

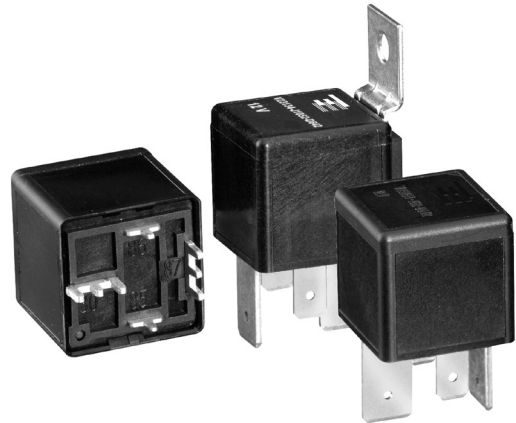
### Power Relay F7

#### ■ Pin assignment similar to ISO 7588 part 1

#### ■ Plug-in or PCB terminals

#### Customized versions on request

- Integrated components (e.g. resistor, diode)
- Customized marking/color
- Special covers (e.g. notches, release features, brackets)
- For latching (bistable) version refer to Power Relay F7 A Latching
- For shrouded/weatherproof dust cover versions refer to Shrouded Power Relay F7 A



#### Typical applications

Cross carline up to 70A for example: ABS control, cooling fan, energy management, engine control, glow plug, heated front screen, ignition, lamps: front, rear, fog light, main switch/supply relay.

#### Contact Data

|                                 |                         |                         |
|---------------------------------|-------------------------|-------------------------|
| Contact arrangement             | 1 form A, 1 NO          | 1 form A, 1 NO          |
| Rated voltage                   | 12VDC                   | 24VDC                   |
| Maximum switching voltage       | 16VDC                   | 32VDC                   |
| Limiting continuous current     | NO                      | NO                      |
| 23°C                            | 70A                     | 70A                     |
| 85°C                            | 50A                     | 50A                     |
| 125°C                           | 30A                     | 30A                     |
| Limiting short time current     |                         |                         |
| overload current                | 1.35 x 50A, 900s        | 1.35 x 50A, 900s        |
| ISO 8820-3 <sup>1)</sup> (2010) | 2.00 x 50A, 60s         | 2.00 x 50A, 60s         |
|                                 | 3.50 x 50A, 7s          | 3.50 x 50A, 7s          |
|                                 | 6.00 x 50A, 1s          | 6.00 x 50A, 1s          |
| Contact material                | silver alloy            | silver alloy            |
| Min. contact load <sup>2)</sup> | 1A 5VDC                 | 1A 5VDC                 |
| Initial voltage drop            |                         |                         |
| NO contact at 10A, typ./max.    | 15mV/200mV              | 15mV/200mV              |
| Operate time <sup>3)</sup>      | typ. 7ms                | typ. 7ms                |
| Release time <sup>3)</sup>      | typ. 2ms                | typ. 2ms                |
| Mechanical endurance            | >1x10 <sup>6</sup> ops. | >1x10 <sup>6</sup> ops. |

#### Electrical Endurance 12VDC Coil

| Load voltage/<br>coil voltage | Load type |       | Load current | On / off ratio | Electrical endurance <sup>4)</sup> |
|-------------------------------|-----------|-------|--------------|----------------|------------------------------------|
|                               |           |       | 1 form A     |                | Coil suppression <sup>5)</sup>     |
| 14VDC                         | Resistive | make  | NO           | 2s / 2s        | Resistor                           |
|                               |           | break | 70A          |                | >1x10 <sup>5</sup> ops.            |
|                               | Resistive | make  | 70A          | 2s / 2s        | >2x10 <sup>5</sup> ops.            |
|                               |           | break | 50A          |                |                                    |

#### Electrical Endurance 24VDC Coil

|       |                          |       |      |         |                         |
|-------|--------------------------|-------|------|---------|-------------------------|
| 28VDC | capacitive <sup>6)</sup> | make  | 200A | 2s / 2s | >1x10 <sup>5</sup> ops. |
|       |                          | break | 40A  |         |                         |

All tests performed with cyclic temperature.

1) Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current.

2) See Definitions for automotive relays <https://relays.te.com/definitions/> and chapter Diagnostics of Relays in our Application Notes at <https://relays.te.com/appnotes/>

3) At rated voltage and 23°C for a relay coil with suppression resistor. A suppression diode will influence the switching behaviour and reduce the service life.

4) According Weibull.

5) Any diode or pn-junction parallel to the coil (internal or external) will significantly decrease the electrical lifetime, especially when used for inductive loads.

6) Max. inrush peak-current at 250 ... 350µs.

### Power Relay F7 (Continued)

#### Coil Data

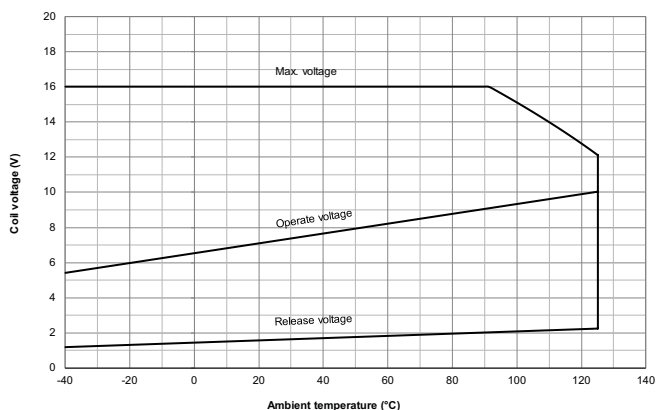
| Coil code | Rated voltage [VDC] | Must Operate voltage [VDC] | Must Release voltage [VDC] | Coil resist. [ $\Omega$ ] | Suppr. resist. [ $\Omega$ ] | Total resist. [ $\Omega$ ]<br>$\pm 10\%$ | Rated coil power [W] |
|-----------|---------------------|----------------------------|----------------------------|---------------------------|-----------------------------|------------------------------------------|----------------------|
| 052       | 12                  | 7.2                        | 1.6                        | 90                        | --                          | 90                                       | 1.6                  |
| 052       | 12                  | 7.2                        | 1.6                        | 90                        | 470                         | 76                                       | 1.9                  |
| 052       | 12                  | 7.2                        | 1.6                        | 90                        | 560                         | 78                                       | 1.8                  |
| 052       | 12                  | 7.2                        | 1.6                        | 90                        | 680                         | 79                                       | 1.8                  |
| 165       | 24                  | 14.4                       | 2.4                        | 288                       | 1200                        | 232                                      | 2.5                  |

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

#### Insulation Data

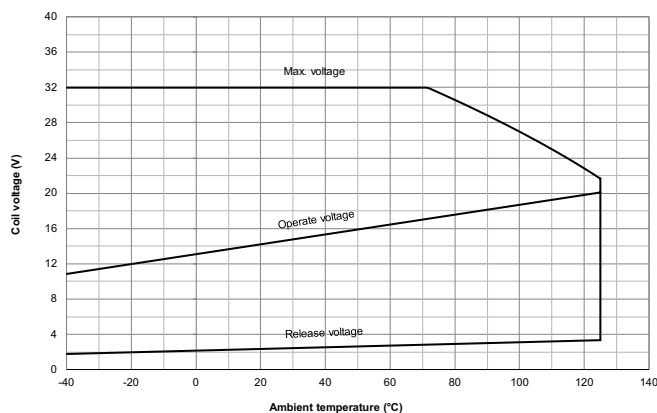
|                             |                       |
|-----------------------------|-----------------------|
| Initial dielectric strength |                       |
| between open contacts       | 500VAC <sub>rms</sub> |
| between contact and coil    | 500VAC <sub>rms</sub> |

#### Coil operating range coil 0052



Does not take into account the temperature rise due to the contact current

#### Coil operating range coil 0165



Does not take into account the temperature rise due to the contact current

#### Other Data

|                                                                    |                                          |
|--------------------------------------------------------------------|------------------------------------------|
| EU RoHS/ELV compliance                                             | compliant                                |
| Protection to heat and fire according UL-94                        | HB or better <sup>7)</sup>               |
| Ambient temperature                                                |                                          |
| for 12V coil                                                       | -40 to +125°C                            |
| for 24V coil                                                       | -40 to +105°C                            |
| Rapid change of temperature (thermal shock), IEC 60068-2-14 (2009) |                                          |
| Na                                                                 | 100 cycles, -40°C / +125°C               |
| Damp heat cyclic, IEC 60068-2-30 (2005)                            |                                          |
| Db, Variant 1                                                      | 6 cycles, upper air temp. 55°C           |
| Degree of protection IEC 60529 (2013)                              | IP54                                     |
| Vibration resistance (functional) ISO 16750-3 (2012)               | 10 to 1000Hz, 2.71g eff.                 |
| Test IV                                                            | No change of switching state >10 $\mu$ s |
| Shock resistance (functional) IEC 60068-2-27 (2008)                | min. 20g 11ms                            |
| half sine                                                          | No change of switching state >10 $\mu$ s |
| Drop test, free fall, IEC 60068-2-32 (2008)                        | 1m onto concrete                         |
| Terminal type                                                      | Plug-in, QC/ PCB                         |
| Cover retention                                                    |                                          |
| pull                                                               | 150N                                     |
| push                                                               | 200N                                     |
| Terminal retention                                                 |                                          |
| pull                                                               | 100N                                     |
| push                                                               | 100N                                     |
| resistance to bending                                              | 10N <sup>8)</sup>                        |
| Weight                                                             | approx. 38g (1.3oz)                      |
| Packaging unit                                                     |                                          |
| Plug-in:                                                           | 210 pcs.                                 |
| Plug-in with bracket:                                              | 208 pcs.                                 |
| PCB                                                                | 315 pcs.                                 |

7) Refers to used materials.

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.

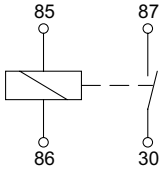
#### Accessories

For details see datasheet Connectors for Maxi ISO Relays

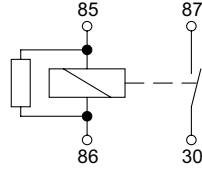
### Power Relay F7 (Continued)

#### Terminal Assignment

NO  
1 form A, NO



NOR  
1 form A, NO with resistor

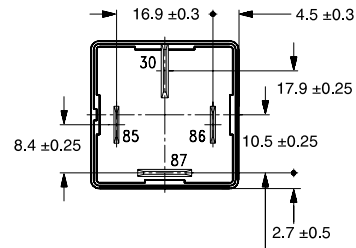
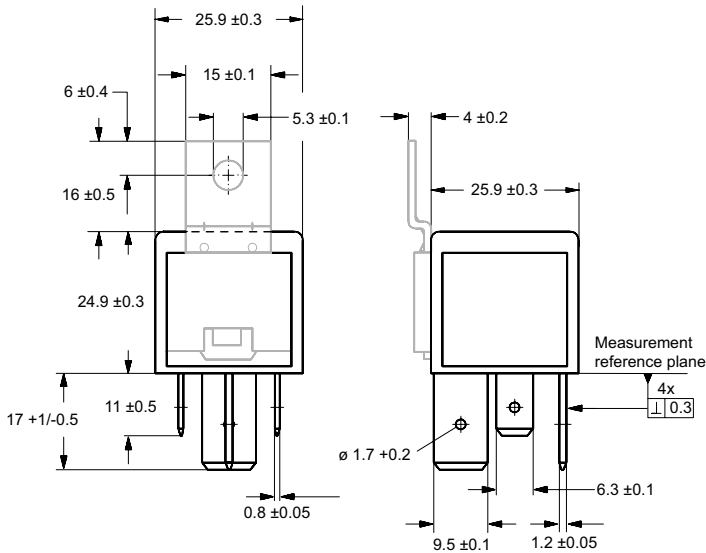


#### Dimensions

##### Power Relay F7 with quick connect (QC) terminals

External dimensions

View of the terminals (bottom view)

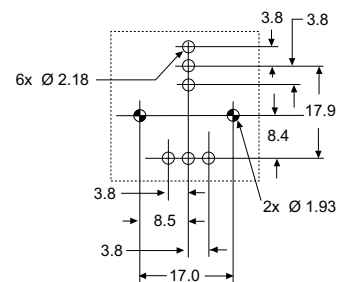
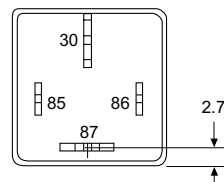
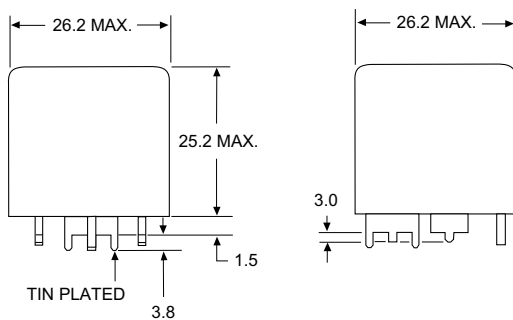


##### Power Relay F7 with PCB terminals

External dimensions

View of the terminals (bottom view)

Mounting hole layout (bottom view)



### Power Relay F7 (Continued)

#### Product Code Structure

Typical product code **V23134 -J 0 052 -D642**

|                                                                          |  |                                              |  |  |  |
|--------------------------------------------------------------------------|--|----------------------------------------------|--|--|--|
| <b>Type</b><br><b>V23134</b> Power Relay F                               |  |                                              |  |  |  |
| <b>Contact arrangement</b><br><b>J</b> 1 form A, 1 NO                    |  |                                              |  |  |  |
| <b>Cover</b><br><b>0</b> Standard<br><b>2</b> Bracket at terminal 86 ISO |  | <b>1</b> Bracket at terminal 30 ISO          |  |  |  |
| <b>Coil</b><br><b>052</b> 12VDC<br><b>165</b> 24VDC                      |  |                                              |  |  |  |
| <b>Terminal arrangement</b><br><b>D642</b> Plug-in/NO                    |  | <b>Xnnn</b> Customized (nnn: version number) |  |  |  |

#### Production in Europe (only)

| Product Code                     | Arrangement    | Cover    | Coil Suppr.    | Circuit <sup>9)</sup> | Coil  | Terminals   | Part Number |
|----------------------------------|----------------|----------|----------------|-----------------------|-------|-------------|-------------|
| V23134-J0052-D642                | 1 form A, 1 NO | Standard | --             | NO                    | 12VDC | Plug-in, QC | 7-1393303-3 |
| V23134-J0052-X429                | 1 form A, 1 NO | Standard | Resistor 680Ω  | NOR                   | 12VDC | Plug-in, QC | 1-1414147-0 |
| V23134-J0052-X455                | 1 form A, 1 NO | Standard | Resistor 470Ω  | NOR                   | 12VDC | PCB         | 1-1414610-0 |
| V23134-J0052-X511                | 1 form A, 1 NO | Standard | --             | NO                    | 12VDC | PCB         | 3-1415001-2 |
| V23134-J0052-X461 <sup>10)</sup> | 1 form A, 1 NO | Standard | Resistor 560Ω  | NOR                   | 12VDC | Plug-in, QC | 1-1414469-0 |
| V23134-J1052-D642                | 1 form A, 1 NO | Bracket  | --             | NO                    | 12VDC | Plug-in, QC | 1393304-9   |
| V23134-J1052-X281                | 1 form A, 1 NO | Bracket  | Resistor 560Ω  | NOR                   | 12VDC | Plug-in, QC | 1-1393304-0 |
| V23134-J0165-X537 <sup>10)</sup> | 1 form A, 1 NO | Standard | Resistor 1200Ω | NOR                   | 24VDC | Plug-in, QC | 3-1904117-4 |
| V23134-J2165-X538 <sup>10)</sup> | 1 form A, 1 NO | Bracket  | Resistor 1200Ω | NOR                   | 24VDC | Plug-in, QC | 3-1904117-5 |

#### Production in Asia (only)

| Product Code                     | Arrangement    | Cover    | Coil Suppr.    | Circuit <sup>9)</sup> | Coil  | Terminals   | Part Number |
|----------------------------------|----------------|----------|----------------|-----------------------|-------|-------------|-------------|
| V23134-J0052-D642                | 1 form A, 1 NO | Standard | --             | NO                    | 12VDC | Plug-in, QC | 7-1904094-7 |
| V23134-J0052-X429                | 1 form A, 1 NO | Standard | Resistor 680Ω  | NOR                   | 12VDC | Plug-in, QC | 7-1904094-8 |
| V23134-J0052-X461 <sup>10)</sup> | 1 form A, 1 NO | Standard | Resistor 560Ω  | NOR                   | 12VDC | Plug-in, QC | 8-1904094-0 |
| V23134-J0165-X537 <sup>10)</sup> | 1 form A, 1 NO | Standard | Resistor 1200Ω | NOR                   | 24VDC | Plug-in, QC | tdb         |

Other types on request.

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

<sup>9)</sup> See terminal assignment diagrams.

<sup>10)</sup> Special feature: 14.5mm load terminals.