

# AZ2150

## MINIATURE POWER RELAY

### FEATURES

- 40 Amp switching capability
- 1 Form A, B and C contacts available
- Life expectancy to 10 million operations
- Class F (155°C) version available
- Available with an epoxy seal for automatic wave soldering and immersion cleaning
- Proof Tracking Index (PTI/CTI) 175
- UL, CUR file E44211 with versions meeting UL 508 and UL 873 spacing and contact rating requirements
- VDE certificate 40023154 (AZ2150-1A and 1C only)



### CONTACTS

|   |  |
|---|--|
| <b>Arrangement</b>  | SPST-N.O. (1 Form A)<br>SPST-N.C. (1 Form B)<br>SPDT (1 Form C)  |
| <b>Ratings (max.)</b><br>switched power<br>switched current<br>switched voltage | (resistive load)<br>900 W or 10000 VA<br>40 A (Form A), 30 A (Form B)<br>30VDC* or 300VAC<br><br>* Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.   |
| <b>Rated Loads</b><br>UL/CUR<br><br>VDE   | See pg.2 for UL/CUR approved contact ratings<br><br><b>1 Form A - class F coil wire, AgCdO</b><br>25 A at 250 VAC, 10k cycles, resistive<br><b>1 Form A - class B coil wire, AgCdO</b><br>20 A at 250 VAC, 10k cycles, resistive<br><b>1 Form C, AgCdO</b><br>NO: 20 A at 250 VAC, 10k cycles, resistive<br>NC: 10 A at 250 VAC, 10k cycles, resistive |
| <b>Contact materials</b>  | AgSnO <sub>2</sub> (silver tin oxide)<br>AgCdO (silver cadmium oxide)  |
| <b>Contact resistance</b><br>initial  | (load contact, voltage drop method)<br>≤ 20 mΩ   |

### COIL

|  |  |
|--|--|
| <b>Nominal coil DC voltages</b>  | 5, 6, 9, 12, 15, 18, 24, 48, 70, 110   |
| <b>Dropout voltage</b>   | > 10% of nominal coil voltage  |
| <b>Holding voltage</b>   | > 35% of nominal coil voltage  |
| <b>Coil power</b><br>nominal<br>max. continuous<br><br>at pickup voltage | (at 23°C)<br>0.9 W<br>2.2 W at 20°C (68°F) ambient<br>1.8 W at 40°C (104°F) ambient<br>500 mW (typ.) |
| <b>Temperature Rise</b>  | 43 K (77°F) at nom. coil voltage   |
| <b>Max. temperature</b>  | 130°C (266°F) - class B coil wire<br>155°C (311°F) - class F coil wire                               |

### GENERAL DATA

|   |   |
|---|---|
| <b>Life Expectancy</b><br>mechanical<br>electrical                            | (minimum operations)<br>1 x 10 <sup>7</sup><br>1 x 10 <sup>5</sup> at 30 A 125 VAC resistive (N.O.)                                     |
| <b>Operate Time</b>   | 8 ms (typ.), 12 ms (max.)<br>at nominal coil voltage  |
| <b>Release Time</b>   | 3.5 ms (typ.), 5 ms (max.)<br>at nominal coil voltage, w/o coil suppression   |
| <b>Dielectric Strength</b><br>coil to load contacts<br><br>open load contacts | (at sea level for 1 min.)<br>2500 V <sub>RMS</sub><br>4000 V <sub>RMS</sub> (high dielectric strength version)<br>1500 V <sub>RMS</sub> |
| <b>Insulation Resistance</b>  | 1000 MΩ (min.) at 20°C, 500 VDC, 50% RH   |
| <b>Temperature Range</b><br>operating   | (at nominal coil voltage)<br>-55°C (-67°F) to 85°C (185°F) - class B coil<br>-55°C (-67°F) to 105°C (221°F) - class F coil              |
| <b>Vibration resistance</b>   | 0.062" (1.5 mm) DA at 10–55 Hz  |
| <b>Shock</b>  | 20 g  |
| <b>Enclosure</b><br>flammability  | P.B.T. polyester<br>UL94 V-0  |
| <b>Terminals</b>  | Tinned copper alloy, P. C.  |
| <b>Soldering</b><br>max. temperature<br>max. time                             | 270 °C (518°F)<br>5 s   |
| <b>Cleaning</b><br>max. Solvent Temp.<br>max. Immersion Time                  | 80°C (176°F)<br>30 seconds  |
| <b>Dimensions</b><br>length<br>width<br>height                                | 31.8 mm (1.25")<br>26.9 mm (1.06")<br>19.1 mm (0.75")   |
| <b>Weight</b>   | 25 grams (approx.)  |
| <b>Compliance</b>   | UL 508, IEC 61810-1   |
| <b>Packing unit in pcs</b>  | 40 per plastic tray / 400 per carton box  |

**ZETTLER**

# AZ2150

## UL/CUR APPROVED CONTACT RATINGS (AgCdO)

| Load type                   | Cycles                  | Volts   | Form A               | Form B           | Form C               |                  |
|-----------------------------|-------------------------|---------|----------------------|------------------|----------------------|------------------|
|                             |                         |         | N.O.                 | N.C.             | N.O.                 | N.C.             |
| General purpose (inductive) | 100,000                 | 240 VAC | 30 A                 | 15 A             | 30 A                 | 15 A             |
|                             | 30,000                  | 277 VAC | 30 A                 | 30 A             | 30 A                 | 30 A             |
| Resistive                   | 100,000                 | 240 VAC | 30 A                 | 15 A             | -                    | -                |
|                             | 100,000                 | 30 VDC  | 20 A                 | 10 A             | 20 A                 | 10A              |
|                             | 100,000                 | 277 VAC | 20 A                 | -                | -                    | -                |
|                             | 100,000 <sup>1)</sup>   | 240 VAC | 15 A                 | -                | -                    | -                |
|                             | 30,000 <sup>1)</sup>    | 250 VAC | 23 A                 | -                | -                    | -                |
|                             | 25,000                  | 240 VAC | 20 A                 | 10 A             | 20 A                 | 10 A             |
|                             | 6,000                   | 277 VAC | 12 A                 | 6 A              | 12 A                 | 6 A              |
|                             | 6,000                   | 250 VAC | 40 A                 | -                | 40 A                 | -                |
| Ballast                     | 6,000                   | 277 VAC | 6 A                  | 3 A              | 6 A                  | 3 A              |
| Pilot Duty                  | 100,000                 | 277 VAC | 764 VA               | -                | 764 VA               | -                |
|                             | 100,000                 | 125 VAC | 690 VA               | -                | 690 VA               | -                |
|                             | 30,000                  | 125 VAC | 800 VA               | -                | 800 VA               | -                |
|                             | 6,000                   | 240 VAC | 1152 VA              | 768 VA           | 1152 VA              | 768 VA           |
|                             | 6,000                   | 125 VAC | 800 VA               | 290 VA           | 800 VA               | 290 VA           |
| Motor Load                  | 100,000                 | 125 VAC | ¾ HP                 | -                | ¾ HP                 | -                |
|                             | 100,000                 | 277 VAC | ¾ HP                 | -                | ¾ HP                 | -                |
|                             | 30,000                  | 125 VAC | 1 HP                 | -                | 1 HP                 | -                |
|                             | 6,000                   | 125 VAC | 1 HP                 | ¼ HP             | 1 HP                 | ¼ HP             |
|                             | 6,000                   | 240 VAC | 2 HP                 | 1 HP             | 2 HP                 | 2 HP             |
|                             | 6,000 <sup>3)</sup>     | 240 VAC | 3 HP                 | -                | -                    | -                |
| Tungsten                    | 6,000                   | 120 VAC | 5 A                  | 3 A              | 5 A                  | 3 A              |
|                             | 6,000                   | 240 VAC | 5 A                  | 3 A              | 5 A                  | 3 A              |
|                             | 6,000                   | 125 VAC | 15 A                 | -                | 15 A                 | -                |
| TV-5                        | 25,000                  | 120 VAC | TV-5                 | -                | TV-5                 | TV-3             |
| TV-3                        | 25,000                  | 120 VAC | -                    | TV-3             | -                    | TV-3             |
| Definite Purpose            | 100,000                 | 277 VAC | 60 LRA<br>20 FLA     | -                | 60 LRA<br>20 FLA     | -                |
|                             | 100,000                 | 125 VAC | 82.8 LRA<br>27 FLA   | -                | 82.8 LRA<br>27 FLA   | -                |
|                             | 100,000 <sup>2)4)</sup> | 240 VAC | 75 LRA<br>15 FLA     | -                | -                    | -                |
|                             | 30,000                  | 240 VAC | 80 LRA<br>30 FLA     | 33 LRA<br>10 FLA | 60 LRA<br>30 FLA     | 33 LRA<br>10 FLA |
|                             | 30,000                  | 125 VAC | 96 LRA<br>30 FLA     | 33 LRA<br>10 FLA | 60 LRA<br>30 FLA     | 33 LRA<br>10 FLA |
|                             | 30,000 <sup>2)</sup>    | 240 VAC | 60 LRA<br>20 FLA     | -                | 60 LRA<br>20 FLA     | -                |
|                             | 30,000 <sup>2)</sup>    | 125 VAC | 60 LRA<br>20 FLA     | 30 LRA<br>12 FLA | 60 LRA<br>20 FLA     | 30 LRA<br>12 FLA |
|                             | 30,000 <sup>2)</sup>    | 120 VAC | 82.8 LRA<br>13.8 FLA | -                | 82.8 LRA<br>13.8 FLA | -                |

### Notes to table UL/CUR APPROVED CONTACT RATINGS—AgCdO

- 1) Ambient temperature: 98°C max. for sealed version, 105°C max. for unsealed class F version (reduced contact load)
- 2) Ambient temperature: 85°C
- 3) Ambient temperature: 65°C
- 4) Tested per UL 60730-1A/CSA 60730-1A using 1 sec. On, 9 sec. Off at 0.4 to 0.5 power factor for overload test

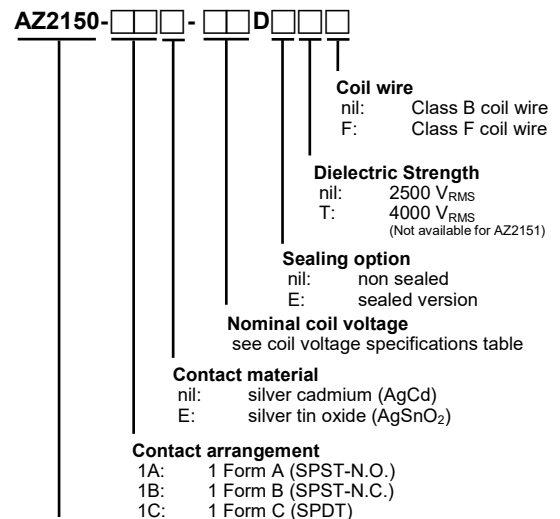
## UL/CUR APPROVED CONTACT RATINGS (AgSnO2)

| Load type   | Cycles                | Volts   | Form A | Form B | Form C |      |
|-------------|-----------------------|---------|--------|--------|--------|------|
|             |                       |         | N.O.   | N.C.   | N.O.   | N.C. |
| General Use | 100,000               | 125 VAC | 30 A   | 15 A   | 30 A   | 15 A |
|             | 100,000               | 240 VAC | 20 A   | 15 A   | 20 A   | 15 A |
|             | 30,000                | 277 VAC | 30 A   | 30 A   | 30 A   | 30 A |
|             | 100,000               | 30 VDC  | 20 A   | 10 A   | 20 A   | 10 A |
| Resistive   | 6,000                 | 250 VAC | 40 A   | -      | -      | -    |
|             | 100,000 <sup>1)</sup> | 240 VAC | 30 A   | -      | -      | -    |
|             | 80,000 <sup>2)</sup>  | 240 VAC | 20.3 A | -      | 20.3 A | -    |
|             | 100,000 <sup>2)</sup> | 240 VAC | 18 A   | -      | 18 A   | -    |
|             | 6,000 <sup>2)</sup>   | 240 VAC | -      | 17 A   | -      | 17 A |
| Motor Load  | 6,000                 | 250 VAC | 1 HP   | -      | 1 HP   | 1 HP |

### Notes to table UL/CUR APPROVED CONTACT RATINGS—AgSnO

- 1) Ambient temperature: 70°C
- 2) Ambient temperature: 105°C

## ORDERING DATA



### Series

AZ2150: 1/8" Clearance, 1/4" Creepage meeting UL 508 Group A spacing and UL 873 refrigeration and safety control requirements.

AZ2151: 1/16" Clearance, 1/8" Creepage meeting UL 508 Group B spacing requirements.

### Example ordering data

- AZ2150-1A-9D 4 terminals, 1 Form A, AgCdO contacts, 9 VDC nominal coil voltage, non sealed, class B coil wire
- AZ2150-1CE-24DEF 5 terminals, 1 Form C, AgSnO<sub>2</sub> contacts, 24 VDC nominal coil voltage, sealed, class F coil wire
- AZ2151-1C-70DE 6 terminals, 1 Form C, AgCdO contacts, 70 VDC nominal coil voltage, sealed, class B coil wire

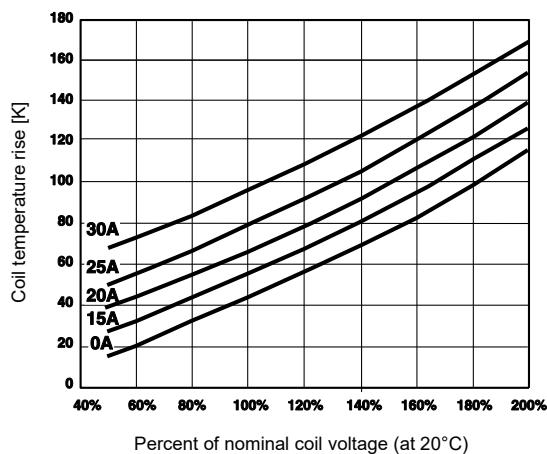
# AZ2150

## COIL VOLTAGE SPECIFICATIONS

| Nominal Coil VDC | Must Operate VDC | Max. Continuous VDC | Resistance Ohm $\pm 10\%$ |
|------------------|------------------|---------------------|---------------------------|
| 5                | 3.75             | 7.3                 | 27                        |
| 6                | 4.5              | 8.9                 | 40                        |
| 9                | 6.75             | 13.9                | 97                        |
| 12               | 9.0              | 17.5                | 155                       |
| 15               | 11.25            | 22.5                | 256                       |
| 18               | 13.5             | 27.4                | 380                       |
| 24               | 18.0             | 36.1                | 660                       |
| 48               | 36.0             | 68.4                | 2560                      |
| 70               | 52.5             | 104.4               | 5500                      |
| 110              | 82.5             | 163.2               | 13450                     |

Note: All values at 23°C (73°F), upright position, terminals downward.

## COIL TEMPERATURE RISE

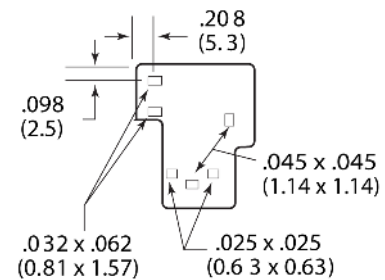
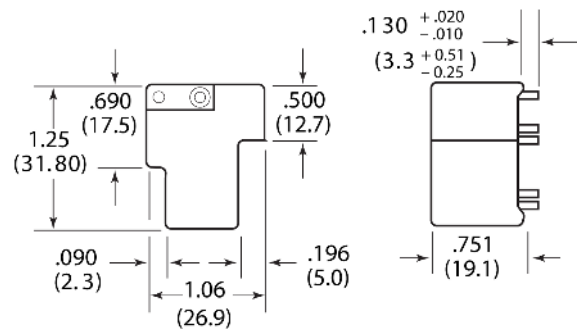


## NOTES

1. All values at 23°C (73°F).
2. Relay may pull in with less than "Must Operate" value.
3. Provide sufficient PCB cross section as heat spreader on terminals.
4. Specifications subject to change without notice.

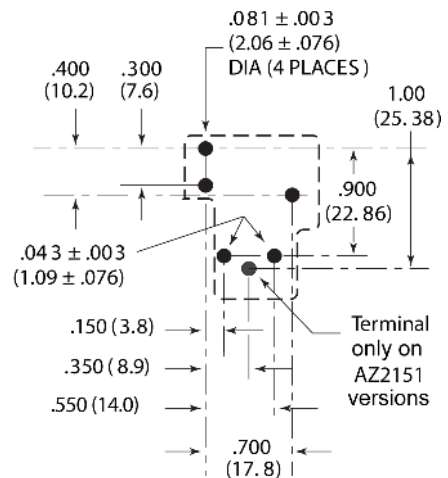
## MECHANICAL DATA

Dimensions in inches with metric equivalents in parentheses. Tolerance:  $\pm .010"$



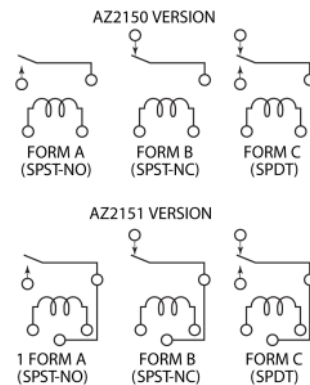
## PC BOARD LAYOUT

Dimensions in inches with metric equivalents in parentheses. Viewed towards terminals.



## WIRING DIAGRAMS

Viewed towards terminals



# AZ2150

## 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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