



**Low profile:**  
**15.7mm .618inch height**  
**1a/1c 16A power relay**

LZ RELAYS (ALZ)



**RoHS compliant**

Protective construction: Flux-resistant type

### FEATURES

- 1. Low profile type with height of 15.7 mm .618 inch**  
 Slim, low profile type with dimensions of 28.8 (L) × 12.5 (W) × 15.7 (H) mm  
 1.134 (L) × .492 (W) × .618 (H) inch.
- 2. High insulation resistance**  
 Superior insulation characteristics have been achieved by maintaining an insulation distance between coil and contacts of at least 10 mm for both creepage distance and clearances. Furthermore, anti-surge voltage is 10 kV and higher. (Supports European reinforced insulation requirement.)
- 3. Superior heat resistance**  
 Can be used in ambient temperatures up to 85°C 185°F for the class B and 105°C 221°F for the class F.
- 4. Low operating power**  
 Power saved with a nominal operating power of only 400 mW.

- 5. Conforms to the various safety standards:**  
 UL/C-UL, VDE approved.
- 6. Superior heat resistance and tracking resistance**  
 EN60335-1 GWT compliant (Tested by VDE) type available

### TYPICAL APPLICATIONS

- 1. Household electrical appliances**  
 TV, CATV, Audio equipment, Microwave ovens, and Heaters, etc.
- 2. Office equipment**  
 Copy machines, Packaged air conditioners, and Vending machines
- 3. Industrial equipment**  
 Machine tools, Robots, and Temperature controllers

### ORDERING INFORMATION



Notes: 1. Certified by UL/C-UL and VDE  
 2. Tube packing type is also available. Please consult us.

## TYPES

| Contact arrangement | Coil voltage | Flux-resistant type |                    | Sealed type        |                    |
|---------------------|--------------|---------------------|--------------------|--------------------|--------------------|
|                     |              | Class B insulation  | Class F insulation | Class B insulation | Class F insulation |
|                     |              | Part No.            | Part No.           | Part No.           | Part No.           |
| 1 Form C            | 5 V DC       | ALZ11B05W           | ALZ11F05W          | ALZ12B05W          | ALZ12F05W          |
|                     | 9 V DC       | ALZ11B09W           | ALZ11F09W          | ALZ12B09W          | ALZ12F09W          |
|                     | 12 V DC      | ALZ11B12W           | ALZ11F12W          | ALZ12B12W          | ALZ12F12W          |
|                     | 18 V DC      | ALZ11B18W           | ALZ11F18W          | ALZ12B18W          | ALZ12F18W          |
|                     | 24 V DC      | ALZ11B24W           | ALZ11F24W          | ALZ12B24W          | ALZ12F24W          |
| 1 Form A            | 5 V DC       | ALZ51B05W           | ALZ51F05W          | ALZ52B05W          | ALZ52F05W          |
|                     | 9 V DC       | ALZ51B09W           | ALZ51F09W          | ALZ52B09W          | ALZ52F09W          |
|                     | 12 V DC      | ALZ51B12W           | ALZ51F12W          | ALZ52B12W          | ALZ52F12W          |
|                     | 18 V DC      | ALZ51B18W           | ALZ51F18W          | ALZ52B18W          | ALZ52F18W          |
|                     | 24 V DC      | ALZ51B24W           | ALZ51F24W          | ALZ52B24W          | ALZ52F24W          |

Standard packing: Carton: 100 pcs.; Case: 500 pcs.

Notes: 1. Tube packing type is also available. Please consult us.

2. Carton packing symbol "W" is not marked on the relay.

3. EN60335-1 GWT compliant types available. When ordering, please add suffix "T".

Ex. ALZ51F12TW

## RATING

## 1. Coil data

| Nominal coil voltage | Pick-up voltage (at 20°C 68°F)      | Drop-out voltage (at 20°C 68°F)     | Nominal operating current [ $\pm 10\%$ ] (at 20°C 68°F) | Coil resistance [ $\pm 10\%$ ] (at 20°C 68°F) | Nominal operating power (at 20°C 68°F) | Max. applied voltage (at 20°C 68°F) |
|----------------------|-------------------------------------|-------------------------------------|---------------------------------------------------------|-----------------------------------------------|----------------------------------------|-------------------------------------|
| 5 V DC               | Max. 70%V nominal voltage (Initial) | Min. 10%V nominal voltage (Initial) | 80 mA                                                   | 63 $\Omega$                                   | 400 mW                                 | 130%V of nominal voltage            |
| 9 V DC               |                                     |                                     | 44.4 mA                                                 | 203 $\Omega$                                  |                                        |                                     |
| 12 V DC              |                                     |                                     | 33.3 mA                                                 | 360 $\Omega$                                  |                                        |                                     |
| 18 V DC              |                                     |                                     | 22.2 mA                                                 | 810 $\Omega$                                  |                                        |                                     |
| 24 V DC              |                                     |                                     | 16.7 mA                                                 | 1,440 $\Omega$                                |                                        |                                     |

## 2. Specifications

| Characteristics                                  | Item                                                            | Specifications                                                                                                                          |                                                                                                                |
|--------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Contact                                          | Arrangement                                                     | 1 Form C, 1 Form A                                                                                                                      |                                                                                                                |
|                                                  | Contact resistance (Initial)                                    | Max. 100 m $\Omega$ (By voltage drop 6V DC 1A)                                                                                          |                                                                                                                |
|                                                  | Contact material                                                | AgSnO <sub>2</sub> type                                                                                                                 |                                                                                                                |
| Rating                                           | Nominal switching capacity (resistive load)                     | 16A 250V AC                                                                                                                             |                                                                                                                |
|                                                  | Max. switching power (resistive load)                           | 4,000V A                                                                                                                                |                                                                                                                |
|                                                  | Max. switching voltage                                          | 440V AC                                                                                                                                 |                                                                                                                |
|                                                  | Max. switching current                                          | 16A                                                                                                                                     |                                                                                                                |
|                                                  | Nominal operating power                                         | 400mW                                                                                                                                   |                                                                                                                |
|                                                  | Min. switching capacity (reference value)*1                     | 100mA 5V DC                                                                                                                             |                                                                                                                |
| Electrical characteristics                       | Insulation resistance (Initial)                                 | Min. 1,000 M $\Omega$ (at 500V DC) Measurement at same location as "Breakdown voltage" section.                                         |                                                                                                                |
|                                                  | Breakdown voltage (Initial)                                     | Between open contacts                                                                                                                   | 1,000 Vrms for 1 min. (Detection current: 10mA)                                                                |
|                                                  |                                                                 | Between contacts and coil                                                                                                               | 5,000 Vrms for 1 min. (Detection current: 10mA)                                                                |
|                                                  | Temperature rise (coil)                                         | Max. 55°C 131°F [with nominal coil voltage and at 16A contact carrying current (resistance method) at 20°C 68°F]                        |                                                                                                                |
|                                                  | Surge breakdown voltage*2 (Between contacts and coil) (Initial) | 10,000 V                                                                                                                                |                                                                                                                |
|                                                  | Operate time (at nominal voltage) (at 20°C 68°F)                | Max. 15ms (excluding contact bounce time)                                                                                               |                                                                                                                |
| Release time (at nominal voltage) (at 20°C 68°F) | Max. 5ms (excluding contact bounce time, without diode)         |                                                                                                                                         |                                                                                                                |
| Mechanical characteristics                       | Shock resistance                                                | Functional                                                                                                                              | 100 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11ms; detection time: 10 $\mu$ s)                          |
|                                                  |                                                                 | Destructive                                                                                                                             | 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6ms)                                                     |
|                                                  | Vibration resistance                                            | Functional                                                                                                                              | 10 to 55Hz at double amplitude of 1.5mm (Detection time: 10 $\mu$ s) (Only the N.C. side of 1 Form C is 0.8mm) |
|                                                  |                                                                 | Destructive                                                                                                                             | 10 to 55Hz at double amplitude of 1.5mm                                                                        |
| Expected life                                    | Mechanical (at 180 times/min.)                                  | Min. 10 <sup>7</sup>                                                                                                                    |                                                                                                                |
|                                                  | Electrical (at 20 times/min.)*3                                 | N.O.: Min. 10 <sup>5</sup> , N.C.: Min. 5 $\times$ 10 <sup>4</sup>                                                                      |                                                                                                                |
| Conditions                                       | Conditions for operation, transport and storage*4, *5           | Ambient temperature: -40°C to +85°C -40°F to +185°F (Class B), Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) |                                                                                                                |
|                                                  | Max. operating speed                                            | 20 times/min. (at nominal switching capacity)                                                                                           |                                                                                                                |
| Unit weight                                      |                                                                 | Approx. 12 g .42 oz                                                                                                                     |                                                                                                                |

Notes: \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*2. Wave is standard shock voltage of  $\pm 1.2 \times 50\mu$ s according to JEC-212-1981.

\*3. In order to obtain the full rated life cycles, the relay should be properly vented by removing the vent nib. More detail, please look at caution for NOTES.

\*4. Class F type is ambient temperature 105°C 221°F.

\*5. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

\*Please note that some of the specifications listed above may not comply with overseas standards.

## REFERENCE DATA

1. Max. switching power (AC resistive load)

2. Max. switching power (DC resistive load)

3. Coil temperature rise

Sample: ALZ11F12, 5pcs.  
Measured portion: coil inside  
Contact current: 0 A, 16 A



## DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

### 1. 1 Form A type

**CAD Data**



#### External dimensions



#### PC board pattern



Tolerance:  $\pm 0.1 \pm 0.004$

#### Schematic (Bottom view)



|                                            |                     |
|--------------------------------------------|---------------------|
| <b>Dimension:</b>                          | <b>Tolerance</b>    |
| Less than 1mm .039inch:                    | $\pm 0.1 \pm 0.004$ |
| Min. 1mm .039inch less than 3mm .118 inch: | $\pm 0.2 \pm 0.008$ |
| Min. 3mm .118 inch:                        | $\pm 0.3 \pm 0.012$ |

### 2. 1 Form C type

**CAD Data**



#### External dimensions



#### PC board pattern



Tolerance:  $\pm 0.1 \pm 0.004$

#### Schematic (Bottom view)



|                                            |                     |
|--------------------------------------------|---------------------|
| <b>Dimension:</b>                          | <b>Tolerance</b>    |
| Less than 1mm .039inch:                    | $\pm 0.1 \pm 0.004$ |
| Min. 1mm .039inch less than 3mm .118 inch: | $\pm 0.2 \pm 0.008$ |
| Min. 3mm .118 inch:                        | $\pm 0.3 \pm 0.012$ |

## SAFETY STANDARDS

| UL/C-UL (Recognized) |                                                                                                                                                                                       | VDE (Certified) |                               | TV rating (UL/CSA) |        |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------|--------------------|--------|
| File No.             | Contact rating                                                                                                                                                                        | File No.        | Contact rating                | File No.           | Rating |
| E43149               | 16A 277V AC, 34.8LRA/7.2FLA/120V AC, 15LRA/3FLA/120V AC<br>10LRA/3FLA 240V AC, 20A 240V AC (N.O. only)<br>16A 30V DC, 25A 240V AC, 15A 240V AC Resistive load 105°C 221°F (N.O. only) | 40000380        | 16A 250V AC (cos $\phi$ =1.0) | C-UL<br>E43149     | TV-5   |

\* CSA standard: Certified by C-UL

## NOTES

1. For cautions for use, please read

“GENERAL APPLICATION

GUIDELINES” on page B-1.

2. Electrical life (Sealed type)

In order to obtain the full rated life cycles, the relay should be properly vented by removing the vent nib after the soldering/ washing process.



# Mouser Electronics

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## Panasonic:

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