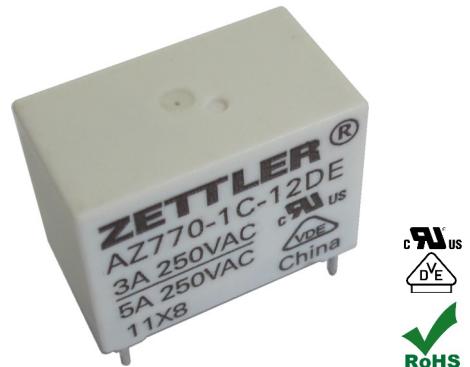


## SPDT SUBMINIATURE POWER RELAY

## FEATURES

- 5 kV dielectric strength, 10 kV surge
- 8 mm creepage and clearance
- Proof tracking index (PTI/CTI) 250
- 5 A switching capability (high capacity version: 10 A)
- 20 A high inrush current (1 Form A)
- Epoxy sealed version available
- UL Class F insulation (155°C) standard
- EN 60335-1 (GWT) approved version available
- Reinforced insulation, EN 60730-1 (VDE 0631, part 1), 1 Form A: EN 60335-1 (VDE 0700, part 1)
- UL, CUR file E44211
- VDE certificate 40006815



## CONTACTS

Arrangement	SPST (1 Form A), SPDT (1 Form C)
Ratings (max.) switched power switched current switched voltage	(resistive load) 150 W or 1250 VA 5 A 30 VDC* or 400 VAC
High cap. version switched power switched current switched voltage	150 W or 2500 VA 10 A 30 VDC* or 400 VAC
	* Note: If switching voltage is greater than 30 VDC, special precautions must be taken. Please contact the factory.
Rated Loads UL	<p><b>1 Form A</b> 5 A at 250 VAC, resistive, 100k cycles 5 A at 30 VDC, resistive, 100k cycles 3 A at 250 VAC, cos phi 0.4, 100k cycles 1/8 HP at 125/250 VAC, 100k cycles C300 pilot duty, 125/250 VAC, 100k cycles TV-2 at 120 VAC</p> <p><b>1 Form C</b> 3 A at 250 VAC, resistive, 100k cycles 3 A at 30 VDC, resistive, 100k cycles</p>
VDE	<p><b>1 Form A</b> 5 A at 250 VAC, 85°C, 100k cycles 2 A at 250 VAC, cos phi 0.5, 85°C, 30k cycles 3 A at 400 VAC, 85°C, 100k cycles *5 A at 30 VDC, 85°C, 10k cycles * sensitive coil version only</p> <p><b>1 Form C</b> 3 A at 250 VAC, 85°C, 100k cycles ** 5 A at 250 VAC, 85°C, 100k cycles ** 2 A at 250 VAC, cos phi 0.5, 85°C, 30k cycles ** ** change-over contact tested as make contact</p>
High cap. version UL	10 A at 250 VAC, resistive, 85°C, 100k cycles 15 A at 120 VAC, resistive, 70°C, 6k cycles B300 pilot duty, 40°C 1000 W, 250 VAC, tungsten load, 40°C, 6k cycles
VDE	10 A at 250 VAC, 85°C, 15k cycles 6 A at 250 VAC, 85°C, 100k cycles *** *** standard coil version only
Contact materials	Silver nickel (standard version) Silver tin oxide (high capacity version) Gold plating available
Initial resistance	< 100 mΩ

## GENERAL DATA

<b>Life Expectancy</b> mechanical electrical High cap. version mechanical electrical	(minimum operations) $1 \times 10^6$ $1 \times 10^5$ at 5 A 250 VAC resistive $1 \times 10^6$ $1 \times 10^5$ at 10 A 250 VAC resistive
<b>Operate Time</b>	8 ms (max.) at nominal coil voltage
<b>Release Time</b>	4 ms (max.) at nominal coil voltage, without coil suppression
<b>Dielectric Strength</b>	(at sea level for 1 min.) 5000 V <sub>RMS</sub> coil to contact 1000 V <sub>RMS</sub> between open contacts
<b>Surge voltage</b> coil to contact	10,000 V (at 1.2 x 50 µs)
<b>Insulation Resistance</b>	1000 MΩ (min.) at 20°C, 500 VDC, 50% RH
<b>Insulation</b>	(according to DIN VDE 0110, IEC 60664-1) C250 Overvoltage category: III, Pollution degree: 3, Nominal voltage: 250 VAC
<b>Temperature Range</b> operating	(at nominal coil voltage) -40°C (-40°F) to 85°C (185°F)
<b>Vibration resistance</b>	1.5 mm (0.062") DA at 10–55 Hz N.C. contact: 0.6 mm (0.024") if vibration is in length direction
<b>Shock</b>	10 g operating, 100 g damage
<b>Enclosure</b> type material group	P.B.T. polyester flux proof, wash tight IIIa
<b>Terminals</b>	Tinned copper alloy, P. C.
<b>Soldering</b> max. Temperature max. Time	270°C (518°F) 5 seconds
<b>Cleaning</b> max. Solvent Temp. max. Immersion Time	80°C (176°F) 30 seconds
<b>Dimensions</b> length width height	17.85 mm (0.703") 10.35 mm (0.407") 12.95 mm (0.510")
<b>Weight</b>	4.6 grams (approx.)
<b>Packing unit in pcs</b>	100 per tray / 1000 per carton box
<b>Compliance</b>	UL 508, IEC 61810-1, IEC60335-1 (GWT), RoHS, REACH

## COIL

Nominal coil DC voltages	see coil voltage specifications tables
Dropout	> 5% of nominal coil voltage
Nominal power	(approx.)
standard coil	450 mW
sensitive coil - standard version	200 mW
sensitive coil - high cap. Version	230 mW
Power at pickup voltage	(typ.)
standard coil	253 mW
sensitive coil - standard version	113 mW
sensitive coil - high cap. Version	130 mW
Max. continuous dissipation	760 mW at 20°C (68°F) ambient
Temperature Rise	(at nominal coil voltage)
standard coil	41 K (74°F)
sensitive coil - standard version	22 K (40°F)
sensitive coil - high cap. Version	27 K (49°F)
Max. temperature	155°C (311°F)

## COIL VOLTAGE SPECIFICATIONS

### Standard Coil

Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Resistance Ohm $\pm 10\%$
3	2.25	3.9	20
5	3.75	6.6	55
6	4.5	7.8	80
9	6.75	11.7	180
12	9.0	15.6	320
18	13.5	23.4	720
24	18.0	31.2	1280
48	36.0	62.4	5120

### Sensitive Coil - Standard Version

Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Resistance Ohm $\pm 10\%$
3	2.25	5.1	45
5	3.75	8.5	125
6	4.5	10.2	180
9	6.75	15.3	400
12	9.0	20.4	720
18	13.5	30.6	1600
24	18.0	40.8	2800

### Sensitive Coil - High Capacity Version

Nominal Coil VDC	Must Operate VDC	Max. Continuous VDC	Resistance Ohm $\pm 10\%$
3	2.25	5.1	38
5	3.75	8.5	108
6	4.5	10.2	155
9	6.75	15.3	350
12	9.0	20.4	620
18	13.5	30.6	1390
24	18.0	40.8	2480
48	36.0	81.6	9920

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

## ORDERING DATA

### Standard Version

AZ770--D

**Material option**  
nil: standard version  
GW: EN 60335-1 (GWT) approved

**Plating option**  
nil: non plated  
G: Gold plating

**Footprint**  
nil: Type 1 footprint  
K: Type 2 footprint

**Sealing option**  
nil: non sealed  
E: sealed version

**Coil option**  
nil: standard coil  
S: sensitive coil (1 Form A contacts only)

**Nominal coil voltage**  
see coil voltage specifications tables

**Contact arrangement**  
1A: 1 Form A (SPST)  
1C: 1 Form C (SPDT)

### High Capacity Version

AZ770T-1AE-D

**Material option**  
nil: standard version  
GW: EN 60335-1 (GWT) approved

**Plating option**  
nil: non plated  
G: Gold plating

**Footprint**  
nil: Type 1 footprint  
K: Type 2 footprint

**Sealing option**  
nil: non sealed  
E: sealed version

**Coil option**  
nil: standard coil  
S: sensitive coil

**Nominal coil voltage**  
see coil voltage specifications tables

**Contact arrangement**  
1A: 1 Form A (SPST)

### Example ordering data

AZ770-1A-5D Standard version, 1 Form A, 5 VDC nominal coil voltage, standard coil, non sealed, type 1 footprint, non gold plated

AZ770-1C-12DSEG Standard version, 1 Form C, 12 VDC nominal coil voltage, sensitive coil, sealed, type 1 footprint, gold plated

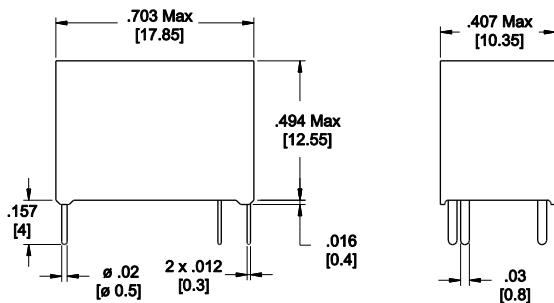
AZ770T-1AE-24DS High capacity version, 1 Form A, 24 VDC nominal coil voltage, sensitive coil, non sealed, type 1 footprint, non gold plated

AZ770-1A-9DSGW Standard version, 1 Form A, 9 VDC nominal coil voltage, sensitive coil, EN 60335-1 (GWT) approved

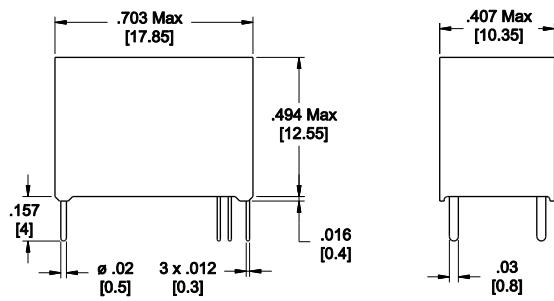
**AZ770**

## MECHANICAL DATA

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



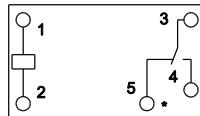
## Type 1



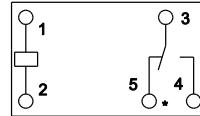
## Type 2

## WIRING DIAGRAMS

Viewed towards terminals.  
Shown in deenergized condition.



## Type 1



## Type 2

\* Not used on 1 Form A version

## NOTES

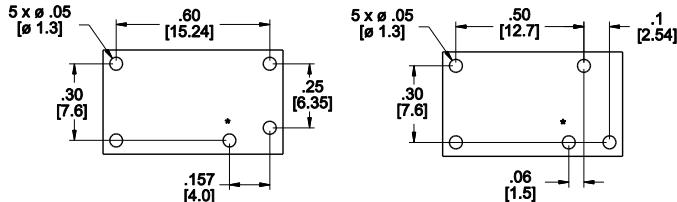
1. All values at reference temperature of 23°C (73°F) unless stated otherwise.
2. Relay may pull in with less than "Must Operate" value.
3. Coil suppression circuits such as diodes, etc. in parallel to the coil will lengthen the release time.
4. Relay adjustment may be affected if excessive shock is applied to the relay.
5. Relay adjustment may be affected if undue pressure is exerted on the relay case.
6. Specifications subject to change without notice.

## PC BOARD LAYOUT

### Recommendation for PC board layout.

Recommendation for PCB board layout.  
Dimensions in inches with metric equivalents in parentheses.  
Viewed towards terminals.

Viewed towards terminals.



### Type 1

## Type 2

\* Not used on 1 Form A version

# AZ770

## 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.

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