

Solid State Relays SOLITRON POWER - With Integrated Heatsink Types RJ1A, RJ1B



- AC semiconductor contactor
- Zero switching (RJ1A) or instant-on switching (RJ1B)
- Direct copper bonding (DCB) technology
- LED-indication
- Cage clamp terminals
- 2 input ranges: 4-32 VDC and 24-275 VAC/24-48 VDC
- Operational ratings up to 90 AACrms and 600 VAC¹
- Non-repetitive voltage: Up to 1200 V_p
- Opto-isolation > 4000 VACrms
- Over-temperature safety option²
- Integrated fan option

Product Description

The SOLITRON Power is a single-phase Solid State Contactor designed to replace electro-mechanical contactors in industrial heating and motor applications. This product can cope with frequent switching of high current loads. The product is ready to mount on DIN-rail or chassis and comes with integral heatsink. For current rating of 90 AACrms (AC51) convection cooling is used. The terminal layout

allows both contactor (E) and SSR (U) type connection. Cage clamp terminals are used to ensure secure load connection with cable up to 25mm².

An LED indicates the status of the control input. The superior heat-transfer efficiency combined with a robust power management system make this a high reliability product that can meet the most stringent functional requirements.

Ordering Key

RJ 1 A 60 D 90 E P

| | |
|---------------------------|-------|
| Solid State Relay | _____ |
| Number of poles | _____ |
| Switching mode | _____ |
| Rated operational voltage | _____ |
| Control voltage | _____ |
| Rated operational current | _____ |
| Terminal layout | _____ |
| Options | _____ |

Type Selection

| Switching mode | Rated operational voltage ¹ | Control voltage | Rated operational current | Terminal layout | Options |
|---|--|--|---|------------------------|---|
| A: Zero switching B: Instant-on switching ³ | 23: 230 VACrms 60: 600 VACrms | D: 4-32 VDC A: 24-275 VAC/ 24-48 VDC | 70: 70 AACrms 90: 90 AACrms ⁴ | U: SSR E: Contactor | P: Over-temp. protection ² V: Integrated Varistor |

Selection Guide

| Rated operational voltage | Non-rep. voltage | Control voltage | Rated operational current 70 A | 90 A(FAN+OTP) ² |
|---------------------------|---------------------|----------------------------|--------------------------------|----------------------------|
| 230 VACrms | 650 V _p | 4 - 32 VDC | RJ1A23D70E RJ1A23D70U | RJ1A23D90EP |
| | | 24 - 275 VAC / 24 - 48 VDC | RJ1A23A70E RJ1A23A70U | RJ1A23A90EP |
| 600 VACrms | 1200 V _p | 4 - 32 VDC | RJ1A60D70E RJ1A60D70U | RJ1A60D90EP |
| | | 24 - 275 VAC / 24 - 48 VDC | RJ1A60A70E RJ1A60A70U | RJ1A60A90EP |

Notes

- 1 690 VACrms rated operational voltage available on request. Example: RJ1A69D70U
- 2 "P" suffix: Over-temperature protection (OTP), available with type "E" terminals only
- 3 Instant On versions not available with AC control voltage
- 4 With integrated fan and over-temperature protection - fan will automatically switch on when necessary.

General Specifications

| | RJ1.23.. | RJ1.60.. |
|-----------------------------|--------------------|---------------------|
| Operational voltage range | 24 to 265 VAC | 42 to 660 VAC |
| Non-rep. peak voltage | 650 V _p | 1200 V _p |
| Operational frequency range | 45 to 65 Hz | 45 to 65 Hz |
| Power factor | ≥ 0.5 @ 230 VACrms | ≥ 0.5 @ 600 VACrms |
| Over-temperature alarm | | |
| I _{max} | 50mADC | 50mADC |
| U _{max} | 50VDC | 50VDC |
| Approvals | UL, cUL, CSA | UL, cUL, CSA |
| CE-marking | Yes | Yes |
| Pollution degree | 2 | 2 |

Input Specifications

| | RJ1A...D | RJ1B...D | RJ1A...A |
|------------------------|-----------|------------|----------------------|
| Control voltage range | 4-32 VDC | 4.5-32 VDC | 24-275 VAC/24-48 VDC |
| Pick-up voltage | 3.8 VDC | 4.25 VDC | 22 VAC/DC |
| Reverse voltage | 32 VDC | 32 VDC | n/a |
| Drop-out voltage | 1.2 VDC | 1.0 VDC | 6 VAC/DC |
| Maximum Input current | 12 mA | 15 mA | 17 mA |
| Response time pick-up | 1/2 cycle | 1 ms | 1 cycle |
| Response time drop-out | 1/2 cycle | 1 cycle | 1 cycle |

Output Specifications

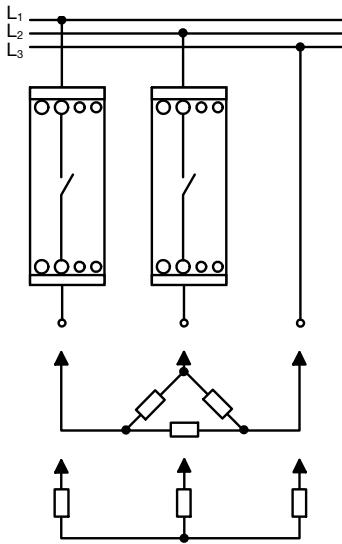
| | RJ...70 | RJ...90 (With integrated fan) |
|--|------------------------|-------------------------------|
| Rated operational current AC51 @Ta=25°C AC53a @Ta=25°C | 70 AACrms 30 AACrms | 90 AACrms 30 AACrms |
| Min. operational current | 100 mAACrms | 100mAACrms |
| Rep. overload current t = 1s | < 200 AACrms | <200 AACrms |
| Non rep. surge current Tj(init.) = 25°C and t = 10 ms | 1900 A _p | 1900 A _p |
| Off-state leakage current @ rated voltage and frequency | < 3 mArms | < 3 mArms |
| I ² t for fusing t = 10 ms | 18000 A ² s | 18000 A ² s |
| Critical dI/dt | ≥ 100 A/μs | ≥ 100 A/μs |
| On-state voltage drop @ rated current | 1.6 Vrms | 1.6 Vrms |
| Critical dV/dt off-state | 500 V/μs | 500 V/μs |

Thermal Specifications

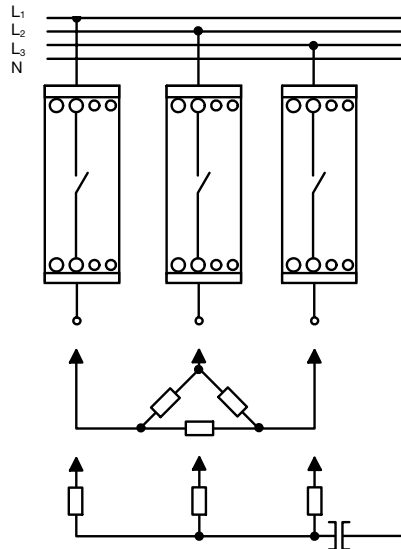
| | RJ...D | RJ...A |
|-----------------------|------------------------------|------------------------------|
| Operating temperature | -30 to +70°C (-22 to +158°F) | -30 to +70°C (-22 to +158°F) |
| Storage temperature | -40 to +100°C (-40 to 176°F) | -40 to +100°C (-40 to 176°F) |

Applications

Two single pole relays in
3-phase application
Delta and star.
(Economy Switch)

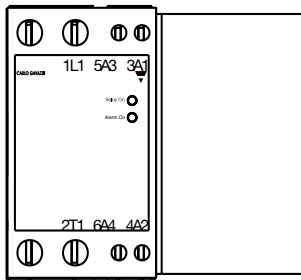


3 single pole relays in
3-phase application
Delta, Star, Star with neutral

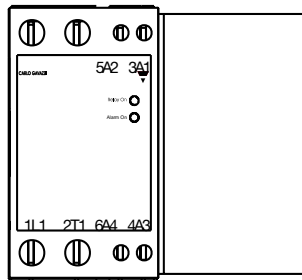


Terminal Layout

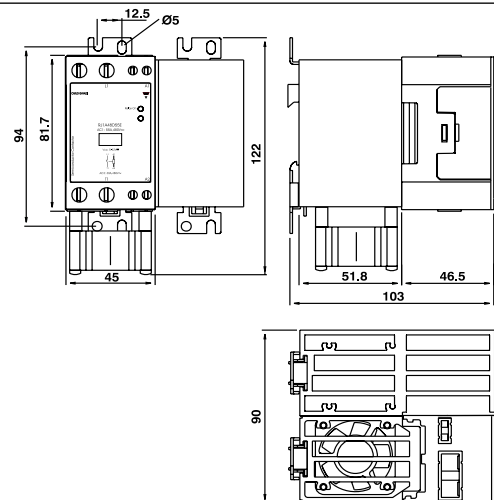
RJ1A.....E



RJ1A.....U

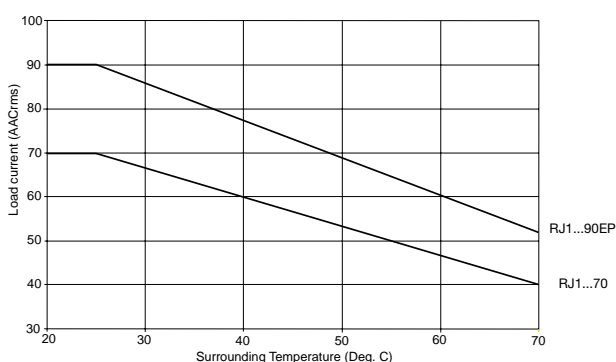


Dimensions

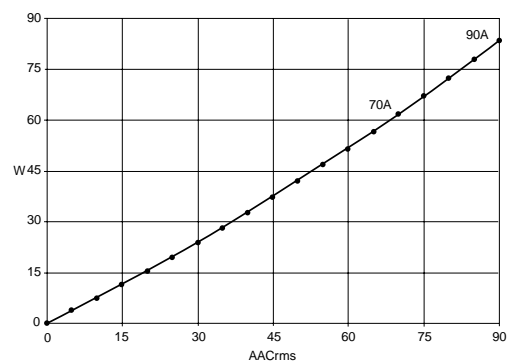


All dimensions in mm

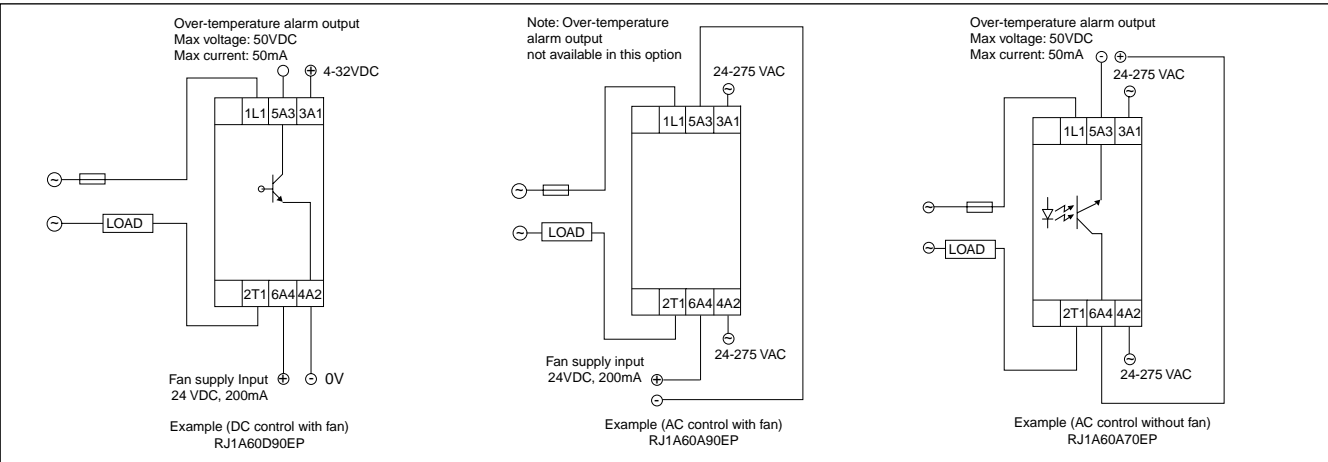
Derating Curve



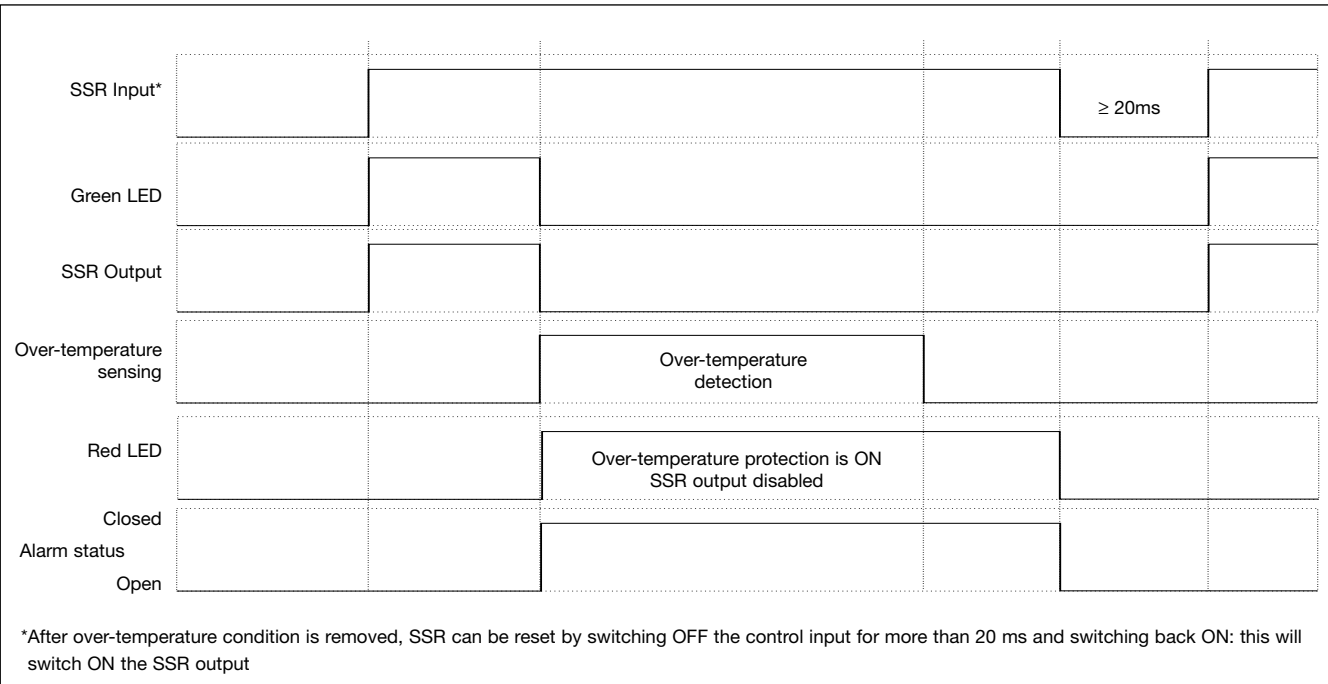
Dissipation Curve



Connection Examples



Over-temperature Protection (Option: ...P)



Housing Specifications

| | |
|-----------------------------|---|
| Weight | |
| RJ Power | Approx. 750 g |
| RJ Power w. fan | Approx. 780 g |
| Housing material | PBT, Flame retardant |
| Control terminal cable size | |
| Min | 1 x 0.5 mm ² (1 x AWG20) |
| Max | 1 x 4.0 mm ² (1 x AWG12) or 2 x 2.5 mm ² (2 x AWG14) |
| Mounting torque max. | 0.6 Nm with Posidrive 0 bit |
| Control terminal screws | M3 |
| Power terminal cable size | |
| Min | 1 x 4 mm ² (1 x AWG12) |
| Max | 1 x 25 mm ² (1 x AWG3) or 2 x 10 mm ² (2 x AWG6) |
| Mounting torque max. | 2.5 Nm with Posidrive 2 bit |
| Power terminal screws | M5 |

Insulation

| | |
|--------------------------|---------------|
| Rated insulation voltage | |
| Input to output | ≥ 4000 VACrms |
| Output to case | ≥ 4000 VACrms |

Derating vs Spacing Curves

