

Micro Relay Latching



Features

- Magnetically latched ISO plug-in relay
- Two coils with set and reset function
- Pin assignment according to ISO 7588 part 3
- Plug-in terminals

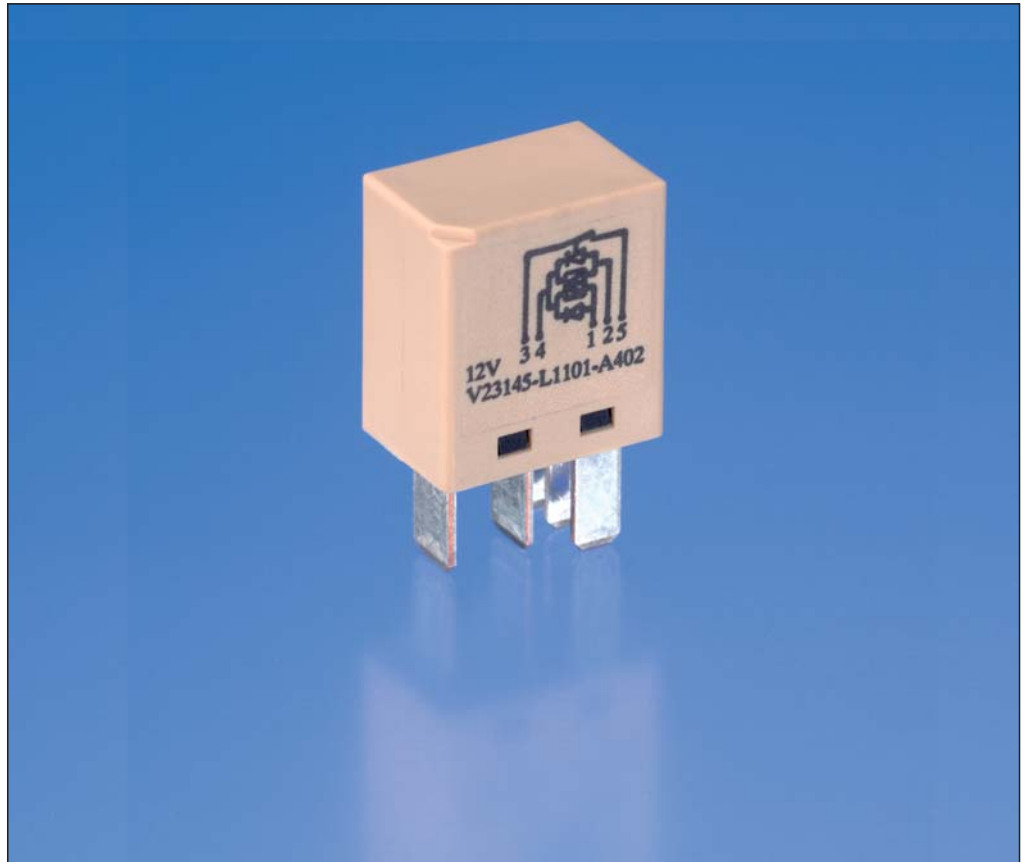
Customized Versions on Request

- Special marking
- Special covers (e.g. notches, release features, brackets)

Typical Applications

- Active power management
- Disconnection of power outlets
- Security systems

Please contact Tyco Electronics for relay application support.



145L_302

Design

- ELV/RoHS/WEEE compliant
- Dustproof; protection class IP54 to IEC 529 (EN 60 529)

Weight

Approx. 15 g (0.5 oz.)

Nominal Voltage

12 V

Terminals

Quick connect terminals similar to ISO 8092-1, coil and break 4.8 x 0.8 mm, load terminals 6.3 x 0.8 mm; surfaces tin plated

Accessories

Connectors see page 226 ff

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.

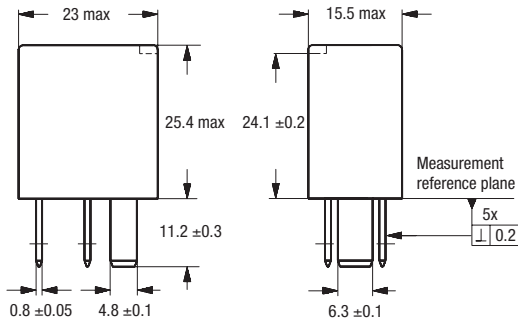
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

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.

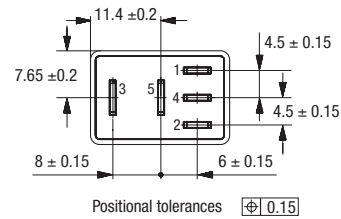
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Dimensional Drawing




Quick connect terminal similar to ISO 8092-1

View of the Terminals (bottom view)



145_DD_1

Contact Data

| | |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Typical areas of application | Resistive, inductive and capacitive loads |
| Contact configuration | 1 Make contact/ 1 Form A |
| Circuit symbol (see also Pin assignment) |  |
| Rated voltage | 12 V |
| Rated current | 20 A |
| Limiting continuous current | |
| 23°C | 25 A |
| 85°C | 20 A |
| 125°C | 8 A |
| Contact material | Silver based |
| Max. switching voltage/power | See load limit curve |
| Max. switching current ¹⁾ | |
| On ²⁾ | 50 A |
| Off | 30 A |
| Min. recommended load ³⁾ | 1 A at 5 V |
| Voltage drop at 10 A (initial) | |
| NO contact | Typ. 50 mV, 300 mV max. |
| Mechanical endurance (without load) | Typ. 10 ⁶ operations |
| Electrical endurance example at cyclic temperature -40/+23°C/+85°C and 14 V | > 1 x 10 ⁵ operations 20 A resistive > 1 x 10 ⁵ operations 25 A inductive (L=0.6 mH) |
| Max. switching rate at nominal load | 6 operations per minute (0.1 Hz) |

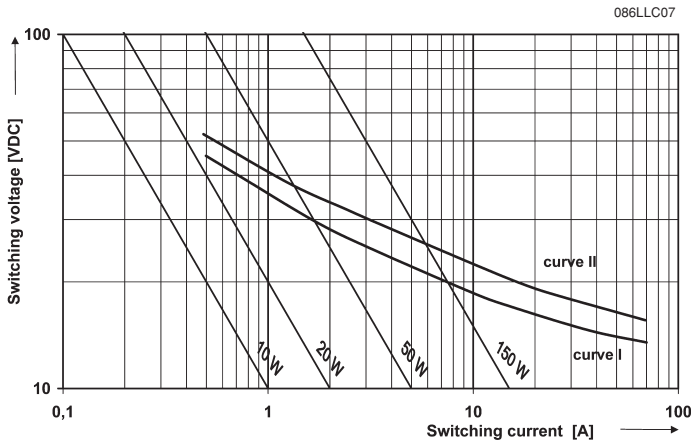
¹⁾ The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V.

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/>

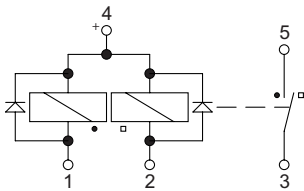
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Load Limit Curve



Circuit Diagram

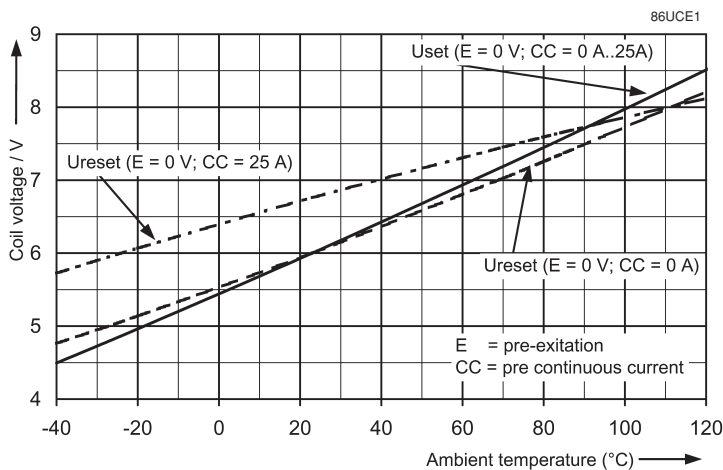
AS
1 Make contact/1 Form A
with Diodes



Coil Data

| | | | | |
|----------------------------------------------|--------------------------|-------|-------|-------|
| Available for nominal voltages | 12 V | | | |
| Polarity for energizing/deenergizing contact | Set | | Reset | |
| | + | - | + | - |
| | Pin 4 | Pin 1 | Pin 4 | Pin 2 |
| Min. and max. set pulse width | 5 ms < pulse width < 1 s | | | |
| Test voltage winding/contact | 500 VAC _{rms} | | | |
| Ambient temperature range | -40 to +125°C | | | |
| Operate time at nominal voltage | Typ. 1.5 ms | | | |
| Release time at nominal voltage | Typ. 1.5 ms | | | |

Operating Voltage Range



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| Mechanical Data | |
|-----------------------------------------------|---------------------------------------------------------------------------|
| Cover retention | |
| Axial force | 150 N |
| Pull force | 150 N |
| Push force | 200 N |
| Terminals | |
| Pull force | 100 N |
| Push force | 100 N |
| Resistance to bending, force applied to front | 10 N ¹⁾ |
| Resistance to bending, force applied to side | 10 N ¹⁾ |
| Torsion | 0.3 Nm |
| Enclosures | |
| Dust cover | Protects relay from dust. For use in passenger compartment or enclosures. |

¹⁾ Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

| 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 |
| 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 | IEC 68-2-30 | Db, Variant 1 | 6 cycles | Upper air temperature 55°C |
| constant | IEC 68-2-3 | Ca | 56 days | |
| Corrosive gas | IEC 68-2-42 | 10 ±2 cm ³ /m ³ SO ₂ | 10 days | |
| | IEC 68-2-43 | 1 ±0.3 cm ³ /m ³ H ₂ S | 10 days | |
| Vibration resistance | IEC 68-2-6 (sine sweep) | | 10 - 500 Hz min. 10 g | No change in the switching state > 10 μs |
| Shock resistance | IEC 68-2-27 (half sine form single pulses) | | min. 30 g 6 ms | |
| Load dump | ISO 7637-1 (12 V) | Test pulse 5 | Vs = +86.5 V | |
| Drop test | Capable of meeting specifications after 1.0 m (3.28 ft) drop onto concrete | | | |
| Flammability | UL94-HB or better (meets FMVSS 302) ¹⁾ | | | |
| Overload current ²⁾ | 27 A, 1800 s 40 A, 5 s 70 A, 0.5 s 120 A, 0.1 s | | | |

¹⁾ FMVSS: Federal Motor Vehicle Safety Standard.

²⁾ Current and time are compatible with circuit protection by a typical 20 A automotive fuse. Relay will make, carry and break the specified current.

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Ordering Information

| Part Numbers (see table below for coil data) | | Circuit/Contact Arrangement | Contact Material | Enclosure | Terminals |
|-------------------------------------------------|-------------|--------------------------------|---------------------|------------|---------------|
| Relay Description | Part Number | | | | |
| V23145-L1101-A402 | On request | AS/1 Form A | Silver based | Dust cover | Quick connect |

Coil Versions

| Coil Data for Micro Latching | Rated Coil Voltage (V) | Coil Resistance $\pm 10\%$ (Ω) | | Must Pulse Voltage (V) | | Allowable Overdrive ¹⁾ Voltage (V) | | | |
|------------------------------------|------------------------------|-----------------------------------------------|-------|------------------------------|-------|--------------------------------------------------|------------------------|---------|------------------------|
| | | Set | Reset | Set | Reset | at 23°C | | at 85°C | |
| | | | | | | Set | Reset | Set | Reset |
| V23145-L1101-A402 | 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 $T_{Amb} = 85^{\circ}\text{C}$ must be at least 10 s.

Standard Delivery Packs (orders in multiples of delivery pack)

Micro Latching: On request