

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

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- 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 (AC1) 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
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 <sup>1</sup>	Control voltage	Rated operational current	Terminal Layout	Options
A: Zero switching B: Instant-on switching	23: 230 VACrms 60: 600 VACrms	D: 4-32 VDC A: 24-275 VAC 24-48 VDC	70: 70 AACrms 90: 90 AACrms*	U: SSR E: Contactor	P: Over-temperature protection <sup>2</sup>

\* With integrated fan and over-temperature protection

## 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

\* With integrated fan and over-temperature protection

### 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

## 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

\* Approval pending

## 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 cycle	1 ms	1 cycle
Response time drop-out	1 cycle	1 cycle	1 cycle

## Output Specifications

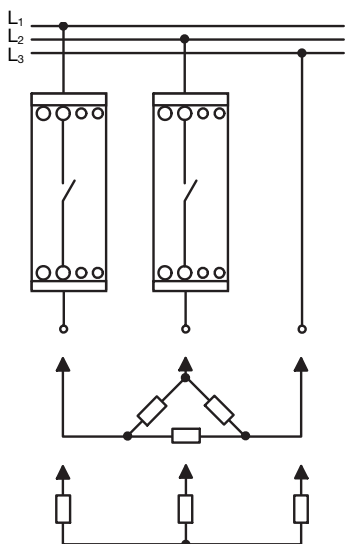
	RJ...70	RJ...90 (With integrated fan)
Rated operational current		
AC51 @Ta=25°C	70 AACrms	90 AACrms
AC53a @Ta=25°C	30 AACrms	30 AACrms
Min. operational current	150 mAACrms	150mAACrms
Rep. overload current t = 1s	< 200 AACrms	<200 AACrms
Non rep. surge current Tj(init.) = 25°C and t = 10 ms	1900 A <sub>p</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	≥ 150 A/μs	≥ 150 A/μs
On-state voltage drop @ rated current	1.6 Vrms	1.6 Vrms
Critical dv/dt commutating	500 V/μs	500 V/μs
Critical dV/dt off-state	500 V/μs	500 V/μs

## Thermal Specifications

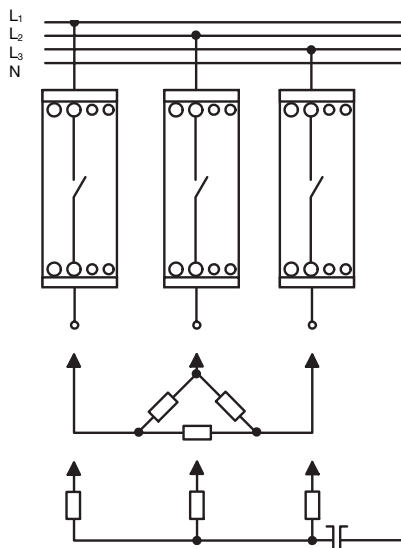
	RJ...D	RJ...A
Operating temperature	+30 to +70°C	+30 to +70°C
Storage temperature	-40°C to +100°C	-40°C to +100°C
Junction temperature	125°C	125°C

## Applications

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

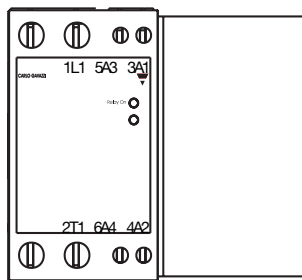


3 single pole relays in  
3-phase application  
Delta, Star, Star with neutral

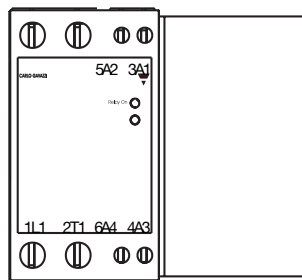


## Terminal Layout

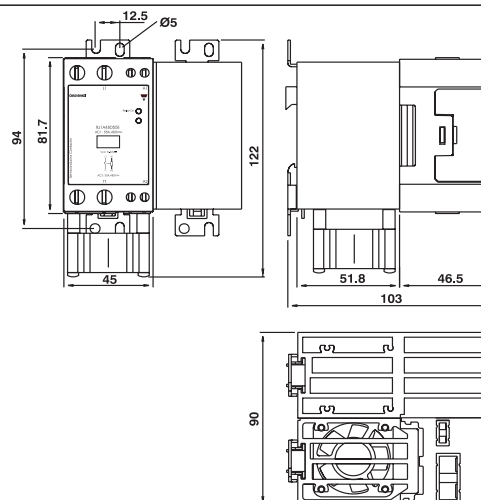
RJ1A.....E



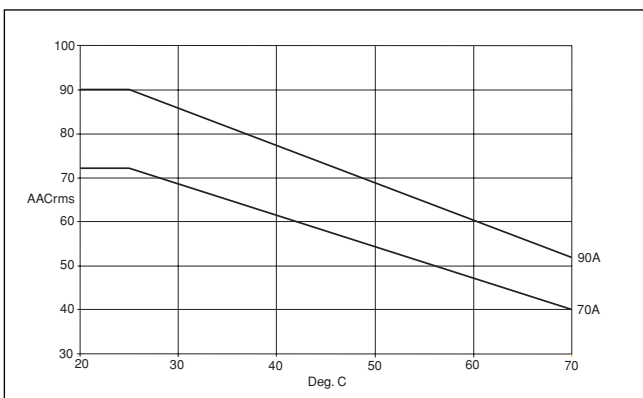
RJ1A.....U



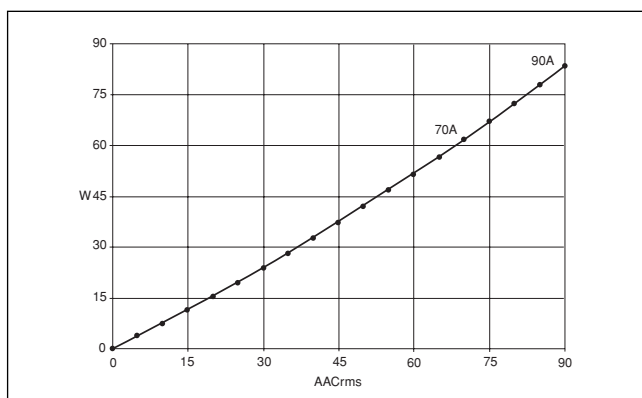
## Dimensions



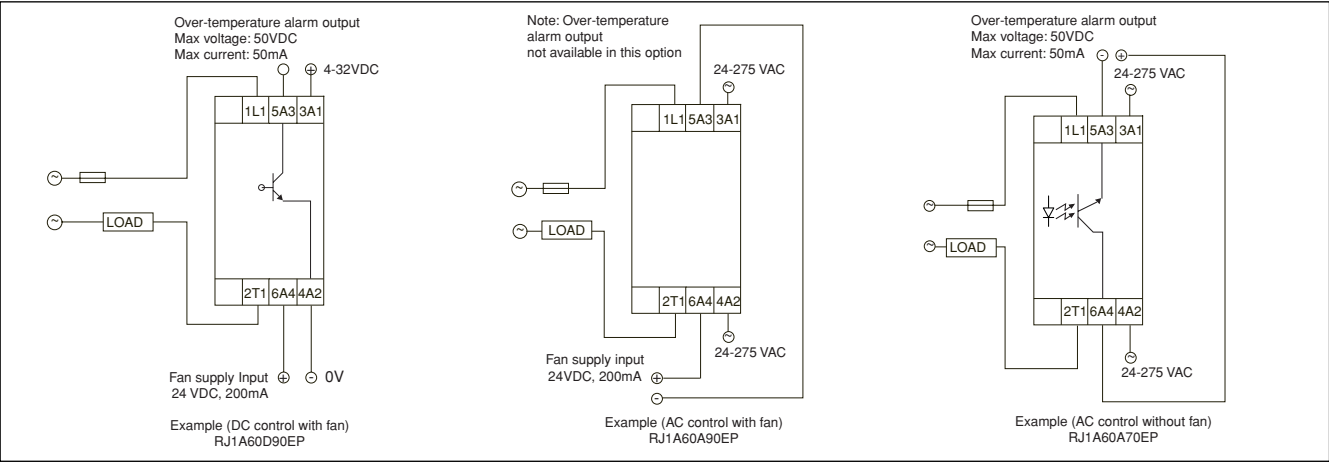
## Derating Curve



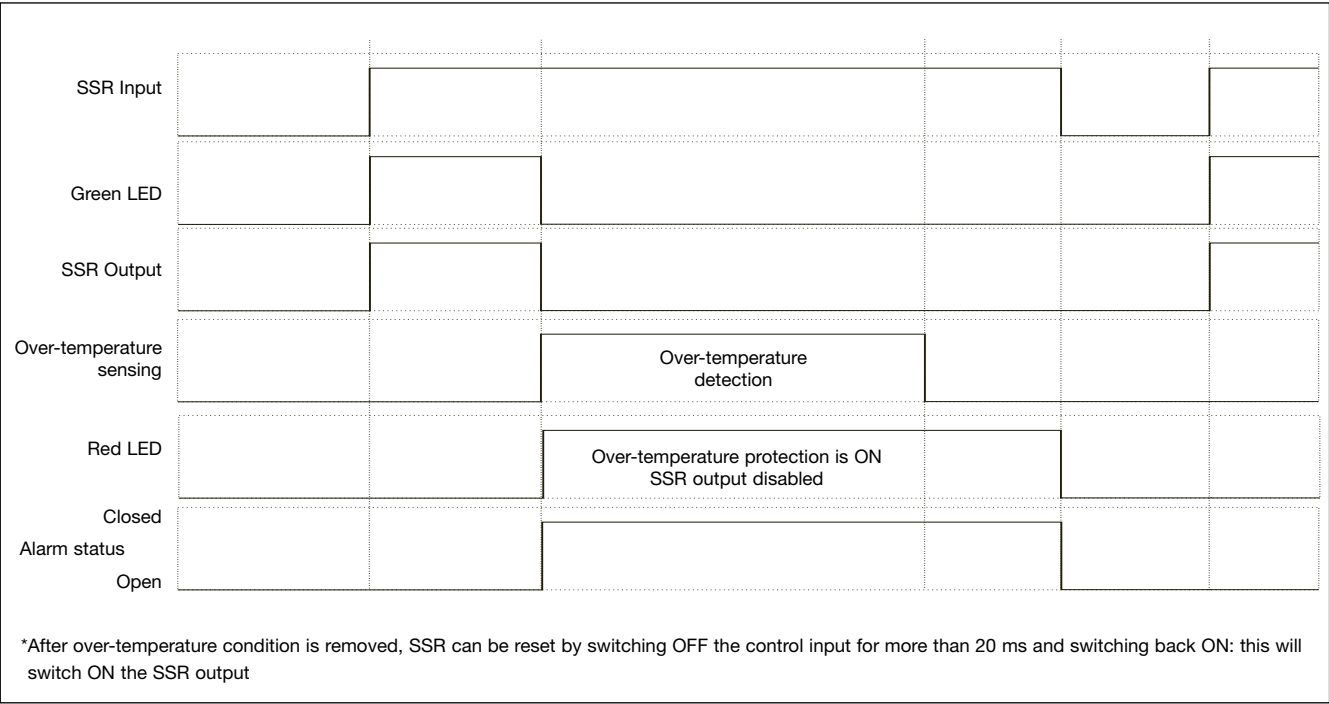
## Dissipation Curve



Connection Examples



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



Housing Specifications

Weight	Approx. 700 g
Housing material	PBT FR
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
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

Insulation

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