

AZ7621H

20 AMP MINIATURE POWER RELAY

FEATURES

- Miniature power relay with SPST-NO or SPDT contact arrangements
- Up to 25 Amp switching capability
- High dielectric strength of 5 kV and 10kV surge withstand voltage
- Reinforced insulation according IEC 60730-1 and IEC 60335-1
- Glow wire approved versions acc. IEC 60335-1 available
- IEC60079-15 cl. 11.2 "sealed device" versions available
- Sensitive DC coil options with only 250mW nominal coil power
- UL / CUR and VDE approvals



CONTACTS

Arrangement	SPST-NO (1 Form A) SPDT (1 Form C)
Ratings (max.) switched power switched current switched voltage	(resistive load) 5000 VA 20 A 440 VAC
25A version switched power switched current switched voltage	6250 VA 25 A 440 VAC
Sensitive coil switched power switched current switched voltage	4000 VA 16 A 440 VAC
Rated Loads UL, CUR	Standard Coil 20 A at 250 VAC, resistive, 105°C, 50k cycles 16 A at 250 VAC, resistive, 105°C, 100k cycles TV-8 at 120 VAC, 25k cycles 1 HP at 240 VAC Standard Coil - High Capacity version 25 A at 250 VAC, resistive, 105°C, 80k cycles Sensitive Coil 16 A at 250 VAC, resistive, 105°C, 100k cycles
VDE	Standard Coil 20 A at 250 VAC, resistive, 85°C, 50k cycles 16 A at 250 VAC, resistive, 105°C, 90k cycles Note: Changeover contacts tested as make contacts.
Contact material	AgSnO ₂ / AgSnO ₂ +Au (silver tin oxide / Au plating)
Initial resistance max. typ.	100 mΩ (1A / 6VDC, voltage drop method) < 10 mΩ (at rated current)

COIL

Nominal coil DC voltages	5, 6, 9, 12, 18, 24, 48
Dropout	> 10% of nominal coil voltage
Nominal coil power standard coil types sensitive DC coil types	typ. at 23°C (73°F) coil temperature 410 mW 250 mW
Temperature Rise	29 K (52°F) at nominal coil voltage
Max. temperature	155°C (311°F), class F insulation system

GENERAL DATA

Life Expectancy mechanical electrical	(minimum operations) 1 x 10 ⁷ 1 x 10 ⁵ at 20 A, 250 VAC res.
Operate Time	15 ms (max.) at nominal coil voltage
Release Time	8 ms (max.) at nominal coil voltage, without coil suppression
Dielectric Strength coil to contacts between open contacts	(at sea level for 1 min.) 5000 VAC 1000 VAC
Surge voltage coil to contacts	(1.2/50 μs) 10 kV
Insulation Resistance	1000 MΩ (min.) at 23°C, 500 VDC, 50% RH
Insulation coil to contacts	Reinforced insulation (250 VAC, PD3, OVC III)
Temperature Range operating	(at nominal coil voltage) -40°C (-40°F) to 105°C (221°F)
Vibration resistance	0.062" (1.5 mm) DA at 10-55 Hz
Shock resistance	10 g
Enclosure protection category material group	P.B.T. polyester RT II - flux proof, RT III - wash tight IIIa
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
Cleaning max. solvent temp. max. immersion time	(RT III - wash tight versions only) 80°C (176°F) 30 seconds
Dimensions length width height	29.2 mm (1.150") 12.8 mm (0.504") 16.0 mm (0.630")
Weight	14 grams (approx.)
Packing unit in pcs	20 per plastic tube / 500 per carton box
Agency Approvals VDE UL/CUR	40059276 E43202
Compliance	UL 508, IEC 61810-1 RoHS, REACH

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COIL VOLTAGE SPECIFICATIONS

Standard 410mW coils

Nominal Coil VDC	Must Operate VDC	Max. Coil VDC	Nom. Current mA (ref.)	Resistance Ohm ±10%
5	3.5	6.5	82.0	61
6	4.2	7.8	68.2	88
9	6.3	11.7	45.5	198
12	8.4	15.6	34.2	351
18	12.6	23.4	22.8	790
24	16.8	31.2	17.1	1405
48	33.6	62.4	8.5	5620

Sensitive 250mW coils

Nominal Coil VDC	Must Operate VDC	Max. Coil VDC	Nom. Current mA (ref.)	Resistance Ohm ±10%
5	3.5	6.5	50.0	100
6	4.2	7.8	41.7	144
9	6.3	11.7	27.8	324
12	8.4	15.6	20.8	576
18	12.6	23.4	13.9	1296
24	16.8	31.2	10.4	2304
48	33.6	62.4	5.2	9216

- Notes:
 1. All values at 23°C (73°F), upright position, terminals downward.
 2. Max. Coil VDC is the voltage the coil can endure for a short period of time.
 3. Versions with sensitive 250mW coils are not VDE approved.

ORDERING DATA

AZ7621H-E-

- Material option**
 nil: standard version
 GW: glow wire approved
- Plating option**
 nil: non plated
 A: gold plated contacts
- Sealing option**
 nil: non sealed (RT II - flux tight)
 E: sealed (RT III - wash tight)
- Coil type**
 D: Standard 410mW DC coil
 DS: Sensitive 250mW DC coil
- Nominal coil voltage**
 see coil voltage specifications tables
- Capacity**
 nil: standard version
 T: 25 A high capacity version (std. coil only)
- Contact material**
 E: silver tin oxide - AgSnO₂
- Contact arrangement**
 1A: 1 Form A (SPST-NO)
 1C: 1 Form C (SPDT)

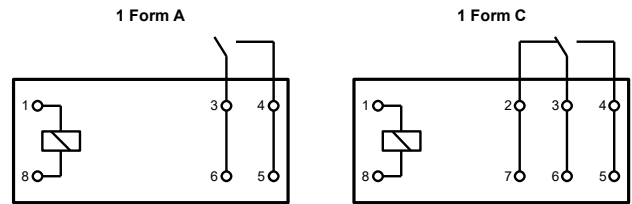
- Notes:
 1. Parts with *sealing option* E along with *material option* GW are tested as "sealed device" according IEC 60079-15 clause 11.2 for a mx. ambient temperature up to 85°C.
 2. Parts with *capacity option* T and/or *sensitive coil type* DS are not available within the region of the European Economic Area.

Example ordering data

- AZ7621H-1AE-12D 1 Form A (SPST-NO), 12 VDC coil
- AZ7621H-1CE-9DSE 1 Form C (SPDT), 9 VDC sensitive 250mW coil, sealed version
- AZ7621H-1AET-24D 1 Form A (SPST-NO), 25 Amp high capacity version, 24 VDC coil
- AZ7621H-1AE-24DEGW 1 Form A, 24 VDC coil, sealed, glow wire approved materials, "sealed device" acc. IEC 60079-15 cl. 11.2

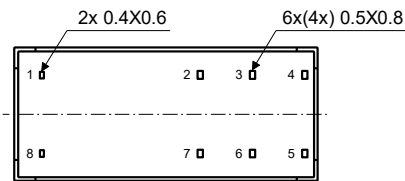
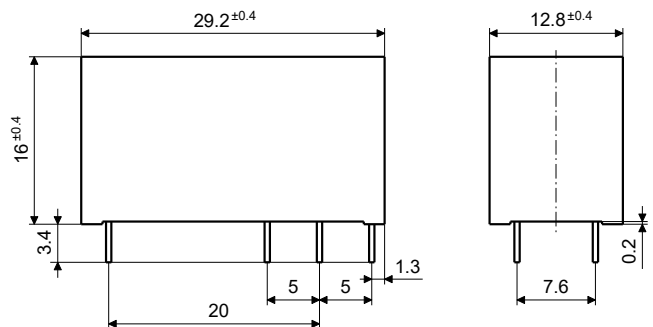
WIRING DIAGRAMS

Viewed towards terminals.
 Note: Connect associated load terminals on PCB to ensure proper operation and service life.



MECHANICAL DATA

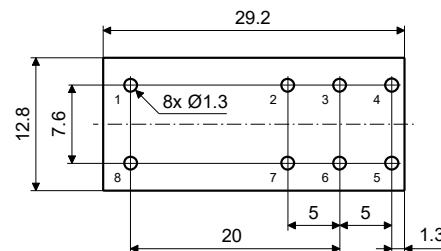
Dimensions in mm. Pin dimensions for reference only and given without tin coating.
 Note: Pins 2 and 7 are omitted at 1-Form-A versions.



CAD data in attachment of this datasheet.

PCB FOOTPRINT

Footprint / Layout recommendation. Dimensions in mm.
 Note: Pins 2 and 7 are omitted at 1-Form-A versions.



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.
4. Some versions of this component may not be available within the region of the European Economic Area.

Storage, handling, and environmental guidelines

5. 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.
6. 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.
7. Prevent relays from atmospheres containing corrosive gases. Corrosion of internal structures and contacts leads to malfunction and shortens the component's service life.
8. 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.
9. Do not use these relays in environments with explosive or flammable gases. Electrical arcing at the contacts could ignite these gases and cause fire.
10. 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.
11. 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.
12. Avoid high frequency or ultrasonic vibrations on the relays as these can cause contact welding and misalignment or destruction of internal structures.
13. 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

14. The relay may pull in and operate with less than the specified *must operate* voltage value.
15. The coil's *must operate voltage* and 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.
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. 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.
18. 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.
19. For PCBs with multiple relays, do not place the components directly next to each other. We suggest providing a mounting distance of minimum 5 mm to allow for better cooling.

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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.

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