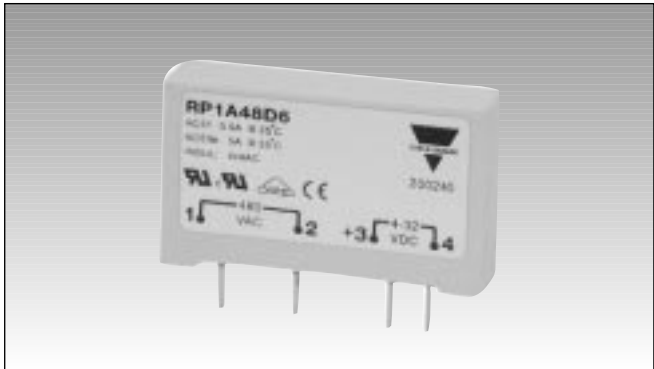




Solid State Relays PCB, 1-Phase ZS/IO Type RP1A, RP1B



- AC Solid State Relay for PCB mounting
- Zero switching or instant-on
- Rated operational current: 3, 5 or 5.5 A
- Rated operational voltage: Up to 480 V
- Surface mount technology
- Flexible encapsulation for extended life
- Control voltage: 3 to 32 VDC* / 16 to 32 VAC**
- Opto-isolation: > 4000 VACrms
- Non-repetitive peak voltage: 1000 Vp
- Non-repetitive surge current up to 300 A

Product Description

The RP1 is an SSR series for socket- or PCB-mounting, providing an ideal interface between logic controls and AC loads. The RP1 is designed for resistive and inductive loads up to 480V. Two regulated control voltages cover most standard input requirements in an economic package. These features allow a direct substitution of existing PCB mounted relays with RP1. Internally this new series enjoys an improved technical design with the introduction of stress-free flexible encapsulation and automated

assembly of components. Opto-isolation and load switching are performed by individual components, providing higher reliability than monolithic designs. Additionally RP1..6 is a special version with high current surge capability that reduces fusing requirements. This relay can also drive higher AC3 loads up to 5 A. The Solid State technology used can withstand peak voltages of 1000V, making the RP1 series suitable to drive AC loads such as valve solenoids and small induction motors.

Ordering Key

RP 1 A 23 D 3

- Solid State Relay (PCB)
- Number of poles
- Switching mode
- Rated operational voltage
- Control voltage
- Rated operational current

Type Selection

Switching mode	Rated operational voltage	Rated operational current	Control voltage
A: Zero switching	23: 230 V	3: 3 A	D: 3 to 32 VDC*
B: Instant-On switching	40: 400 V	5: 5 A	A: 16 to 32 VAC**
	48: 480 V	6: 5.5 A	* 4 to 32 VDC for 480 VAC types
			** Only available for 230V, 5.5 A

Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current		
			3 AACrms	5 AACrms	5.5 AACrms
230 VACrms	650 Vp	3 to 32 VDC	RP1A23D3	RP1A23D5	RP1A23D6
		16 to 32 VAC	RP1B23D3	RP1B23D5	RP1B23D6
400 VACrms	850 Vp	3 to 32 VDC	RP1A40D3	RP1A40D5	RP1A40D6
			RP1B40D3	RP1B40D5	RP1B40D6
480 VACrms	1000 Vp	4 to 32 VDC	RP1A48D3	RP1A48D5	RP1A48D6
			RP1B48D3	RP1B48D5	RP1B48D6

Selection Guide (mounted on DIN EN adaptor)

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current		
			3 AACrms	5 AACrms	5.5 AACrms
230 VACrms	650 Vp	4 to 32 VDC	RP1A23D3M1	RP1A23D5M1	RP1A23D6M1
		16 to 32 VAC	RP1B23D3M1	RP1B23D5M1	RP1B23D6M1
					RP1A23A6M1

General Specifications

	RP1.23..	RP1.40..	RP1.48..
Operational voltage range	12 - 265 VACrms	12 - 440 VACrms	12 - 530 VACrms
Non-rep. peak voltage	650 V _p	850 V _p	1000 V _p
Rated insulated input to output out to heatsink	4 kVACrms	4 kVACrms	4 kVACrms
Operational frequency range	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
Power factor	> 0.5	> 0.5	> 0.5
Zero voltage turn-on	< 10 V	< 10 V	< 10 V
Approvals	UL, cUL, VDE*	UL, cUL, VDE*	UL, cUL, VDE*
CE-marking	Yes	Yes	Yes

* VDE 0700, VDE 0805

Input Specifications

	RP1..23D.. RP1..40D..	RP1..48D..	RP1..23A6..
Control voltage	3 - 32 VDC	4 - 32 VDC	16 - 32 VAC
Pick-up voltage	2.5 VDC	3.5 VDC	10 VAC
Drop-out voltage	1.2 VDC	1.2 VDC	5 VAC
Input current max.	10 mADC	10 mADC	13 mAAC
Max. reverse voltage	32 VDC	32 VDC	-
Response time pick-up			
RP1A	< 10 ms	< 10 ms	< 20 ms
RP1B			
12 VDC/50 Hz	< 160 µs	< 160 µs	-
5 VDC/50 Hz	< 320 µs	< 320 µs	-
Response time drop-out			
RP1A	< 10 ms	< 10 ms	< 20 ms
RP1B	< 10 ms	< 10 ms	-

Output Specifications

	RP1....3	RP1....5	RP1....6
Rated operational current			
AC 51 @ T _a = 25°C	3 A	5 A	5.5 A
AC 53a @ T _a = 25°C	2 A	3 A	5 A
Min. operational load current	20 mA	20 mA	20 mA
Rep. overload current t=1 s	10 A _p	12 A _p	16 A _p
Non-rep. surge current t=20 ms	65 A _p	80 A _p	300 A _p
Off-state leakage current	< 1 mA	< 1 mA	< 1 mA
I ² t for fusing t=10 ms	20 A ² s	50 A ² s	400 A ² s
Critical di/dt @ 50 Hz	50 A/µs	20 A/µs	20 A/µs
Critical dV/dt off state min.	250 V/µs	500 V/µs	500 V/µs
On-state voltage drop @ rated current	< 1.2 Vrms	< 1.2 Vrms	< 1.2 Vrms

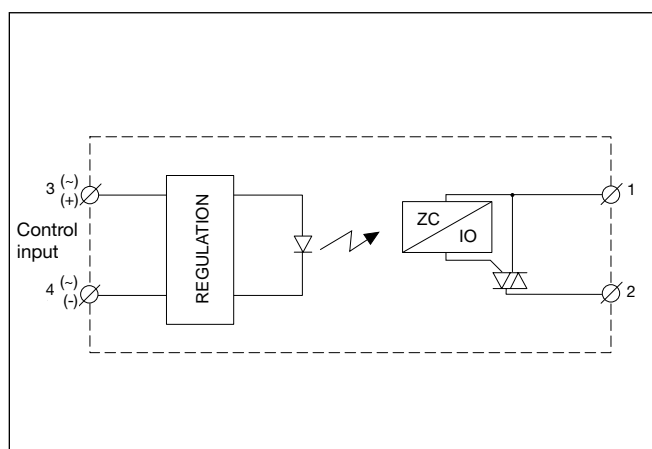
Thermal Specifications

Operating temperature	-20° to +70°C (-4° to +158°F)
Storage temperature	-40° to +100°C (-40° to +212°F)

Insulation Input - Output

Insulation resistance	≥ 10 ¹⁰ Ω
Insulation capacitance	≤ 8 pF

Functional Diagram



Applications

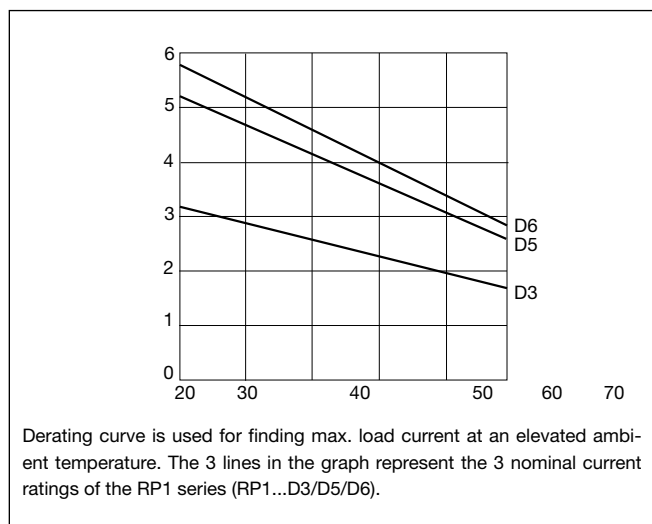
These relays can be used to switch heaters, motors, lights, valves or solenoids.

When used at full load current, the relays must be placed vertically. If more than one relay is mounted, please allow a minimum distance of 20 mm in between for sufficient air cooling.

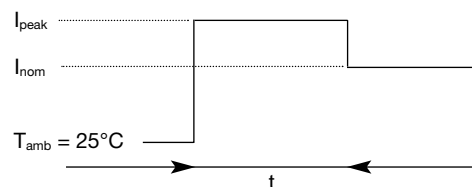
Housing Specifications

Weight	Approx. 20 g
Housing material	PBT, grey
Terminals	Copper alloy, tin-plated
Potting compound	Flame-retardant flexible silicone rubber

Derating Curve



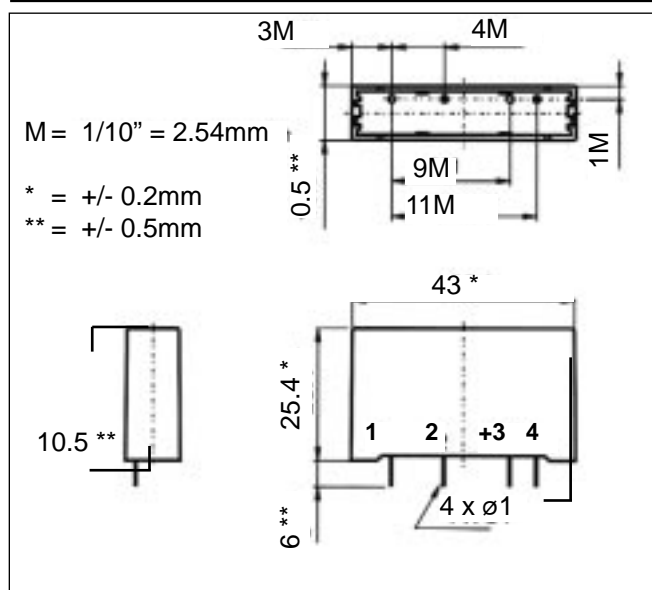
Increased Current Options



I peak (Amps)	6	8	10
D5 : t (minutes)	15	5	3
D6 : t (minutes)	15	5	3

Note: Even though the D3 can withstand a slight increase in current for a limited time, it is not recommended for this purpose.

Dimensions



Accessories



M1 DIN-rail adaptor (photo)

Varistors

Fuses

For further information refer to "General Accessories".