AZSR131

35 AMP MINIATURE POWER RELAY

FEATURES

- Single pole / normally open miniature power relay
- 35 Amp / 277 VAC switching capability
- Wide contact gap of 1.8 mm and 2.3 mm
- High dielectric strength of 4.5 kV_{RMS}
- 10 kV surge withstand voltage
- Glow wire test approved versions available
- TÜV, UL / CUR and CQC approvals



CONTACTS

Arrangement	SPST-NO (1 Form A)
Ratings (max.) switched power switched current continuous current switched voltage contact load category	(resistive load) 9695 VA 35 A 35 A 277 VAC CC2
Approved ratings **UL/CUR** **TÜV/CQC**	 26 A at 277 VAC, resistive, 85°C, 50k cycles 35 A at 277 VAC, resistive, 85°C, 30k cycles 22 A at 277 VAC, resistive, 70°C, 100k cycles 26 A at 277 VAC, resistive, 85°C, 50k cycles 33 A at 277 VAC, cos phi 0.8, 85°C, 50k cycles 35 A at 277 VAC, cos phi 0.8, 85°C, 30k cycles.
Contact material	$AgSnO_2$ (silver tin oxide)
Contact gap standard version option (200) version	(clearance of open load contacts) ≥ 1.8 mm ≥ 2.3 mm
Contact resistance initial typical	 ≤ 100 mΩ (at 1A) ≤ 2 mΩ (at 35A)

COIL

Nominal coil voltages	5, 9, 12, 18, 24, 48 (DC)
Dropout voltage	> 5% of nominal coil voltage
Holding voltage	> 35% of nominal coil voltage
Coil power nominal holding power	(at 23°C) 1.4 W 0.18 W
Temperature Rise	70 K at nominal coil voltage, 35 A/85°C
Insulation system	class F, max. temperature 155°C (311°F)

GENERAL DATA

Life Expectancy mechanical standard version option (200) version electrical	(minimum operations) 3 x 10^5 (1.8 mm contact gap version) 1 x 10^5 (2.3 mm contact gap version) see approved ratings
Timing operate time release time	(at nominal coil voltage) 20 ms max. / 10 ms typ. 10 ms max. / 2 ms typ. (w/o coil suppression)
Dielectric Strength coil to load contacts open load contacts standard version option (200) version	(at sea level for 1 min.) 4500 V_{RMS} 2500 V_{RMS} 3500 V_{RMS}
Surge Voltage coil to load contacts	(1.2/50 µs pulses) 10 kV
Insulation Distances coil to load contacts open load contacts standard version option (200) version	(clearance / creepage) ≥ 6.4 mm / ≥ 7.6 mm ≥ 1.8 mm / ≥ 7.5 mm ≥ 2.3 mm / ≥ 7.5 mm
Insulation Type coil to contacts	 Reinforced insulation (rated voltage ≤ 300 VAC, pollution degree: 2, overvoltage category: II)
Insulation Resistance	1000 MΩ (min.) at 23°C, 500 VDC, 50% RH
Temperature Range operating	(at nominal coil voltage) -40°C (-40°F) to 85°C (185°F)
Vibration resistance	1.5 mm (0.062") DA at 10–55 Hz
Shock resistance	20 g
Enclosure material protection category material group flammability	 PBT / LCP RT II, flux proof IIIa UL94 V-0
Terminals	Tinned copper alloy, THT PCB mounting
Soldering preheating soldering	(referring IEC 61760-1 wave soldering) 120°C (248°F) / ≤ 120 s 260 ±5°C (500 ±9°F) / ≤ 2 x 5 s
Dimensions and Weight	30.4 mm x 15.9 mm x 25.15 mm, 25 grams
Compliance	UL 508, IEC 61810-1, GB/T 21711.1-2008, RoHS, REACH
Agency Approvals TÜV UL/CUR CQC	 B 088793 0015 E365652 CQC17002168255
Packing (pcs.)	50 per plastic tray 500 per carton box

Downloaded from Arrow.com.

AZSR131

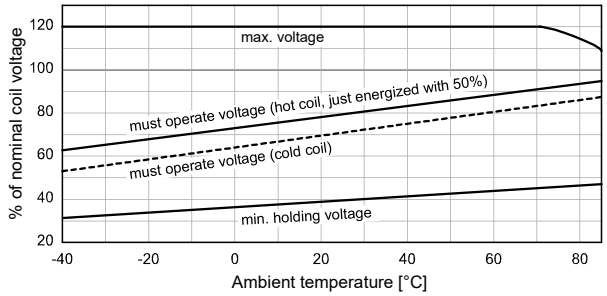
COIL VOLTAGE SPECIFICATIONS

Voltage [VDC]					Resistance [Ω] ±10%	Power (ref.) [W]	
nominal	must operate contact gap 1.8 mm	must operate contact gap 2.3 mm	min. holding	max.		nominal	min. holding
5	3.5	3.75	1.75	6.0	18	1.4	0.18
9	6.3	6.75	3.15	10.8	58		
12	8.4	9.0	4.2	14.4	103		
18	12.6	13.5	6.3	21.6	230		
24	16.8	18.0	8.4	28.8	410		
48	33.6	36.0	16.8	57.6	1650		

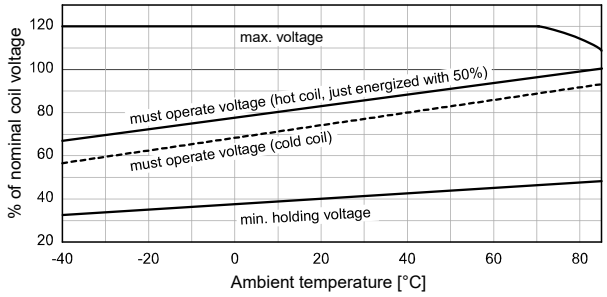
Notes:
1. All values at 23°C, upright position, terminals downward.
2. Voltage max. is the voltage the coil can endure for a short period of time.
3. To avoid overheating at elevated ambient temperatures, we recommend to operate the coil at 50 - 75% of nominal coil voltage after applying the full nominal coil voltage for ≥200 ms.
4. Preferred coil voltages in bold face numbers.

Coil operative range (at rated load)

Standard version - 1.8 mm contact gap



Option (200) version - 2.3 mm contact gap



ORDERING DATA

AZSR131-1AE-□□D□□□□

Options
nil: standard version
(200): 2.3 mm contact gap version

Material option
nil: standard version
GW: glow wire test approved version

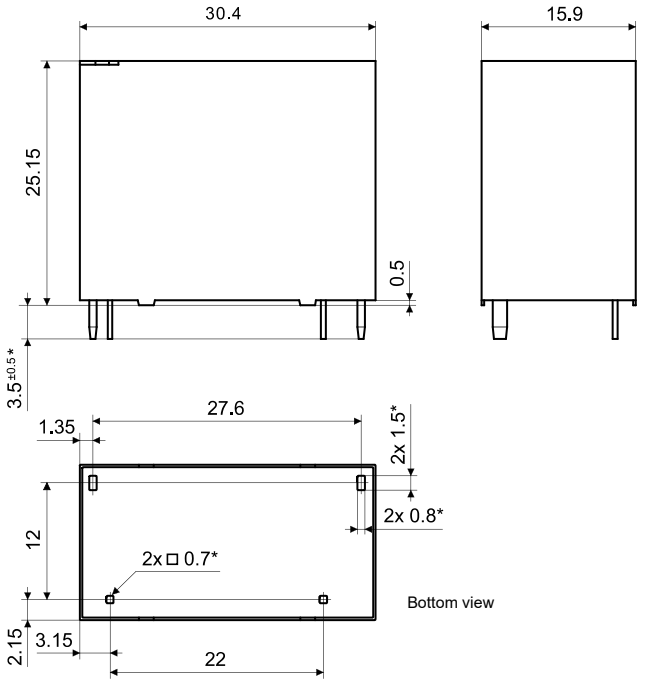
Nominal coil voltage
see coil voltage specifications table

Example ordering data

AZSR131-1AE-12D	12 VDC nominal coil voltage, standard version
AZSR131-1AE-24DGW	24 VDC nominal coil voltage, glow wire test approved version, standard contact gap
AZSR131-1AE-9D(200)	9 VDC nominal coil voltage, 2.3 mm wide contact gap

MECHANICAL DATA

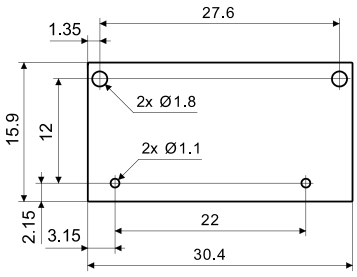
Dimensions in mm. Tolerance ±0.3mm if not stated otherwise .
Note: * Pin dimensions for reference only and given without tin coating.

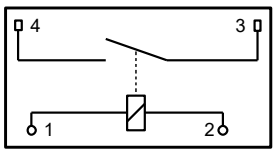


CAD data in attachment of this datasheet.

PCB FOOTPRINT / WIRING DIAGRAM

Layout and footprint recommendation. Dimensions in mm. Viewed towards terminals.





1	Coil start - winding center layer
2	Coil end - winding outer layer
3	NO load contact - movable
4	NO load contact - stationary

Downloaded from Arrow.com.

NOTES

General

1. All values in this datasheet are at reference temperature of 23°C (73°F) unless stated otherwise.
2. Evaluate the component's performance and operating conditions under the worst-case conditions of the actual application.
3. The datasheet and the component's specifications are subject to change without notice.

Storage, handling, and environmental guidelines

4. Relays are electromechanical components that are sensitive to shock. The relay's adjustment can be affected if the relay is subjected to excessive shock or excessive pressure is applied to the relay case. Relays which have been dropped must no longer be used.
5. Substances containing silicone or phosphorus must be avoided in the vicinity to the relay. Outgassing from these substances can penetrate the relay and adhere on the contacts. Deposits of these substances may act as insulators and adversely affect the contact resistance. Silicone can be found e.g. in gaskets, lubricants or filling materials, phosphorus can be found e.g. as a flame retardant in plastics.
6. Prevent relays from atmospheres containing corrosive gases. Corrosion of internal structures and contacts leads to malfunction and shortens the component's service life.
7. Prevent non-sealed relays and relays with opened vent hole from atmospheres subject to dust. Dust particles may enter the case and get stuck between the contacts, causing the contact circuits to fail.
8. Do not use these relays in environments with explosive or flammable gases. Electrical arcing at the contacts could ignite these gases and cause fire.
9. For automated dual wave soldering process we recommend preheating with 120°C (248°F) for max. 120 seconds and a soldering temperature of 260 ±5°C (500 ±9°F) for max. 10 seconds soldering time (max. 5 seconds per wave). For manual soldering we recommend 350°C (662°F) max. temperature for max. 5 seconds. During the soldering process, no force may be exerted on the relay terminals.
10. Non-sealed relays must not be washed, immersion cleaned or conformal coated as substances may enter the case and cause corrosion or seizure of mechanical parts.
11. Avoid high frequency or ultrasonic vibrations on the relays as these can cause contact welding and misalignment or destruction of internal structures.
12. During operation, storage and transport, ambient temperature should be within the specified operating temperature range. Humidity should be in the range of 5% to 85% RH. Icing and condensation must be avoided. Relays stored for an extended period of time may show initially increased contact resistance values due to chemical effects such as oxidation.

Design guidelines

13. The relay may pull in and operate with less than the specified *must operate* voltage value.
14. The coil's *must operate* and *min. holding* voltages, the coil's *ohmic resistance* and the relay's *operate time* depend on the temperature of the coil. The specified values are given for a coil temperature of 23°C and increase by approx. 0.39% per Kelvin of temperature rise. This circumstance must be considered, especially during operation with high load currents and elevated ambient temperature.
15. At elevated ambient temperatures, after applying the rated nominal coil voltage for ≥ 200 milliseconds, the coil energization should be reduced to a suitable holding level in order to reduce thermal stress and prevent the coil from overheating.
16. Coil suppression circuits such as rectifier diodes, etc. in parallel to the coil will lengthen the release time. We recommend using suppression circuits like TVS diodes, or Zener diodes in series with a rectifier diode, with a breakdown voltage of approx. 2 times the nominal coil voltage in order to achieve a quick release time.
17. When using PWM coil control, use a fast-switching recirculation diode in parallel with the coil to keep the coil current during pulse pauses. To achieve a quick release time, when de-energizing the coil, the recirculation diode must be eliminated from the circuit to get a fast decay of coil current. As PWM frequency we recommend ≥ 15 kHz in order to avoid audible noise from magnetostriction. To reduce EMI effects, we recommend to apply the PWM to the coil's inner layer terminal (1) and have the outer layer terminal (2) connected to ground or the supply rail.
18. Contact resistance is a function of load current, dwell time and wear level of the contacts. Immediately after closing the contacts, or if tested with low current only, the contact resistance will show a relatively high value. A low level steady state contact resistance is reached at higher current after a certain time in thermal equilibrium.
19. The relay dissipates heat form power losses through its load terminals. Provide sufficient cross section and area of the PCB traces so that they can act as heat spreader.
20. For PCBs with multiple relays, do not place the components directly next to each other. We suggest providing a mounting distance of minimum 10 mm to allow for better cooling.

Downloaded from Arrow.com.

DISCLAIMER

This product specification is to be used in conjunction with the application notes which can be downloaded from the regional ZETTLER relay websites. The specification provides an overview of the most significant part features. Any individual applications and operating conditions are not taken into consideration. It is recommended to test the product under application conditions. Responsibility for the application remains with the customer. Proper operation and service life cannot be guaranteed if the part is operated outside the specified limits.

ZETTLER GROUP

Building on a foundation of more than a century of expertise in German precision engineering, ZETTLER Group is a world-class enterprise, engaged in the design, manufacturing, sales and distribution of electronic components. Our industry leadership is based on a unique combination of engineering competence and global scale.

For more information on other ZETTLER Group companies, please visit ZETTLER-group.com. For support on this product or other ZETTLER relays, please visit one of the group sites below.

SITES FOR ZETTLER RELAYS

NORTH AMERICA

American Zettler, Inc.
www.azettler.com
sales@azettler.com

EUROPE

Zettler Electronics, GmbH
www.zettlerelectronics.com
office@zettlerelectronics.com

Zettler Electronics, Poland
www.zettlerelectronics.pl
office@zettlerelectronics.pl

CHINA

Zettler Group, China
www.zettlercn.com
relay@zettlercn.com

ASIA PACIFIC

Zettler Electronics (HK) Ltd.
www.zettlerhk.com
sales@zettlerhk.com



Downloaded from Arrow.com.