

Star Point Relay SPR



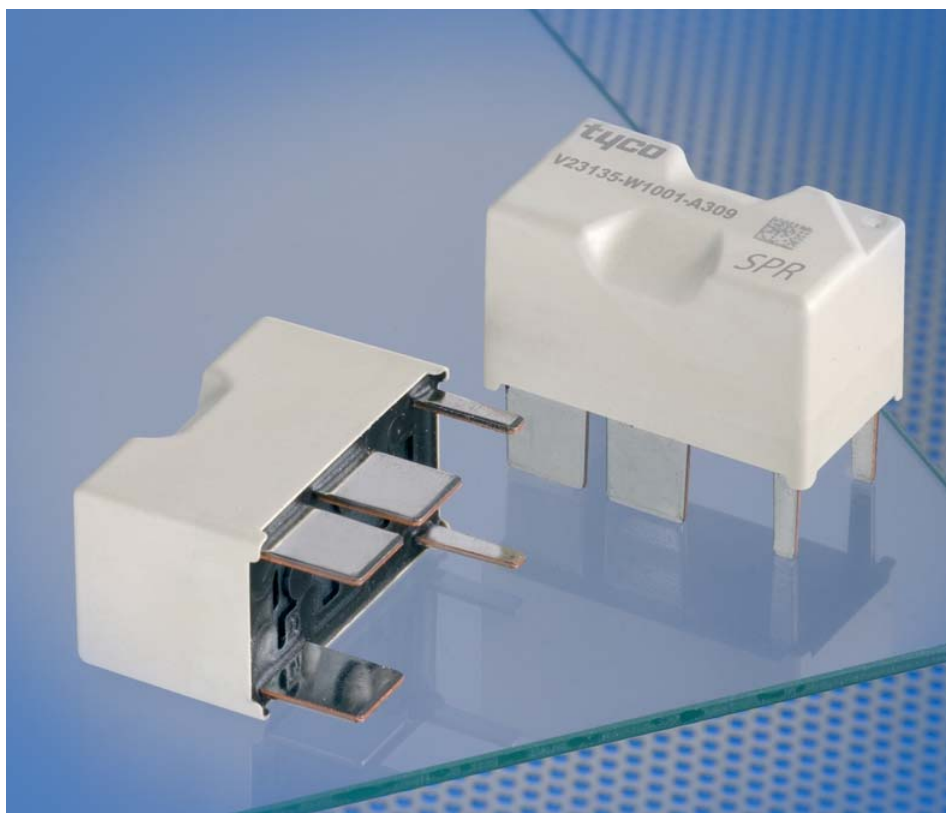
Features

- Full, symmetric star-point disconnection of an electric power steering motor
- Limiting continuous current 90 A
- Disconnection of high over-currents up to 200 A in 12 V and up to 60 A in 36 V power nets
- Contact arrangement fulfills 42 V power net requirements
- Optimized dimensions: L x H x W (in mm) 32 x 17.5 x 18
- Resistant against high ambient temperature up to 135°C
- Contact resistance typ. < 2 mΩ per path for load current 20 A (after fritting)

Typical Applications

- All EPA/EPS applications

Please contact Tyco Electronics for relay application support.



135_3D03

Design

- ELV/RoHS/WEEE compliant
- Sealed: sealing in accordance with IEC 68; immersion cleanable: protection class IP67 to IEC 529 (EN 60 529)

Weight

Approx. 30 g (1.06 oz.)

Nominal Voltage

12 V, 24 V or 42 V

Terminals

Terminals optimized for welding assembly

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.

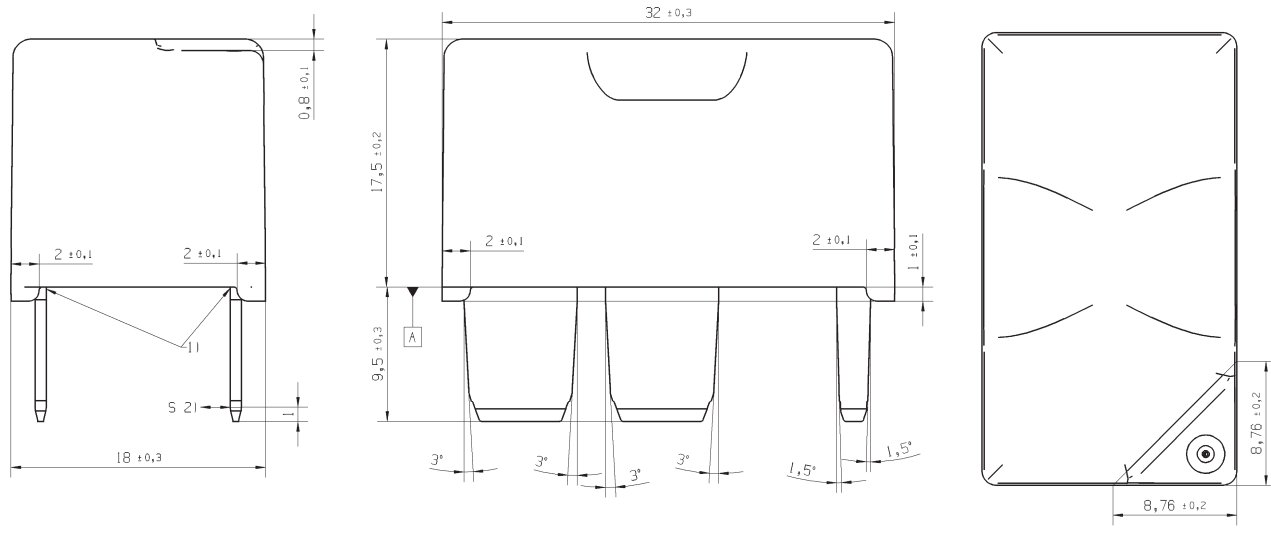
For general storage and processing recommendations please refer to our Application Notes and especially to *Storage* in the "Glossary" page 23 or at <http://relays.tycoelectronics.com/appnotes/>

Disclaimer

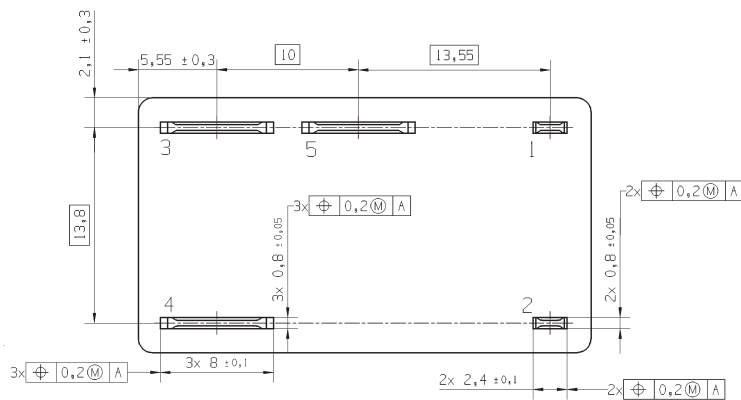
All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete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




135_DD1

- 1) Epoxy at terminals exceeds max. 0.9 mm over coverage.
- 2) Permanent acceptable deformation 0.25 mm respectively 0.5 mm temporarily.

Maximum permissible thermal load of the terminals during the resistance welding process depends on leadframe design.

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Contact Data			
Contact configuration	Triple make contact		
Circuit symbol			
Rated voltage	12 V	–	36 V
Rated current ¹⁾	90 A		
Contact material	AgNi0.15		
Limiting continuous current ¹⁾	23°C	120 A	
	85°C	90 A	
	125°C	60 A	
Emergency switch off > 10 cycles without suppression device	200 A ²⁾	–	60 A ²⁾
Voltage drop at 90 A (initial) ³⁾ per load path	< 180 mV		
Mechanical endurance (without load)	> 10 ⁶ operations		
Electrical endurance dry switching (I load only carried, not switched) ⁴⁾	> 2 x 10 ⁵ operations I load = 120 A at 23°C 500 ms on/off		

¹⁾ Max. terminal temperatures up to 180°C are allowed. Final temperatures depend on the leadframe layout.

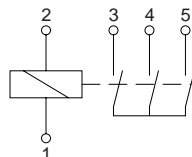
²⁾ Parallel diode is not recommended in any case.

³⁾ After fritting with 90 A for 30 s.

⁴⁾ Important.

Circuit Diagram

T0
1 Triple make contact/Form 3



Coil Data	
Available for nominal voltages	12 V
Nominal power consumption of the unsuppressed coil at nominal voltage	1.5 W
Test voltage winding/contact	500 VAC _{rms}
Ambient temperature range	-40 to +125°C
Operate time at nominal voltage	< 20 ms
Release time at nominal voltage ¹⁾	< 10 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.

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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
Random vibration	IEC 60068-2-64 Energized Not energized		20 - 1000 Hz Min. 6 g _{rms} Min. 4 g _{rms}	No change in the switching state > 10 μs
Shock resistance	IEC 60068-2-27 (half sine form single pulses) Energized Not energized		6 ms Min. 40 g Min. 10 g	No change in the switching state > 10 μs
Sealing	IEC 60068-2-17	Qc, Method 2		1 min/70°C
Protection class	IEC 529 (EN60529)		IP67	

Ordering Information

Part Numbers (see table below for coil data)		Circuit/Contact Arrangement	Contact Material	Enclosure	Special Features
Relay Description	Part Number				
V23135-W1001-A309	1-1414704-0	T0/Form 3	AgNi0.15	IP67	Terminals for welding assembly
V23135-W1002-A309	1-1414705-0	T0/Form 3	AgNi0.15	IP67	Terminals for welding assembly

Coil Versions

Coil Data for SPR	Rated Coil Voltage (V)	Coil Resistance ±10% (Ω)	Must Operate Voltage at 23°C (V)	Must Release Voltage at 23°C (V)
V23135-W1001-****	12	150	6.2	1.0
V23135-W1002-****	10	97	5.0	0.8

Standard Delivery Packs (orders in multiples of delivery pack)

SPR: 357 pieces