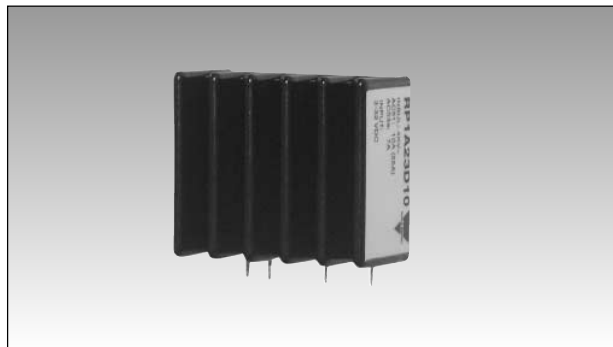# Solid State Relays
PCB 1-Phase ZS/IO
Types RP1A..D10, RP1B..D10

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_p
- Non-repetitive surge current: up to 250 A_p

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_p	3-32 VDC	RP1A23D10
400 VACrms	850 V_p	4-32 VDC	RP1A40D10
480 VACrms	1000 V_p		RP1A48D10

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_p	< 850 V_p	< 1000 V_p
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

Specifications are subject to change without notice (28.02.2007)

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Input Specifications

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

Output Specifications

Rated operational current	
AC51 @ Ta=25ºC	10 AACrms
AC53a @ Ta=25ºC	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_p
Off-state leakage current @ rated voltage and frequency	< 3 mAACrms
I^2t for fusing t=10 ms	340 A^2s
Critical dV/dt off-state min.	1000 V/μs
On-state voltage drop max. @ rated current	< 1.5 VACrms

Thermal Specifications

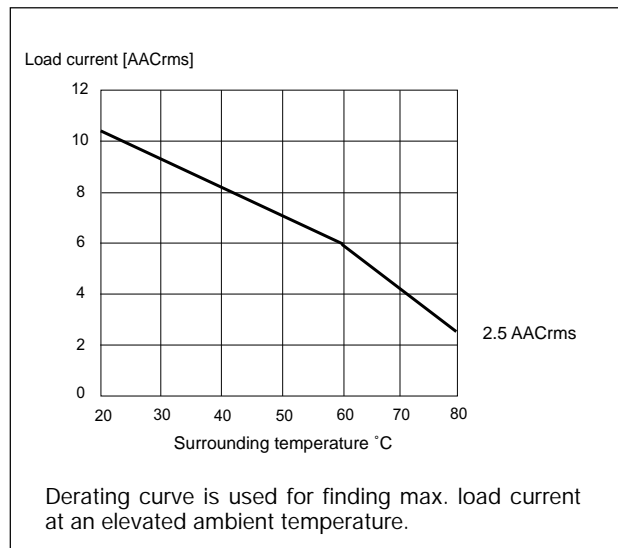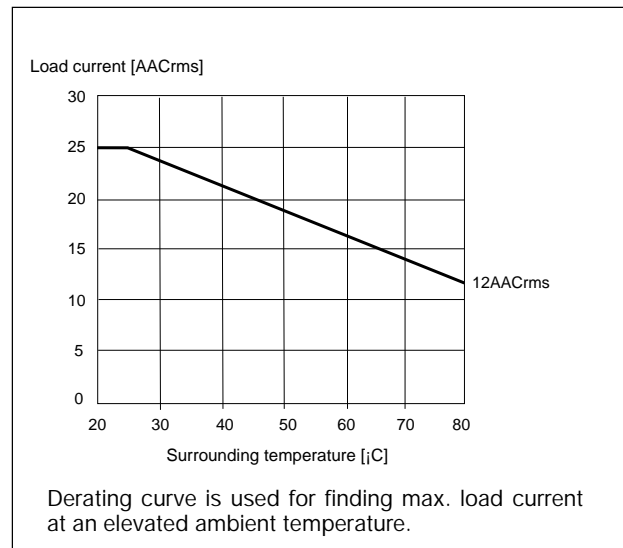|	
Operating temperature	-30° to +80°C (-22° to +176° F)
Storage temperature	-40° to +100°C (-40° to +212°F)

Housing Specifications

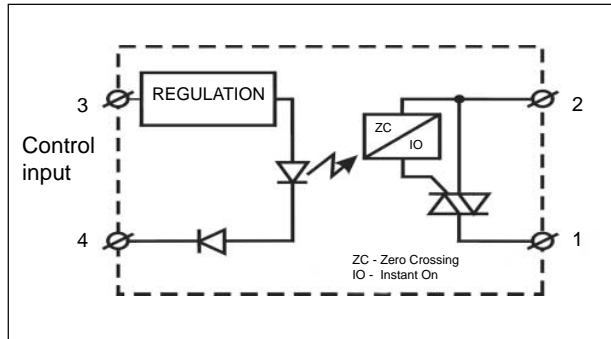|	
Weight	Approx. 40 g
Housing material	Black Epoxy coating
Terminals	Copper alloy, tin-plated
Terminals soldering temperature	max. 300°C for 5 sec.

Derating Curve (convection cooling)

Load current [AACrms]

2.5 AACrms

Surrounding temperature ˚C

Derating curve is used for finding max. load current at an elevated ambient temperature.

Derating Curve (forced air cooling at 15m³/h)

Load current [AACrms]

12AACrms

Surrounding temperature [¡C]

Derating curve is used for finding max. load current at an elevated ambient temperature.

Specifications are subject to change without notice (28.02.2007)

Functional Diagram

3 — REGULATION
Control input
4

2
1

ZC
IO

ZC - Zero Crossing
IO - Instant On

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

11 M
9 M
22 mm
18 mm
3M
4 M

43 mm
22 mm
37 mm

M = 2.54 mm = 1/10 "