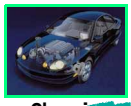
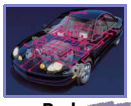
Micro power relay A


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information

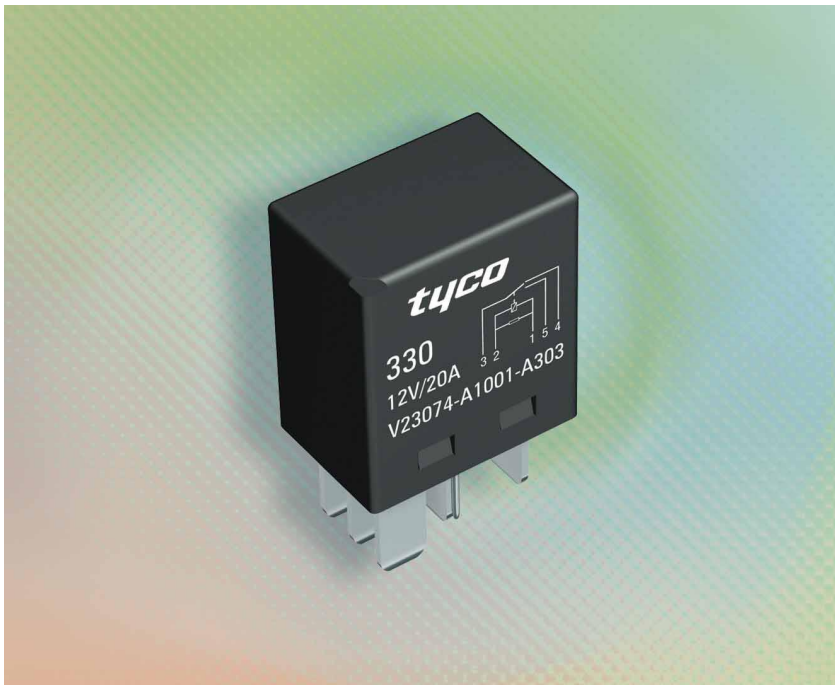

Convenience

Features

- Limiting continuous currents 25/15 A at the NO contact/ NC contact
- Pin assignment to ISO 7588 part 3
- Positions of quick connect terminals to ISO 7588 part 3
- Compact dimensions

Typical applications

- Heaters (seat, front/rear windows)
- Motors (fan, pump, wiper)
- Valves, lifting magnets, interlocks
- Headlights, lighting



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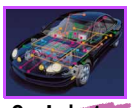

Car Industry


Truck Industry


Other Industry

Design

Dustproof; protection class IP 54 to IEC 60 529 (EN 60 529)
Optional cover markings; color-coded

Weight

Approx. 0.5 - 0.7 oz. (16 - 20 g) depending on contact

Nominal voltage

12 V or 24 V, VFM (see page 82) also 6 V;
other nominal voltages available on request

Terminals

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

Accessories

Connectors see page 180

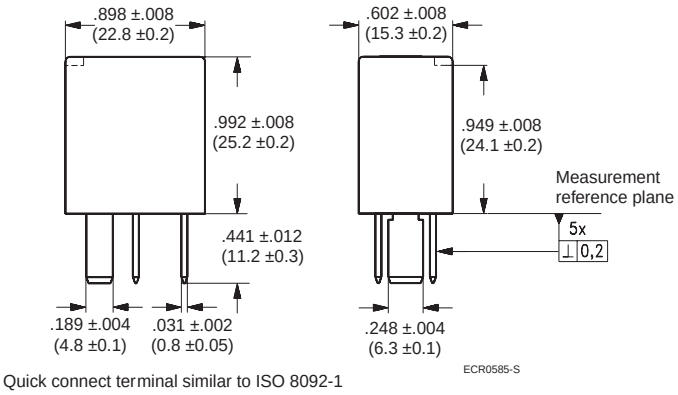
Special models on request

- 1 component (diode or varistor) parallel to the coil
- Special labels
- Special cover shapes

Conditions

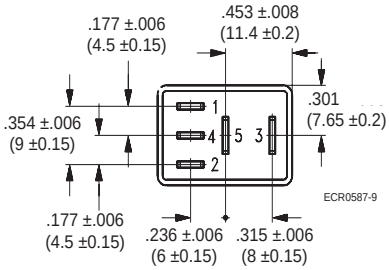
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted: 23 °C ambient temperature, 20-50% RH, 29.5 ± 1.0" Hg (998.9 ±33.9 hPa).

Dimension drawing

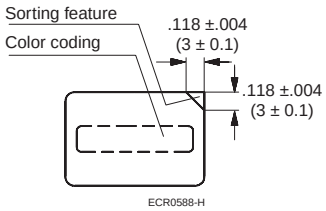


Quick connect terminal similar to ISO 8092-1

View on the terminals (bottom view)



Cover markings
(view from above)



Models with color coded covers on request

Micro power relay A

Contact data	**12 V nominal voltage, test voltage 13 VDC**			
Typical areas of application	Resistive/inductive loads		Lamp loads	
Contact configuration	Make contact/ Form A	Changeover contact/ Form C	Make contact/ Form A	Changeover contact/ Form C
Contact material	AgNi0.15		$AgSnO_2$	
Circuit symbol (see also Pin assignment)				
Max. switching voltage	See load limit curve			
Max. switching power	See load limit curve			
Max. switching current[1]		NC/NO		NC/NO
On[2]	90 A	20/90 A	120 A[3]	40/120 A
Off	30 A	15/30 A	30 A	15/30 A
Limiting continuous current		NC/NO		NC/NO
at 23 °C	25 A	15/25 A	25 A	15/25 A
at 85 °C	15 A	10/15 A	15 A	10/15 A
Voltage drop (initial) at 10 A	Typ. 20 mV			
Increase in coil temperature at 10 A load	Typ. 5 °C			
Mechanical endurance (without load)	> 10^6 operations			
Electrical endurance	See page 81			

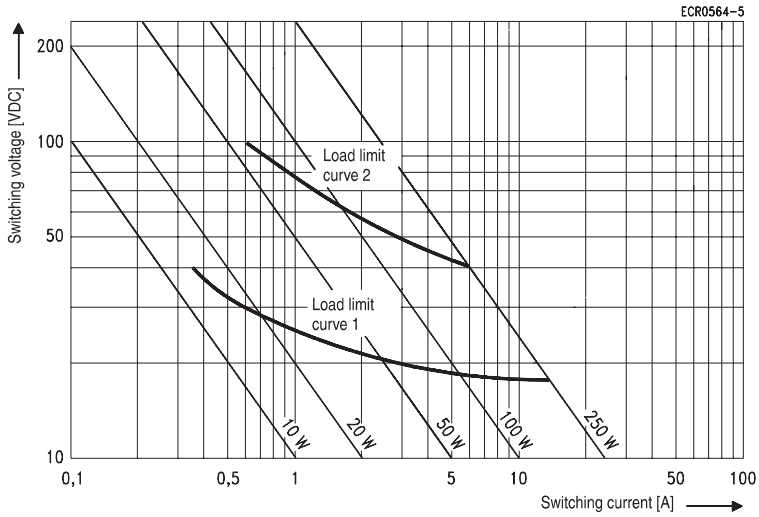
1) The values apply to a resistive load or inductive load with suitable spark suppression.
2) This current may flow for a maximum of 3 sec for a make/break ratio of 1 : 10.
3) Corresponds to the peak inrush current of a lamp on initial actuation (cold coil filament).

Micro power relay A

Contact data	**24 V nominal voltage, contact gap ≥ 0.6 mm, test voltage 27 VDC**		
Typical areas of application	Resistive/inductive loads		Lamp loads
Contact configuration	Make contact/ Form A	Changeover contact/ Form C	Make contact/ Form A
Contact material	AgNi0.15		$AgSnO_2$
Circuit symbol (see also Pin assignment)			
Max. switching voltage	See load limit curve		
Max. switching power	See load limit curve		
Max. switching current[1]		NC/NO	
On[2]	40 A	20/40 A	80 A[3]
Off	20 A	10/20 A	15 A
Limiting continuous current		NC/NO	
at 23 °C	25 A	15/25 A	25 A
at 85 °C	15 A	10/15 A	15 A
Voltage drop (initial) at 10 A	Typ. 20 mV		
Increase in coil temperature at 10 A load	Typ. 5 °C		
Mechanical endurance (without load)	Typ. 10^7 operations		
Electrical endurance	See page 81		

1) The values apply to a resistive load or inductive load with suitable spark suppression.
2) This current may flow for a maximum of 3 sec for a make/break ratio of 1 : 10.
3) Corresponds to the peak inrush current of a lamp on initial actuation (cold coil filament).

Load limit curve

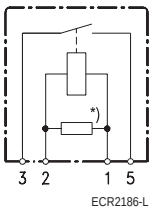


Load limit curve 1 ≙ arc extinguishes during transit time (changeover contact)

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

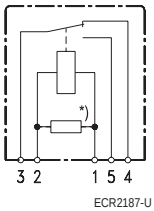
Pin assignment

1 make contact/
1 form A



*) Models with diode in parallel to the coil on request.

1 changeover contact/
1 form C



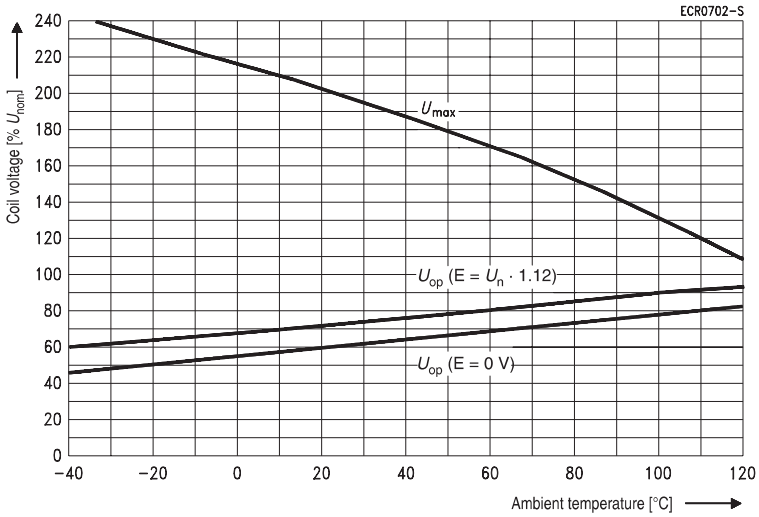
*) Models with diode in parallel to the coil on request.

Coil data		
Available for nominal voltages	12 VDC	24 VDC
Nominal power consumption at nominal voltage	1.4 W	1.6 W
Resistor parallel to the coil	680 Ω	1800 Ω
Test voltage winding/contact	1000 VAC_{rms}	
Upper limit temperature for the coil	180 °C	
Maximum ambient temperature range[1)]	– 40 to + 125 °C	
Max. switching rate without contact loading	20 Hz	
Operate time[2)]	Typ. 5 msec	
Release time[2)]	Typ. 2 msec	

1) See also operating voltage range diagram
2) Measured at nominal voltage without coil suppression unit

N.B.
A low resistive device in parallel to the relay coil slows the armature movement down 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

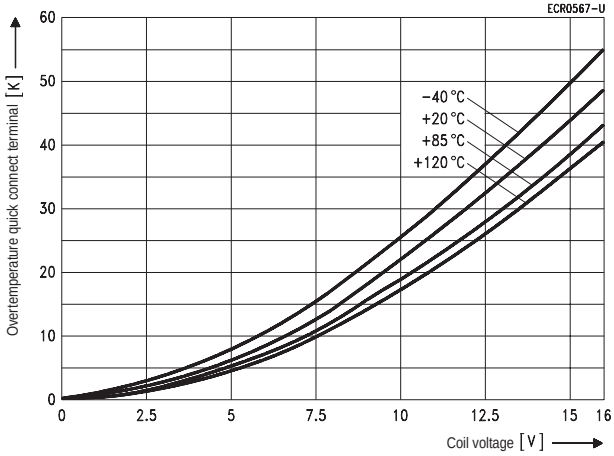
Mechanical data	
Cover retention	
pull	100 N (22.5 lbs)
push	100 N (22.5 lbs)
Terminals	
Pull force	100 N (22.5 lbs)
Push force	100 N (22.5 lbs)
Resistance to bending, force applied to front	10 N (2.25 lbs)
Resistance to bending, force applied to side	10 N (2.25 lbs)
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures

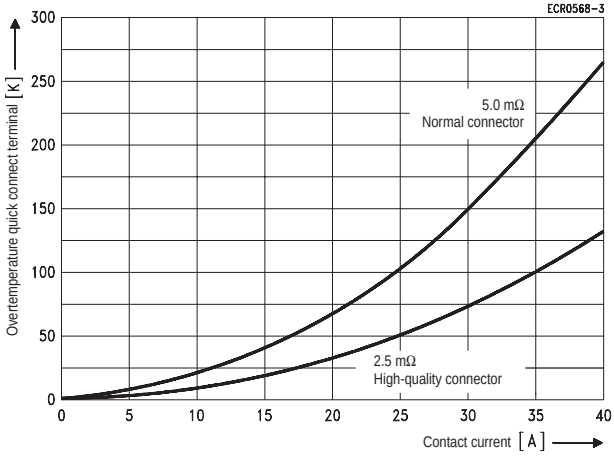
Operating conditions

Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
Climatic cycling with condensation	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 60 068-2-14	Nb	10 cycles	– 40/+ 85 °C (5 °C per min.)
Damp heat cyclic constant	 IEC 60 068-2-30 IEC 60 068-2-3	 Db, Variant 1 Ca	 6 cycles 10 days	 Upper air temperature 55 °C
Corrosive gas	IEC 60 068-2-42 IEC 60 068-2-43	10 ± 2 cm^3/m^3 SO_2 1 ± 0.3 cm^3/m^3 H_2S	10 days 10 days	
Vibration resistance	IEC 60 068-2-6 (sine pulse form) acceleration, acc. to position		20 - 500 Hz min. 5 *g*	No change in the switching state > 10 µsec
Shock resistance	IEC 60 068-2-27 (half-sine pulse form) acceleration, acc. to position		min. 20 *g*	No change in the switching state > 10 µsec
Load dump	ISO 7637	DIN 40 839 Part 1		
Jump start	5 s 16 V 15 s 28 V 10 s 16 V		3 cycles	
Drop test	Capable of meeting specifications after 1.0 m (3.28 foot) drop onto concrete			
Flammability	UL94-HB			

Temperature curves for the quick connect terminals

Parameter:
Ambient temperature Contact circuit release incl. connector





Micro power relay A

Electrical endurance
12 V nominal voltage, test voltage 13 V

	Make contact	Break contact	Order number
Motor load			V23074-A1001-A302 (make contact) V23074-A1001-A303 (changeover contact)
Make current	40 A	20 A	
Break current	20 A	10 A	
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		
Resistive load			
Nominal load current	20 A	10 A	
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		
Lamp load (bounce free coil control circuit)			V23074-A1001-A402 (make contact) V23074-A1001-A403 (changeover contact)
Max. make current	120 A	40 A	
Break contact	20 A	10 A	
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		

24 V nominal voltage, test voltage 27 V

	Make contact	Break contact	Order number
Motor load			V23074-A1002-A302 (make contact) V23074-A1002-A303 (changeover contact)
Make current	38 A	28 A	
Break current	15 A	6 A	
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		
Resistive load			
Nominal load current	20 A	10 A	
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		
Lamp load, 2 H4 lamps (bounce free coil control circuit)			V23074-A1002-A402 (make contact)
Max. make current	70 A		
Break current	7 A		
Duty cycle t_{on}/t_{off}	2 sec/2 sec		
Operations	> 10^5		

Ordering information

Part number (Replace * with "Coil designator") Micro A[1)]	Contact arrangement	Contact material	Enclosure	Terminals
V23074-A1*-A302	1 Form A	AgNi0.15	dust cover, black	quick connect
V23074-A1*-A303	1 Form C	AgNi0.15	dust cover, black	quick connect
V23074-A1*-A402	1 Form A	$AgSnO_2$	dust cover, black	quick connect
V23074-A1*-A403	1 Form C	$AgSnO_2$	dust cover, black	quick connect

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

Coil versions

Coil designator Micro A (with resistor)	Rated coil voltage (V)	Coil resistance +/- 10% (Ω)	Must operate voltage (VDC)	Must release voltage (VDC)	Allowable overdrive (VDC) at 23 °C[1)]	Allowable overdrive (VDC) at 85 °C[1)]
001	12	124	7.2	1.8	24	18
002	24	441	14.4	3.6	45	33

1) Allowable overdrive is stated with no load current flowing through the relay contacts and minimum coil resistance.

Standard delivery packs (orders in multiples of delivery pack)

Micro power relay A: 480 pieces