

Micro power relay K SMD

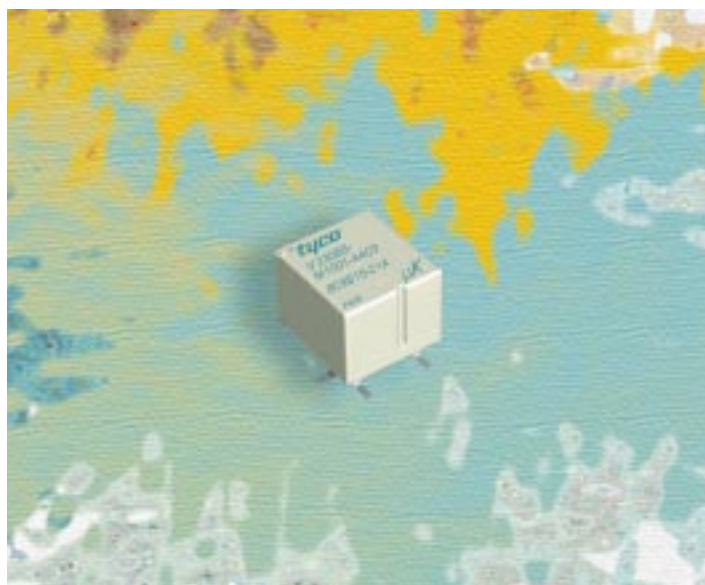


Features

- Smallest power relay with surface mounted technology
- Minimal weight (0.14 oz. / 4 g)
- Maximum continuous current 30 A
- SMD-terminals designed for convection and infrared reflow

Typical applications

- Rear window and seat heating
- Wiper and indicator control
- Lamp load
- Motor management



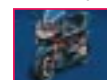
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~~Car Industry~~



Truck Industry



~~Other Industry~~

Design

Sealed;
sealed version:
sealing in accordance with IEC 68;
immersion cleanable:
protection class IP67 to IEC 529 (EN 60 529)

Weight

Approx. 0.14 oz. (4 g)

Nominal voltage

10, 12 V
other nominal voltages on request

Terminals

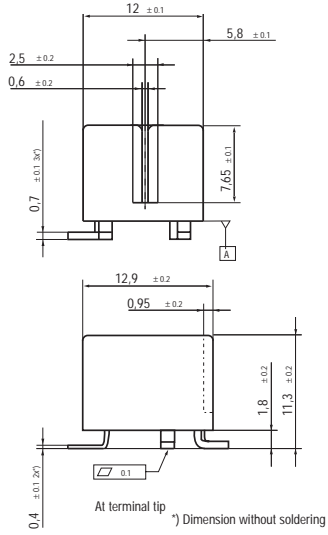
PCB/SMD terminals, for assembling in printed circuit boards

Conditions

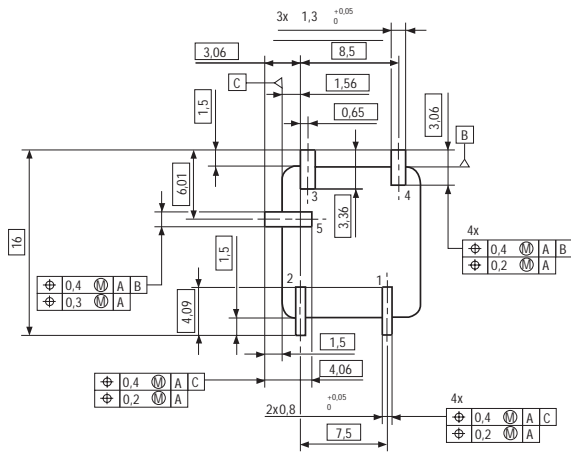
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23 °C ambient temperature,
20-50% RH, 29.5 ± 1.0" Hg (998.9 ± 33.9 hPa).

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Dimensional drawing



View of the terminals (Bottom view)



Remark: Positional tolerances according to DIN EN ISO 5458

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Contact data					
Contact configuration	Changeover contact/ Form C			Make contact/ Form A	Make contact/ Form A
Contact material	AgNi0.15 (AgSnO ₂ available on request)			AgSnO ₂	AgSnO ₂
Circuit symbol (see also Pin assignment)					
Max. switching current ¹⁾					
On	40 A ²⁾			40 A ^{2)/70 A³⁾}	40 A ^{2)/100 A³⁾}
Off	30 A			30 A	30 A
Limiting continuous current	NC/NO				
at 23 °C	25 A/30 A			30 A	30 A
at 85 °C	15 A/20 A			20 A	20 A
Voltage drop at 10 A	Typ. 30 mV				
Mechanical endurance (without load)	> 5 x 10 ⁶ operations				
Electrical endurance at cyclic temperature -40 /+23 /+85 °C and 13,5 VDC	Resistive load: > 3 x 10 ⁵ operations 20 A on NO-contact	Wiper reserve: > 3 x 10 ⁵ operations 25 A make /5 A break; generator peak - 10 A L = 1.0 mH	Motor reserve blocked: > 1 x 10 ⁵ operations 20 A L = 0.77 mH	Flasher load: > 2 x 10 ⁶ operations up to 3 x 21 W, 4) Turn and hazard signal in sequence	Lamp load: > 1 x 10 ⁵ operations 100 A inrush /10 A steady state

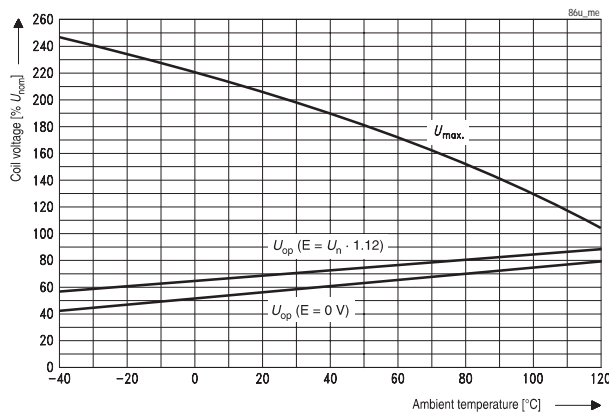
¹⁾ The values apply to a resistive or inductive load with suitable spark suppression.

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 on initial actuation (cold filament).

4) With polarization + at terminal 4

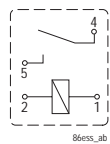
Operating voltage range



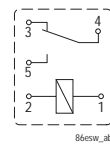
Does not take into account the temperature rise due to the contact current
E = pre-energization

Pin assignment

1 make contact/
1 form A



1 changeover contact/
1 form C



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Coil data

Available for nominal voltages	10, 12 VDC (other coils on request)
Nominal power consumption of the unsuppressed coil at nominal voltage	0,64 W
Test voltage winding/contact	500 VAC _{rms}
Upper limit temperature for the coil	155 °C
Maximum ambient temperature range ¹⁾	- 40 to + 105 °C
Max. switching rate without contact loading	50 Hz
Operate time ²⁾	Typ. 3 msec
Release time ²⁾	Typ. 1.5 msec

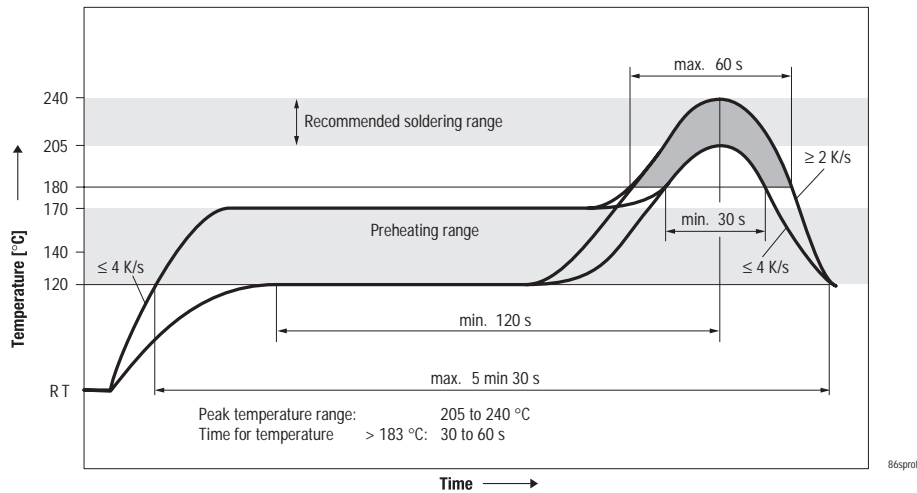
¹⁾ See also operating voltage range diagram

²⁾ Measured at nominal voltage without coil suppression unit

N.B.

A low resistive device in parallel to the relay coil slows down the armature movement and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Recommended reflow soldering profile



Mechanical data

Enclosure Sealed	Sealed relay is suitable for immersion cleaning of PCB assembly or conformal coating.
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Operating conditions

Test	Relevant standard	Testing as per	Dimension	Comments
Temperature range, storage	-40 °C to 155 °C			
Cold storage	IEC 68-2-1		72 h	-40 °C
Dry heat	IEC 68-2-2	Ba	1000 h	85 °C
Climatic cycling with condensation	EN ISO 6988		20 cycles	Storage 8/16 h
Thermal change	IEC 68-2-14	Nb	35 cycles	- 40/+ 105 °C
Thermal shock	IEC 68-2-14	Na	100 cycles	- 40/+ 105 °C Dwell time 1 h
Damp heat cyclic	IEC 68-2-30	Db, Variant 2	6 cycles	40 °C / 55 °C / 93%
constant	IEC 68-2-3	Ca	56 days	40 °C / 93%
Corrosive gas	IEC 68-2-42 IEC 68-2-43	–	10 days 10 days	
Vibration resistance	IEC 68-2-6 (sine pulse form)		10 ... 500 Hz	No change in the switching state > 10 µsec, 6 g
Shock resistance	IEC 68-2-27 (half-sine pulse form)		6 msec	No change in the switching state > 10 µsec up to 30 g
Solderability	IEC 68-2-58			215 °C; 3 sec wetting
Resistance to soldering heat	IEC 68-2-58			260 °C 10 sec (see soldering profile)
Sealing	IEC 68-2-17	Oc, Method 2		1 min / 70 °C

Ordering information

Part number (Replace * with "Coil designator") Micro power relay K SMD	Contact arrangement	Contact material	Enclosure	Terminals
V23086-M1*-A303	Form C	AgNi0.15	Sealed	Printed circuit/SMD
V23086-M1*-A403	Form C	AgSnO2	Sealed	Printed circuit/SMD
V23086-M1031-A502	Form A; lamp load	AgSnO2	Sealed	Printed circuit/SMD
V23086-M1*-A602	Form A; flasher load	AgSnO2	Sealed	Printed circuit/SMD

Coil versions

Coil designator Micro power relay K SMD	Rated coil voltage (V)	Coil resistance +/- 10% (Ω)	Must operate voltage (VDC)	Must release voltage (VDC)	Allowable overdrive (VDC)	
					at 23 °C ¹⁾	at 105 °C ¹⁾
011	12	225	6.9	1.5	24	15
012	10	156	5.7	1.25	20	13
031	12	156	6.9	1.5	20	13

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 K SMD: 1000 pieces