

Micro Relay Low Noise


Features

- Noise level below 50 dB(A)
- Limiting continuous current 20 A
- Pin assignment according to ISO 7588 part 3
- Plug-in terminals

Customized Versions on Request

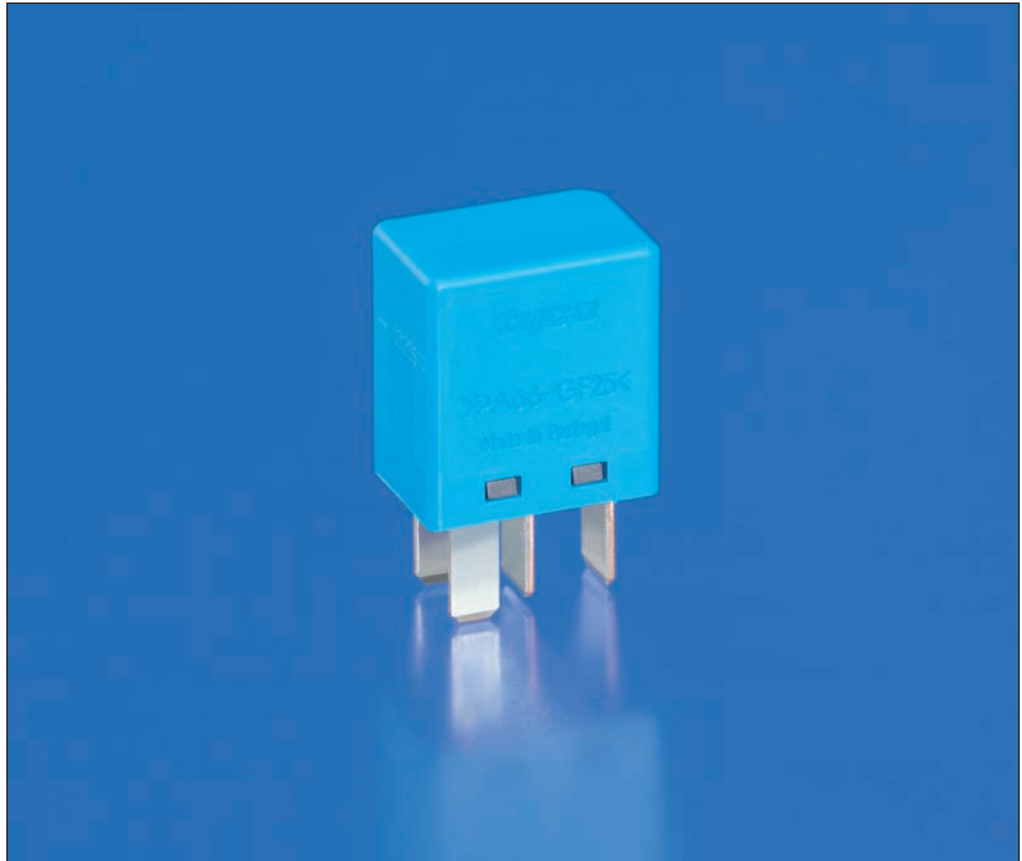
- Special marking
- Special covers (e.g. notches, release features, brackets)

Typical Applications

Cross carline up to 20 A
for example:

- Front and rear wiper
- Air condition
- Interior fan

Please contact Tyco Electronics for relay application support.



145_3003

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.

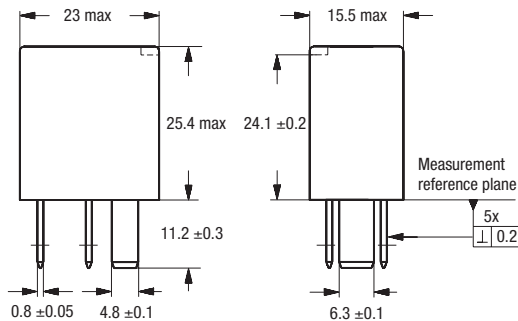
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

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.

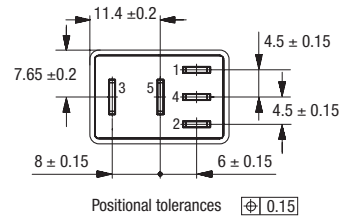
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Dimensional Drawing





Quick connect terminal similar to ISO 8092-1

View of the Terminals (bottom view)



Contact Data

Typical areas of application		Wiper
Contact configuration	1 Make contact/ 1 Form A	1 Changeover contact/ 1 Form C
Circuit symbol		
Rated voltage	12 V	12 V
Rated current	15 A	10/15 A
Limiting continuous current		NC/NO
23°C	20 A	15/20 A
85°C	15 A	10/15 A
125°C	8 A	5/8 A
Contact material	Silver based	
Max. switching voltage/power	See load limit curve	
Max. switching current ¹⁾		
On ²⁾	100 A	40 A
Off	30 A	30 A
Min. recommended load ³⁾	1 A at 5 V	
Voltage drop at 10 A (initial)		
NO contact	Typ. 15 mV, 300 mV max.	Typ. 50 mV, 300 mV max.
NC contact		
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 15 A resistive > 1 x 10 ⁵ operations 120 W lamp (+ on terminal 5)	> 1 x 10 ⁵ operations front wiper (20 a inrush, 8 A steady, 1.1 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 load voltages.

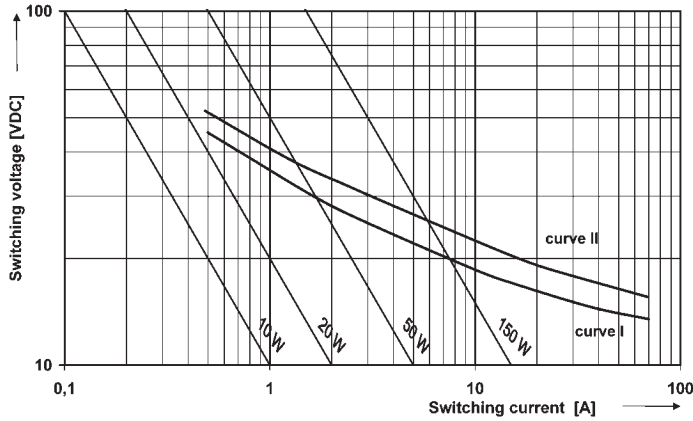
²⁾ For a load current duration of maximum 3 s for a make/break ratio of 1:10.

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

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Load Limit Curve

086LLC07



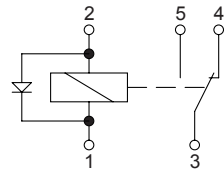
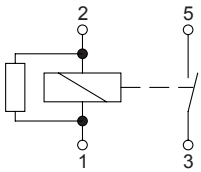
Load limit curve 1 \triangleq arc extinguishes during transit time

Load limit curve 2 \triangleq safe shutdown, no stationary arc

Circuit Diagram

AR
1 Make contact/1 Form A
with Resistor

CD
1 Changeover contact/1 Form C
with Diode



Coil Data

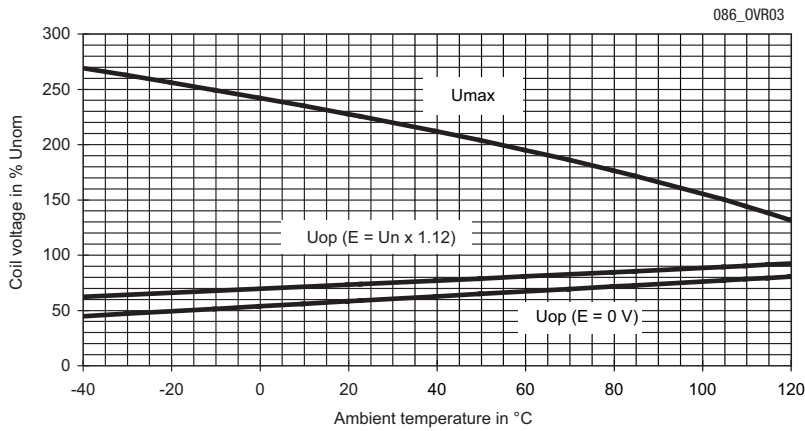
Available for nominal voltages	12 V	
Nominal power consumption at nominal voltage with suppression resistor	Form A/Make 0.9 W	Form C/Changeover 0.6 W
Test voltage winding/contact	500 VAC _{rms}	
Ambient temperature range	-40 to +85°C	
Operate time at nominal voltage	Typ. 3 ms	
Release time at nominal voltage	Typ. 2 ms	Typ. 4 ms

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.

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Operating Voltage Range



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

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
Noise emission	Leq measured at 10 cm distance, 0.5 s/0.5 s cycling, freely suspended in anechoic chamber		< 50 dB (A)	
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	6 cycles	Upper air temperature 55°C 56 days
constant	IEC 68-2-3	Ca		
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. 5 g	No change in the switching state > 10 μs Valid for NC contacts, NO contact values significantly higher
Shock resistance	IEC 68-2-27 (half sine form single pulses)		min. 20 g 11 ms	
Load dump	ISO 7637-1 (12 V)	Test pulse 5	Vs = +86.5 V	
Jump start	24 V for 5 minutes conducting nominal current at 23°C			
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-B1101-A402	3-1414773-5	AR/1 Form A	Silver based	Dust cover	Quick connect
V23145-A1101-A403	On request	CD/1 Form C	Silver based	Dust cover	Quick connect

Coil Versions

Coil Data for Micro LN	Rated Coil Voltage (V)	Coil Resistance ²⁾ ±10% (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive ¹⁾ Voltage (V)	
					at 23°C	at 85°C
V23145-B1101-A402	12	181	7.2	1.4	25	19
V23145-A1101-A403	12	254	7.2	1.4	25	19

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

Standard Delivery Packs (orders in multiples of delivery pack)

Micro LN: 240 pieces