

## Shrouded Power Relay F4 A

- Pin assignment similar to ISO 7588 part 1
- Plug-in terminals
- Customized versions on request
  - Integrated components (e.g. resistor, diode)
  - Customized marking/color
  - Special cover with bracket

### Typical applications

Cross carline up to 40A for example: ABS control, blower fans, cooling fan, energy management, engine control, fuel pump, heated front screen, lamps: front, rear, fog light, main switch/supply relay, wiper control.



F136\_fw3c\_bw

### Contact Data

|                                                                        |                                                                             |                        |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------|
| Contact arrangement                                                    | 1 form A, 1 NO                                                              | 1 form C, 1 CO         |
| Rated voltage                                                          | 12VDC                                                                       | 12VDC                  |
| Limiting continuous current                                            | NO                                                                          | NO/NC                  |
| 23°C, form A/form B                                                    | 60A                                                                         | 60/45A                 |
| 85°C, form A/form B                                                    | 40A                                                                         | 40/30A                 |
| 125°C, form A/form B                                                   | 17A                                                                         | 17/12A                 |
| Limiting making current <sup>1)</sup>                                  |                                                                             |                        |
| form A/form B                                                          | 120A                                                                        | 120/45A                |
| Limiting breaking current, form A/form B                               | 60A                                                                         | 60/40A                 |
| Limiting short-time current overload current, ISO 8820-3 <sup>2)</sup> | 1.35 x 40A, 1800s<br>2.00 x 40A, 5s<br>3.50 x 40A, 0.5s<br>6.00 x 40A, 0.1s |                        |
| Jump start test, ISO 16750-1                                           | 24VDC for 5min, conducting nominal current at 23°C                          |                        |
| Contact material                                                       | Silver based                                                                |                        |
| Min. recommended contact load <sup>3)</sup>                            | 1A at 5VDC                                                                  |                        |
| Initial voltage drop,                                                  |                                                                             |                        |
| form A (NO) at 10A, typ./max.                                          | 15/300mV                                                                    | 15/300mV               |
| form B (NC) at 10A, typ./max.                                          | -                                                                           | 25/300mV               |
| Frequency of operation at nominal load                                 | 6 ops./min (0.1Hz)                                                          |                        |
| Operate/release time typ.                                              | 8.5/4ms <sup>4)</sup>                                                       |                        |
| Electrical endurance                                                   | >2x10 <sup>5</sup> ops                                                      | >1x10 <sup>5</sup> ops |
| resistive load at 14VDC                                                | 40A (NO)                                                                    | 40A (NO)               |

### Contact Data (continued)

|                      |                        |
|----------------------|------------------------|
| Mechanical endurance | >1x10 <sup>7</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 | 12VDC |
|--------------------|-------|

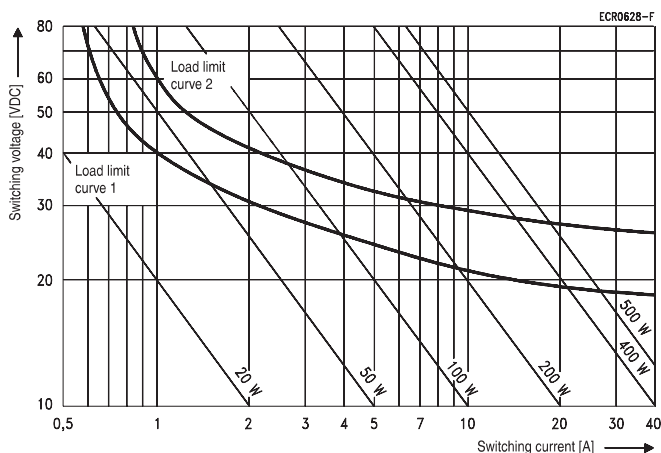
  

| Coil versions, DC coil |                   |                     |                     |                                     |                                  |
|------------------------|-------------------|---------------------|---------------------|-------------------------------------|----------------------------------|
| 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                | 7.2                 | 1.6                 | 114                                 | 1.3                              |

5) Without components in parallel.

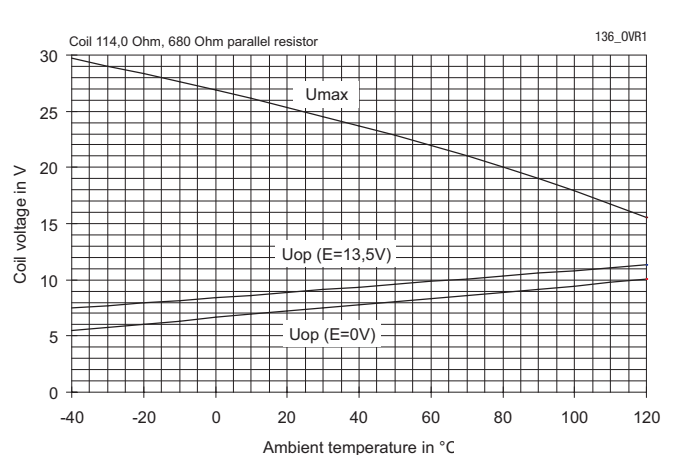
All figures are given for coil without pre-energization, at ambient temperature +23°C.

### Max. DC load breaking capacity



Load limit curve 1: arc extinguishes during transit time (changeover contact).  
Load limit curve 2: safe shutdown, no stationary arc (make contact).  
Load limit curves measured with low inductive resistors verified for 1000 switching events.

### Coil operating range



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

## Shrouded Power Relay F4 A (Continued)

### 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 III – sealed                                                |
| Degree of protection, IEC 60529                                 | IP67 (sealed)<br>only with special connector                   |
| Corrosive gas<br>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)<br>IEC 60068-2-6 (sine sweep) | 10 to 500Hz, min. 5g <sup>7)</sup>                             |
| Shock resistance (functional)<br>IEC 60068-2-27 (half sine)     | 11ms, min. 20g <sup>7)</sup>                                   |
| Drop test, free fall, IEC 60068-2-32                            | 1m onto concrete                                               |

### Other Data (continued)

|                    |                     |
|--------------------|---------------------|
| Terminal type      | plug-in, QC/ PCB    |
| Cover retention    |                     |
| axial force        | 150N                |
| pull force         | 200N                |
| push force         | 200N                |
| Terminal retention |                     |
| pull force         | 100N                |
| push force         | 100N                |
| Weight             | approx. 60g (2.1oz) |
| Packaging unit     | 108 pcs.            |

6) Refers to used materials.

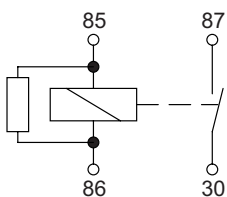
7) No change in the switching state >1μs. Valid for NC contacts, NO contact values significantly higher.

### Accessories

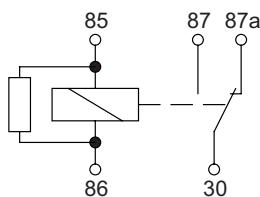
For fitting connectors please contact us via online Support Center

### Terminal Assignment

NOR  
1 form A, NO with resistor

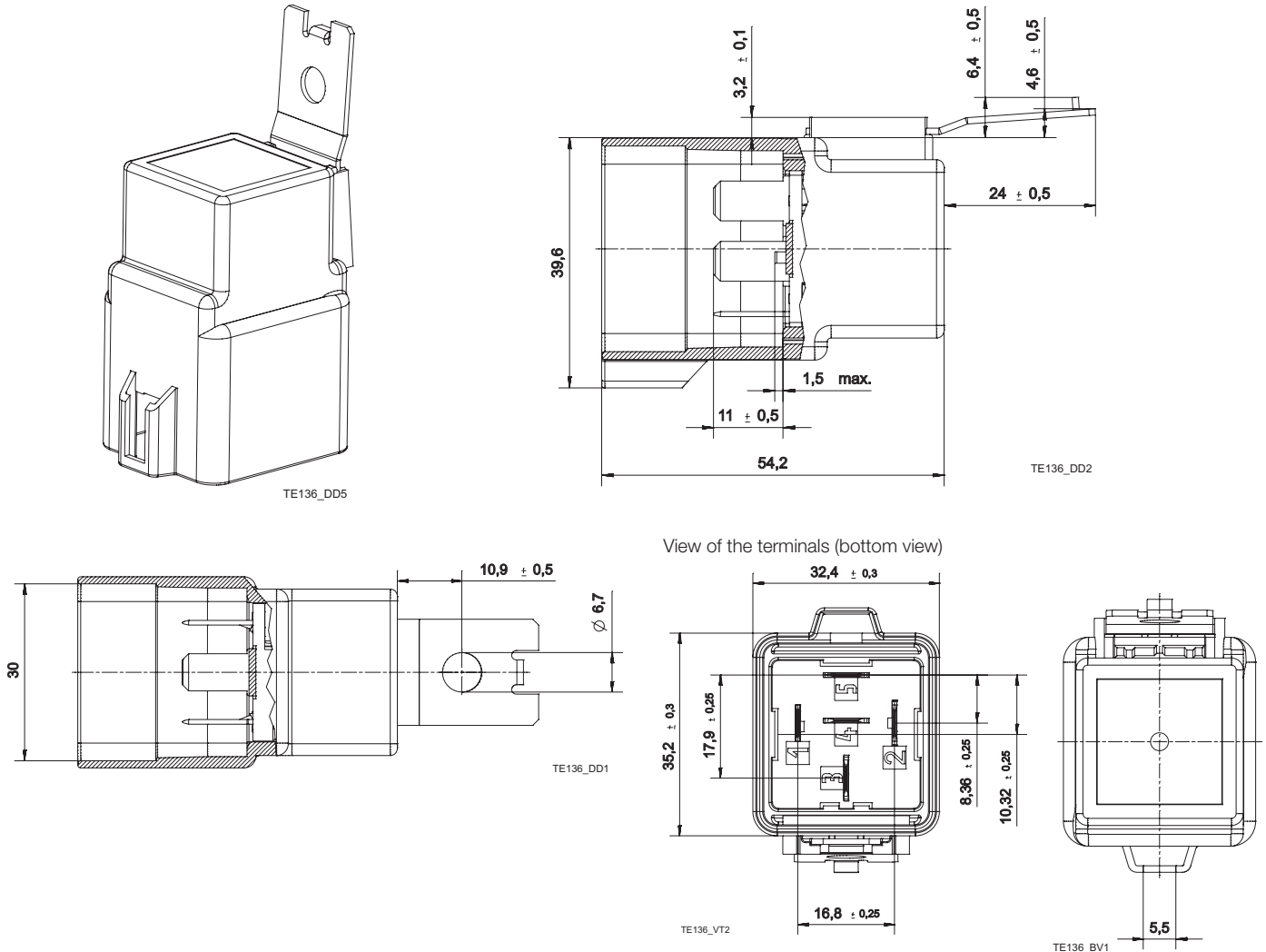


COR  
1 form C, CO with resistor



## Shrouded Power Relay F4 A (Continued)

### Dimensions



### Product code structure

Typical product code **V23136 -A 1 001 -X057**

|                      |                                       |  |  |
|----------------------|---------------------------------------|--|--|
| Type                 | V23136 Power Relay F4 A               |  |  |
| Contact arrangement  | A 1 form C, 1 CO B 1 form A, 1 NO     |  |  |
| Cover                | 1 Bracket at terminal 30 ISO          |  |  |
| Coil                 | 001 12VDC                             |  |  |
| Terminal/arrangement | Xnnn Customized (nnn: version number) |  |  |

| Product code      | Arrangement    | Cover    | Coil suppl.   | Circuit <sup>1)</sup> | Coil  | Cont. material | Terminals   | Part number |
|-------------------|----------------|----------|---------------|-----------------------|-------|----------------|-------------|-------------|
| V23136-A1001-X057 | 1 Form C, 1 CO | Shrouded | Resistor 680Ω | COR                   | 12VDC | Silver based   | Plug-in, QC | 1-1414552-0 |
| V23136-B1001-X051 | 1 Form A, 1 NO |          |               | NOR                   |       |                |             | 1-1414121-0 |

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.