

# Solid State Relays

## SOLITRON MINI - With Integrated Heatsink

### Types RJ1A, RJ1B



- AC semiconductor contactor
- Zero switching (RJ1A) or instant-on switching (RJ1B)
- Direct copper bonding (DCB) technology
- LED-indication
- Self-lifting terminals
- 2 input ranges: 4-32 VDC and 24-275 VAC/24-48VDC
- Operational ratings up to 30 AACrms and 600 VAC
- Non-repetitive voltage: Up to 1200 Vp
- Opto-isolation > 4000 VACrms
- Over-temperature safety option

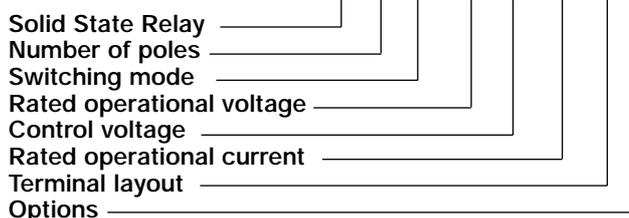
### Product Description

The SOLITRON Mini is a single-phase Solid State Contactor designed to replace electro-mechanical contactors in industrial heating and motor applications, especially when switching is frequent. The product is ready to mount on DIN-rail or chassis and comes with integral heatsink. The standard housing dimensions enable installation in limited space and the terminal layout allows both contactor (E) and SSR (U) type connection. Two

2.5mm<sup>2</sup> cables can be connected in each screw terminal to allow looping. A removable IP20 cover allows connection of a 4mm<sup>2</sup> cable with crimped terminal. 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 30 U P**



### Type Selection

Switching mode	Rated operational voltage	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	20: 20 AACrms 30: 30 AACrms	U: SSR E: Contactor	P: Over-temperature protection

### Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current	
			20 A	30 A
230 VACrms	650 V <sub>p</sub>	4 - 32 VDC	RJ1A23D20E RJ1A23D20U	RJ1A23D30E RJ1A23D30U
		24 - 275 VAC / 24 - 48VDC	RJ1A23A20E RJ1A23A20U	RJ1A23A30E RJ1A23A30U
600 VACrms	1200 V <sub>p</sub>	4 - 32 VDC	RJ1A60D20E RJ1A60D20U	RJ1A60D30E RJ1A60D30U
		24 - 275 VAC / 24 - 48VDC	RJ1A60A20E RJ1A60A20U	RJ1A60A30E RJ1A60A30U

### Options

- 1 Over-temperature protection: add suffix P to include over-temperature protection. Example: RJ1A60D30UP
- 2 690 VACrms rated operational voltage available on request. Example: RJ1A69D30U

## 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
Approvals	UL, CSA*	UL, CSA*
CE-marking	Yes	Yes

\* Approvals pending

## Input Specifications

	RJ1A..D	RJ1B.D	RJ..A
Control voltage range	4 to 32 VDC	4.5 to 32 VDC	24-275VAC, 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
Max 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

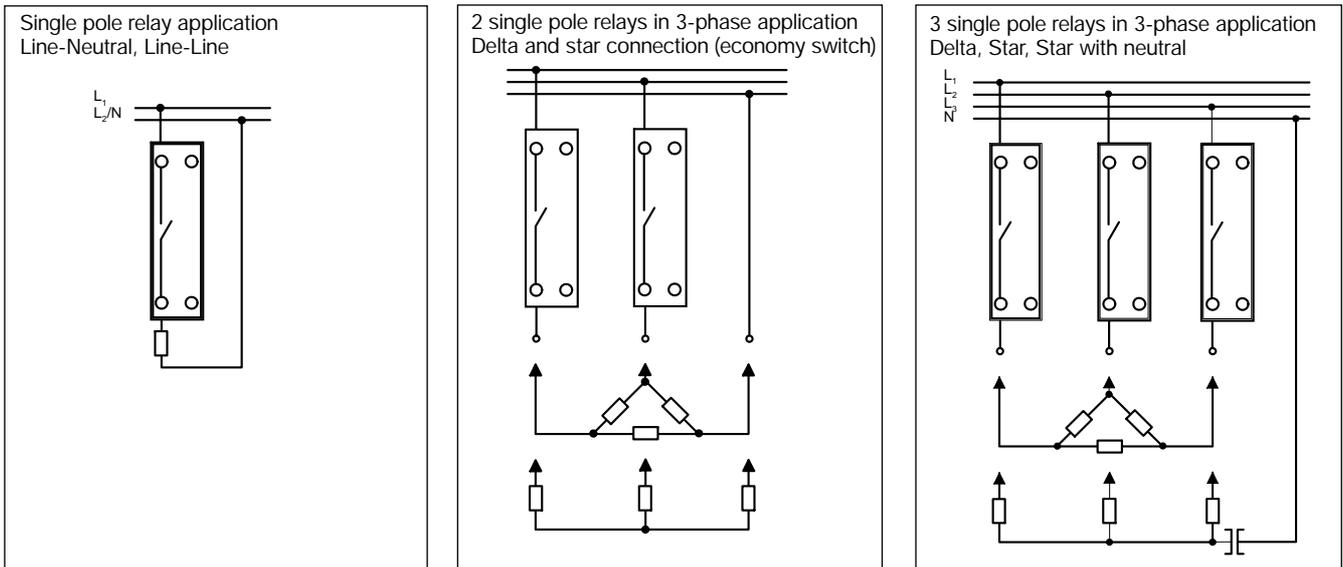
## Output Specifications

	RJ..20	RJ..30
Rated operational current AC51 @TA=25°C AC53a @Ta=25°C	20 AACrms 5 AACrms	30 AACrms 15 AACrms
Min. operational current	350 mAACrms	150mAACrms
Rep. overload current t = 1s	< 35 AACrms	<125 AACrms
Non rep. surge current Tj(init.) = 25°C and t = 10 ms	250 Ap	400 Ap
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms
I <sup>2</sup> t for fusing t = 10 ms	310 A <sup>2</sup> s	1800 A <sup>2</sup> s
Critical di/dt	≥ 10 A/μs	≥ 100 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

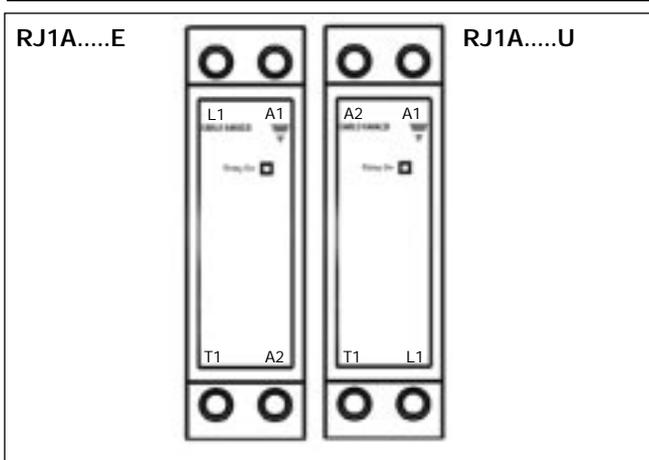
## Thermal Specifications

	RJ...D	RJ...A
Operating temperature	-30 to +80°C	-30 to +80°C
Storage temperature	-40°C to +100°C	-40°C to +100°C
Junction temperature	125°C	125°C

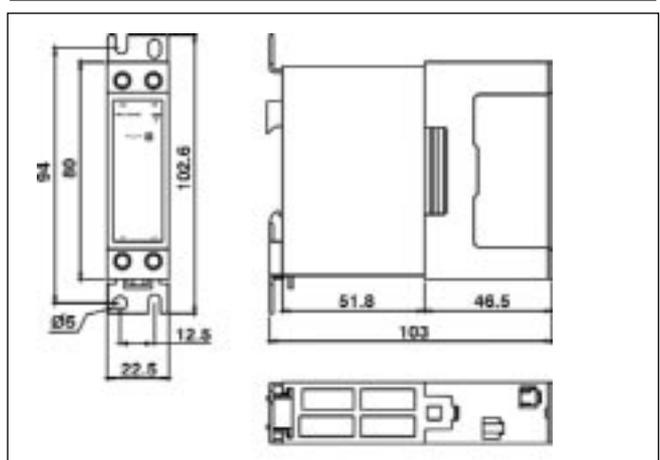
## Applications



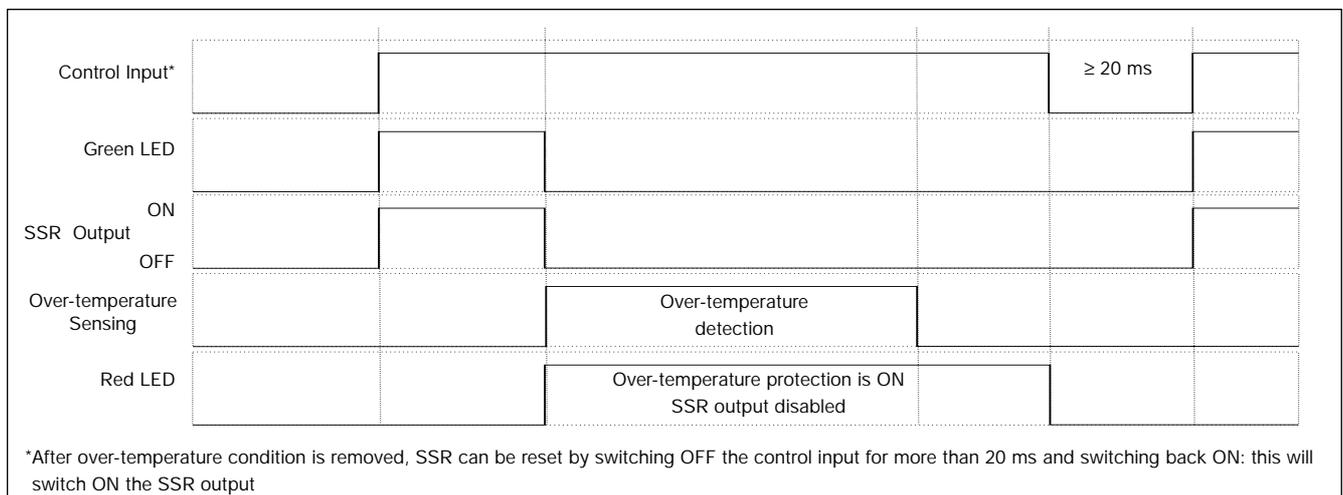
## Terminal Layout



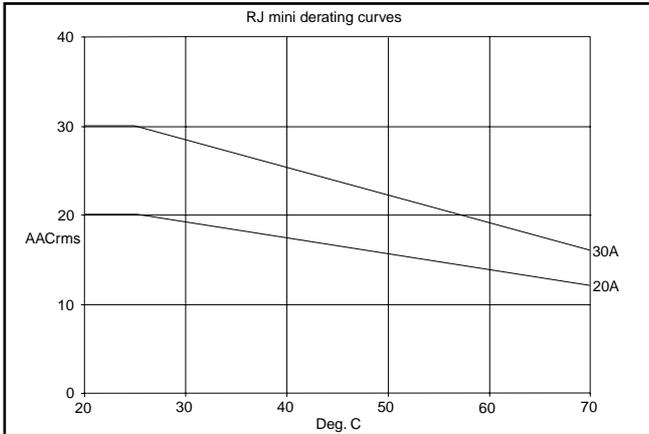
## Dimensions



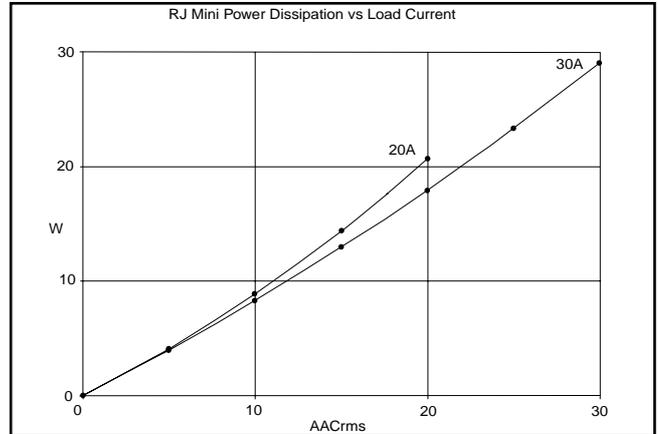
## Over-temperature Protection (option: ...P)



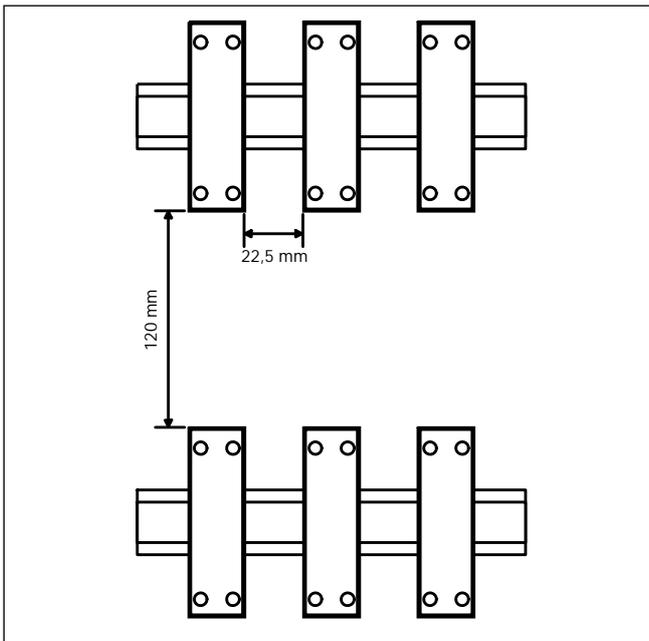
## Derating Curve



## Dissipation Curve



## Panel Mounting



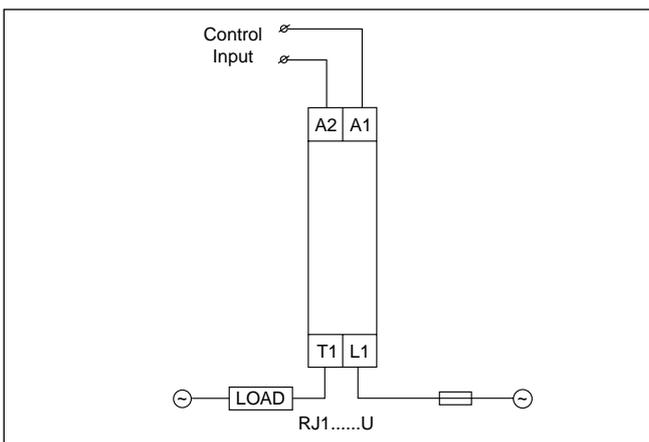
## Housing Specifications

Weight	Approx. 225 g
Housing material	PBT FR
Control terminal cable size	
Min	1 x 0.5 mm <sup>2</sup> (1 x AWG20)
Max	2 x 2.5 mm <sup>2</sup> (2 x AWG14)
Mounting torque max.	2 Nm
Power terminal cable size	
Min	1 x 0.5 mm <sup>2</sup> (1 x AWG20)
Max	2 x 2.5 mm <sup>2</sup> (2 x AWG14) or
Max (with crimped terminal)	1 x 4 mm <sup>2</sup> (1 x AWG 12)
Mounting torque max.	2 Nm

## Insulation

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

## Connection Example



## Installation

