

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



86\_3d06

**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**

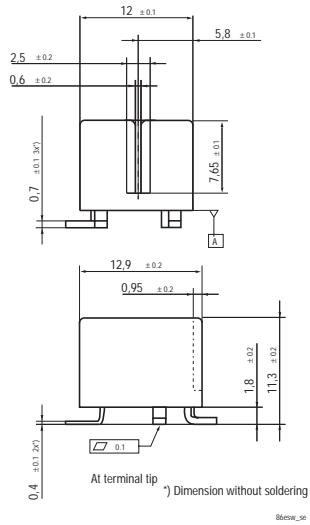
PCB/SMD terminals, for assembling in printed circuit boards

**Conditions**

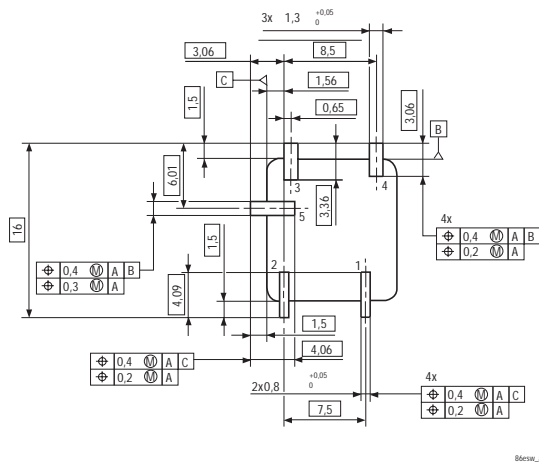
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:  
23 °C ambient temperature,  
20-50% RH, 29.5 ± 1.0" Hg (998.9 ± 33.9 hPa).

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

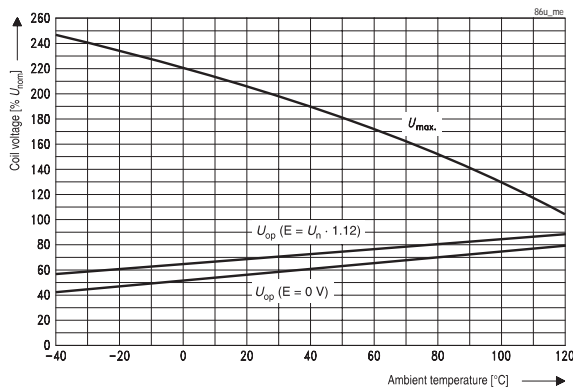
<sup>1)</sup> The values apply to a resistive or inductive load with suitable spark suppression.

<sup>2)</sup> This current may flow for a maximum of 3 sec for a make/break ratio of 1 : 10.

<sup>3)</sup> Corresponds to the peak inrush current on initial actuation (cold filament).

4) With polarization + at terminal 4.

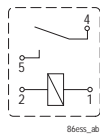
Operating voltage range



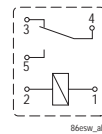
Does not take into account the temperature rise due to the contact current  
E = pre-energization

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 <sub>rms</sub>
Upper limit temperature for the coil	155 °C
Maximum ambient temperature range <sup>1)</sup>	- 40 to + 105 °C
Max. switching rate without contact loading	50 Hz
Operate time <sup>2)</sup>	Typ. 3 msec
Release time <sup>2)</sup>	Typ. 1.5 msec

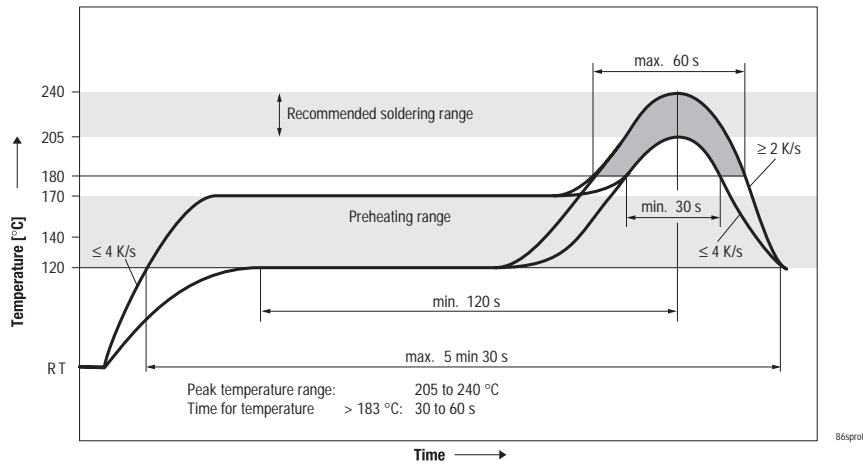
<sup>1)</sup> See also operating voltage range diagram

<sup>2)</sup> 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**

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	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	Qc, 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	AgSn02	Sealed	Printed circuit/SMD
V23086-M1031-A502	Form A; lamp load	AgSn02	Sealed	Printed circuit/SMD
V23086-M1*-A602	Form A; flasher load	AgSn02	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 <sup>1)</sup>	at 105 °C <sup>1)</sup>
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

<sup>1)</sup> 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