Micro Relay K Latching

Features

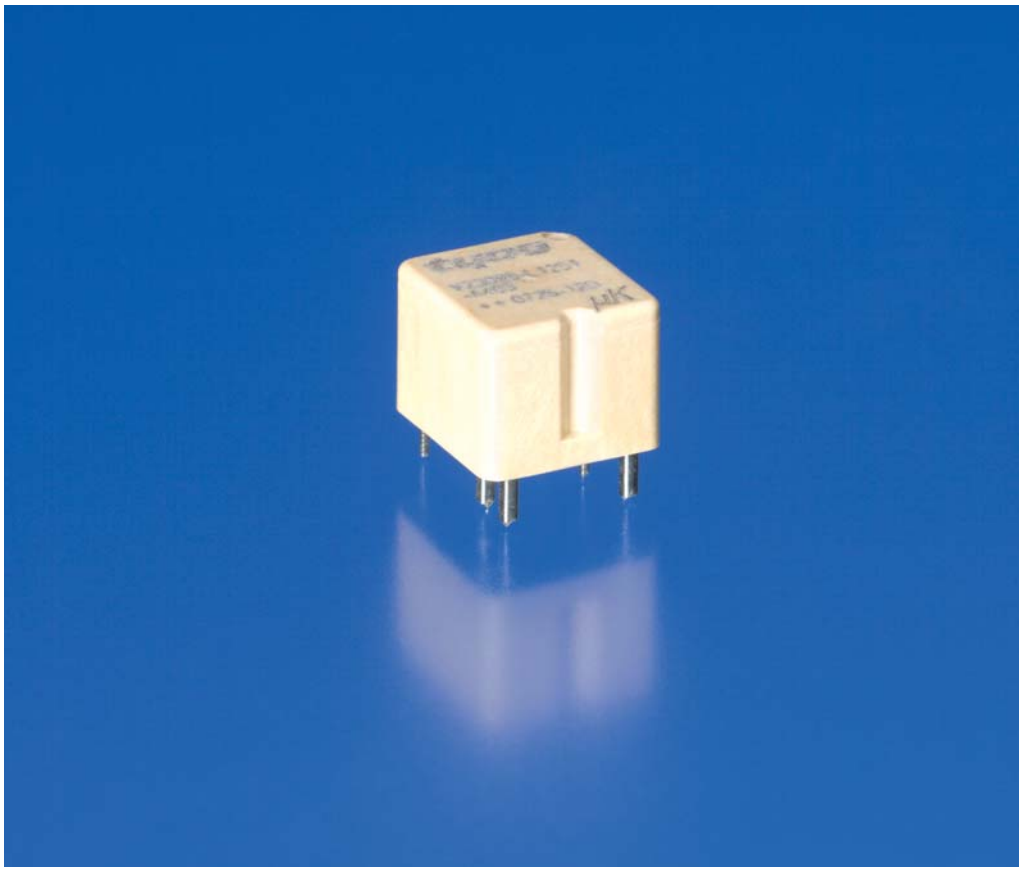
- Smallest magnetically latched PCB relay
- Only set and reset pulse no continuous coil power required
- Increased ambient temperature range up to 125°C
- Limiting continuous current up to 35 A
- Footprint compatible with Micro Relay K
- Two coils with set and reset function
- Minimal weight

- For monostable single version refer to Micro Relay K
- For monostable twin version refer to Double Micro Relay K

Typical Applications

- Active power management
- Energy management
- Main switch/supply relay
- Quiescent current management

Please contact Tyco Electronics for relay application support.



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Design

- ELV/RoHS/WEEE compliant
- THT: Sealed type washable

Weight

Approx. 4 g (0.14 oz.)

Nominal Voltage

12 V; other nominal voltages available on request

Terminals

PCB terminals for assembly on printed circuit boards

Conditions

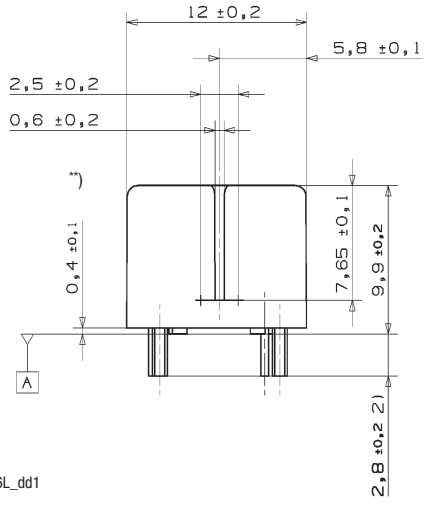
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23°C ambient temperature,
20 - 50% RH, 998.9 ±33.9 hPa.

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

Dimensional Drawing

**) Epoxy height at terminals max. 0.7 mm



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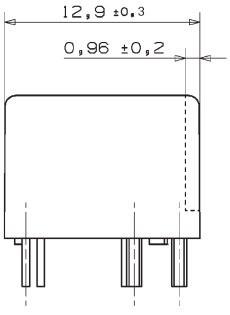

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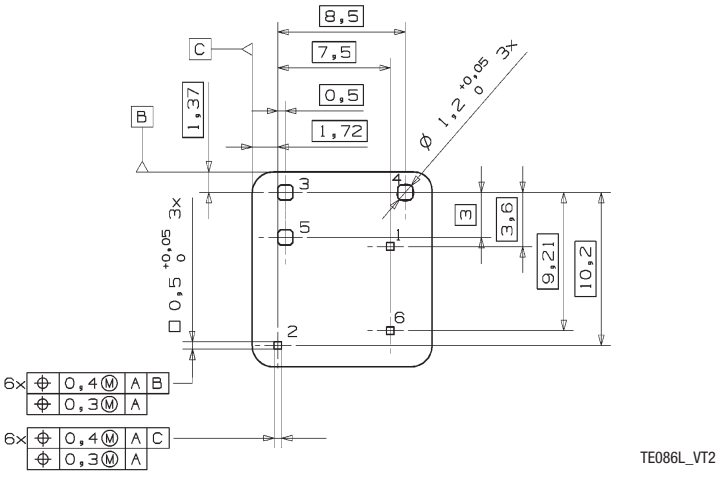
View of the Terminals (bottom view)



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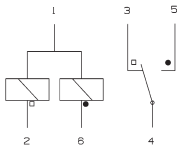
Remark: Positional tolerances according to DIN EN ISO 5458

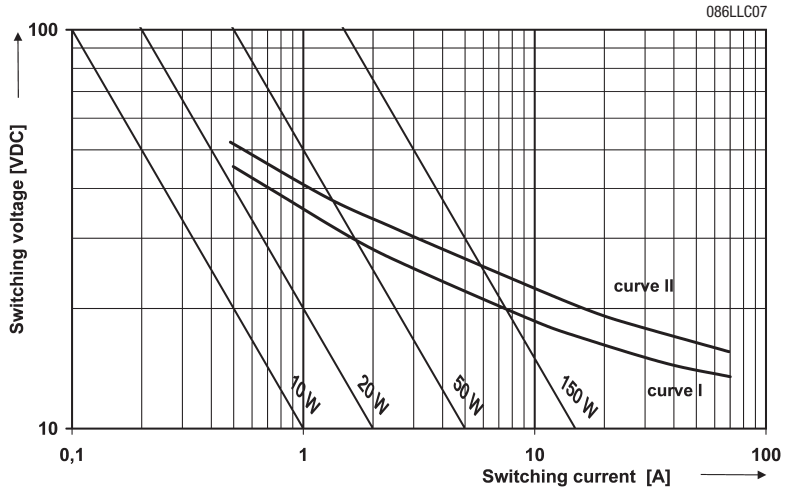
Micro Relay K Latching

Contact Data

Typical areas of application	Resistive/inductive/ capacitive loads		
Contact configuration	Changeover contact/ 1 Form C		
Circuit symbol [1), 2)] (see also Pin assignment)			
Rated voltage	12 V		
Rated current	Auxiliary contact: Pin 3 - 4		Main contact: Pin 5 - 4
	15 A		30 A
Limiting continuous current			
23°C	20 A		40 A
85°C	15 A		30 A
105°C	12 A		25 A
Contact material	$AgSnO_2$		
Max. switching voltage/power	See load limit curve		
Max. switching current			
On [3)]	20 A		50 A [4)]
Off	20 A		30 A
Min. recommended load [5)]	1 A at 5 V		
Voltage drop at 10 A (initial)	Typ. 30 mV, 300 mV max.		
Mechanical endurance (without load)	> 1 x 10^6 operations		
Electrical endurance	Resistive load:	Inductive load:	Lamp load:
	On 20 A/Off 20 A	On 25 A/Off 25 A	On 50 A/Off 5 A
	On 1 s/Off 1 s	On 120 ms/Off 4880 ms	On 120 ms/Off 4880 ms
	at +85°C	L = 0.6 mH	
	> 1 x 10^5 operations	at cyclic temperature change	at cyclic temperature change
		–40/+23/+85°C	–40/+23/+85°C
		> 1 x 10^5 operations	> 1 x 10^5 operations

1) Delivery status “ex works”.
2) Refer to *Latching Relay* in the “Glossary”.
3) The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V load voltages.
4) Corresponds to the peak inrush current on initial actuation (cold filament).
5) See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at http://relays.tycoelectronics.com/appnotes/

Load Limit Curve

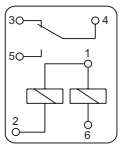


Load limit curve 1 ≙ arc extinguishes during transit time

Load limit curve 2 ≙ safe shutdown, no stationary arc

Circuit Diagram

1 Changeover contact/1 Form C



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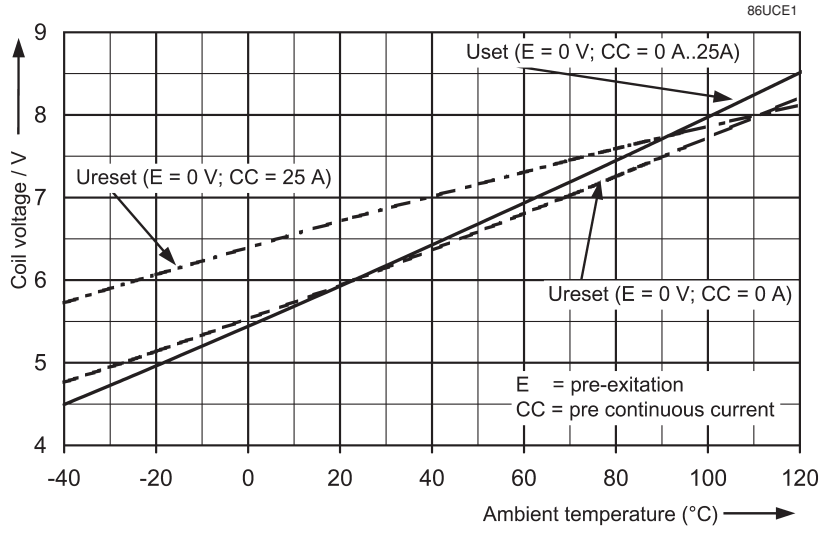
Coil Data

Available for nominal voltages	12 V						
Polarity for energizing/deenergizing main contact (pin 4 - 5)	Set			Reset			
	+ Pin 1	0 V Pin 2	n.a. Pin 6	+ Pin 1	n.a. Pin 2	0 V Pin 6	
Min. and max. set pulse width	5 ms < pulse width < 1 s						
Test voltage winding/contact	500 VAC_{rms}						
Maximum ambient temperature range [1]	–40 to +125°C						
Operate time at nominal voltage	Typ. 1.5 ms						
Release time at nominal voltage [2]	Typ. 1.5 ms						

[1] See also operating voltage range diagram.
[2] 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



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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	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 68-2-14	Nb	10 cycles	–40/+85°C (5°C per min)
Damp heat cyclic constant	 IEC 68-2-30 IEC 68-2-3	 Db Method Ca	 6 cycles 56 days	 Upper air temperature 55°C
Vibration resistance	IEC 68-2-6 (sine pulse form)		10 - 2000 Hz Main contact 10 g 10 - 500 Hz Auxiliary contact 6 g	 No change in the switching state > 10 µs
Shock resistance	IEC 68-2-27 (half sine form single pulses)		6 ms Main contact 100 g Auxiliary contact 30 g	 No change in the switching state > 10 µs
Solderability	IEC 68-2-20	Ta, Method 1	Hot dip 5 s 215°C	Aging 3 (4 h/155°C) for leaded process (Tm = 183°C) for Pb-free process (Tm = 217°C)
Resistance to soldering heat	IEC 68-2-20	Td, Method 1A	Hot dip 10 s 260°C	with thermal screen
Sealing	IEC 68-2-17	Qc, Method 2		1 min/70°C

Ordering Information

Part Numbers (see table below for coil data)		**Contact Arrangement**	**Contact Material**	**Enclosure**	**Terminals**
Relay Description	**Part Number**				
V23086-L1251-A403	8-1416000-9	1 Form C	$AgSnO_2$	Sealed	Printed circuit

Coil Versions

Coil Data for Micro K Latching	**Rated Coil Voltage (V)**	**Coil Resistance ±10% (Ω)**		**Must Pulse Voltage (V)**		**Allowable Overdrive[1] Voltage (V)**			
						at 23°C		**at 85°C**	
		Set	**Reset**	**Set**	**Reset**	**Set**	**Reset**	**Set**	**Reset**
V23086-**251-****	12	75	75	6	6	28	18; 28[2)3)]	28	18; 28[2)3)]

[1)] Allowable overdrive is stated with no load applied and minimum coil resistance.
[2)] Overvoltage according to ISO 16750-2 functional status C. In case of a reset latch pulse up to 28 V the contact may reclose, but will not remain closed (no latching function).
[3)] The delay between driving impulses at cyclic energizing at T_{Amb} = 85°C must be at least 10 s.

Standard Delivery Packs (orders in multiples of delivery pack)

Micro K Latching: 2000 pieces