AZ6963

10 AMP SUBMINIATURE POWER RELAY

FEATURES

- 10 Amp / 250 VAC switching capability
- High dielectric strength of 5 kV between coil and contacts
- Isolation spacing ≥ 10 mm
- Reinforced insulation according IEC 60730-1 and IEC 60335-1
- Compact size with small footprint and low seated height of 12.5 mm
- Flux proof and wash tight versions available
- VDE and UL / CUR approvals

CONTACTS

Arrangement	SPST-NO (1 Form A) SPDT (1 Form C)
Ratings (max.) switched power switched current switched voltage	(resistive load) 300 W or 2500 VA 10 A 440 VAC
Approved ratings **UL/CUR** **VDE**	 8 A at 250 VAC, general use, 6k cycles [1][2] 8 A at 30 VDC, general use, 6k cycles [1][2] **1 Form A** 10 A at 250 VAC, 20k cycles, 85°C [1] ** 10 A at 250 VAC, 40k cycles, 85°C [2] ** **1 Form C** 8 A at 250 VAC, 15k cycles, 85°C [1][2] ** [1] denotes AgNi (silver nickel) contact material [2] denotes $AgSnO_2$ (silver tin oxide) contact material ** Note: RTIII wash tight types tested with open vent hole
Contact material	AgNi / AgNi+Au (silver nickel / Au plating) $AgSnO_2$ / $AgSnO_2$+Au (silver tin oxide / Au plating)
Initial resistance max. typ.	 100 mΩ (1A / 6VDC, voltage drop method) < 20 mΩ (at rated current)

COIL

Nominal coil voltages	5, 6, 9, 12, 18, 24 (DC)
Dropout	> 10% of nominal coil voltage
Coil power nominal	typ. at 23°C (73°F) coil temperature ≤ 250 mW
Temperature Rise	typ. 20 K (36°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 see Approved ratings
Operate Time max. typ.	(at nominal coil voltage) 10 ms 7 ms
Release Time max. typ.	(at nom. coil voltage, without coil suppression) 5 ms 3 ms
Dielectric Strength coil to contacts between open contacts	(at sea level for 1 min.) 5000 VAC 1000 VAC
Insulation Resistance	1000 MΩ (min.) at 23°C, 500 VDC, 50% RH
Isolation spacing clearance creepage	(coil to contact) ≥ 10 mm ≥ 10 mm
Insulation coil to contacts	 Reinforced insulation (rated insulation voltage: 250 VAC, pollution degree: 3, overvoltage category: III)
Temperature Range operating	(at nominal coil voltage) -40°C (-40°F) to 85°C (185°F)
Vibration resistance make contact (NO) break contact (NC)	 1.5 mm DA at 10–55 Hz 0.8 mm DA at 10–55 Hz
Shock resistance make contact (NO) break contact (NC)	 10 g 5 g
Enclosure protection category material group flammability	PBT RT II - flux proof, RT III - wash tight 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
Cleaning max. solvent temp. max. immersion time	(RT III wash tight types only) 80°C (176°F) 30 seconds
Dimensions and Weight	28.5 mm x 10.1 mm x 12.5 mm, 8 grams
Compliance	UL 508, IEC 61810-1, RoHS, REACH
Agency Approvals VDE UL/CUR	 40021878 E43203
Packing (pcs.)	20 per plastic tube 1000 per carton box

AZ6963

COIL VOLTAGE SPECIFICATIONS

Voltage [VDC]			Resistance [Ω] ±10%	Power (ref.) [mW]
nominal	must operate	max.		nominal
5	3.5	11.6	113	221
6	4.2	14.0	164	219
9	6.3	20.8	360	225
12	8.4	27.2	620	232
18	12.6	39.4	1295	250
24	16.8	53.1	2350	245

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. Preferred coil voltages in bold face numbers.
4. Values for coil power for reference only.

ORDERING DATA

AZ6963-□□□-□□D□□

Plating option
nil: non plated
A: gold plated contacts

Sealing option
nil: RTII - flux proof - non sealed
E: RTIII - wash tight - sealed

Nominal coil voltage
see coil voltage specifications tables

Contact material
B: silver nickel - AgNi
E: silver tin oxide - $AgSnO_2$

Contact arrangement
1A: 1 Form A (SPST-NO)
1C: 1 Form C (SPDT)

Example ordering data

AZ6963-1AE-24D — 1 Form A (SPST-NO), silver tin oxide, 24 VDC nominal coil voltage, flux proof, non gold plated

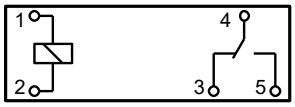
AZ6963-1CB-12DE — 1 Form C (SPDT), silver nickel, 12 VDC nominal coil voltage, wash tight version, non gold plated

WIRING DIAGRAMS

Viewed towards terminals.

1 Form A

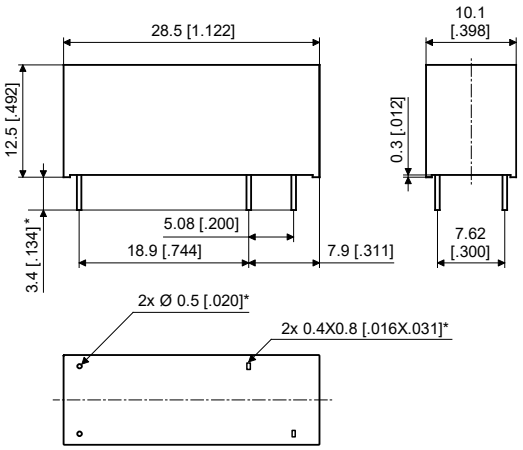
1 Form C



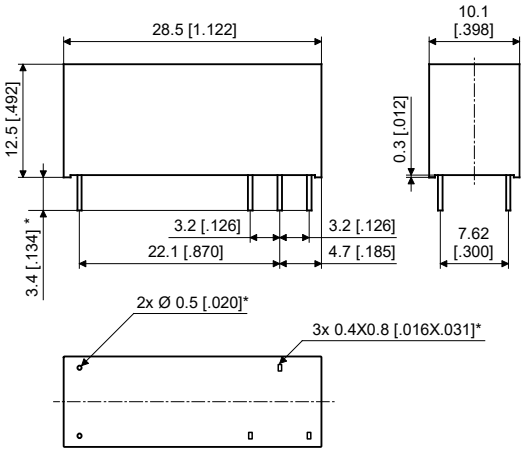
MECHANICAL DATA

Dimensions in mm with imperial equivalents in parentheses.
Notes: * Pin dimensions for reference only and given without tin coating.

1 Form A



1 Form C

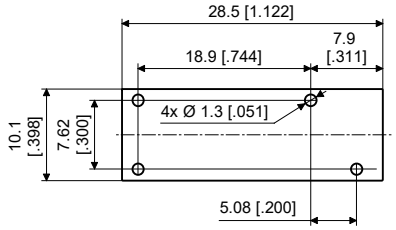


CAD data in attachment of this datasheet.

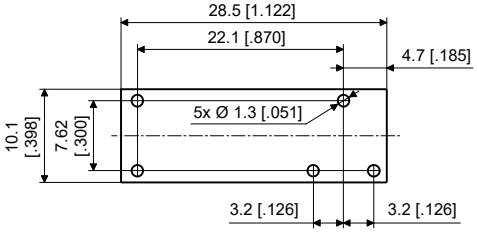
PCB FOOTPRINT

Layout recommendation. Dimensions in mm with imperial equivalents in parentheses.
Viewed towards terminals.

1 Form A

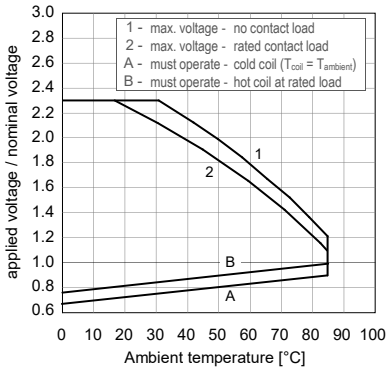


1 Form C

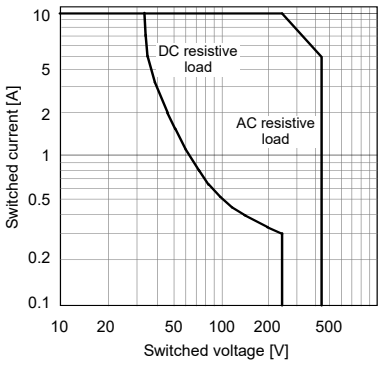


CHARACTERISTICS

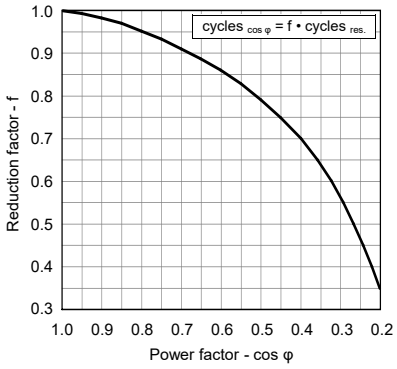
Coil operative range



Switching capacity



AC inductive loads life reduction



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* voltage, 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. Coil suppression circuits such as diodes, etc. in parallel to the coil will lengthen the release time. We recommend using suppression circuits with a breakdown voltage of approx. 2 times the nominal coil voltage in order to achieve a quick release time.
16. 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.

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

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