

# 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 VAC<sup>1</sup>
- Non-repetitive voltage: Up to 1200 V<sub>p</sub>
- Opto-isolation > 4000 VACrms
- Over-temperature safety option<sup>2</sup>
- Integrated fan option

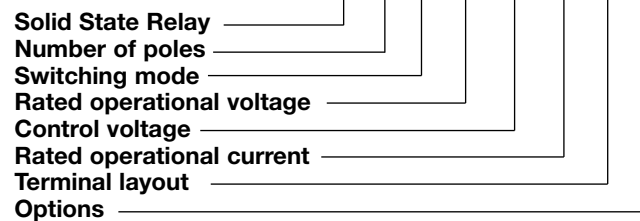
## Product Description

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 25mm<sup>2</sup>. 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**



## Type Selection

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

## Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 70 A	90 A(FAN+OTP) <sup>2</sup>
230 VACrms	650 V <sub>p</sub>	4 - 32 VDC	RJ1A23D70E RJ1A23D70U	RJ1A23D90EP
		24 - 275 VAC / 24 - 48 VDC	RJ1A23A70E RJ1A23A70U	RJ1A23A90EP
600 VACrms	1200 V <sub>p</sub>	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 <sub>p</sub>	1200 V <sub>p</sub>
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 <sub>max</sub>	50mADC	50mADC
U <sub>max</sub>	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

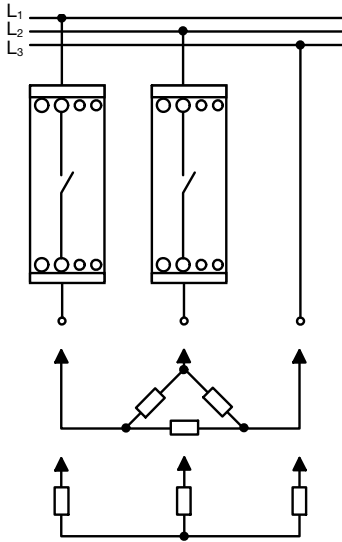
	RJ...70	RJ...90 (With integrated fan)
Rated operational current		
AC51 @Ta=25°C	70 AACrms	90 AACrms
AC53a @Ta=25°C	30 AACrms	30 AACrms
Min. operational current	100 mAACrms	100mAACrms
Rep. overload current t = 1s	< 200 AACrms	<200 AACrms
Non rep. surge current Tj(init.) = 25°C and t = 10 ms	1900 A <sub>p</sub>	1900 A <sub>p</sub>
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms
I <sup>2</sup> t for fusing t = 10 ms	18000 A <sup>2</sup> s	18000 A <sup>2</sup> 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

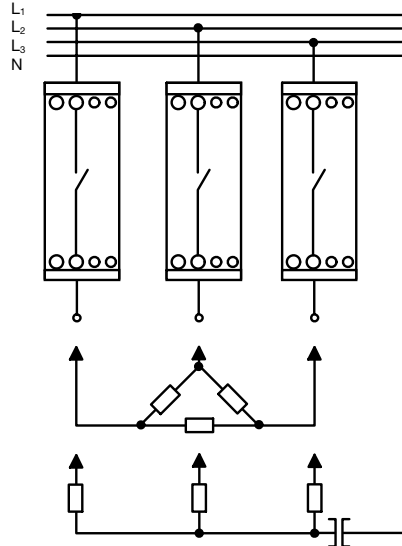
	RJ...D	RJ...A
Operating temperature	-30 to +70°C (-22 to +158°F)	-30 to +70°C (-22 to +158°F)
Storage temperature	-40 to +100°C (-40 to 176°F)	-40 to +100°C (-40 to 176°F)

## Applications

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

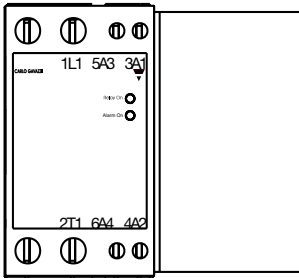


3 single pole relays in 3-phase application  
Delta, Star, Star with neutral

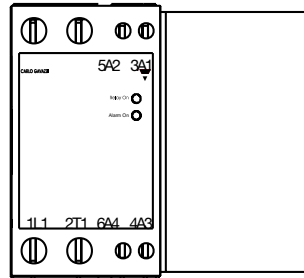


## Terminal Layout

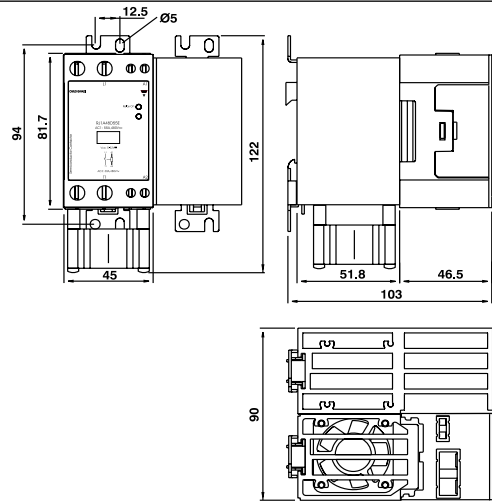
RJ1A.....E



RJ1A.....U

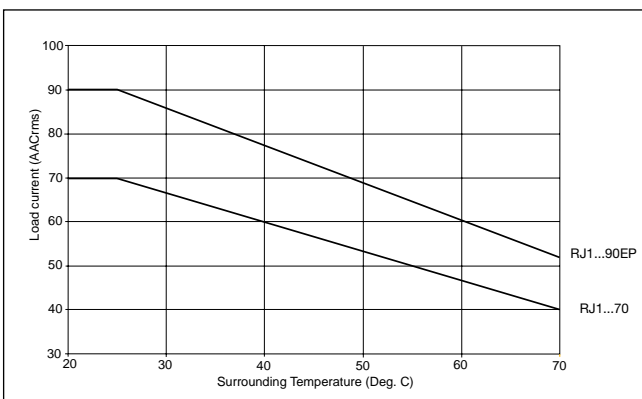


## Dimensions

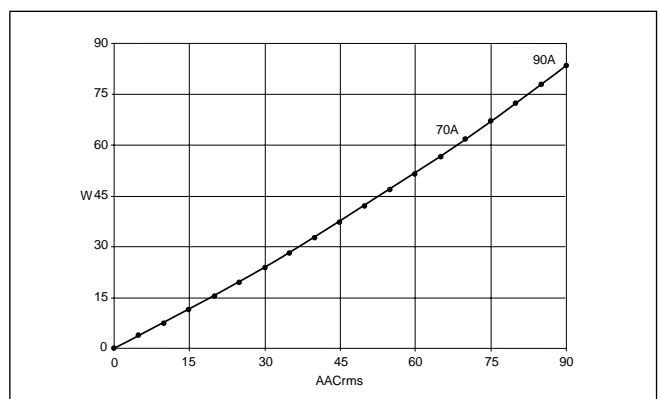


All dimensions in mm

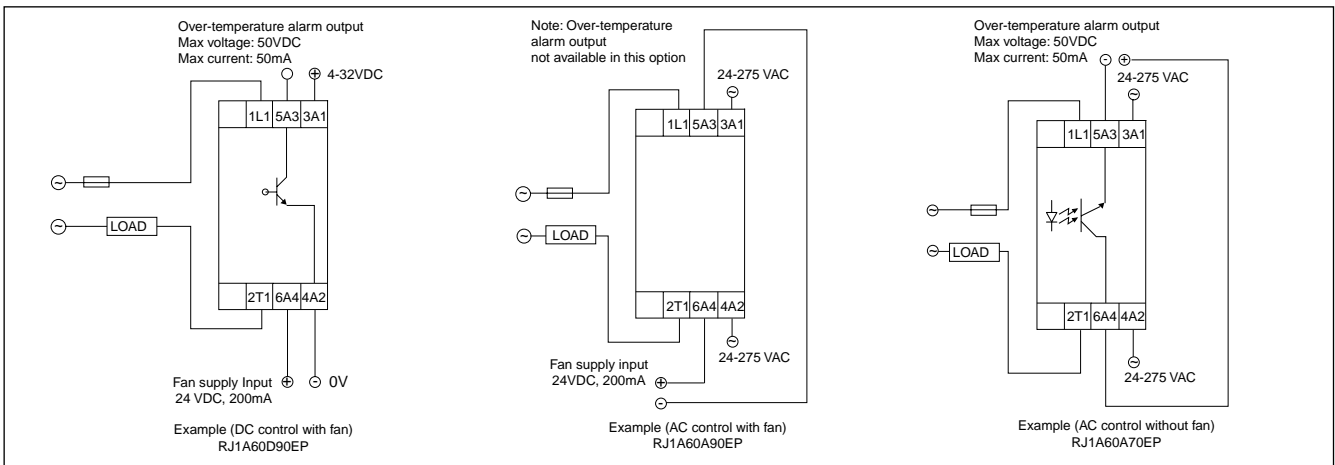
## Derating Curve



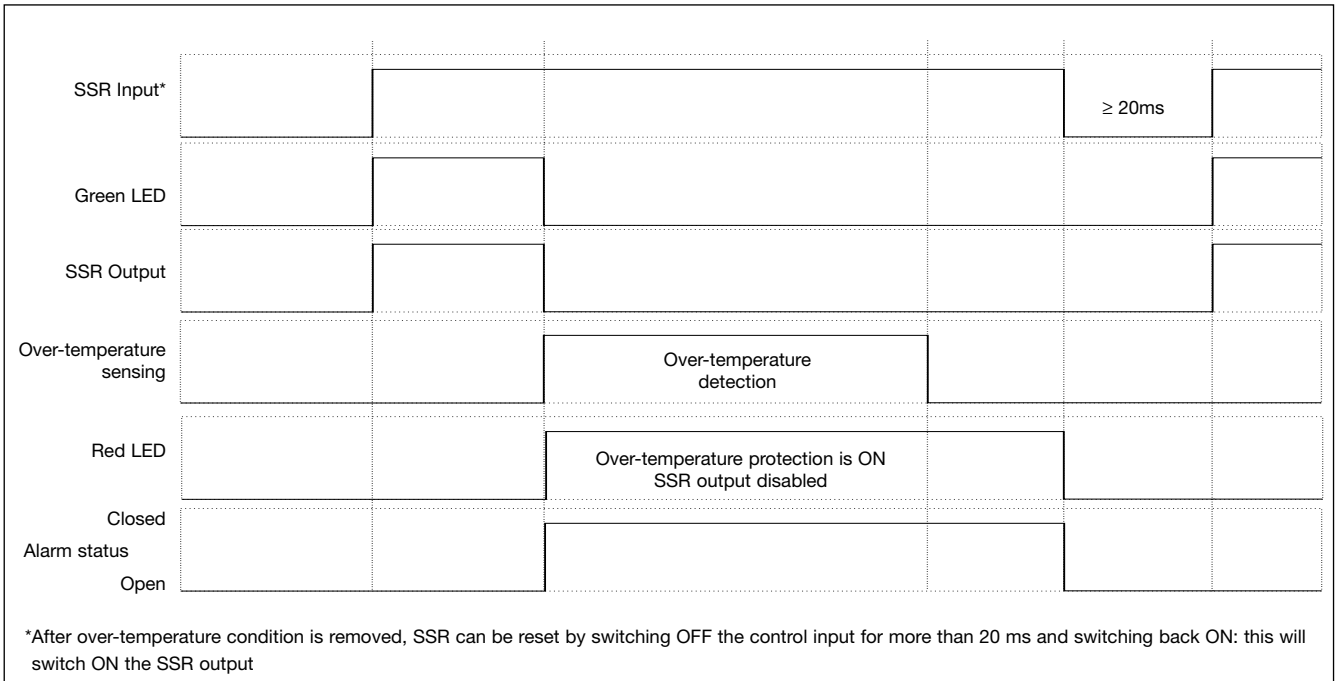
## Dissipation Curve



## 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 <sup>2</sup> (1 x AWG20)
Max	1 x 4.0 mm <sup>2</sup> (1 x AWG12) or 2 x 2.5 mm <sup>2</sup> (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 <sup>2</sup> (1 x AWG12)
Max	1 x 25 mm <sup>2</sup> (1 x AWG3) or 2 x 10 mm <sup>2</sup> (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

