

# Solid State Relays PCB 1-Phase ZS/IO Types RP1A..D10, RP1B..D10

CARLO GAVAZZI



- AC Solid State Relay primarily for PCB mounting
- Zero switching or instant-on
- Rated operational current: 10 AACrms (25 AACrms with forced air cooling)
- Rated operational voltage: Up to 480 VACrms
- Surface mount technology
- Flexible encapsulation for extended life
- Control voltage: 4 to 32 VDC\*
- Opto-isolation: > 4000 VACrms
- Blocking voltage: up to 1000 V<sub>p</sub>
- Non-repetitive surge current: up to 250 A<sub>p</sub>

## Product Description

The RP1..D10 is a SSR series for socket or PCB-mounting, providing an ideal interface between logic controls and AC loads. The RP1..D10 is designed for resistive and inductive load switching up to 480VACrms. The integral heatsink allows switching of a high current in this compact package. Opto-isolation and

load switching are performed by individual components, providing higher reliability. This relay can also drive high AC53a loads up to 7 AACrms. The Solid State technology used can withstand peak voltages of 1000V, making the RP1..D10 series suitable to drive AC loads such as loaded induction motors.

## Ordering Key

**RP 1 A 48 D 10**

- 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 B: Instant-On switching	23: 230 VACrms 40: 400 VACrms 48: 480 VACrms	10: 10 AACrms	D: 4-32 VDC  * 3-32 VDC for RP1.23D10

## Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 10 AACrms
230 VACrms	650 V <sub>p</sub>	3-32 VDC	<b>RP1A23D10</b>
400 VACrms	850 V <sub>p</sub>	4-32 VDC	<b>RP1A40D10</b>
480 VACrms	1000 V <sub>p</sub>		<b>RP1A48D10</b>

## General Specifications

	RP1.23D10	RP1.40D10	RP1.48D10
Operational voltage range RP1A RP1B	12-265 Vrms 12-265 Vrms	20- 440 Vrms 12- 440 Vrms	20-530 Vrms 12-530 Vrms
Blocking voltage	< 650 V <sub>p</sub>	< 850 V <sub>p</sub>	< 1000 V <sub>p</sub>
Rated insulation input to output	4 kVArms	4 kVArms	4 kVArms
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 VACrms	< 10 VACrms	< 10 VACrms
Approvals	UL, cUL	UL, cUL	UL, cUL
CE-marking	Yes	Yes	Yes



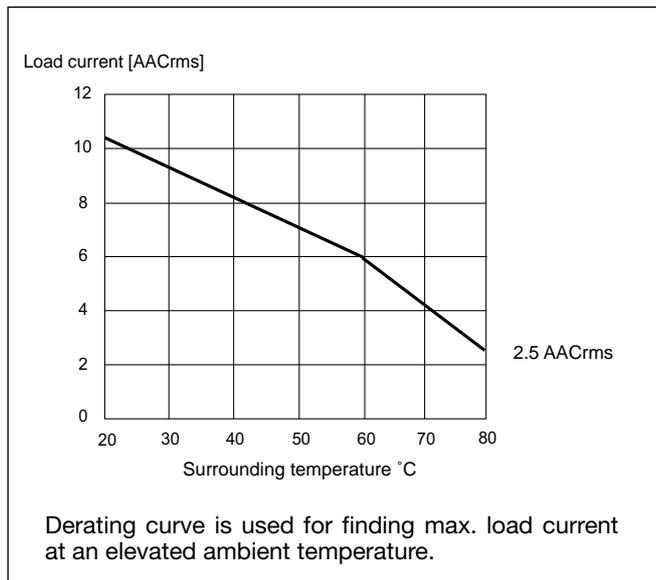
## Input Specifications

Control voltage DC RP1.23D10 RP1.40D10, RP1.48D10	3 - 32 VDC 4 - 32 VDC
Pick-up voltage RP1.23D10 RP1.40D10, RP1.48D10	2.8 VDC 3.8 VDC
Drop-out voltage	1.2 VDC
Reverse voltage	32 VDC
Max. input current RP1A..D10 RP1B..D10	10 mA 17 mA
Response time pick-up RP1A..D10 RP1A..D10 @ Vin ≥ 5VDC	≤ 1/2 cycle ≤ 200 μs
Response time drop-out RP1B..D10 RP1B..D10 @ Vin ≥ 5VDC	≤ 1/2 cycle ≤ 1/2 cycle

## Thermal Specifications

Operating temperature	-30° to +80°C (-22° to +176° F)
Storage temperature	-40° to +100°C (-40° to +212° F)

## Derating Curve (convection cooling)



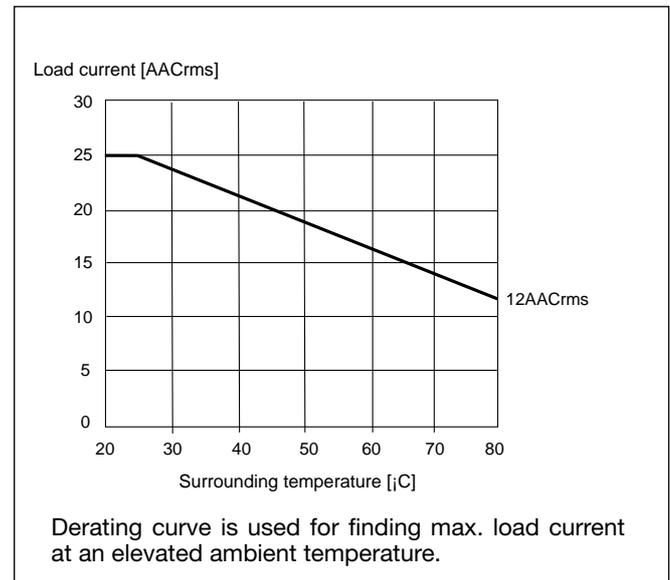
## Output Specifications

Rated operational current AC51 @ Ta=25°C AC53a @ Ta=25°C	10 AACrms 7 AACrms
Min. operational load current	10 mAACrms
Rep. overload current t=1 s	16 AACrms
Non-rep. surge current t=20 ms	250 A <sub>p</sub>
Off-state leakage current @ rated voltage and frequency	< 3 mAACrms
I <sup>2</sup> t for fusing t=10 ms	340 A <sup>2</sup> s
Critical dV/dt off-state min.	1000 V/μs
On-state voltage drop max. @ rated current	< 1.5 VACrms

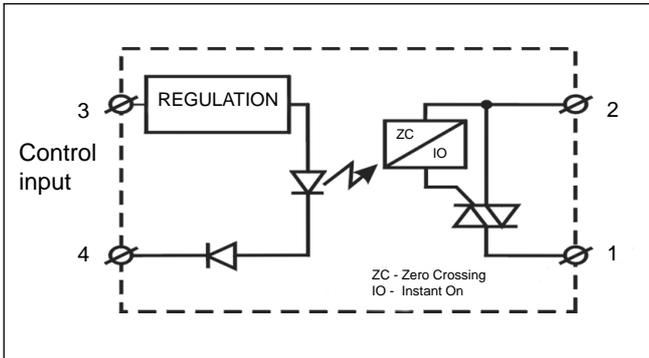
## Housing Specifications

Weight	Approx. 40 g
Housing material	Black Epoxy coating
Terminals	Copper alloy, tin-plated
Terminals soldering temperature	max. 300°C for 5 sec.

## Derating Curve (forced air cooling at 15m<sup>3</sup>/h)



## Functional Diagram



## Applications

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

If more than one relay is mounted, please allow a minimum distance of 20 mm in between for sufficient air cooling.

## Dimensions

