

Micro Relay A



Features

- Limiting continuous current 25 A at 85°C
- High current version with limiting continuous current 30 A at 85°C
- Pin assignment according to ISO 7588 part 3

Customized Versions on Request

- 24 V versions with special contact gap
- Integrated components (e.g. diode)
- Customized marking
- Special covers (e.g. notches, release features, brackets)
- For latching version refer to Micro Relay Latching
- For low noise version refer to Micro Relay Low Noise
- For high current version refer to Ordering Information page 41

Typical Applications

Cross carline up to 25 A
for example:

- ABS control
- Blower fans
- Cooling fan
- Door control
- Door lock
- Fuel pump
- Heated front screen
- Immobilizer
- Interior lights
- Seat control
- Seatbelt pretensioner
- Sun roof
- Trunk lock
- Valves
- Window lifter
- Wiper control

Please contact Tyco Electronics for relay application support.



074_3D03

Design

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

Weight

Approx. 16 – 20 g (0.5 – 0.7 oz.)

Nominal Voltage

12 V or 24 V

Terminals

Quick connect terminals similar to ISO 8092-1, coil and break 4.8 x 0.8 mm, load 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.

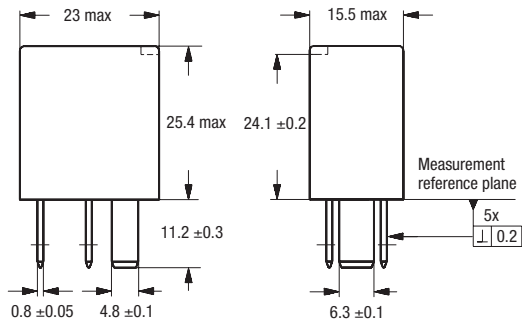
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the “Glossary” page 23 or at <http://relays.tycoelectronics.com/apnotes/>

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.

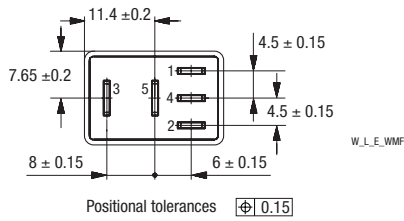
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Dimensional Drawing

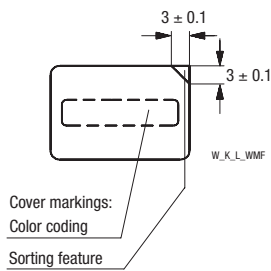


Quick connect terminal similar to ISO 8092-1

View of the Terminals (bottom view)





Cover Marking



Only available for Micro Relay A on request

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Contact Data

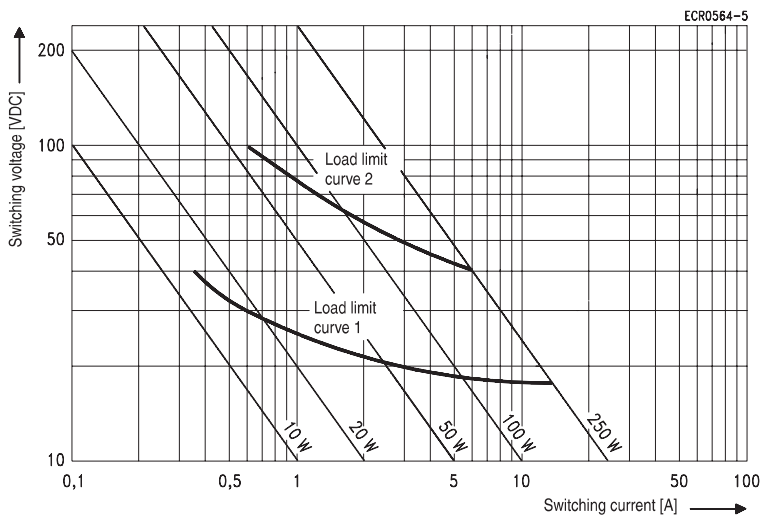
Contact configuration	1 Make contact/ 1 Form A			1 Changeover contact/ 1 Form C	
Circuit symbol					
Rated voltage	12 V		24 V	12 V	24 V
Rated current	Standard 25 A	High current 30 A	15 A	15/25 A	10/15 A
Limiting continuous current				NC/NO 20/30 A 15/25 A 8/10 A	
23°C	30 A	35 A	30 A		
85°C	25 A	30 A	25 A		
125°C	10 A	15 A	10 A		
Contact material	Silver based				
Max. switching voltage/power	See load limit curve				
Max. switching current ¹⁾				NC/NO 40/120 A	NC/NO 20/120 A
On ²⁾	120 A	120 A	120 A	15/30 A	10/20 A
Off	30 A	30 A	20 A	15/30 A	10/20 A
Min. recommended load ³⁾	1 A at 5 V				
Voltage drop at 10 A (initial)	Typ. 15 mV, 200 mV max.			Typ. 15 mV, 200 mV max. Typ. 20 mV, 250 mV max.	
NO contact					
NC contact					
Mechanical endurance (without load)	Typ. 10 ⁷ operations				
Electrical endurance (example of resistive load, further information on request)	> 1 x 10 ⁵ operations 25 A, 14 V 30 A, 14 V		> 1 x 10 ⁵ operations 15 A, 28 V	> 1 x 10 ⁵ operations 25 A, 14 V (NO contact) > 1 x 10 ⁵ operations 10 A, 28 V (NC contact)	> 1 x 10 ⁵ operations 15 A, 28 V (NO contact)
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 or 27 V for 24 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/>

Load Limit Curve



Load limit curve 1 ≙ arc extinguishes, during transit time (changeover contact)

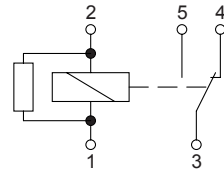
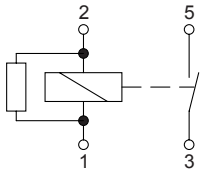
Load limit curve 2 ≙ safe shutdown, no stationary arc (make contact)

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Circuit Diagram

AR
1 Make contact/1 Form A
with Resistor

CR
1 Changeover contact/1 Form C
with Resistor



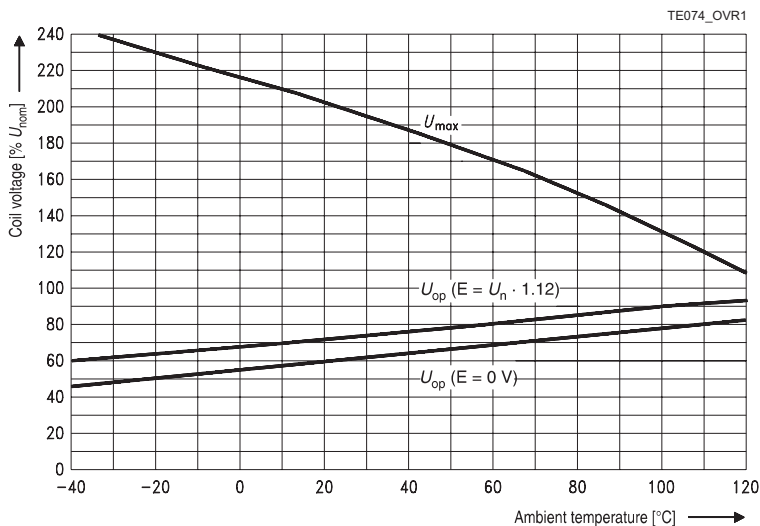
Coil Data

Available for nominal voltages	12 V / 24 V		
Nominal power consumption at nominal voltage with suppression resistor	Micro A 12 V 1.4 W	Micro A 12 V high current 1.1 W	Micro A 24 V 1.6 W
Test voltage winding/contact	500 VAC _{rms}		
Ambient temperature range	-40 to +125°C		
Max. switching rate without contact loading	20 Hz		
Operate time at nominal voltage	Typ. 5 ms		
Release time at nominal voltage	Typ. 3 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.

Operating Voltage Range



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

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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. 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	
	ISO 7637-2 (24 V)	Test pulse 5	Vs = +200 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⁾	34 A, 1800 s 50 A, 5 s 87.5 A, 0.5 s 150 A, 0.1 s			

¹⁾ FMVSS: Federal Motor Vehicle Safety Standard.

²⁾ Current and time are compatible with circuit protection by a typical 25 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	Coil Suppression	Terminals
Relay Description	Equivalent to	Part Number					
12 V Plug-In Relays ¹⁾							
V23074-A1001-A402	VFM-11F41-S01	1393292-5	AR/1 Form A	AgSnO ₂	Dust cover	Resistor 680 Ω	Quick connect
V23074-A1001-A403	VFM-15F41-S01	8-1393292-4	CR/1 Form C	AgSnO ₂	Dust cover	Resistor 680 Ω	Quick connect
High current version ¹⁾							
V23074-H1005-A502		2-1414971-4	AR/1 Form A	AgSnO ₂	Dust cover	Resistor 680 Ω	Quick connect
24 V Plug-In Relays ¹⁾							
V23074-A1002-A402			AR/1 Form A	AgSnO ₂	Dust cover	Resistor 1800 Ω	Quick connect
V23074-A1002-A403			CR/1 Form C	AgSnO ₂	Dust cover	Resistor 1800 Ω	Quick connect

¹⁾ Versions with diode or varistor in parallel to the coil on request. Versions with special labels or color shapes on request

Coil Versions

Coil Data for Micro A (with Resistor)	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
V23074-**001-****	12	105	7.2	1.6	24	18
V23074-**002-****	24	347	14.4	3.6	45	33
V23074-**005-****	12	127	7.2	1.6	24	18

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

²⁾ Including parallel resistor.

Standard Delivery Packs (orders in multiples of delivery pack)

Micro A: 480 pieces