Micro power relay K


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information

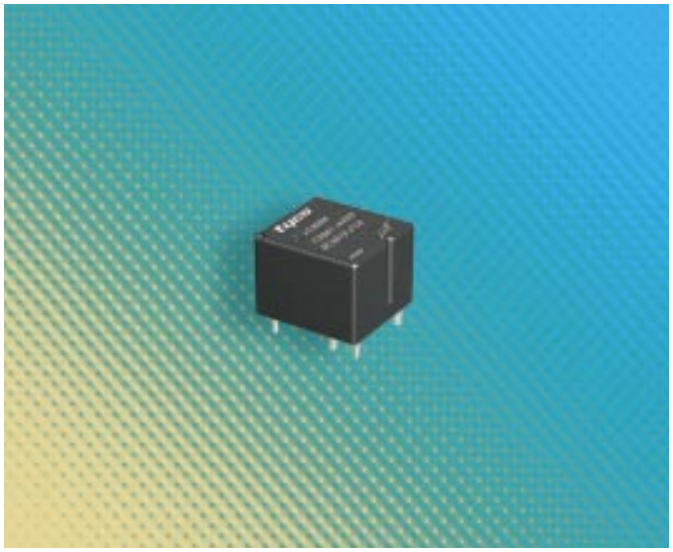

Convenience

Features

- Smallest power relay
- Minimal weight (0.14 oz. / 4 g)
- Maximum continuous current 30 A

Typical applications

- Rear window and seat heating
- Wiper and indicator control
- 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 V, 12 V
other nominal voltages on request

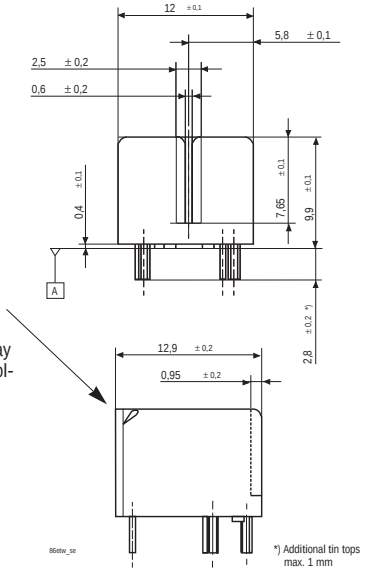
Terminals

PCB 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).

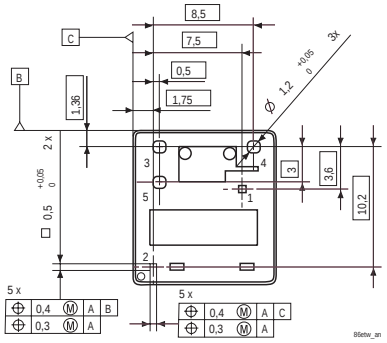
Dimensional drawing



Nipp-off-pin

The nipp-off-pin may be removed after soldering and washing (for ventilation)

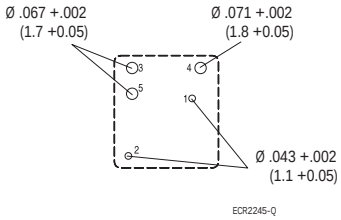
View of the terminals (Bottom view)



Remark: Positional tolerances according to DIN EN ISO 5458

Mounting holes

View of the terminals (Bottom view)



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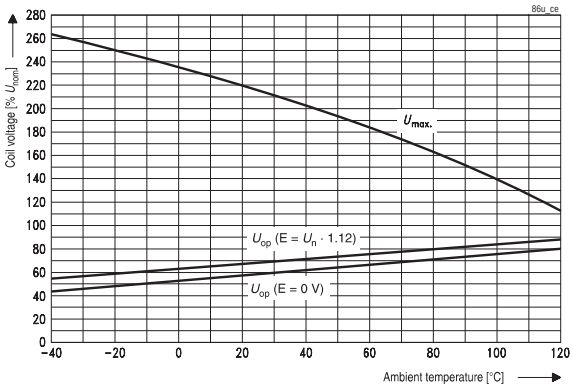
Contact data

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 A[3]	40 A[2]/100 A[3]
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 to 10.
[3] Corresponds to the peak inrush current on initial actuation (cold filament).
4) With polarization + at terminal 4.

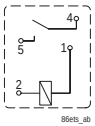
Operating voltage range



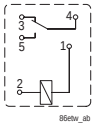
Does not take into account the temperature rise due to the contact current
E = pre-energization

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	0.55 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.

Mechanical data

Enclosure	
Sealed	Sealed relay is suitable for immersion cleaning of PCB assembly or conformal coating. Relay may be vented after cleaning by cutting the vent protection from the corner of the relay after processing using a razor knife or equivalent.

Operating conditions

Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
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	–	10 days	
	IEC 68-2-43	–	10 days	
Vibration resistance	IEC 68-2-6 (sine pulse form)		10 … 500 Hz 6 g	No change in the switching state > 10 µsec
Shock resistance	IEC 68-2-27 (half-sine pulse form)		6 msec up to 30 g	No change in the switching state > 10 µsec
Solderability	IEC 68-2-20	Ta, Method 1		Aging 3 (4 h/155 °C) Dewetting
Resistance to soldering heat	IEC 68-2-20	Tb, Method 1A		10 sec ± 1 sec with thermal screen
Sealing	IEC 68-2-17	Qc, Method 2		1 min / 70 °C

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Ordering information

Part number (Replace * with "Coil designator") Micro power relay K	Contact arrangement	Contact material	Enclosure	Terminals
V23086-C1*-A303	Form C	AgNi0.15	Sealed	Printed circuit
V23086-C1*-A403	Form C	$AgSnO_2$	Sealed	Printed circuit
V23086-C1021-A502	Form A; lamp load	$AgSnO_2$	Sealed	Printed circuit
V23086-C1*-A602	Form A; flasher load	$AgSnO_2$	Sealed	Printed circuit

Coil versions

Coil designator Micro power relay K	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)]
001	12	254	6.9	1.5	26	16
002	10	181	5.7	1.25	22	13
021	12	181	6.9	1.5	22	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: 2000 pieces