5] V23086-*1*02-A803	Flasher load V23086-C100*-A602	Lamp load V23086-***21-A502
Contact configuration	Changeover contact/ 1 Form C			Make contact/ 1 Form A	Make contact/ 1 Form A
Circuit symbol (see also Pin assignment)					
Rated voltage	12 V				
Rated current	NC/NO 15 A/20 A			20 A	20 A
Limiting continuous current	NC/NO				
23°C	25 A/30 A			30 A	30 A
85°C	15 A/20 A			20 A	20 A
Contact material	Silver based				
Max. switching voltage/power	See load limit curve				
Max. switching current[1]					
On	40 A[2]			40 A[2]/70 A[3]	40 A[2]/100 A[3]
Off	30 A			30 A	30 A
Min. recommended load[4]	1 A at 5 V				
Voltage drop at 10 A (initial) for NC/NO contacts	Typ. 30 mV, 300 mV max.				
Mechanical endurance (without load)	> 5 x 10^6 operations				
Electrical endurance at cyclic temperature –40/+23/+85°C and 13.5 V	Resistive load: > 3 x 10^5 operations 20 A on NO-contact	Motor reverse: blocked: > 1 x 10^5 operations 25 A L = 0.77 mH	Wiper [5] > 1 x 10^6 operations 20 A make/5 A make, generator peak - 20 A L = 0.7 mH	Flasher load: > 2 x 10^6 operations up to 3 x 21 W, turn and hazard signal in sequence	Lamp load: > 1 x 10^5 operations 100 A inrush/ 10 A steady state

[1] The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V load voltages.
[2] For a load current duration of maximum 3 s 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 page 31 or consult the internet at http://relays.tycoelectronics.com/appnotes/
[5] Avoid using capacitive protection circuits. It will reduce lifetime. Wiper loads always to be tested with original loads.

Load Limit Curve



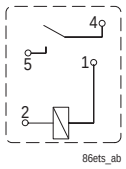
Load limit curve 1 ≙ arc extinguishes during transit time

Load limit curve 2 ≙ safe shutdown, no stationary arc

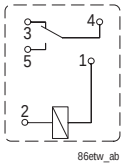
Micro Relay K (THT – THR)

Circuit Diagram

1 Make contact/1 Form A



1 Changeover contact/1 Form C

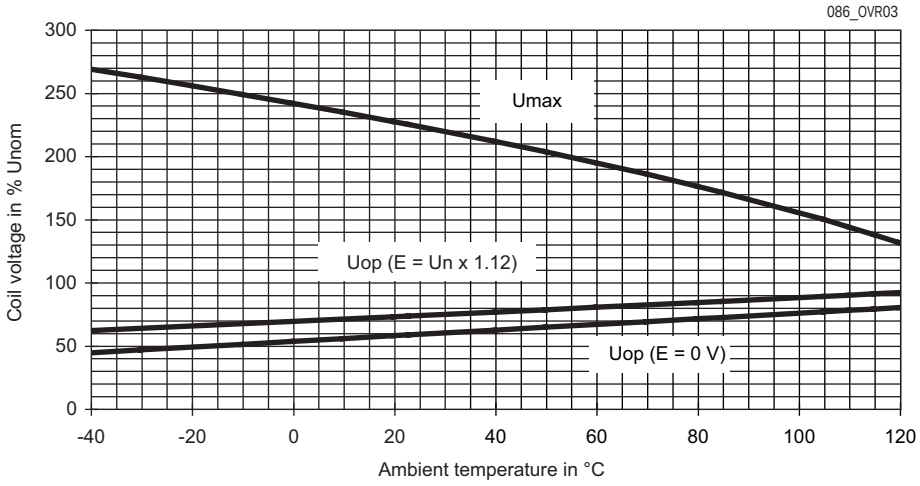


Coil Data	
Available for nominal voltages	10 V / 12 V (other coils on request)
Nominal power consumption of the unsuppressed coil at nominal voltage	0.55 W
Test voltage winding/contact	500 VAC_{rms}
Maximum ambient temperature range [1)]	–40 to +105°C
Operate time at nominal voltage [2)]	Typ. 3 ms
Release time at nominal voltage [2)]	Typ. 1.5 ms

1) See also operating voltage range diagram.
2) Measured at nominal voltage without coil suppression unit.

Note:
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.

Operating Voltage Range



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

Micro Relay K (THT – THR)

Environmental Conditions					
Temperature range, storage		Refer to *Storage* in the "Glossary" catalog page 23 or http://relays.tycoelectronics.com/appnotes/			
Test		Relevant standard	Testing as per	Dimension	Comments
Cold storage		IEC 68-2-1		1000 h	–40°C
Dry heat		IEC 68-2-2	Ba	1000 h	125°C
Climatic cycling with condensation					
	THT	EN ISO 6988		20 cycles	Storage 8/16 h
Thermal change		IEC 68-2-14	Nb	35 cycles	–40/+125°C
Thermal shock		IEC 68-2-14	Na	100 cycles	–40/+125°C Dwell time 1 h
Damp heat					
cyclic	THT	IEC 68-2-30	Db, Variant 2	6 cycles	40°C/55°C/93%
constant	THT	IEC 68-2-3	Method Ca	56 days	40°C/93%
Corrosive gas					
	THT	IEC 68-2-42			10 days
	THT	IEC 68-2-43			10 days
Vibration resistance		IEC 68-2-6 (sine pulse form)		10 - 500 Hz 6 g	No change in the switching state > 10 µs
Shock resistance		IEC 68-2-27 (half sine form single pulses)		6 ms up to 30 g	No change in the switching state > 10 µs
Solderability				Hot dip 5 s	Aging 3 (4 h/155°C)
	THT	IEC 68-2-20	Ta, Method 1	215°C	for leaded process (Tm = 183°C)
	THR	IEC 68-2-58		245°C	for Pb-free process (Tm = 217°C)
Resistance to soldering heat				Hot dip 10 s	with thermal screen
	THT	IEC 68-2-20	Tb, Method 1A	260°C	
	THR	IEC 68-2-58		260°C	Preheating min 130°C
Sealing					
	THT	IEC 68-2-17	Qc, Method 2		1 min/70°C
	THR				Open vent hole

Ordering Information

Part Numbers (see table below for coil data)		Contact Arrangement	Contact Material	Enclosure	Soldering Technology
Relay Description	Part Number				
V23086-C1021-A502	8-1416000-7	1 Form A: lamp load	Silver based	Sealed	THT
V23086-C1001-A602	9-1416000-6	1 Form A: flasher load	Silver based	Sealed	THT
V23086-C1001-A403	1393280-6	1 Form C	Silver based	Sealed	THT
V23086-C1002-A403	1-1393280-1	1 Form C	Silver based	Sealed	THT
V23086-C1002-A803	On request	1 Form C	Silver based	Sealed	THT
V23086-R1801-A403	6-1414920-0	1 Form C	Silver based	Open vent hole	THR
V23086-R1802-A403	5-1414920-9	1 Form C	Silver based	Open vent hole	THR
V23086-R1802-A803	7-1414967-8	1 Form C	Silver based	Open vent hole	THR
V23086-R1821-A502	6-1414918-8	1 Form A	Silver based	Open vent hole	THR

Micro Relay K (THT – THR)

Coil Versions

Coil Data for Micro K – THT/THR	Rated Coil Voltage (V)	Coil Resistance ±10% (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive[1] Voltage (V)	
					at 23°C	at 105°C
V23086-**001-****	12	254	6.9	1.5	27	18
V23086-**002-****	10[2]	181	5.7	1.25	22	15
V23086-**021-****	10	181	6.9	1.5	22	15
V23086-**801-****	12	254	6.9	1.5	27	18
V23086-**802-****	10	181	5.7	1.25	22	15
V23086-**821-****	10	181	6.9	1.5	22	15

[1] Allowable overdrive is stated with no load applied and minimum coil resistance.
[2] See operating voltage range.

Standard Delivery Packs (orders in multiples of delivery pack)

Micro K – THT/THR: 2000 pieces