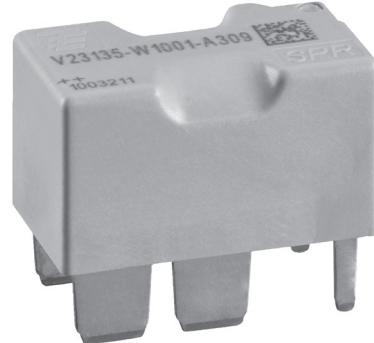


Star Point Relay SPR

- Full, symmetric star-point disconnection of an electric power steering motor
- Limiting continuous current 90A at 85°C
- Disconnection of high over-currents up to 200A in 12VDC and up to 60A in 36VDC power nets
- Contact arrangement fulfills 42VDC power net requirements
- Optimized dimensions: lhw (in mm) 32x18.5x18
- Resistant against high ambient temperature up to 125°C
- Contact resistance typ. <2mΩ per path for load current 20A after fritting

Typical applications
All EPA/EPS applications.



F135_fw3b

Contact Data

Contact arrangement	1 form 3, 3 NO
Rated voltage	12VDC
Max. switching voltage	depends on load parameters ^{A)}
Rated current	120A
Limiting continuous current ¹⁾	
23°C	120A
85°C	90A
125°C	60A
Limiting breaking current	200A ²⁾
Breaking capacity max.	>10 ops. at 200A
Contact material	AgNi0.15
Contact style	triple
Min. recommended contact load ⁵⁾	1A at 5VDC
Initial voltage drop, after fritting with 90A for 30s	<180mV at 90A
Operate/release time max. ³⁾	<20/10ms
Bounce time max. ³⁾	see footnote ³⁾
Electrical endurance	
120A, dry switching ⁴⁾ at 23°C, 500ms on/off	>2x10 ⁵ ops.
Mechanical endurance	>10 ⁶ ops.

Contact Data (continued)

A) Please contact TE relay application engineer.

- 1) Max. terminal temperatures up to 180°C are allowed. Final temperatures depend on the leadframe layout.
- 2) Without relay coil voltage: suppression component (see Application Note "Automotive Applications").
- 3) Release and bounce time depend on component in parallel to the coil, please contact application support.
- 4) Load only carried, not switched!
- 5) See Application Note "Diagnostics of Relays"

Coil Data

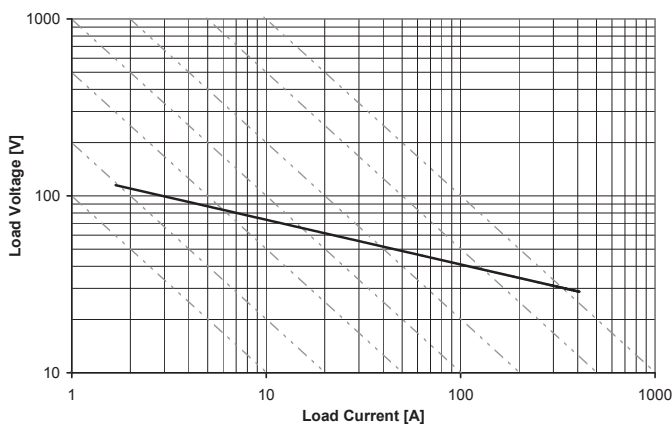
Coil voltage range	12VDC
Max. coil temperature	<180°C

Coil versions, DC coil

Coil code	Rated voltage VDC	Operate voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power W
001	12	6.4	1	150	0.96
002	10	5.2	0.8	97	1.03

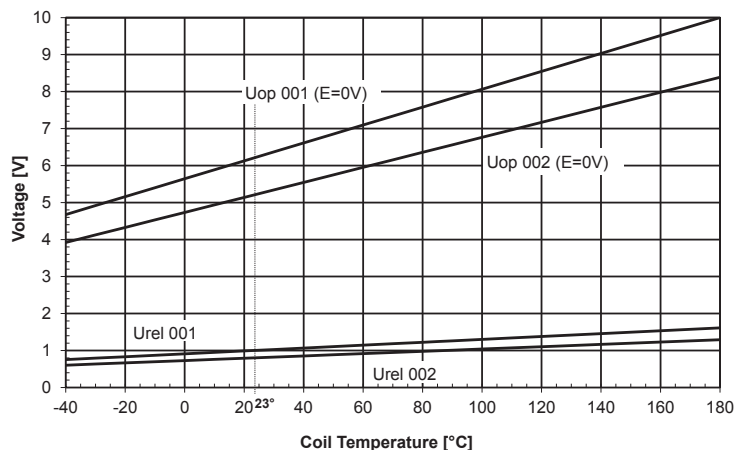
All figures are given for coil without preenergization, at ambient temperature +23°C.

Max. DC load breaking capacity



Load limit Curve II: valid for load path through pin 4 and pin 5, no coil suppression used.

Coil operating range



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

Star Point Relay SPR (Continued)

Insulation Data

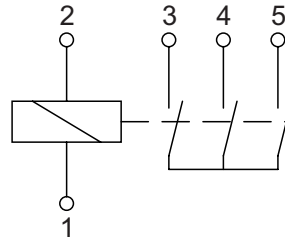
Initial dielectric strength between contact and coil	500VAC _{rms}
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Other Data

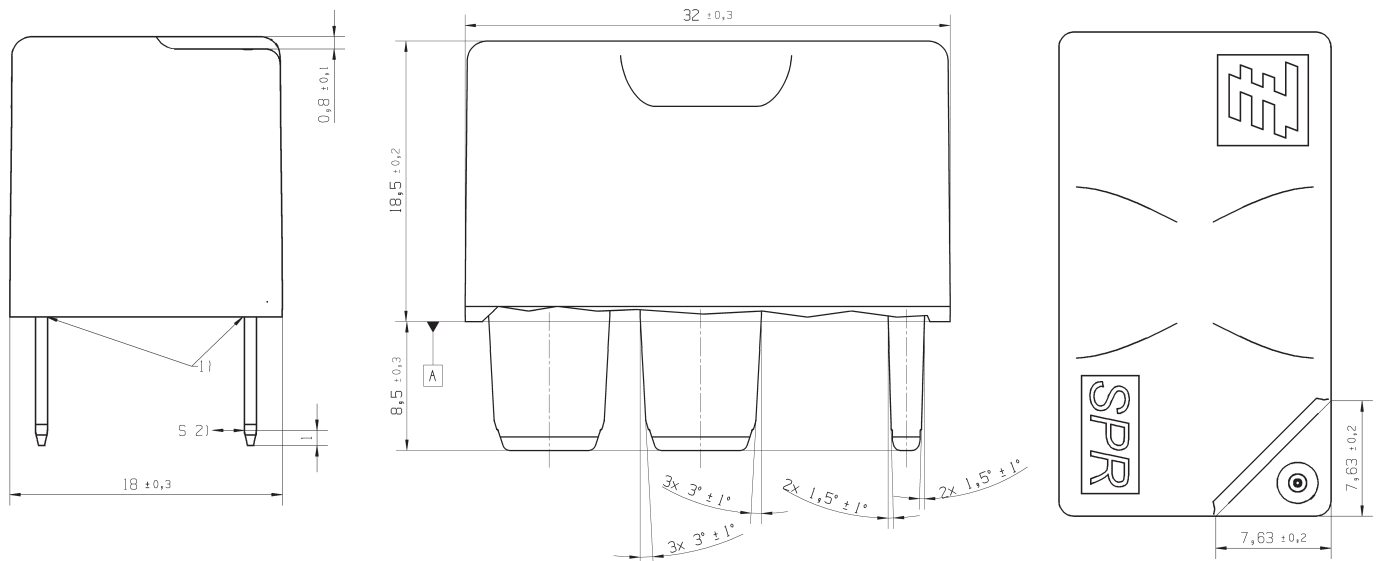
EU RoHS/ELV compliance	compliant
Ambient temperature	-40°C to 125°C
Cold storage, IEC 60068-2-1	2000h; -40°C
Dry heat, IEC 60068-2-2	500h; +135°C
Temperature cycling (shock), IEC 60068-2-14, Na	500 cycles; -40/+135°C
Damp heat cyclic, IEC 60068-2-30, Db, Variant 1	83 cycles (2000h) 25°C/55°C/93%RH
Flowing mixed gas corrosion test, IEC 60068-2-60, Ke, method 1	10 days
Degree of protection	IP67 (IEC 60529), RT III (IEC 61810)
Vibration resistance (functional), IEC 60068-2-64 (random) energized	20 to 1000Hz >6g ms
IEC 60068-2-64 (random) not energized	20 to 1000Hz >4g ms
Shock resistance (functional), IEC 60068-2-27 (half sine) 6ms, energized	>40g
IEC 60068-2-27 (half sine) 6ms, not energized	>10g
Mounting	welding process on leadframe
Weight	approx. 30g (1.06oz)
Packaging unit	357 pcs.

Terminal Assignment

1 form 3, 3 NO



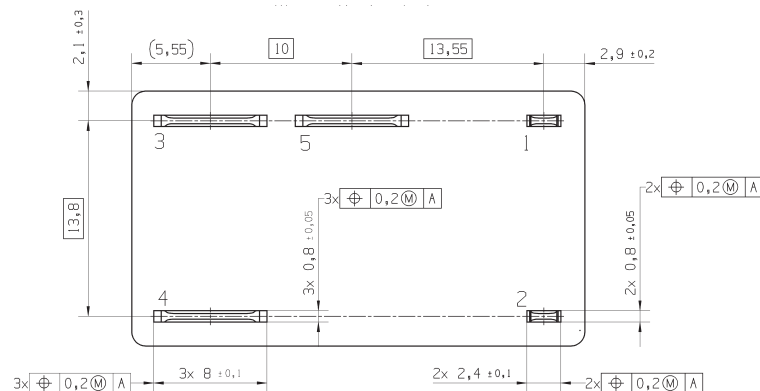
Dimensions



View of the terminals

Bottom view

- 1) Epoxy at terminals exceeds max. 0.9mm over coverage.
 - 2) Permanent acceptable deformation 0.25mm respectively 0.5mm temporarily.
- Maximum permissible thermal load of the terminals during the resistance welding process depends on leadframe design.



Star Point Relay SPR (Continued)

Product code structure

Typical product code

V23135 **-W** **1** **001** **-A3** **09**

Type

V23135 Star Point Relay

Terminal and enclosure

W Welding version, sealed

Design

1 Single relay

Coil version

001 Standard **002** Sensitive

Contact type and material

A3 Standard, AgNi0.15

Contact arrangement

09 Standard (triple make)

Product code	Terminal and enclosure	Design	Coil	Contact	Arrangement	Part number
V23135-W1001-A309	Welding version, sealed	Single relay	12VDC	Standard, AgNi0.15	1 form 3, 3 NO	1-1414704-0
V23135-W1002-A309			10VDC			1-1414705-0

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