

## Power Relay B

- Pin assignment similar to ISO 7588 part 1
- Plug-in terminals
- Customized versions on request
  - 24VDC versions with contact gap >0.8mm
  - Integrated components (e.g. resistor, diode)
  - Customized marking/color
  - Special covers (e.g. notches, release features, brackets)
  - Various contact arrangements and materials

### Typical applications

Cross carline up to 35A for example: rear window defogger, battery disconnection, power distribution (clamp 15)



F234\_fow1\_bw

| Contact Data  | 1 A                  | 1 A   | 1 C                   | 1 C                  |
|---|----------------------|---|-----------------------|----------------------|
| Contact arrangement   | 1 form A,<br>1 NO    | 1 form A,<br>1 NO                                     | 1 form C,<br>1 CO     | 1 form C,<br>1 CO    |
| Rated voltage   | 12VDC                | 24VDC   | 12VDC                 | 24VDC                |
| Limiting continuous current<br>form A/form B (NO/NC)                      |                      |   |                       |                      |
| 23°C  | 50A                  | 50A   | 50/35A                | 50/35A               |
| 85°C  | 35A                  | 35A   | 35/25A                | 35/25A               |
| 125°C   | 15A                  | 15A   | 15/10A                | 15/10A               |
| Limiting making current <sup>1)</sup><br>A/B (NO/NC)                      | 120A                 | 120A  | 120/45A               | 120/45A              |
| Limiting breaking current,<br>A/B (NO/NC)                                 | 30A                  | 20A   | 30/20A                | 20/10A               |
| Limiting short-time current<br>overload current, ISO 8820-3 <sup>2)</sup> |                      | 1.35 x 35A, 1800s                                     | 2.00 x 35A, 5s        | 3.50 x 35A, 0.5s     |
|   |                      | 6.00 x 35A, 0.1s                                      |                       |                      |
| Jump start test, ISO 16750-1  |                      | 24VDC for 5min,<br>conducting nominal current at 23°C |                       |                      |
| Contact material  |                      | Silver based  |                       |                      |
| Min. recommended contact load <sup>3)</sup>                               |                      | 1A at 5VDC  |                       |                      |
| Initial voltage drop, at 10A, typ./max.                                   |                      |   |                       |                      |
| form A (NO)   | 15/300mV             | 15/300mV  | 15/300mV              | 15/300mV             |
| form B (NC)   | -                    | -   | 20/300mV              | 20/300mV             |
| Frequency of operation, at nominal load                                   |                      | 6 ops./min (0.1Hz)                                    |                       |                      |
| Operate/release time typ.   |                      | 10/10ms <sup>4)</sup>                                 |                       |                      |
| Electrical endurance, ops.  |                      |   |                       |                      |
| resistive load, A (NO)  | >2.5x10 <sup>5</sup> | >2.5x10 <sup>5</sup>                                  | >2.5x10 <sup>5</sup>  | >2.5x10 <sup>5</sup> |
|   | 30A,<br>14VDC        | 20A,<br>28VDC   | 30A,<br>14VDC         | 20A,<br>28VDC        |
| resistive load, B (NC)  | -                    | -   | >1x10 <sup>5</sup>    | >2.5x10 <sup>5</sup> |
|   |                      |   | 20A,<br>10A,<br>14VDC | 10A,<br>28VDC        |
| Mechanical endurance  |                      | typ. 1x10 <sup>6</sup> ops.                           |                       |                      |

- 1) The values apply to a resistive or inductive load with suitable spark suppression and at maximum 14VDC for 12VDC or 28VDC for 24VDC load voltages. For a load current duration of maximum 3s for a make/break ratio of 1:10.
- 2) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current.
- 3) See chapter Diagnostics of Relays in our Application Notes or consult the internet at <http://relays.te.com/appnotes/>
- 4) For unsuppressed relay coil. 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.

### Coil Data

|                    |          |
|--------------------|----------|
| Rated coil voltage | 12/24VDC |
|--------------------|----------|

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance <sup>5)</sup> Ω±10% | Rated coil power <sup>5)</sup> W |
|-----------|-------------------|---------------------|---------------------|-------------------------------------|----------------------------------|
| 001       | 12                | 8                   | 1.5                 | 85                                  | 1.7                              |
| 002       | 12                | 6.5                 | 1                   | 75                                  | 1.9                              |
| 004       | 24                | 16                  | 3                   | 255                                 | 2.3                              |

<sup>5)</sup> Without components in parallel.

All figures are given for coil without pre-energization, at ambient temperature +23°C.

### Insulation Data

|                                  |                          |
|----------------------------------|--------------------------|
| Initial dielectric strength      |                          |
| between open contacts            | 500V <sub>rms</sub>      |
| between contact and coil         | 500V <sub>rms</sub>      |
| between adjacent contacts        | 500V <sub>rms</sub>      |
| Load dump test                   |                          |
| ISO 7637-1 (12VDC), test pulse 5 | V <sub>s</sub> =+86.5VDC |
| ISO 7637-2 (24VDC), test pulse 5 | V <sub>s</sub> =+200VDC  |

### Other Data

|  |  |
|--|--|
| EU RoHS/ELV compliance                             | compliant  |
| Protection to heat and fire according UL94         | HB or better <sup>6)</sup>                                     |
| Ambient temperature                                | -40 to 125°C   |
| Climatic cycling with condensation,<br>EN ISO 6988 | 6 cycles, storage 8/16h  |
| Temperature cycling,<br>IEC 60068-2-14, Nb         | 10 cycles, -40/+85°C (5°C/min)                                 |
| Damp heat cyclic,<br>IEC 60068-2-30, Db, Variant 1 | 6 cycles, upper air temp. 55°C                                 |
| Damp heat constant, IEC 60068-2-3, Ca              | 56 days  |
| Category of environmental protection,<br>IEC 61810 | RT I – dustproof   |
| Degree of protection, IEC 60529                    | IP54   |
| Corrosive gas                                      |  |
| IEC 60068-2-42                                     | 10±2cm <sup>3</sup> /m <sup>3</sup> SO <sub>2</sub> , 10 days  |
| IEC 60068-2-43                                     | 1±0.3cm <sup>3</sup> /m <sup>3</sup> H <sub>2</sub> S, 10 days |
| Vibration resistance (functional)                  |  |
| IEC 60068-2-6 (sine sweep)                         | 10 to 500Hz, min. 5g <sup>7)</sup>                             |
| Shock resistance (functional)                      |  |
| IEC 60068-2-27 (half sine)                         | 11ms, min. 20g <sup>7)</sup>                                   |
| Drop test, free fall, IEC 60068-2-32               | 1m onto concrete   |

**Power Relay B** (Continued)

**Other Data** (continued)

|                                  |                     |
|----------------------------------|---------------------|
| Terminal type                    | plug-in, QC         |
| Cover retention                  |                     |
| axial force                      | 150N                |
| pull force                       | 200N                |
| push force                       | 200N                |
| Terminal retention <sup>8)</sup> |                     |
| pull force                       | 100N                |
| push force                       | 100N                |
| resistance to bending            | 10N                 |
| force applied to side            | 10N                 |
| torque                           | 0.3Nm               |
| Weight                           | approx. 35g (1.2oz) |
| Packaging unit                   | 200 pcs.            |

6) Refers to used materials.

7) No change in the switching state >10µs. Valid for NC contacts, NO contact values significantly higher.

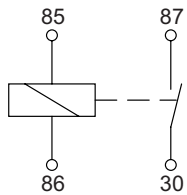
8) Values apply 2mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3mm.

**Accessories**

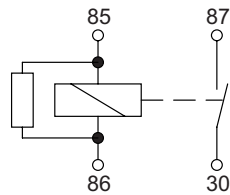
For details see datasheet Connectors for Mini ISO Relays

**Terminal Assignment**

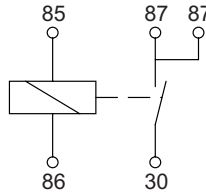
NO  
1 form A, NO



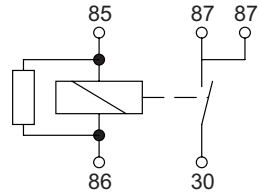
NOR  
1 form A, NO with resistor



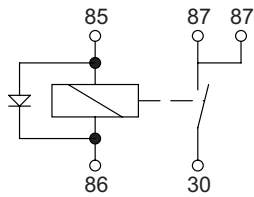
NO\_2x87  
1 form A, 1 NO (2x87)



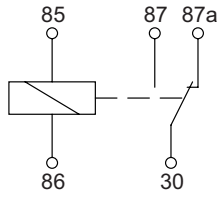
NOR\_2x87  
1 form A, 1 NO (2x87) with resistor



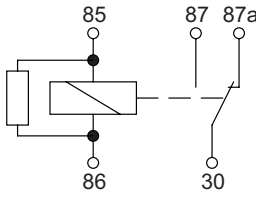
NOD\_2x87  
1 form A, 1 NO (2x87) with diode



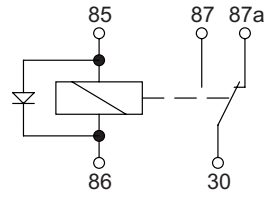
CO  
1 form C, CO



COR  
1 form C, CO with resistor



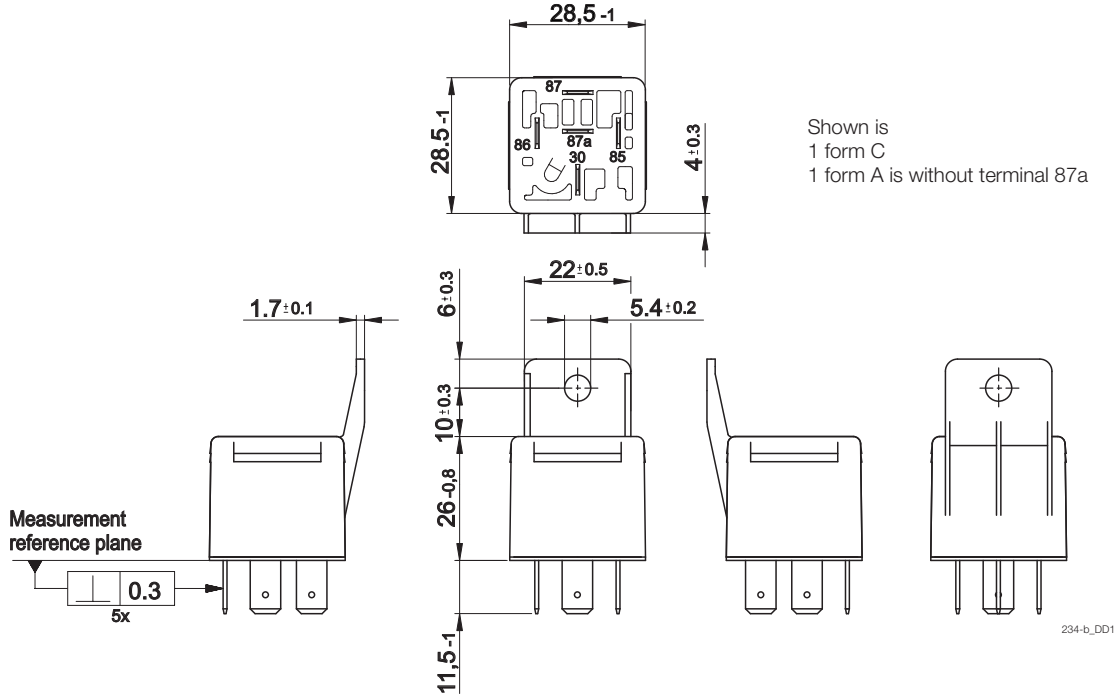
COD  
1 form C, CO with diode



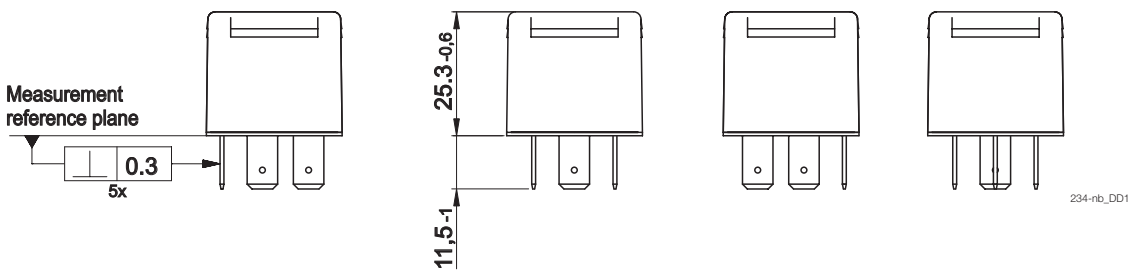
**Power Relay B** (Continued)

**Dimensions**

Power Relay B with bracket

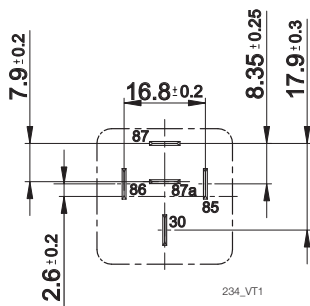


Power Relay B without bracket

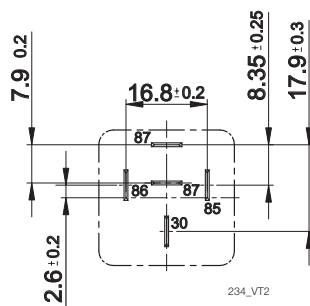


View of the terminals (bottom view)

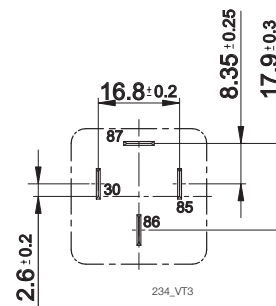
1 form C  
1 form A is without 87a



1 form A (2x87)



1 form A non ISO  
(Terminals 30 and 86 changed position)



**Power Relay B** (Continued)

|                                     |                                  |                      |                              |           |          |            |              |
|-------------------------------------|----------------------------------|----------------------|------------------------------|-----------|----------|------------|--------------|
| <b>Product code structure</b>       |                                  | Typical product code | <b>V23234</b>                | <b>-A</b> | <b>0</b> | <b>001</b> | <b>-X040</b> |
| <b>Type</b><br>V23234 Power Relay B |                                  |                      |                              |           |          |            |              |
| <b>Contact arrangement</b>          |                                  |                      |                              |           |          |            |              |
| <b>A</b>                            | 1 form C, 1 CO                   | <b>B</b>             | 1 form A, 1 NO               |           |          |            |              |
| <b>C</b>                            | 1 form A, 1 NO (2x87)            | <b>K</b>             | 1 form A, 1 NO (non ISO)     |           |          |            |              |
| <b>Cover</b>                        |                                  |                      |                              |           |          |            |              |
| <b>0</b>                            | Standard                         | <b>1</b>             | Bracket near terminal 30 ISO |           |          |            |              |
| <b>Coil</b>                         |                                  |                      |                              |           |          |            |              |
| <b>001</b>                          | 12VDC                            | <b>002</b>           | 12VDC                        |           |          |            |              |
| <b>004</b>                          | 24VDC                            |                      |                              |           |          |            |              |
| <b>Terminal/arrangement</b>         |                                  |                      |                              |           |          |            |              |
| <b>Xnnn</b>                         | Customized (nnn: version number) |                      |                              |           |          |            |              |

| Product code      | Arrangement              | Cover    | Coil suppr.        | Circuit <sup>1)</sup> | Coil  | Cont. material | Terminals            | Part number |
|-------------------|--------------------------|----------|--------------------|-----------------------|-------|----------------|----------------------|-------------|
| V23234-A0001-X032 | 1 Form C,<br>1 CO        | Standard | Resistor 680Ω      | COR                   | 12VDC | Silver based   | Plug-in, QC          | 1-1904020-2 |
| V23234-A0001-X038 |                          |          | Diode (cathode 86) | COD                   |       |                |                      | 1-1904020-5 |
| V23234-A0001-X040 |                          |          |                    | CO                    |       |                |                      | 4-1904020-7 |
| V23234-A0004-X055 |                          |          |                    |                       | 24VDC |                |                      | 2-1904025-6 |
| V23234-A0004-X051 |                          |          | Diode (cathode 86) | COD                   |       |                |                      | 2-1904025-3 |
| V23234-A0004-X053 |                          |          | Resistor 1400Ω     | COR                   |       |                |                      | 2-1904025-5 |
| V23234-A1001-X033 |                          | Bracket  | Resistor 680Ω      |                       | 12VDC |                |                      | 1-1904022-1 |
| V23234-A1001-X036 |                          |          | CO                 |                       |       |                |                      | 3-1904022-2 |
| V23234-A1001-X041 |                          |          | Diode (cathode 86) | COD                   |       |                |                      | 2-1904022-3 |
| V23234-A1004-X050 |                          |          |                    | CO                    | 24VDC |                |                      | 1-1904027-1 |
| V23234-A1004-X054 |                          |          | Resistor 1400Ω     | COR                   |       |                |                      | 3-1904027-2 |
| V23234-B0001-X001 | 1 Form A,<br>1 NO        | Standard | Resistor 680Ω      | NOR                   | 12VDC |                |                      | 5-1904006-1 |
| V23234-B0002-X012 |                          |          |                    | NO                    |       |                |                      |             |
| V23234-B1001-X004 |                          | Bracket  | Resistor 680Ω      | NOR                   |       |                |                      | 1-1904007-1 |
| V23234-B1001-X010 |                          |          | NO                 |                       |       |                |                      | 1-1904007-2 |
| V23234-C0001-X003 | 1 Form A,<br>1 NO (2x87) | Standard | Diode (cathode 86) | NOD_2x87              |       |                |                      | 2-1904011-1 |
| V23234-C0001-X006 |                          |          |                    | NO_2x87               |       |                |                      |             |
| V23234-C0004-X018 |                          |          | Resistor 1400Ω     | NOR_2x87              | 24VDC |                |                      | 2-1904015-1 |
| V23234-C0004-X020 |                          |          |                    | NO_2x87               |       |                |                      | 1-1904015-3 |
| V23234-C1001-X005 |                          | Bracket  |                    |                       | 12VDC |                |                      | 5-1904012-1 |
| V23234-C1004-X017 |                          |          | 24VDC              |                       |       |                |                      | 5-1904014-1 |
| V23234-C1004-X085 |                          |          | Resistor 1400Ω     | NOR_2x87              |       |                |                      | 1904015-5   |
| V23234-K1001-X024 | 1 Form A, 1 NO           |          | Resistor 680Ω      | NOR (non ISO)         | 12VDC |                | Plug-in, QC /non ISO | 5-1904018-1 |

1) See terminal assignment diagrams.

Other types on request.

This list represents the most common types and does not show all variants covered by this datasheet.