

Power Relay K (Open - Sealed)



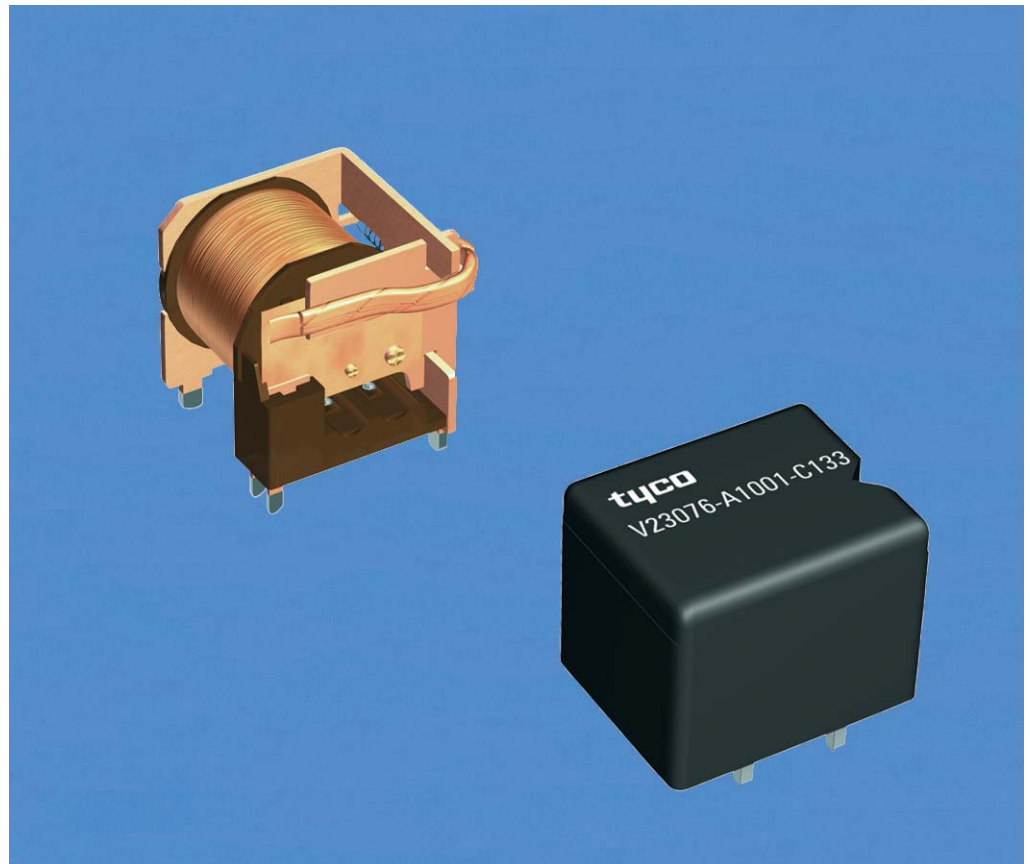
Features

- Limiting continuous current 40 A
- Wide voltage range
- For high current version refer to Power Relay K-S

Typical Applications

- ABS control
- Blower fans
- Car alarm
- Cooling fan
- Engine control
- Fuel pump
- Hazard warning signal
- Heated front screen
- Heated rear screen
- Ignition
- Lamps front, rear, fog light
- Interior lights
- Main switch/supply relay
- Seat control
- Seatbelt pretensioner
- Sun roof
- Turn signal
- Valves
- Window lifter
- Wiper control

Please contact Tyco Electronics for relay application support.



Power_Kos_3d_2

Design

- ELV/RoHS/WEEE compliant
- Open: flux tight type
- Sealed: washable type

Weight

Approx. 19 g (0.67 oz.) open version
Approx. 22 g (0.77 oz.) sealed version

Nominal Voltage

12 V or 24 V; other nominal voltages available on request

Terminals

PCB terminals for assembly on 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, 998.9 ±33.9 hPa.

For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

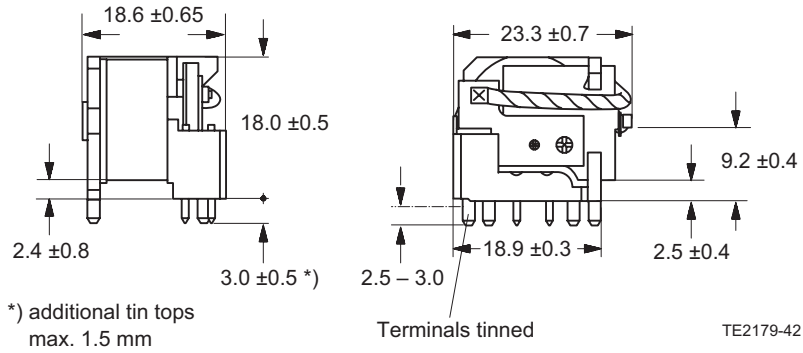
Disclaimer

All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete our questionnaire and to request our technical service. Any responsibility for the application of the product remains with the customer only. All specifications are subject to change without notification. All rights of Tyco Electronics are reserved.

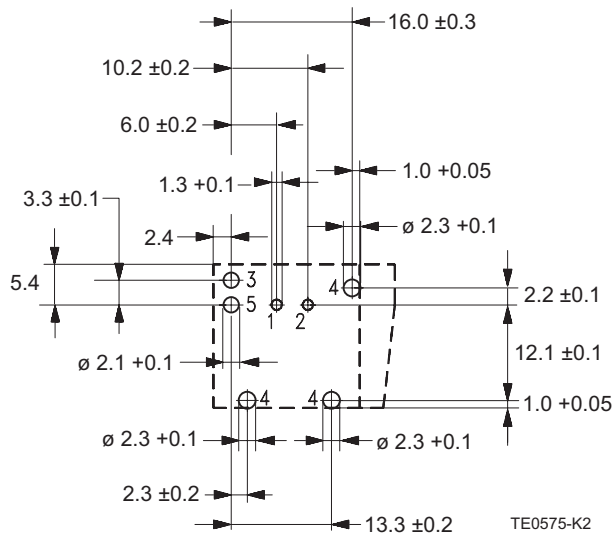
Power Relay K (Open)

Dimensional Drawing

Power Relay K Open Version



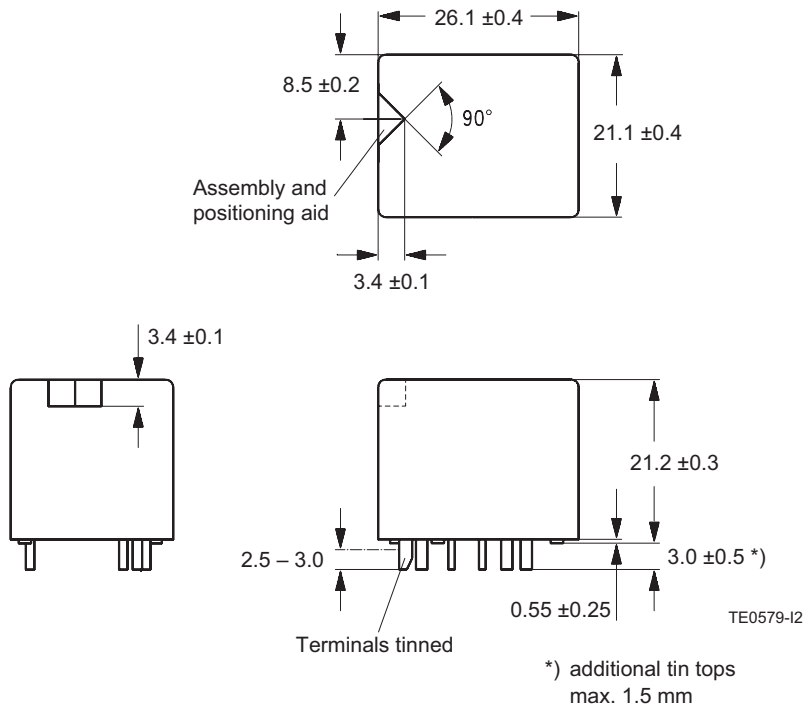
Mounting Hole Layout (bottom view)



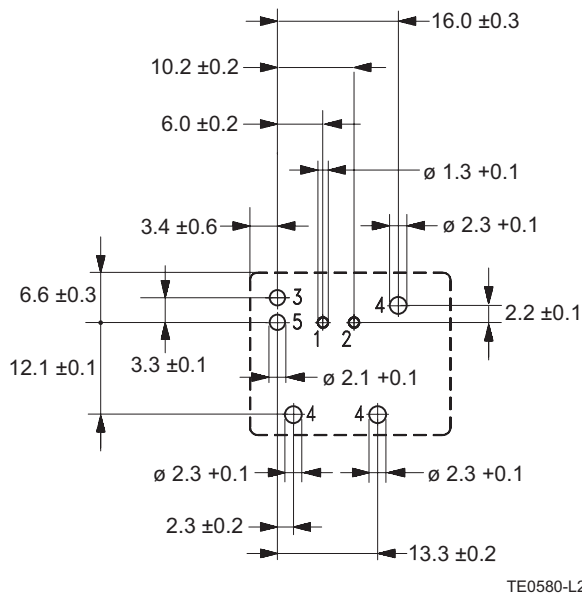
Power Relay K (Sealed)

Dimensional Drawing

Power Relay K Sealed Version








Mounting Hole Layout (bottom view)



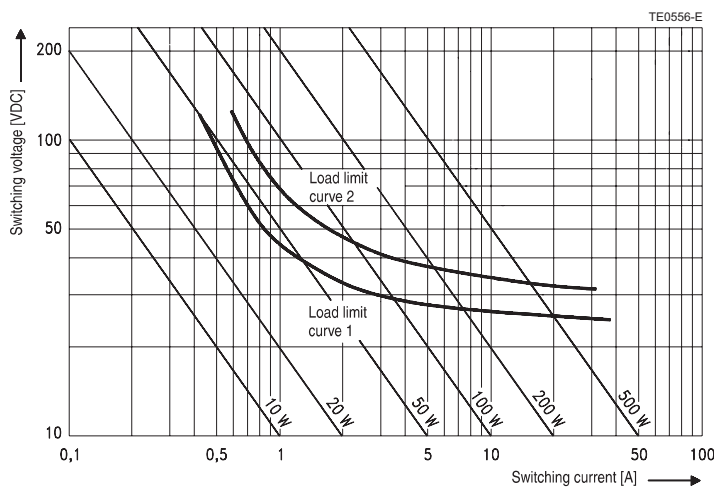
Power Relay K (Open – Sealed)

Contact Data

| Typical areas of application | Resistive/inductive loads | | Indicator lamps V23133-A3*-D152 | Headlights, capacitive loads V23133/076-****-D142 | |
|---|---|---|---|---|---|
| | 1 Make contact/ 1 Form A | 1 Changeover contact/ 1 Form C | 1 Make contact/ 1 Form A | 1 Make contact/ 1 Form A | 1 Changeover contact/ 1 Form C |
| Contact configuration | | | | | |
| Circuit symbol (see also Pin assignment) |  |  |  |  |  |
| Rated voltage | 12 V | 12 V | 12 V | 12 V | 12 V |
| Rated current | 30 A | NC/NO 25/30 A | 25 A | 25 A | NC/NO 20/25 A |
| Limiting continuous current | 23°C | 45 A | 30/45 A | 30 A | 25/40 A |
| | 85°C | 30 A | 25/30 A | 25 A | 20/25 A |
| Contact material | AgNi0.15 | | AgSnO ₂ | | |
| Max. switching voltage/power | See load limit curve | | | | |
| Max. switching current ¹⁾ | | NC/NO | | | NC/NO |
| On ²⁾ | 100 A | 30/100 A | 120 A ³⁾ | 180 A | 60/180 A |
| Off | 60 A | 30/60 A | 60 A | 60 A | 30/60 A |
| Min. recommended load ⁴⁾ | 1 A at 5 V | | | | |
| Voltage drop at 10 A (initial) | Typ. 20 mV, 300 mV max. | | | | |
| Mechanical endurance (without load) | > 10 ⁷ operations | | | | |
| Electrical endurance (example of resistive load) | > 2 x 10 ⁵ operations at 13.5 V/40 A | | > 2.2 x 10 ⁶ operations up to 8 x 21 W | > 10 ⁵ operations up to 4 x 60 W | |

- ¹⁾ The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.
- ²⁾ For a load current duration of maximum 3 s for a make/break ratio of 1:10.
- ³⁾ Corresponds to a peak inrush current on initial actuation (cold filament).
- ⁴⁾ See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at <http://relays.tycoelectronics.com/appnotes/>
- ⁵⁾ For 24 V please contact your nearest Tyco Electronics representative.

Load Limit Curve



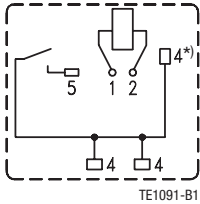
Load limit curve 1 ≙ arc extinguishes, during transit time (changeover contact)
Load limit curve 2 ≙ safe shutdown, no stationary arc (make contact)

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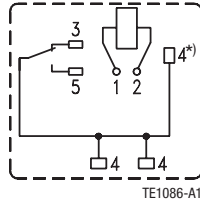
Circuit Diagram

1 Make contact/1 Form A

1 Changeover contact/1 Form C



TE1091-B1



TE1086-A1

*) Terminal 4 to be bridged

Coil Data

| | |
|---|------------------------|
| Available for nominal voltages | 12 V / 24 V |
| Nominal power consumption of the unsuppressed coil at nominal voltage | 1.6 W |
| Test voltage winding/contact | 500 VAC _{rms} |
| Maximum ambient temperature range ¹⁾ | -40 to +85°C |
| Operate time at nominal voltage | Typ. 5 ms |
| Release time at nominal voltage ²⁾ | Typ. 3 ms |

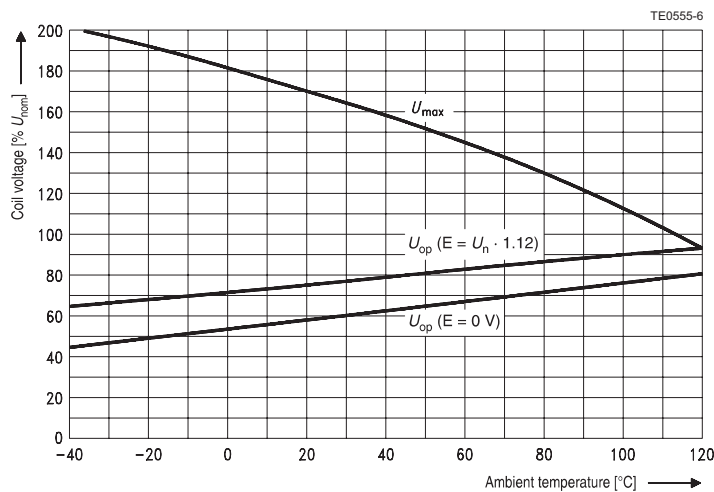
¹⁾ See also operating voltage range diagram.

²⁾ For unsuppressed relay coil.

Note:

A low resistive suppression device in parallel to the relay coil increases the release time 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

Power Relay K (Open – Sealed)

| Environmental Conditions | | | | |
|--|--|----------------|--------------------------|--|
| Temperature range, storage | Refer to <i>Storage</i> in the “Glossary” catalog page 23 or http://relays.tycoelectronics.com/appnotes/ | | | |
| Test | Relevant standard | Testing as per | Dimension | Comments |
| Climatic cycling with condensation ¹⁾ | EN ISO 6988 | | 3 cycles | Storage 8/16 h |
| Temperature cycling ¹⁾ | IEC 68-2-14 | Na | 20 cycles | -40/+85°C (dwell time 1 h) |
| Damp heat ¹⁾ | | | | |
| cyclic | IEC 68-2-30 | Db, Variant 1 | 6 cycles | Upper air temperature 55°C |
| constant | IEC 68-2-3 | Method Ca | 56 days | |
| Corrosive gas ¹⁾ | IEC 68-2-42 IEC 68-2-43 | | 10 days 10 days | |
| Vibration resistance | IEC 68-2-6 (sine pulse form) acceleration, acc. to position | | 10 - 200 Hz 20 - 40 g | No change in the switching state > 10 µs |
| Shock resistance | IEC 68-2-27 (half sine form single pulses) acceleration, acc. to position | | 8 ms 30 g | |
| Solderability | IEC 68-2-20 | Ta, Method 1 | Hot dip 5 s 215°C | Aging 3 (4 h/155°C) for leaded process (T _m = 183°C) for Pb-free process (T _m = 217°C) |
| Resistance to soldering heat | IEC 68-2-20 | Tb, Method 1A | Hot dip 10 s 260°C | with thermal screen |
| Sealing ¹⁾ | IEC 68-2-17 | Qc, Method 2 | | 1 min/70°C |

¹⁾ Only sealed version.

Ordering Information

| Part Numbers (see table below for coil data) | | Contact Arrangement | Contact Material | Enclosure | Terminals |
|--|--------------------|----------------------------|-------------------------|------------------|------------------|
| Relay Description | Part Number | | | | |
| 12 V PCB Relays | | | | | |
| V23133-A1001-C133 | 1393278-7 | 1 Form C | AgNi0.15 | Open | Printed circuit |
| V23133-A1001-D143 | 1-1393278-3 | 1 Form C | AgSnO ₂ | Open | Printed circuit |
| V23133-A3001-C132 | 5-1393278-7 | 1 Form A | AgNi0.15 | Open | Printed circuit |
| V23133-A3001-D142 | 5-1393278-9 | 1 Form A | AgSnO ₂ | Open | Printed circuit |
| V23133-A3001-D152 ¹⁾ | 1-1414173-0 | 1 Form A | AgSnO ₂ | Open | Printed circuit |
| 24 V PCB Relays | | | | | |
| V23133-A1022-C133 | 3-1393278-7 | 1 Form C | AgNi0.15 | Open | Printed circuit |
| V23133-A1022-D143 | 3-1393278-9 | 1 Form C | AgSnO ₂ | Open | Printed circuit |
| V23133-A3022-C132 | 7-1393278-1 | 1 Form A | AgNi0.15 | Open | Printed circuit |
| V23133-A3022-D142 | 7-1393278-2 | 1 Form A | AgSnO ₂ | Open | Printed circuit |
| V23133-A3022-D152 ¹⁾ | 1-1414174-0 | 1 Form A | AgSnO ₂ | Open | Printed circuit |
| 12 V PCB Relays | | | | | |
| V23076-A1001-C133 | 1393277-4 | 1 Form C | AgNi0.15 | Sealed | Printed circuit |
| V23076-A1001-D143 | 1393277-6 | 1 Form C | AgSnO ₂ | Sealed | Printed circuit |
| V23076-A3001-C132 | 1-1393277-4 | 1 Form A | AgNi0.15 | Sealed | Printed circuit |
| V23076-A3001-D142 | 1-1393277-7 | 1 Form A | AgSnO ₂ | Sealed | Printed circuit |
| V23076-A3001-D152 ¹⁾ | 1-1414175-0 | 1 Form A | AgSnO ₂ | Sealed | Printed circuit |
| 24 V PCB Relays | | | | | |
| V23076-A1022-C133 | 1393277-8 | 1 Form C | AgNi0.15 | Sealed | Printed circuit |
| V23076-A1022-D143 | 1393277-9 | 1 Form C | AgSnO ₂ | Sealed | Printed circuit |
| V23076-A3022-C132 | 1-1393277-8 | 1 Form A | AgNi0.15 | Sealed | Printed circuit |
| V23076-A3022-D142 | 1-1393277-9 | 1 Form A | AgSnO ₂ | Sealed | Printed circuit |

¹⁾ For indicator lamps.

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Coil Versions

| Coil Data for Power K | Rated Coil Voltage (V) | Coil Resistance $\pm 10\%$ (Ω) | Must Operate Voltage (V) | Must Release Voltage (V) | Allowable Overdrive ¹⁾ Voltage (V) | |
|-----------------------|------------------------|---|--------------------------|--------------------------|---|---------|
| | | | | | at 23°C | at 85°C |
| V23133-**001-**** | 12 | 90 | 6.9 | 1.2 | 20.8 | 15.5 |
| V23133-**022-**** | 24 | 362 | 14.1 | 2.4 | 41.2 | 32.5 |
| V23076-**001-**** | 12 | 90 | 6.9 | 1.2 | 20.8 | 15.5 |
| V23076-**022-**** | 24 | 362 | 14.1 | 2.4 | 41.2 | 32 |

¹⁾ Allowable overdrive is stated with no load applied and minimum coil resistance.

Note: further coils on request.

Standard Delivery Packs (orders in multiples of delivery pack)

Power K – Open: 500 pieces
Power K – Sealed: 300 pieces