

VBA



Description

Features

- Up to 40 A stall current
- 30 A continuous contact rating at 85 °C
- Motor reversing arrangement
- High side and low side switching versions
- Plug-in connections
- Spring-clip or push-in

Typical applications

- DC motor reversing module

Please contact Tyco Electronics for relay application support.



VBA_3d01

Design

Dustproof;
for spring-clip mounting, push-in fastener or bracket mounting

Weight

Approx. 2.5 oz. (70 g)

Nominal voltage

12 V;
other nominal voltages available on request

Terminals

Terminals A & F are .110 " (2.8 mm) quick connect,
terminals B, C, D & E are .0187 " (4.8 mm) quick connect

Accessories

Connectors see page 193

Conditions

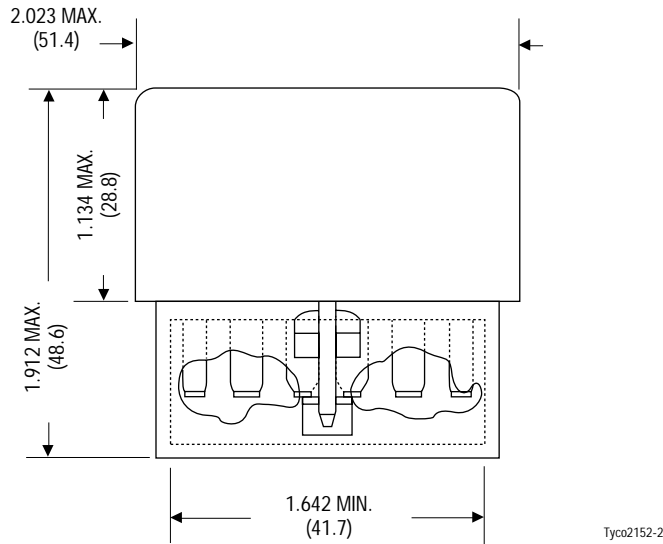
All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23 °C ambient temperature,
20-50% RH, 29.5 ± 1.0" Hg (998.9 ± 33.9 hPa).
Please also refer to the Application Recommendations in this catalog for general precautions.

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.

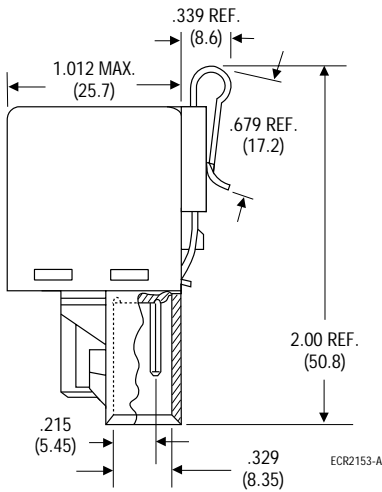
VBA

Dimensional drawing
VBA-1016



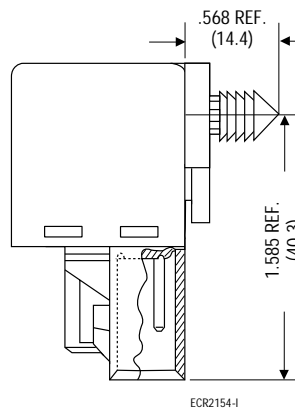
VBA-1001

Spring clip will accommodate panels from 0.020 - 0.093 (0.51 - 2.36) thick.



VBA-1002

Plug-in fastener fits \varnothing 0.256 (6.5) in panels from 0.022 - 0.201 (0.56 - 5.1) thick.



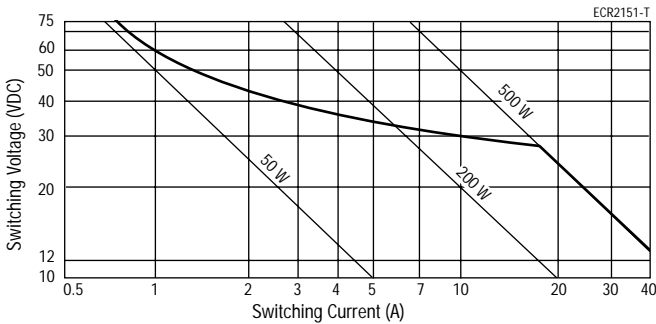
VBA

Contact data

Contact configuration	See schematic for motor reversing arrangement
Rated voltage	12 V
Rated current at 85°C	30 A at 14 V
Contact material	AgNi0.15
Max. switching voltage/power	See load limit curve
Max. switching current ¹⁾ Intermittent	40 A at 14 V, 0.5 mH inductive load with NO contacts switching the load and NC contacts carrying the load duty cycle of 0.5 s on, 4 s off
Voltage drop (initial) at 20 A between any closed contacts	500 mV max.
Mechanical endurance (without load)	> 10 ⁶ operations
Electrical endurance	> 65 x 10 ³ operations per relay at rated inductive load; > 1 x 10 ⁵ operations per relay at rated resistive load
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.

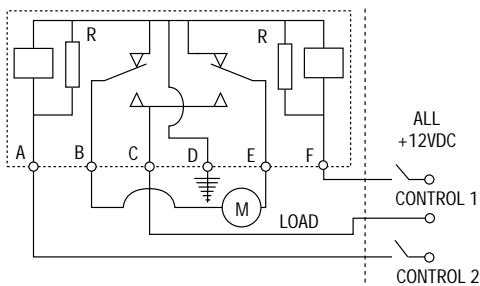
Load limit curve



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

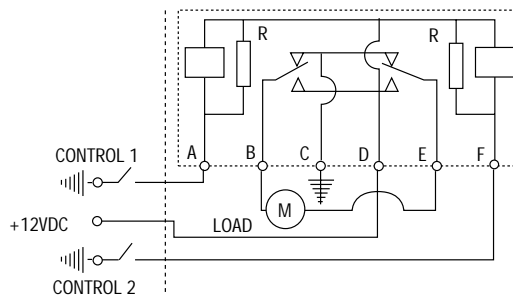
Typical application

Application high side switching



ECR2233-2

Application low side switching



ECR2232-T

Load condition

- Off: Terminals A and F de-energized. The load is off since both terminals B and E are grounded through terminal D.
- On: Terminal A energized and terminal F de-energized. The load receives 12 V with terminal B positive and terminal E grounded.

Reversed

- On: Terminal A de-energized and terminal F energized. The load is reversed with terminal B grounded and terminal E at positive 12 V.
- Off: Terminals A and F energized (this is not recommended for normal operation). The load is off since both terminals B and E are at 12 V through terminal C.

Load condition

- Off: Terminals A and F de-energized. The load is off since both terminals B and E are grounded through terminal C.
- On: Terminal A energized and terminal F de-energized. The load receives 12 V with terminal B positive and terminal E grounded.

Reversed

- On: Terminal A de-energized and terminal F energized. The load is reversed with terminal B grounded and terminal E at positive 12 V.
- Off: Terminals A and F energized (this is not recommended for normal operation). The load is off since both terminals B and E are at 12 V through terminal D.

VBA

Coil data

Available for nominal voltages	12 V (other coils on request)
Nominal power consumption of the unsuppressed coil at nominal voltage	Typ. 1.8 W
Test voltage winding/contact	500 VAC _{rms}
Maximum ambient temperature range ¹⁾	- 40 to + 85 °C
Max. switching rate without contact loading	20 Hz
Operate time at nominal voltage ²⁾	Typ. 6 ms
Release time at nominal voltage ³⁾	Typ. 10 ms

¹⁾ See also operating voltage diagram

²⁾ Measured at nominal voltage without coil suppression unit

³⁾ Measured with zero Volt applied (after having been energized at nominal coil voltage and with no external coil suppression).

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.

Mechanical data

Cover retention	
Axial force	150 N (33.7 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)
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures

Operating conditions

Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
Vibration resistance	1.27 mm double amplitude 5 g contact 0.5 mm double amplitude 10 g constant		10 - 40 Hz 40 - 70 Hz 70 - 100 Hz 100 - 500 Hz	For NC contacts, NO contacts are significantly higher.
Shock resistance	half sine wave pulse		11 ms 20 g	No change in the switching state > 1 ms
Jump start	24 V for 5 minutes, conducting nominal contact current at 23 °C			
Drop test	Capable of meeting specifications after 1.0 m (3.28 foot) drop onto concrete			
Flammability	UL94-HB or better (meets FMVSS 302)			

Ordering information

Part numbers		Type	Mounting feature	Rated coil voltage (V)	Equivalent coil resistance +/- 10% (Ω)	Must operate voltage (V)	Must release voltage (V)	Allowable overdrive ¹⁾ voltage (V)	
Relay part number	Tyco order number							at 23 °C	at 85 °C
VBA-1001	1393318-1	High side switching	Spring-clip	12	79.5	7.5	1.2	19.6	14.3
VBA-1002	1393318-2	High side switching	Push-in fasteners						
VBA-1016	1393318-3	High side switching	None						
VBA-1031	Not established	Low side switching	Specify when ordering						

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

Standard delivery pack (orders in multiples of delivery pack)

VBA: 100 pieces