

Solid State Relays Industrial, 1-Phase ZS w. LED Types RS 23 A, RS 40 A



- Zero switching AC Solid State Relay
- Direct copper bonding (DCB) technology
- Alternistor power unit
- LED indication
- Clip-on IP 20 protection cover
- Self-lifting terminals
- Housing free of moulding mass
- Fixed AC control input
- Operational ratings up to 40 AACrms and 400 VAC
- Non-repetitive voltage: Up to 850 V_p
- Opto-isolation: > 4000 VACrms

Product Description

The zero switching relay with alternistor output is an inexpensive solution for resistive loads. The zero switching relay switches ON when the sinusoidal curve crosses zero and switches OFF when the current crosses zero. The

LED indicates the status of the control input. The clip-on cover is securing touch protection (IP 20). Output terminals can handle cables up to 16 mm².

Ordering Key

RS 1 A 23 A2- 25

- Solid State Relay
- 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 VACrms 40: 400 VACrms	25: 25 AACrms 40: 40 AACrms	A1: 110VAC ± 15% A2: 230VAC ± 15% A4: 400VAC ± 15%

Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current	
			25 A	40 A
230 VACrms	650Vp	110 VAC ± 15%	RS1A23A1-25	RS1A23A1-40
		230 VAC ± 15%	RS1A23A2-25	RS1A23A2-40
		400 VAC ± 15%	RS1A23A4-25	RS1A23A4-40
400 VACrms	850V	230 VAC ± 15%	RS1A40A2-25	RS1A40A2-40
		400 VAC ± 15%	RS1A40A4-25	RS1A40A4-40

General Specifications

	RS1A23...	RS1A40...
Operational voltage range	42 to 265 VACrms	42 to 440 VACrms
Non-rep. peak voltage	≥ 650 V _p	≥ 850 V _p
Zero voltage turn-on	≤ 15 V	≤ 15 V
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor	≥ 0.95 @ 230 VACrms	≥ 0.95 @ 400 VACrms
Approvals*	UL, CSA	UL, CSA
CE-marking	Yes	Yes
(external filter for EN 50081-1 needed)		
*pending		

Input Specifications

	RS1A..A1	RS1A..A2	RS1A..A4
Control voltage	80 to 130VAC	200 to 260 VAC	360 to 440 VAC
Control frequency	60Hz	50Hz	50Hz
Pick-up voltage	70VAC	190VAC	350VAC
Drop out voltage	30VAC	90VAC	160VAC
Input current @ max input voltage	13mA	13mA	13mA
Typical response time pick-up	20mS	20mS	20mS
Typical response time drop-out	20mS	20mS	20mS

Output Specifications

	RS1A...25	RS1A...40
Rated operational current AC51 @ Ta=25°C	25 Arms	40 Arms
Min. operational current	150 mA	150 mA
Rep. overload current t=1 s	< 37 AACrms	< 60 AACrms
Non-rep. surge current t=10 ms	230 Ap	300 Ap
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms
I²t for fusing t=1-10 ms	≤ 310 A ² s	≤ 450 A ² s
Critical di/dt	≥ 50 A/μs	≥ 100 A/μs
On-state voltage drop @ rated current	≤ 1.6 Vrms	≤ 1.6 Vrms
Critical dV/dt off-state	≥ 250 V/μs	≥ 250 V/μs

Thermal Specifications

	RS1A...25	RS1A...40
Operating temperature	-30° to 70°C	-30° to 70°C
Storage temperature	-40° to 100°C	-40° to 100°C
Junction temperature	≤ 125°C	≤ 125°C
R_{th} junction to case	≤ 1.10 K/W	≤ 0.90 K/W
R_{th} junction to ambient	≤ 20 K/W	≤ 20 K/W

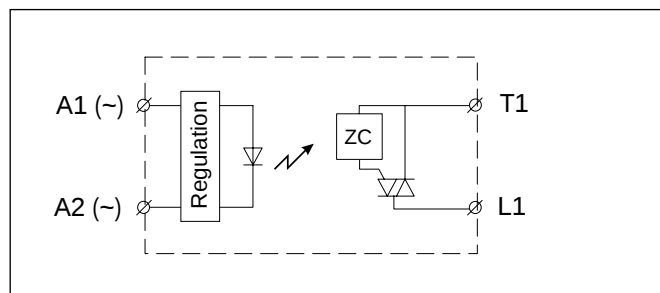
Housing Specifications

Weight	Approx. 60 g
Housing material	Noryl GFN 1, black
Baseplate	Aluminium
Potting compound	None
Relay	
Mounting screws	M5
Mounting torque	1.5-2.0 Nm
Control terminal	
Mounting screws	M3 x 9
Mounting torque	0.5 Nm
Power terminal	
Mounting screws	M5 x 9
Mounting torque	2.4 Nm

Insulation

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

Functional Diagram



Heatsink Dimensions (load current versus ambient temperature)

RS25.

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70	
25.0	1.92	1.61	1.30	1.00	0.69	0.39	33
22.5	2.39	2.04	1.69	1.34	0.99	0.63	28
20.0	3.00	2.59	2.18	1.77	1.36	0.95	24
17.5	3.68	3.19	2.71	2.22	1.74	1.25	21
15.0	4.49	3.90	3.32	2.73	2.14	1.56	17
12.5	5.64	4.91	4.18	3.45	2.72	1.99	14
10.0	7.39	6.44	5.49	4.55	3.60	2.65	11
7.5	10.34	9.03	7.71	6.39	5.07	3.75	8
5.0	16.3	14.2	12.2	10.11	8.05	5.99	5
2.5	-	-	25.7	21.4	17.0	12.7	2

Ambient temp. [°C]

Junction to ambient thermal resistance, $R_{th\ j-a}$	< 20.0	K/W
Junction to case thermal resistance, $R_{th\ j-c}$	< 1.10	K/W
Case to heatsink thermal resistance, $R_{th\ c-s}$	< 0.20	K/W
Maximum allowable case temperature	100	deg.C
Maximum allowable junction temperature	125	deg.C

RS40..

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70	
40.0	1.10	0.89	0.68	0.47	0.26	0.05	48
36.0	1.41	1.18	0.94	0.70	0.46	0.22	42
32.0	1.81	1.54	1.26	0.98	0.70	0.43	36
28.0	2.33	2.01	1.68	1.35	1.03	0.70	31
24.0	2.95	2.56	2.16	1.77	1.38	0.98	25
20.0	3.71	3.22	2.73	2.24	1.75	1.27	20
16.0	4.85	4.22	3.59	2.96	2.33	1.69	16
12.0	6.78	5.91	5.03	4.16	3.29	2.41	11
8.0	10.65	9.30	7.94	6.58	5.23	3.87	7
4.0	22.3	19.5	16.7	13.9	11.1	8.25	4

Ambient temp. [°C]

Junction to ambient thermal resistance, $R_{th\ j-a}$	< 20.0	K/W
Junction to case thermal resistance, $R_{th\ j-c}$	< 0.90	K/W
Case to heatsink thermal resistance, $R_{th\ c-s}$	< 0.20	K/W
Maximum allowable case temperature	100	deg.C
Maximum allowable junction temperature	125	deg.C

Heatsink Selection

Carlo Gavazzi Heatsink (see Accessories)	Thermal resistance...	...for power dissipation
No heatsink required	---	N/A
RHS 300	5.00 K/W	> 0 W
RHS 100	3.00 K/W	> 25 W
RHS 45A	2.70 K/W	> 60 W
RHS 45B	2.00 K/W	> 60 W
RHS 90	1.35 K/W	> 60 W
RHS 45A plus fan	1.25 K/W	> 0 W
RHS 45B plus fan	1.20 K/W	> 0 W
RHS 112	1.10 K/W	> 100 W
RHS 301	0.80 K/W	> 70 W
RHS 90 plus fan	0.45 K/W	> 0 W
RHS 112 plus fan	0.40 K/W	> 0 W
RHS 301 plus fan	0.25 K/W	> 0 W
Consult your distribution	> 0.25 K/W	N/A
Infinite heatsink - No solution	---	N/A

Dimensions

