

VF4 A



Description

Features

- Limiting continuous currents 60/40 A at the NO / NC contacts
- Dimensional characteristics and the functional allocations of the plug-in terminals to ISO 7588 part 1
- Standardized dimensions
- Plug-in or PCB terminals

Typical applications

- Ignition lock
- Lamp load (headlights)
- Cooling fan
- ABS
- Exhaust emission control
- Cross carline up to 60 A
- Fuel pump
- Engine cooling fan
- A/C blower
- A/C compressor clutch
- Also available for 42 V applications



Please contact Tyco Electronics for relay application support.

Design

Dustproof; protection class IP 54 to IEC 529 (EN 60 529); with either mounting bracket or mounting clip

Options

Shrouded and weatherproof covers

Weight

Approx. 1.2 oz. (35 g)

Nominal voltage

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

Terminals

Quick connect terminals similar to ISO 8092-1 coil and load 6.3 x 0.8 mm; surfaces tin-plated or PCB terminals

Accessories

Connectors see page 188

Special models on request

- Integrated components: resistor, varistor, diode
- Special labels
- Special cover shapes

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, 29.5 ± 1.0" Hg (998.9 ± 33.9 hPa).
Please also refer to the Application Recommendations in this catalog for general precautions.

VF4_3d1

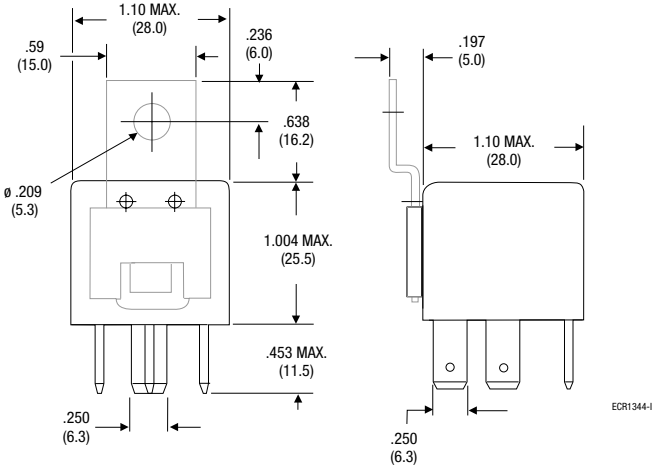
Disclaimer

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 are reserved.

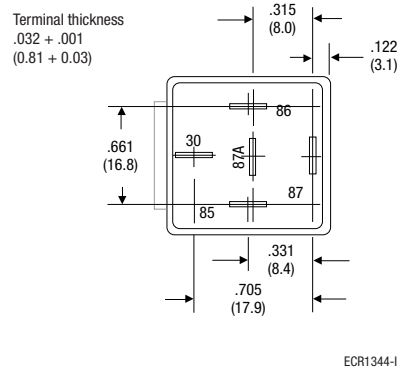
VF4 A

North America production
Dimensional drawing

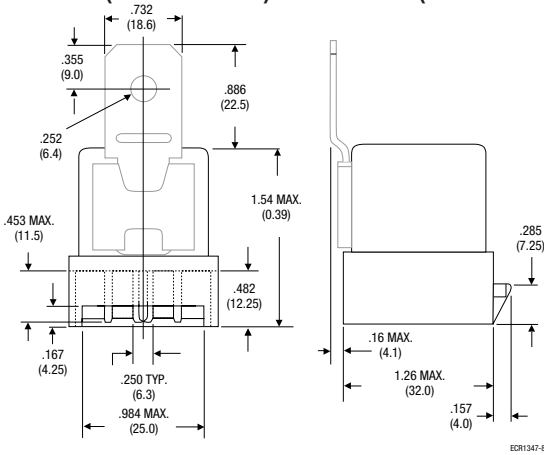
Dust cover with quick connect terminals
VF4-1** (without bracket) and VF4-4**** (with bracket)**



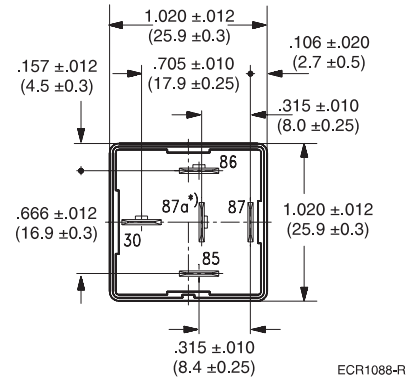
View of the terminals (bottom view)



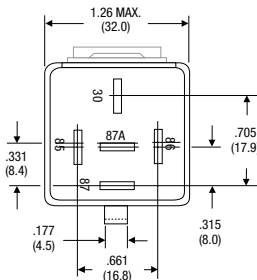
Shrouded dust cover with quick connect terminals
VF4-2** (without bracket) and VF4-5**** (with bracket)**



View of the terminals (bottom view)

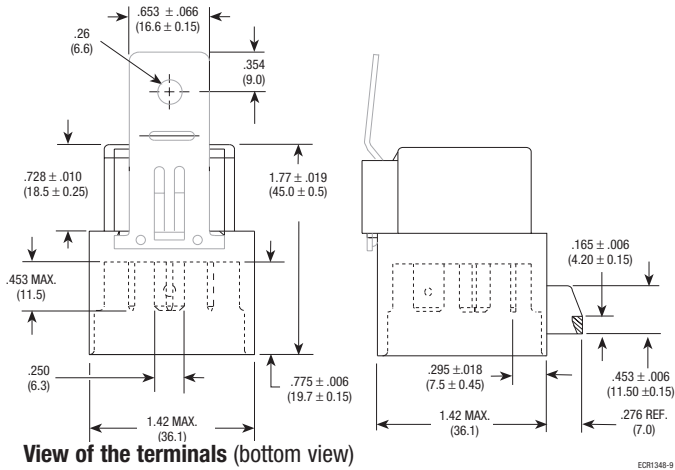


View of the terminals (bottom view)

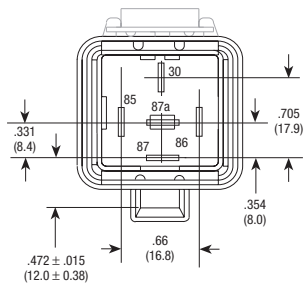


VF4 A

North America production
Weatherproof cover with quick connect terminals
VF4-3** (without bracket) and VF4-6**** (with bracket)**



ECR1348-9



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Contact data

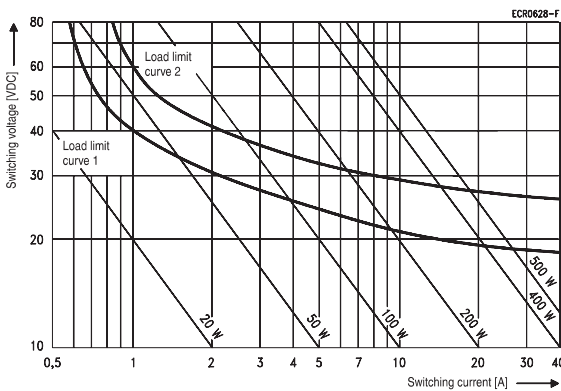
| Contact configuration | Make contact/ Form A | Changeover contact/ Form C |
|--|--|---|
| Circuit symbol (see also Pin assignment) | | |
| Limiting continuous current at 23 °C at 85 °C | 60 A 40 A | 40/60 A 40/60 A |
| Contact material | AgNi0.15 | |
| Max. switching voltage/power | See load limit curve | |
| Max. switching current ¹⁾ | | NC/NO |
| On ²⁾ | 120 A | 45/120 A |
| Off | 60 A | 40/60 A |
| Min. recommended load ³⁾ | 1 A at 5 V | |
| Voltage drop (initial) NO contact at 40 A NC contact at 30 A | Typ. 60 mV, 200 mV max. | Typ. 60 mV, 200 mV max. Typ. 60 mV, 250 mV max. |
| Mechanical endurance (without load) | > 10 ⁷ operations | |
| Electrical endurance (example of resistive load) | > 1 x 10 ⁵ operations 40 A, 14 V | > 1 x 10 ⁵ operations 40 A, 14 V (NO contact) |
| Max switching rate at nominal load | 6 operations per minute (0.1 Hz) | |

¹⁾ The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V load voltages.

²⁾ For a load current duration of maximum 3 s for a make/break ratio of 1:10.

³⁾ See chapter Diagnostics in our Application Recommendations on page 18 of this catalog or consult the internet at <http://relays.tycoelectronics.com/application.asp>

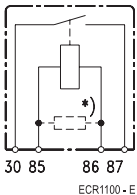
Load limit curve



Load limit curve 1 $\hat{=}$ arc extinguishes during transit time (changeover contact)
Load limit curve 2 $\hat{=}$ safe shutdown, no stationary arc (make contact)

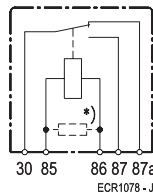
Pin assignment

1 make contact/
1 form A



*) Models with resistor or diode in parallel to the coil on request.

1 changeover contact/
1 form C



*) Models with resistor or diode in parallel to the coil on request.

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Coil data

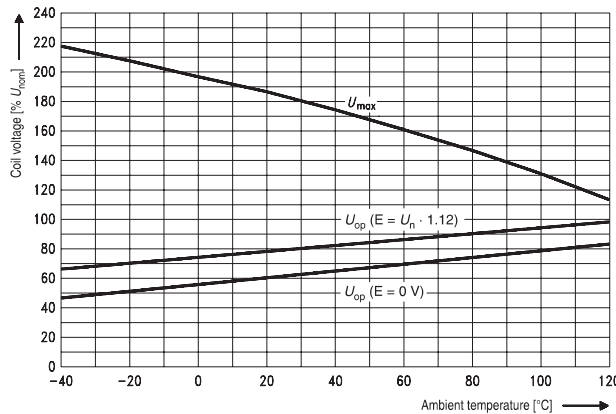
| | |
|--|------------------------|
| Available for nominal voltages | 6, 12, 24 V |
| Nominal power consumption of the unsuppressed coil at nominal voltage | 1.6 W |
| Nominal power consumption at nominal voltage with suppression resistor | 1.8 W |
| Test voltage winding/contact | 500 VAC _{rms} |
| Ambient temperature range | - 40 to + 125 °C |
| Operate time at nominal voltage | Typ. 7 ms |
| Release time at nominal voltage ¹⁾ | Typ. 2 ms |

¹⁾ For unsuppressed relay coil

N.B.

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.

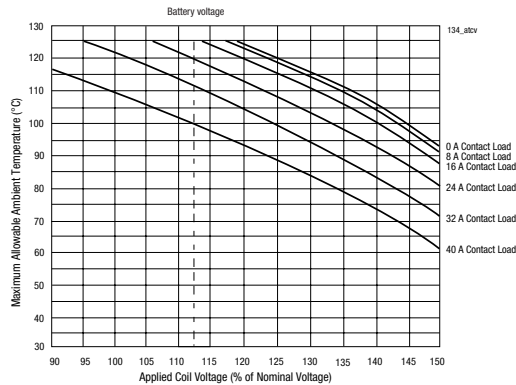
Operating voltage range



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

ECR0701-J

Ambient temperature vs. coil voltage for continuous duty



Assumptions:

1. Still air
2. Nominal coil resistance
3. Maximum mean coil temperature = 180 °C
4. Coil temperature rise due to load = 1 °C at 8 A
= 5 °C at 16 A
= 11 °C at 24 A
= 20 °C at 32 A
= 32 °C at 40 A
5. Thermal resistance and power dissipation based on coil resistance at 180 °C
6. Curves are based on 1.6 W at 23 °C
7. When full lifetime is at high ambient and high load current, subtract 25 °C from maximum allowable ambient temperature.

Mechanical data

| | |
|---|--|
| Cover retention | |
| Axial force | 150 N (33.8 lbs) |
| Pull force | 200 N (45 lbs) |
| Push force | 200 N (45 lbs) |
| Terminals | |
| Pull force | 100 N (22.5 lbs) |
| Push force | 100 N (22.5 lbs) |
| Resistance to bending, force applied to front | 10 N (2.25 lbs) ¹⁾ |
| Resistance to bending, force applied to side | 10 N (2.25 lbs) ¹⁾ |
| Torsion | 0.3 Nm |
| Enclosures | |
| Dust cover | Protects relay from dust. For use in passenger compartment or enclosures |
| Shrouded dust cover | Protects relay and relay connector (order separately) from dust and splash |
| Weatherproof cover | Mates with a connector (order separately) to seal relay from salt spray etc. Recommended for under hood application |

¹⁾ Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.