

Power relay K-B and K-D



**Features**

- Double make contact with high maximum switching voltage
- Extremely high reliability as a twin contact

**Typical applications**

- 24 V loads (double make contact)
- Actuating drives
- Lamp control circuits
- Also applicable for 42 V loads (please ask our specialists)



1 double make contact    1 double make contact on armature    33C\_3401/33D\_3401



**Design**

Open

**Weight**

Approx. 0.7 oz. (20 g)

**Nominal voltage**

12 V or 24 V;  
other nominal voltages available 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).



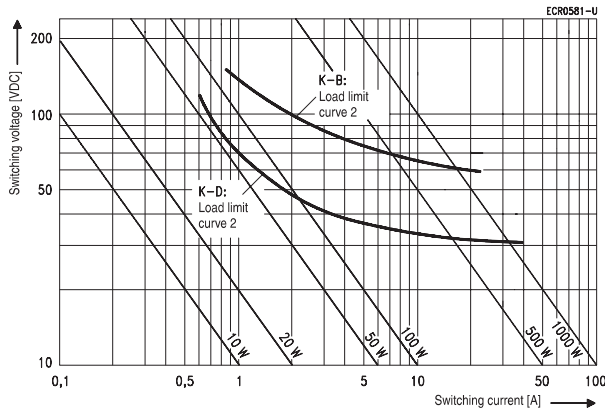
Power relay K-B and K-D

Contact data		
Power relay	K-B	K-D
Contact configuration	Double make contact/ Form X	Double make contact on armature/ Form U
Contact material	AgNi0.15	
Circuit symbol (see also Pin assignment)		
Max. switching voltage	See load limit curve	
Max. switching power	See load limit curve	
Max. switching current <sup>1)</sup>		
On <sup>2)</sup>	80 A	2 x 80 A
Off	35 A	2 x 20 A
Limiting continuous current		
at 23 °C	35 A	2 x 20 A
at 85 °C	20 A	2 x 15 A
Voltage drop (initial) at 10 A	Typ. 40 mV	Typ. 2 x 20 mV
Increase in coil temperature at 10 A load	Typ. 4 °C	Typ. 4 °C
Mechanical endurance (without load)	> 10 <sup>6</sup> operations	
Electrical endurance	> 2 x 10 <sup>4</sup> operations at 13.5 V / 50 A	> 2 x 10 <sup>5</sup> operations at 13.5 V / 50 A

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

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

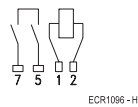
Load limit curve



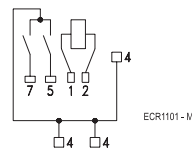
Load limit curve 2 ≙ safe shutdown,  
no stationary arc

Pin assignment

1 bridging make contact/  
1 form X



1 twin make contact/  
1 form U



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**Coil data**

Available for nominal voltages	12, 24 VDC
Nominal power consumption of the unsuppressed coil at nominal voltage	2.25 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 + 85 °C
Max. switching rate without contact loading	20 Hz
Operate time <sup>2)</sup>	Typ. 4 msec
Release time <sup>2)</sup>	Typ. 3 msec

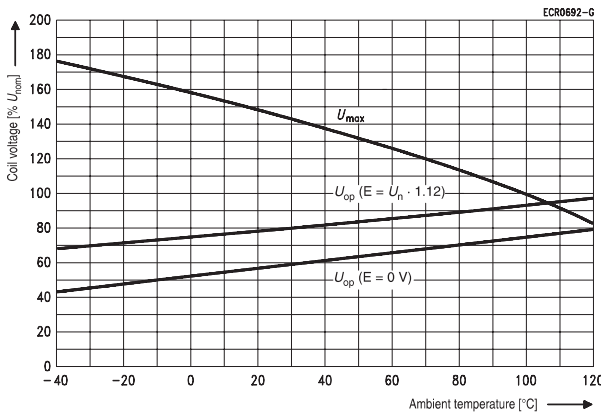
<sup>1)</sup> See also operating voltage range diagram

<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.

**Operating voltage range**



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

**Operating conditions**

Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
Vibration resistance	IEC 68-2-6 (sine pulse form)	10 ... 200 Hz acceleration, according to position	No change in the 5 ... 40 g	switching state > 10 μsec
Shock resistance	IEC 68-2-27 (half-sine pulse form)	acceleration	8 msec 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 shielding

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Ordering information

Part number (Replace * with "Coil designator") K-B / K-D	Contact arrangement	Contact material	Enclosure	Terminals
Power relay K-B V23033-C1*-B132	Form X (double make)	AgNi0.15	Open	Printed circuit
Power relay K-D V23033-D1*-B132	Form U (double make on armature)	AgNi0.15	Open	Printed circuit

Coil versions

Coil type designator K-B / K-D	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 85 °C <sup>1)</sup>
054	12	64	6.9	1.2	16.8	13.3
055	24	234	14.1	2.4	32.2	25.6

<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)

K-B / K-D: 400 pieces