

VF28 (Standard and Shrouded)



**Features**

- Limiting continuous current 30 A at 85°C
- 2.8 mm quick connect terminals (per SAE J1744)

**Customized Versions on Request**

- Integrated components (e.g. resistor, diode)
- Customized marking
- Special covers (e.g. brackets, shrouded)

**Typical Applications**

Cross carline up to 30 A

for example:

- ABS control
- Blower fans
- Cooling fan
- Energy management
- Engine control
- Fuel pump
- Heated front screen
- Ignition
- Lamps front, rear, fog light
- Main switch/supply relay
- Wiper control

Please contact Tyco Electronics for relay application support.



VF28\_3D2R2

**Design**

- ELV compliant
- Dustproof; protection class IP54 to IEC 529 (EN 60 529)
- Shrouded: protection class IP67 to IEC 529 (EN 60 529) if used with special connector

**Weight**

Approx. 34 g (1.2 oz.)

**Nominal Voltage**

12 V or 24 V

**Terminals**

Quick connect terminals per SAE J1744; coil and load 2.8 mm dual in-line

**Accessories**

Connectors see page 235

**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, 998.9 ±33.9 hPa.

For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

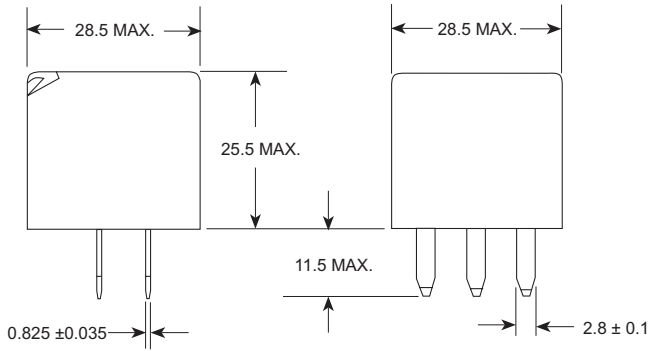
**Disclaimer**

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 Electronics are reserved.

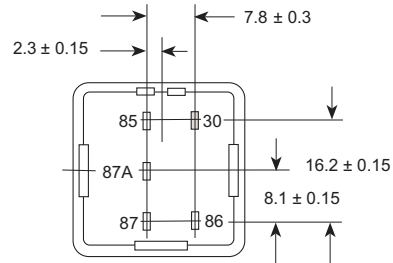
**VF28 (Standard and Shrouded)**

**Dimensional Drawing**

**VF28 with Dust Cover**  
**VF28-1\*\*\*\***

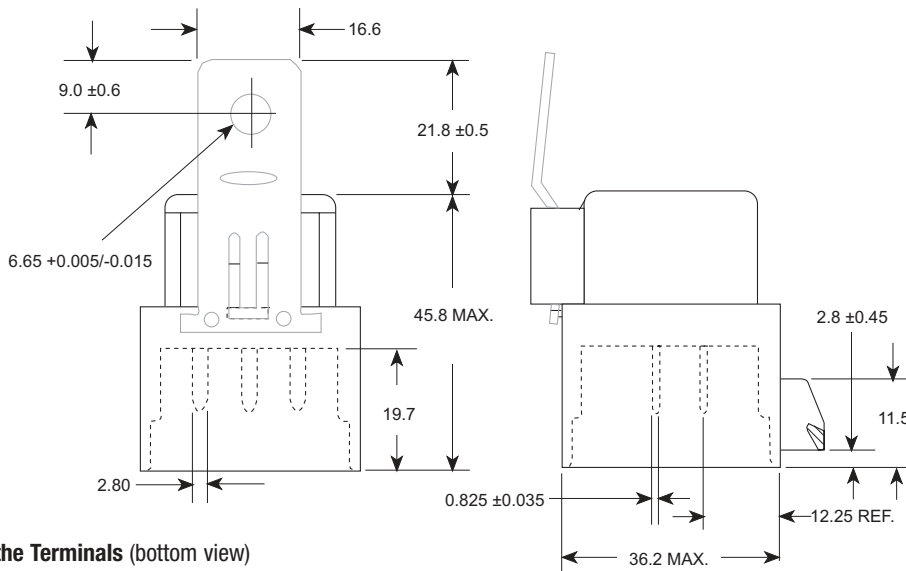


**View of the Terminals (bottom view)**

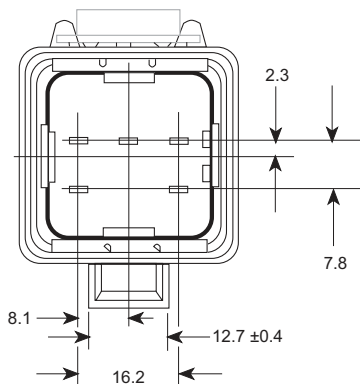


TE2118-M2

**VF28 with Shrouded/Weatherproof cover**  
**VF28-3\*\*\*\* and VF28-6\*\*\*\***



**View of the Terminals (bottom view)**





TE2119-V1

TOLERANCE UNLESS  
OTHERWISE NOTED:

2 DECIMAL: ±0.1

1 DECIMAL: ±0.15

**VF28 (Standard and Shrouded)**

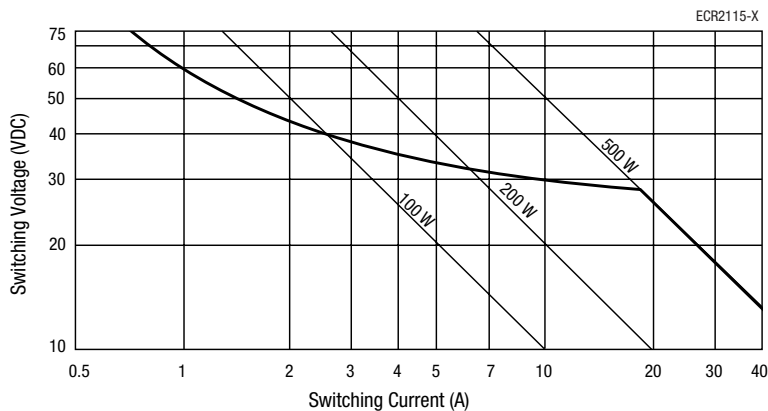
<b>Contact Data</b>		
Contact configuration	1 Make contact/ 1 Form A	1 Changeover contact/ 1 Form C
Circuit symbol		
Rated voltage	12 V	12 V
Rated current	35 A	20/35 A
Limiting continuous current		NC/NO
23°C	45 A	25/45 A
85°C	30 A	20/30 A
125°C	12 A	8/12 A
Contact material	Silver based	
Max. switching voltage/power	See load limit curve	
Max. switching current <sup>1)</sup>		NC/NO
On <sup>2)</sup>	120 A	45/120 A
Off	40 A	30/40 A
Min. recommended load <sup>3)</sup>	1 A at 5 V	
Voltage drop A (initial)		
NO contact at 35 A	200 mV max.	200 mV max.
NC contact at 20 A		250 mV max.
Mechanical endurance (without load)	Typ. 10 <sup>7</sup> operations	
Electrical endurance	> 1 x 10 <sup>5</sup> operations	> 1 x 10 <sup>5</sup> operations
(example of resistive load, further information on request)	35 A, 14 V	35 A, 14 V / 20 A, 14 V
Max. switching rate at nominal load	6 operations per minute (0.1 Hz)	

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

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

<sup>3)</sup> See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at <http://relays.tycoelectronics.com/appnotes/>

**Load Limit Curve**

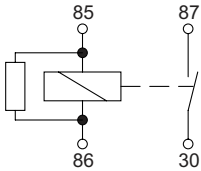


Safe breaking, arc extinguished (normally open contact)  
for resistive loads with resistor suppression.

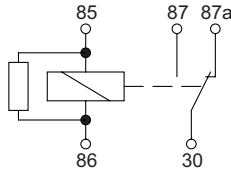
**VF28 (Standard and Shrouded)**

**Circuit Diagram**

AR  
1 Make contact/1 Form A  
with Resistor



CR  
1 Changeover contact/1 Form C  
with Resistor



**Coil Data**

Available for nominal voltages	12 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 <sub>rms</sub>
Ambient temperature range	-40 to +125°C
Operate time at nominal voltage	Typ. 7 ms
Release time at nominal voltage <sup>1)</sup>	Typ. 4 ms

<sup>1)</sup> For unsuppressed relay coil.

**Note:**

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.

**Mechanical Data**

Cover retention	
Axial force	150 N
Pull force	200 N
Push force	200 N
Terminals	
Pull force	100 N
Push force	100 N
Resistance to bending, force applied to front	10 N <sup>1)</sup>
Resistance to bending, force applied to side	10 N <sup>1)</sup>
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures
Weatherproof cover	Mates with VC28-1003 connector.

<sup>1)</sup> 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.

**VF28 (Standard and Shrouded)**

**Environmental Conditions**

Temperature range, storage	Refer to <i>Storage</i> in the "Glossary" catalog page 23 or <a href="http://relays.tycoelectronics.com/appnotes/">http://relays.tycoelectronics.com/appnotes/</a>			
Test	Relevant standard	Testing as per	Dimension	Comments
Vibration resistance	1.27 mm double amplitude 5 g constant 0.5 mm double amplitude 10 g constant		10 - 40 Hz 40 - 70 Hz 70 - 100 Hz 100 - 500 Hz	Valid for NC contacts, NO contacts are significantly higher
Shock resistance	Half sine wave pulse		20 g 11 ms	No change in the switching state > 1 ms
Jump start	24 V for 5 minutes conducting nominal current at 23°C			
Drop test	Capable of meeting specifications after 1.0 m (3.28 ft) drop onto concrete			
Flammability	UL94-HB or better (meets FMVSS 302) <sup>1)</sup>			Internal External
Overload Current <sup>2)</sup>	54 A, 1800 s 80 A, 60 s 240 A, 1 s			

<sup>1)</sup> FMVSS: Federal Motor Vehicle Safety Standard.

<sup>2)</sup> Current and time are compatible with circuit protection by a typical 40 A automotive fuse. Relay will make, carry and break the specified current.

**Ordering Information**

Part Numbers (see table below for coil data)		Circuit/Contact Arrangement	Contact Material	Enclosure	Coil Suppression	Terminals
Relay Description	Part Number					
VF28-11F14-S01	1393297-1	AR/1 Form A	AgNi0.15	Dust cover	Resistor 680 Ω	Quick connect
VF28-11F24-S01	2-1419084-3	AR/1 Form A	AgSnO <sub>2</sub>	Dust cover	Resistor 680 Ω	Quick connect
VF28-15F14-S01	1393297-8	CR/1 Form C	AgNi0.15	Dust cover	Resistor 680 Ω	Quick connect
VF28-15F24-S01	1-1393297-3	CR/1 Form C	AgSnO <sub>2</sub>	Dust cover	Resistor 680 Ω	Quick connect
VF28-61F14-S01	3-1393297-6	AR/1 Form A	AgNi0.15	Weatherproof	Resistor 680 Ω	Quick connect
VF28-65F14-S01	4-1393297-5	CR/1 Form C	AgNi0.15	Weatherproof	Resistor 680 Ω	Quick connect

**Coil Versions**

Coil Data for VF28	Rated Coil Voltage (V)	Coil Resistance ±10% (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive <sup>1)</sup> Voltage (V)	
					at 23°C	at 85°C
VF28-**F**-S01 <sup>2)</sup>	12	79.5	7.2	1.2	20.2	15.7

<sup>1)</sup> Allowable overdrive is stated with no load applied and minimum coil resistance.

<sup>2)</sup> Coil suppression suffix: S01 for 12 V (680 Ω parallel resistor).

**Standard Delivery Packs** (orders in multiples of delivery pack)

Dust cover version: 357 pieces

Weatherproof version with bracket: 110 pieces