

Shrouded Power Relay F4 A



Features

- Limiting continuous current 40 A at 85°C
- Pin assignment according to ISO 7588 part 1
- Bracket

Customized Versions on Request

- Integrated components (e.g. diode)
- Customized marking

Typical Applications

- 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.



136_3D03

Design

- ELV/RoHS/WEEE compliant
- Shrouded: protection class IP67 to IEC 529 (EN 60 529) if used with special connector

Weight

Approx. 60 g (2.1 oz.)

Nominal Voltage

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

Accessories

Fitting connectors see table
Ordering Information

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.

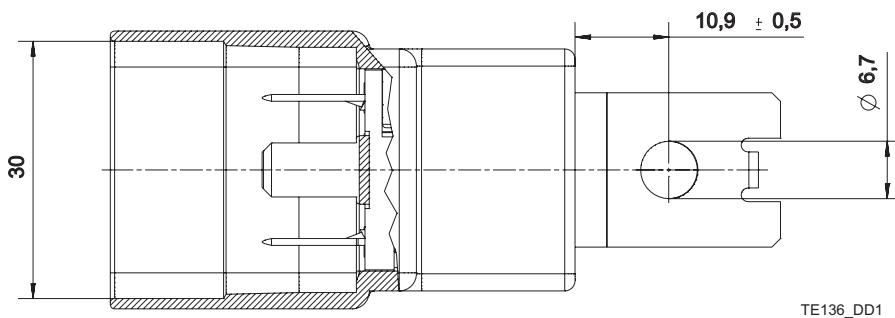
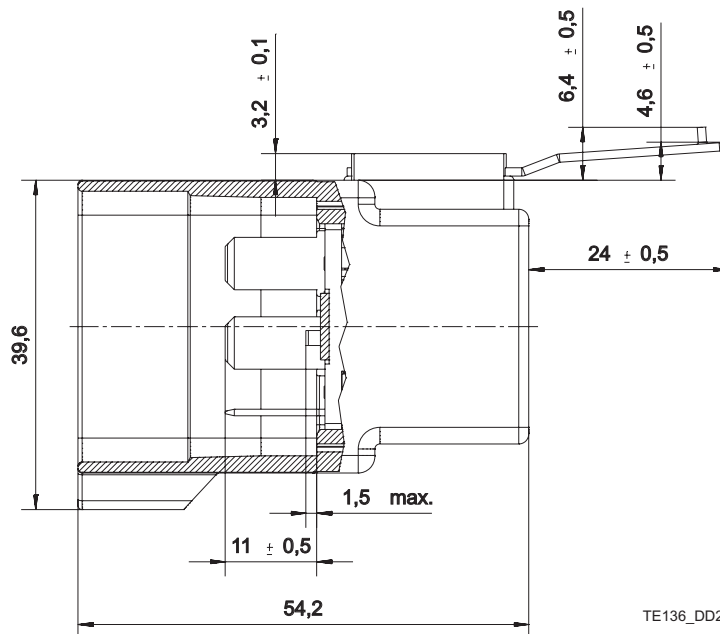
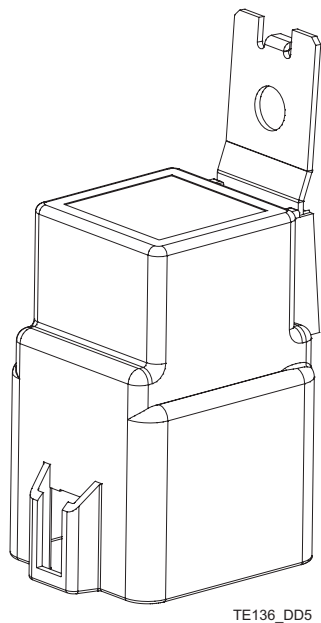
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

Disclaimer

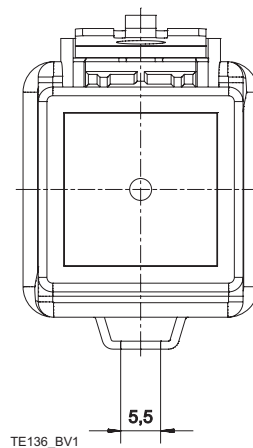
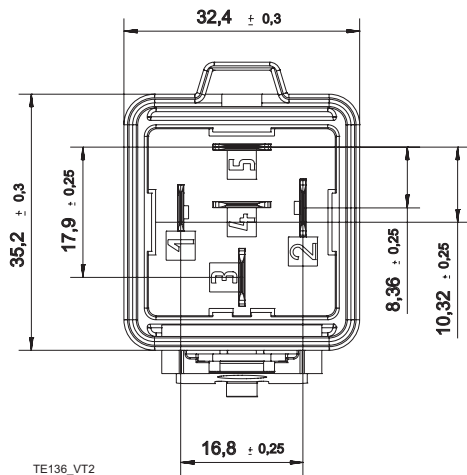
All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete 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.

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Dimensional Drawing





View of the Terminals (bottom view)



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Contact Data

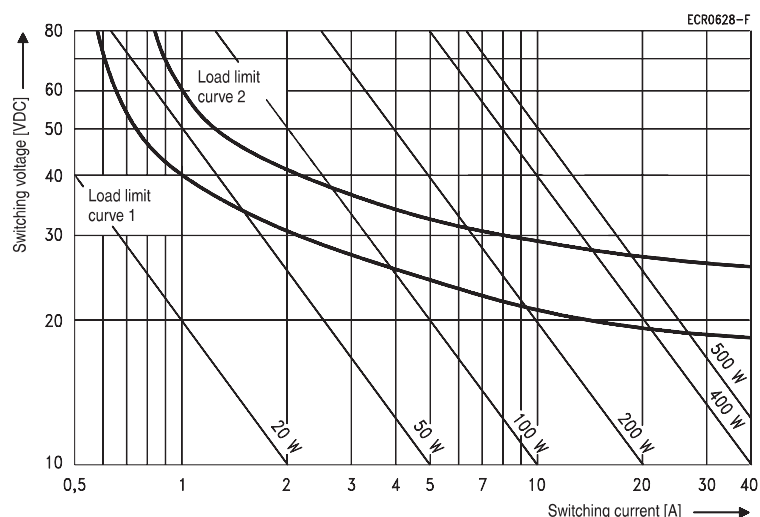
Contact configuration	1 Make contact/ 1 Form A	1 Changeover contact/ 1 Form C
Circuit symbol		
Rated voltage	12 V	12 V
Rated current	40 A	30/40 A
Limiting continuous current		
23°C	60 A	NC/NO
85°C	40 A	45/60 A
125°C	17 A	30/40 A
		12/17 A
Contact material	Silver based	
Max. switching voltage/power	See 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 12 V	
Voltage drop at 10 A (initial)		
NO contact	Typ. 15 mV, 300 mV max.	Typ. 15 mV, 300 mV max.
NC contact		Typ. 25 mV, 300 mV max.
Mechanical endurance (without load)	Typ. 10 ⁷ operations	
Electrical endurance		
(example of resistive load, further information on request)	> 2 x 10 ⁵ operations 40 A on NO	> 1 x 10 ⁵ operations 40 A on NO
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 or 27 V for 24 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 of Relays in our Application Notes page 31 or consult the internet at <http://relays.tycoelectronics.com/appnotes/>

Load Limit Curve



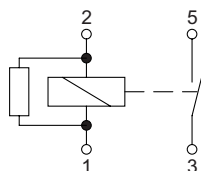
Load limit curve 1 $\hat{=}$ arc extinguishes during transit time (changeover contact)

Load limit curve 2 $\hat{=}$ safe shutdown, no stationary arc (make contact)

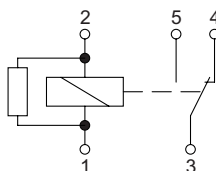
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Circuit Diagram

AR
1 Make contact/1 Form A
with Resistor



CR
1 Changeover contact/1 Form C
with Resistor



Coil Data

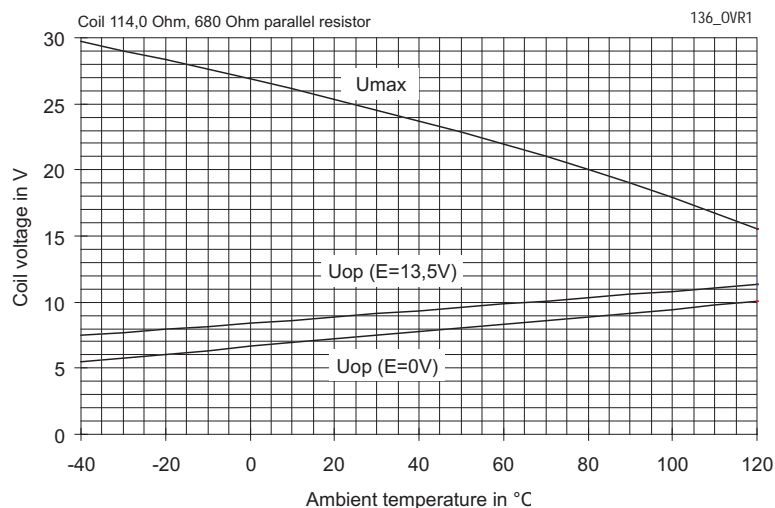
Available for nominal voltages	12 V
Nominal power consumption at nominal voltage with suppression resistor	1.5 W
Test voltage winding/contact	500 VAC _{rms}
Ambient temperature range	-40 to +125°C
Operate time at nominal voltage	Typ. 8.5 ms
Release time at nominal voltage ¹⁾	Typ. 4 ms

¹⁾ 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.

Operating Voltage Range



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

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

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Environmental Conditions				
Temperature range, storage	Refer to <i>Storage</i> in the "Glossary" catalog page 23 or http://relays.tycoelectronics.com/appnotes/			
Test	Relevant standard	Testing as per	Dimension	Comments
Climatic cycling with condensation	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 68-2-14	Nb	10 cycles	-40/+85°C (5°C per min)
Damp heat				
cyclic	IEC 68-2-30	Db, Variant 1	6 cycles	Upper air temperature 55°C
constant	IEC 68-2-3	Ca	56 days	
Corrosive gas	IEC 68-2-42	10 ±2 cm ³ /m ³ SO ₂	10 days	
	IEC 68-2-43	1 ±0.3 cm ³ /m ³ H ₂ S	10 days	
Vibration resistance	IEC 68-2-6 (sine sweep)		10 - 500 Hz min. 5 g	No change in the switching state > 10 µs Valid for NC contacts, NO contact values significantly higher
Shock resistance	IEC 68-2-27 (half sine form single pulses)		min. 20 g 11 ms	
Load dump	ISO 7637-1 (12 V) ISO 7637-2 (24 V)	Test pulse 5 Test pulse 5	Vs = +86.5 V Vs = +200 V	
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) ¹⁾			
Overload current for relays with rated currents as shown in contact data table ²⁾	1.35 x Rated current 1800 s 2.00 x Rated current 5 s 3.50 x Rated current 0.5 s 6.00 x Rated current 0.1 s			
Protection class	IEC 529 (EN 60 529)	IP67 if used with special connector		

¹⁾ FMVSS: Federal Motor Vehicle Safety Standard.

²⁾ Current and time are compatible with circuit protection by a typical 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	Fitting Connectors FCI Order Number
Relay Description	Part Number					
V23136-B1001-X051	1-1414121-0	AR/1 Form A	Silver based	Shrouded cover	Resistor 680 Ω	6 043 01 01
V23136-A1001-X057	1-1414552-0	CR/1 Form C	Silver based	Shrouded cover	Resistor 680 Ω	6 043 01 41

Coil Versions

Coil Data for Shrouded Power F4 A	Rated Coil Voltage (V)	Coil Resistance ²⁾ ±10% (Ω)	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive ¹⁾ Voltage (V)	
					at 23°C	at 85°C
V23136-***001-****	12	96	7.2	1.6	24	18

¹⁾ Allowable overdrive is stated with no load applied and minimum coil resistance.

²⁾ Resistance measured between terminals 1 and 2.

Standard Delivery Packs (orders in multiples of delivery pack)

Shrouded Power F4 A: 108 pieces