

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
 - Special covers (e.g. notches, shrouded)



Typical applications

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

Contact Data

| Contact arrangement | 1 form A, 1 NO | 1 form C, 1 CO | 1 form C, 1 CO |
|---|---|---|---|
| Rated voltage | 12VDC | 12VDC | 24VDC |
| Maximum switching voltage | 16VDC | 16VDC | 32VDC |
| Limiting continuous current ¹⁾ | NO | NO/NC | NO/NC |
| 23°C | 60A | 60/45A | 50/35A |
| 85°C | 40A | 40/30A | 35/25A |
| 125°C | 17A | 17/12A | -- |
| Limiting short-time current ²⁾ | | | |
| overload current | 1.35 x 40A, 900s | 1.35 x 40A/30A, 900s | 1.35 x 35A/25A, 900s |
| ISO 8820-3 (2010-06) | 2.00 x 40A, 60s 3.50 x 40A, 7s 6.00 x 40A, 1s | 2.00 x 40A/30A, 60s 3.50 x 40A/30A, 7s 6.00 x 40A/30A, 1s | 2.00 x 35A/25A, 60s 3.50 x 35A/25A, 7s 6.00 x 35A/25A, 1s |
| Contact material | silver alloy | silver alloy | silver alloy |
| Min. contact load ³⁾ | 1A 5VDC | 1A 5VDC | 1A 5VDC |
| Initial voltage drop | | | |
| NO contact at 10A, typ./max. | 15mV/200mV | 15mV/200mV | 15mV/200mV |
| NC contact at 10A, typ./max. | | 20mV/250mV | 20mV/250mV |
| Operate time ⁴⁾ | typ. 7ms | typ. 7ms | typ. 7ms |
| Release time ⁴⁾ | typ. 2ms | typ. 2ms | typ. 2ms |
| Mechanical endurance | >1x10 ⁶ ops. | >1x10 ⁶ ops. | >1x10 ⁶ ops. |

Electrical Endurance⁵⁾ 12VDC Coil

| Load voltage/ coil voltage | Load type | | Load current | | | On / off ratio | Electrical endurance ⁷⁾ | |
|-------------------------------|---|-------|----------------|------------------------|----|----------------|------------------------------------|------------|
| | | | 1 form A NO | 1 form C ⁶⁾ | | | Coil suppression ⁸⁾ | |
| | | | | NO | NC | | Resistor | Diode |
| 14VDC | capacitive ⁹⁾ | make | 150 | 150 | -- | 2s/2s | >1x10 ⁵ ops. | on request |
| | | break | 30 | 30 | -- | | | |
| | resistive | make | 40 | 40 | 30 | 2s/2s | >1x10 ⁵ ops. | on request |
| | | break | 40 | 40 | 30 | | | |
| | inductive L=0.25mH (NO) L=0.20mH (NC) | make | 80 | 80 | 40 | 2s/2s | >1x10 ⁵ ops. | on request |
| | | break | 33 | 33 | 20 | | | |

Electrical Endurance¹⁰⁾ 24VDC Coil

| Load voltage/ coil voltage | Load type | | Load current | | | On / off ratio | Electrical endurance ¹¹⁾ | |
|-------------------------------|--------------------------|-------|----------------|------------------------|----|----------------|-------------------------------------|--|
| | | | 1 form A NO | 1 form C ⁶⁾ | | | Coil suppression ⁸⁾ | |
| | | | | NO | NC | | Resistor | Diode |
| 28VDC | capacitive ⁹⁾ | make | -- | 72 | 36 | 2s/2s | on request | >2.5x10 ⁵ ops. (NO) >5.0x10 ⁴ ops. (NC) |
| | | break | -- | 16 | 8 | | | |
| | resistive | make | -- | 20 | 10 | 2s/2s | on request | >2.5x10 ⁵ ops. |
| | | break | -- | 20 | 10 | | | |
| | inductive L=0,55mH | make | -- | 40 | -- | 2s/2s | on request | >2.5x10 ⁵ ops. |
| | | break | -- | 16 | -- | | | |

1) At rated voltage.

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

3) 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/>

4) 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.

5) All tests performed with cyclic temperature -40 to 125°C.

6) NO & NC contacts tested independently.

7) According Weibull.

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

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

10) All tests performed with cyclic temperature -40 to 85°C.

11) Single lifetime.

Power Relay F4 A (Continued)

Coil Data

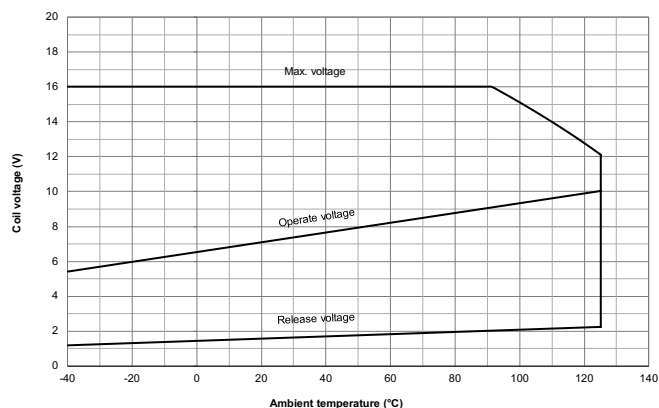
| Coil code | Rated voltage [VDC] | Must Operate voltage [VDC] | Must Release voltage [VDC] | Coil resist. [Ω] | Suppr. resist. [Ω] | Total resist. $\pm 10\%$ [Ω] | Rated coil power [W] |
|-----------|---------------------|----------------------------|----------------------------|---------------------------|-----------------------------|---------------------------------------|----------------------|
| 001 | 12 | 7.2 | 1.6 | 114 | 680 | 98 | 1.3 |
| 004 | 12 | 7.2 | 1.6 | 90 | 680 | 79 | 1.8 |
| 004 | 12 | 7.2 | 1.2 | 90 | -- | 90 | 1.6 |
| 103 | 24 | 16.0 | 3.0 | 255 | 1200 | 210 | 2.7 |
| 103 | 24 | 16.0 | 3.0 | 255 | --- | 255 | 2.3 |

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

Insulation Data

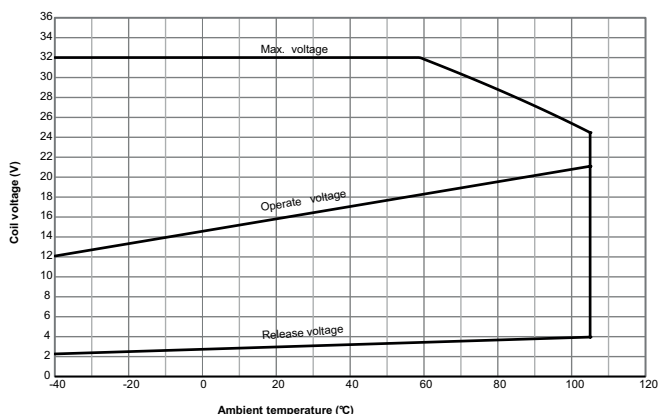
| | |
|-----------------------------|-----------------------|
| Initial dielectric strength | |
| between open contacts | 500VAC _{rms} |
| between contact and coil | 500VAC _{rms} |

Coil operating range 001/004



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

Coil operating range 103



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 | UL94-HB or better ¹¹⁾ |
| 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 (2009-01) | |
| Na | 100 cycles, -40°C / +125°C |
| Damp heat cyclic IEC 60068-2-30 (2005-08) | |
| Db, Variant 1 | 6 cycles, upper air temp. 55°C |
| Degree of protection IEC 60529 (2013-08) | IP54 |
| Vibration resistance (functional) ISO 16750-3 (2012-12) | 10 to 1000Hz, > 2.71g eff |
| Test IV | No change of switching state >10 μ s |
| Shock resistance (functional) IEC 60068-2-27 (2008-02) | min. 20g 11ms ¹²⁾ |
| half sine | No change of switching state >10 μ s |
| Drop test, free fall IEC 60068-2-32 (2008-05) | 1m onto concrete |
| Terminal type | Plug-in, QC |
| Cover retention | |
| pull | 150N |
| push | 200N |
| Terminal retention | |
| pull | 100N |
| push | 100N |
| resistance to beanding | 10N ¹³⁾ |
| Weight | approx. 35g (1.2oz) |
| Packaging unit | 108 pcs |

11) Refers to used materials.

12) valid for NC contacts, NO contact values significantly higher.

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

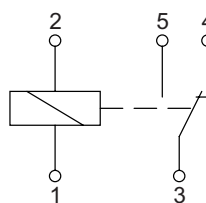
Accessories

| | |
|---------------------------|--------------------------------|
| For details see datasheet | Connectors for Mini ISO Relays |
|---------------------------|--------------------------------|

Terminal Assignment

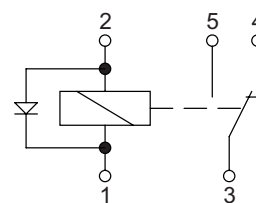
CO

1 form C, 1 CO



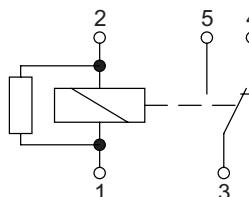
COD

1 form C, 1 CO with diode



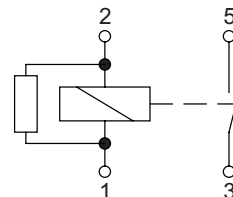
COR

1 form C, 1 CO with resistor



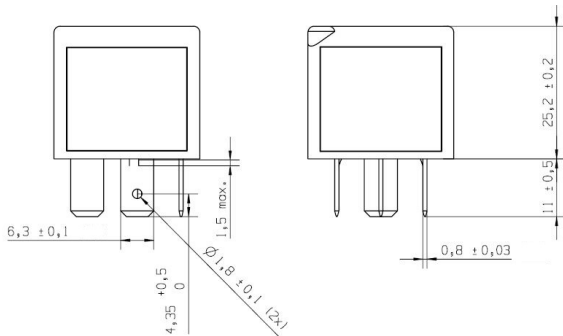
NOR

1 form A, 1 NO with resistor



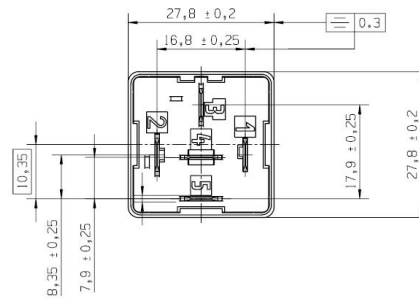
Power Relay F4 A (Continued)

Dimensions (standard cover)

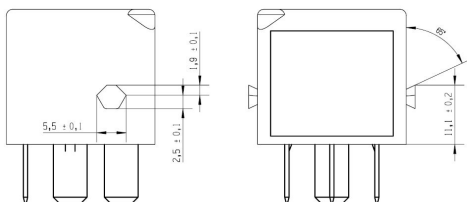


Note:
Holes in terminal 1 and 2 only for 24V versions.

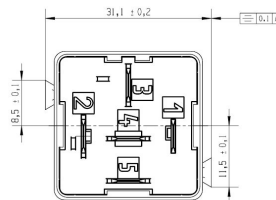
View of the terminals (bottom view)



Dimensions (special cover with notches -V23136-A0001-X083)



View of the terminals (bottom view)



Product Code Structure

Typical product code **V23136 -A 0 001 -Xnnn**

| | | | | | |
|-----------------------------|---------------------------------------|-----------|------------------|--|--|
| Type | V23136 Power Relay F4 A | | | | |
| Contact arrangement | A 1 form C, 1 CO | | B 1 form A, 1 NO | | |
| Cover | 0 Standard | | | | |
| Coil | 001 12VDC | 004 12VDC | 103 24VDC | | |
| Terminal/arrangement | Xnnn Customized (nnn: version number) | | | | |

Production in Europe (only)

| Product Code | Arrangement | Coil Suppr. | Circuit ¹⁴⁾ | Coil | Part Number |
|----------------------------------|----------------|-------------------|------------------------|-------|-------------|
| V23136-A0001-X083 ¹⁵⁾ | 1 form C, 1 CO | Resistor 680Ω | COR | 12VDC | 4-1414977-8 |
| V23136-A0004-X058 | 1 form C, 1 CO | -- | CO | 12VDC | 1-1414686-0 |
| V23136-A0004-X059 | 1 form C, 1 CO | Resistor 680Ω | COR | 12VDC | 1-1414687-0 |
| V23136-A0004-X086 | 1 form C, 1 CO | Diode (cathode 1) | COD | 12VDC | 4-1414992-7 |

Production in Asia (only)

| Product Code | Arrangement | Coil Suppr. | Circuit ¹⁴⁾ | Coil | Part Number |
|-------------------|----------------|-------------------|------------------------|-------|-------------|
| V23136-A0001-X155 | 1 form C, 1 CO | Resistor 680Ω | COR | 12VDC | 2325917-1 |
| V23136-A0004-X058 | 1 form C, 1 CO | -- | CO | 12VDC | 6-1904112-9 |
| V23136-A0004-X059 | 1 form C, 1 CO | Resistor 680Ω | COR | 12VDC | 7-1904112-0 |
| V23136-A0004-X086 | 1 form C, 1 CO | Diode (cathode 1) | COD | 12VDC | 7-1904112-1 |
| V23136-B0001-X104 | 1 form A, 1 NO | Resistor 680Ω | NOR | 12VDC | 7-1904116-0 |
| V23136-A0103-X151 | 1 form C, 1 CO | Diode (cathode 1) | COD | 24VDC | 2383369-1 |
| V23136-A0103-X153 | 1 form C, 1 CO | Resistor 1200Ω | COR | 24VDC | 2383365-1 |

Other types on request. These lists represent the most common types and do not show all variants covered by this datasheet.

14) See terminal assignment diagrams.

15) Special cover with notches.

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[1-1414687-0](#)