

Double Micro Relay K (THT – THR)



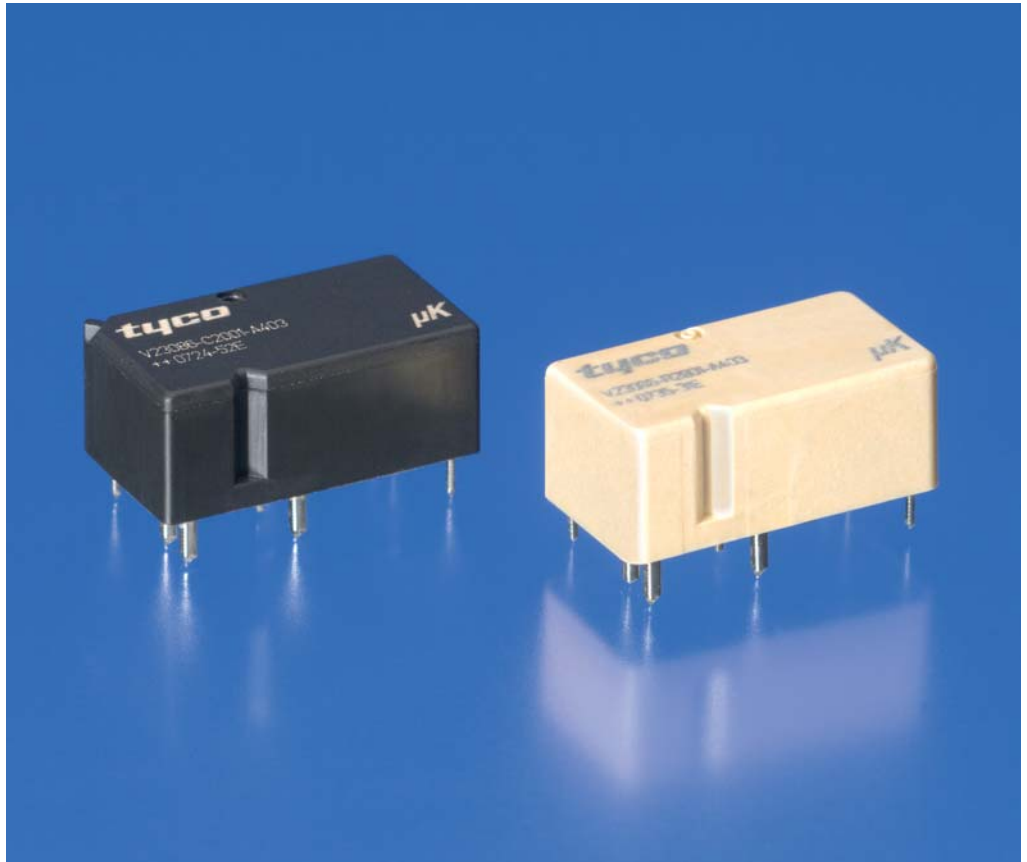
Features

- Small power relay
- Limiting continuous current 30 A
- Minimal weight
- Low noise operations
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions
- For single version refer to 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
- Immobilizer
- Lights interior
- Seat control
- Sun roof
- Trunk lock
- Window lifter

Please contact Tyco Electronics for relay application support.



86CR2_3Dco1

Design

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

Weight

Approx. 8 g (0.28 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/>

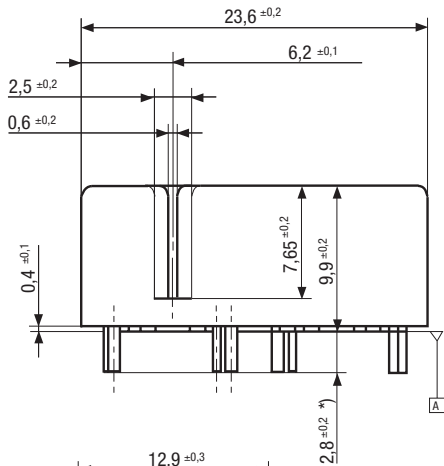
Disclaimer

All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete our questionnaire and to request our technical service. Any responsibility for the application of the product remains with the customer only. All specifications are subject to change without notification. All rights of Tyco Electronics are reserved.

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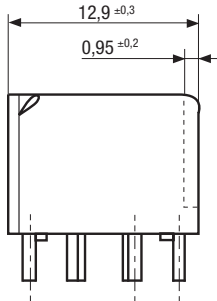
Dimensional Drawing

Double Micro Relay THT



Nipp-off-pin

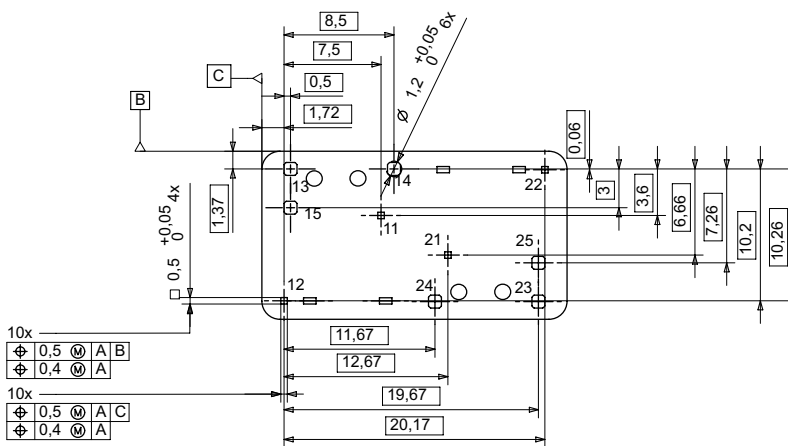
The nipp-off-pin may be removed after soldering and washing (for ventilation)



*) Additional tin tops max. 1 mm

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View of the Terminals (bottom view)



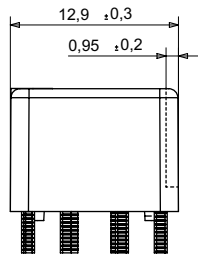
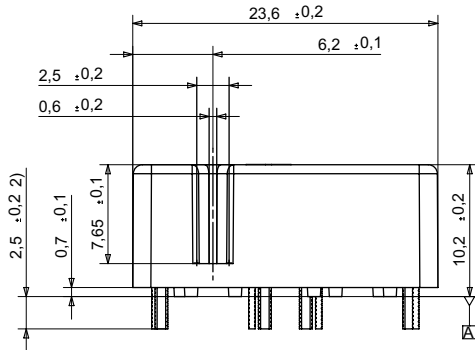
086R2_VT4

Remark: Positional tolerances according to DIN EN ISO 5458

Double Micro Relay K (THT – THR)

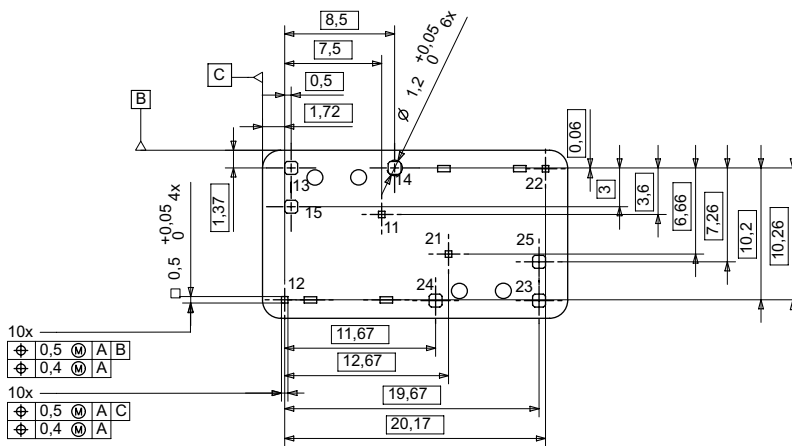
Dimensional Drawing

Double Micro Relay THR

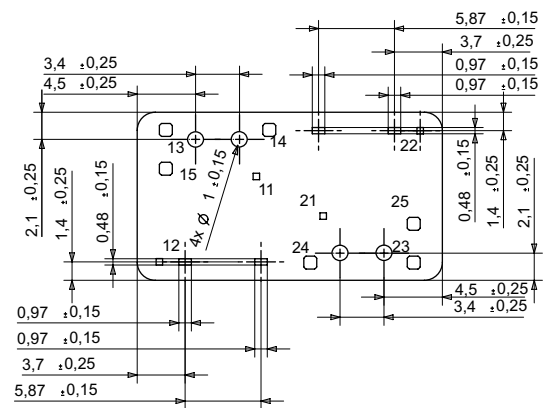


086R2_DD3

View of the Terminals (bottom view)



View of the Terminals (stand offs)



086R2_VT4

Remark: Positional tolerances according to DIN EN ISO 5458

Double Micro Relay K (THT – THR)

Contact Data		Resistive/inductive load	
Typical areas of application		2 changeover contacts/ 2 form C	
Contact configuration			
Circuit symbol (see also Pin assignment)			
Rated voltage		12 V	
Rated current		NC/NO 15 A/20 A	
Limiting continuous current (one system energized)	23°C 85°C 105°C	NC/NO 25 A/30 A 15 A/20 A 5 A/10 A	
Contact material		Silver based	
Max. switching voltage/power		See load limit curve	
Max. switching current ¹⁾		NC/NO	
On ²⁾		40 A	
Off		30 A	
Min. recommended load ³⁾		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	Wiper reverse ⁴⁾ : > 3 x 10 ⁵ operations 25 A make/5 A break; generator peak - 10 A L = 1.0 mH	Motor reverse blocked: > 1 x 10 ⁵ operations 25 A L = 0.77 mH ⁵⁾

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.

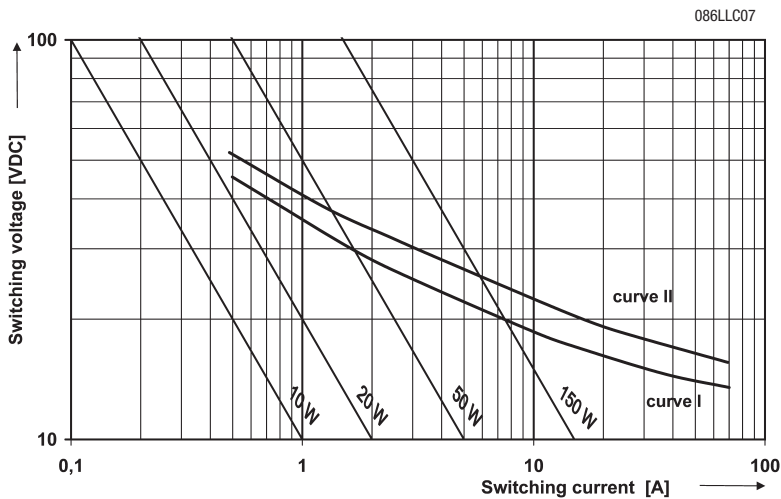
²⁾ For a load current duration of maximum 3 s for a make/break ratio of 1:10.

³⁾ See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at <http://relays.tycoelectronics.com/appnotes/>

⁴⁾ Avoid using capacitive protection circuits. It will reduce lifetime.

⁵⁾ At 50% ON period: max. make time 15 s.

Load Limit Curve



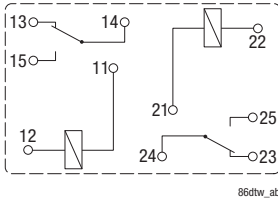
Load limit curve 1 ≙ arc extinguishes during transit time

Load limit curve 2 ≙ safe shutdown, no stationary arc

Double Micro Relay K (THT – THR)

Circuit Diagram

2 Changeover contacts/2 Form C



Coil Data

Available for nominal voltages	10 V / 12 V
Nominal power consumption of the unsuppressed coil at nominal voltage	0.57 W
Test voltage winding/contact	500 VAC _{rms}
Maximum ambient temperature range	-40 to +105°C
Operate time at nominal voltage	Typ. 3 ms
Release time at nominal voltage ¹⁾	Typ. 1.5 ms

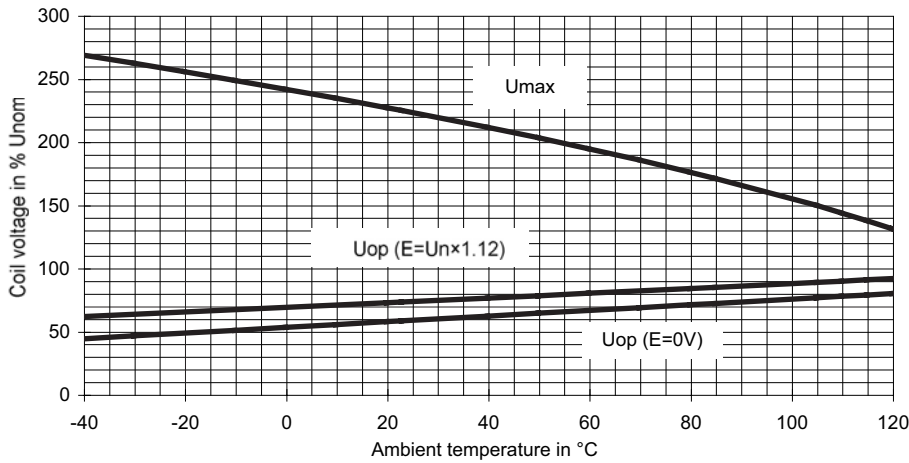
¹⁾ For unsuppressed relay coil.

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

086_OVR03



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

Double Micro Relay K (THT – THR)

Environmental Conditions				
Temperature range, storage	Refer to <i>Storage</i> 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 constant	IEC 68-2-30 IEC 68-2-3	Db, Variant 2 Method Ca	6 cycles 56 days	25°C/55°C/93% 40°C/93%
Corrosive gas THT THR	IEC 68-2-42 IEC 68-2-43		10 days 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 THT THR	IEC 68-2-20 IEC 68-2-58	Ta, Method 1	Hot dip 5 s 215°C 245°C	Aging 3 (4 h/155°C) for leaded process (Tm = 183°C) for Pb-free process (Tm = 217°C)
Resistance to soldering heat THT THR	IEC 68-2-20 IEC 68-2-58	Tb, Method 1A	Hot dip 10 s 260°C 260°C	with thermal screen Preheating min 130°C
Sealing THT THR	IEC 68-2-17	Qc, Method 2		1 min/70°C 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-C2001-A403	1413009-9	2 Form C	Silver based	Sealed	THT
V23086-C2002-A403	8-1419137-4	2 Form C	Silver based	Sealed	THT
V23086-R2801-A403	6-1414920-1	2 Form C	Silver based	Open vent hole	THR
V23086-R2802-A403	6-1414920-2	2 Form C	Silver based	Open vent hole	THR

Coil Versions

Coil Data for DMK – THT/THR	Rated Coil Voltage (V)	Coil Resistance ±10% (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive¹⁾ Voltage (V)	
					at 23°C	at 105°C
V23086-**001-****	12	254	6.9	1.5	27	18
V23086-**002-****	10	181	5.7	1.25	22	15

¹⁾ Allowable overdrive is stated with no load applied and minimum coil resistance.

Standard Delivery Packs (orders in multiples of delivery pack)

DMK – THT/THR: 990 pieces