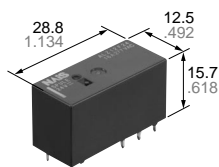


# NAIS

## 16A Low Profile Power Relay

# LZ RELAYS

### FEATURES



- Low profile size: Height 15.7 mm**  
28.8 (L)×12.5 (W)×15.7(H) mm 1.134 (L)×.492 (W)×.618(H) inch
- High insulation resistance**  
Creepage distance and clearances between contact and coil: Min. 10 mm
- UL coil insulation class B (85°C 185°F) or class F (105°C 221°F).**

- Pb free and Cd free**
- Low operating power**  
• Nominal operating power: 400mW
- Conforms to the various safety standards:**  
• UL/CSA, VDE approved.

### SPECIFICATIONS

#### Contact

|  |   |  |
|--|---|--|
| Arrangement  |   | 1 Form A, 1 Form C                                 |
| Initial contact resistance, max.<br>(By voltage drop 6 V DC 1 A) |   | 100 mΩ   |
| Contact material   |   | Silver alloy                                       |
| Rating<br>(resistive load)                                       | Nominal switching capacity                                | 16 A 250 V AC                                      |
|  | Max. switching power                                      | 4,000 V A  |
|  | Max. switching voltage                                    | 440 V AC   |
|  | Max. switching current                                    | 16 A   |
| Expected life<br>(min. operations)                               | Mechanical<br>(at 180 cpm)                                | 1 × 10 <sup>7</sup>                                |
|  | Electrical (at 20 cpm)* <sup>10</sup><br>(Resistive load) | N.O.: 10 <sup>5</sup><br>N.C.: 5 × 10 <sup>4</sup> |

#### Coil

|                         |        |
|-------------------------|--------|
| Nominal operating power | 400 mW |
|-------------------------|--------|

#### Remarks

- \* Specifications will vary with foreign standards certification ratings.  
<sup>\*1</sup> Measurement at same location as "Initial breakdown voltage" section.  
<sup>\*2</sup> Detection current: 10mA  
<sup>\*3</sup> Wave is standard shock voltage of  $\pm 1.2 \times 50\mu s$  according to JEC-212-1981  
<sup>\*4</sup> Excluding contact bounce time.  
<sup>\*5</sup> Half-wave pulse of sine wave: 0.8 ms; detection time: 10  $\mu s$   
<sup>\*6</sup> Half-wave pulse of sine wave: 6 ms  
<sup>\*7</sup> Detection time: 10  $\mu s$   
<sup>\*8</sup> Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 24).  
<sup>\*9</sup> Class F type is ambient temperature 105°C 221°F.  
<sup>\*10</sup> Electrical life was evaluated with the breathing hole open.

#### Characteristics

|   |                           |   |
|---|---------------------------|---|
| Max. operating speed (at rated load)  |                           | 20 cpm  |
| Initial insulation resistance* <sup>1</sup>   |                           | Min. 1,000 MΩ (at 500 V DC)                                       |
| Initial breakdown voltage* <sup>2</sup>   | Between open contacts     | 1,000 Vrms for 1 min.   |
|   | Between contacts and coil | 5,000 Vrms for 1 min.   |
| Initial surge voltage between contact and coil* <sup>3</sup>  |                           | Min. 10,000 V   |
| Operate time* <sup>4</sup> (at nominal voltage)   |                           | Max. 15ms (at 20°C 68°F)  |
| Release time (with diode)* <sup>4</sup><br>(at nominal voltage)   |                           | Max. 5ms (at 20°C 68°F)   |
| Temperature rise (at nominal voltage)   |                           | Max. 55°C<br>(resistance method, contact current 16 A, 20°C 68°F) |
| Shock resistance  | Functional* <sup>5</sup>  | Min. 100 m/s <sup>2</sup> {10 G}                                  |
|   | Destructive* <sup>6</sup> | Min. 1,000 m/s <sup>2</sup> {100 G}                               |
| Vibration resistance  | Functional* <sup>7</sup>  | 10 to 55Hz<br>at double amplitude of<br>1.5mm (NO), 0.82mm (NC)   |
|   | Destructive               | 10 to 55Hz<br>at double amplitude of 1.5mm                        |
| Conditions for operation, transport and storage* <sup>8</sup><br>(Not freezing and condensing at low temperature) | Ambient temp.             | -40°C to +85°C<br>-40°F to +185°F (Class B)* <sup>9</sup>         |
|   | Humidity                  | 5 to 85% R.H.   |
| Unit weight   |                           | Approx. 12 g .42 oz   |

### TYPICAL APPLICATIONS

- HVAC
- Oven ranges
- Refrigerators

### ORDERING INFORMATION

Ex. A LZ 1 2 B 12 W

| Product name | Contact arrangement        | Protective construction                  | Coil insulation class                          | Coil voltage, V DC                                     | Packing style                          |
|--------------|----------------------------|--|--|--|--|
| LZ           | 1: 1 Form C<br>2: 1 Form A | 1: Flux-resistant type<br>2: Sealed type | B: Class B insulation<br>F: Class F insulation | 05: 5<br>09: 9<br>12: 12<br>18: 18<br>24: 24<br>48: 48 | Nil: Tube packing<br>W: Carton packing |

UL/CSA approved type is standard.

- Notes: 1. Tube packing: Inner carton: 20pcs.; Case: 800pcs.  
 2. Carton packing: Inner carton: 100pcs.; Case: 500pcs.  
 3. Carton packing symbol "W" is not marked on the relay.

## TYPES

| Contact arrangement | Coil voltage, V DC | Flux-resistant type |          | Sealed type |          |
|---------------------|--------------------|---------------------|----------|-------------|----------|
|                     |                    | Class B             | Class F  | Class B     | Class F  |
| 1 Form A            | 5                  | ALZ21B05            | ALZ21F05 | ALZ22B05    | ALZ22F05 |
|                     | 9                  | ALZ21B09            | ALZ21F09 | ALZ22B09    | ALZ22F09 |
|                     | 12                 | ALZ21B12            | ALZ21F12 | ALZ22B12    | ALZ22F12 |
|                     | 18                 | ALZ21B18            | ALZ21F18 | ALZ22B18    | ALZ22F18 |
|                     | 24                 | ALZ21B24            | ALZ21F24 | ALZ22B24    | ALZ22F24 |
|                     | 48                 | ALZ21B48            | ALZ21F48 | ALZ22B48    | ALZ22F48 |
| 1 Form C            | 5                  | ALZ11B05            | ALZ11F05 | ALZ12B05    | ALZ12F05 |
|                     | 9                  | ALZ11B09            | ALZ11F09 | ALZ12B09    | ALZ12F09 |
|                     | 12                 | ALZ11B12            | ALZ11F12 | ALZ12B12    | ALZ12F12 |
|                     | 18                 | ALZ11B18            | ALZ11F18 | ALZ12B18    | ALZ12F18 |
|                     | 24                 | ALZ11B24            | ALZ11F24 | ALZ12B24    | ALZ12F24 |
|                     | 48                 | ALZ11B48            | ALZ11F48 | ALZ12B48    | ALZ12F48 |

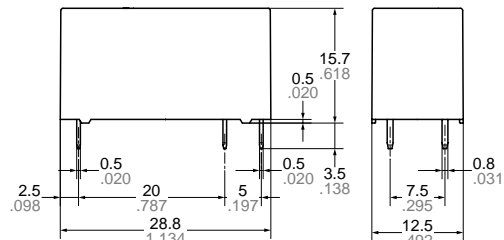
## COIL DATA

| Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating current, mA ( $\pm 10\%$ ) | Nominal operating power, W | Maximum allowable voltage, V DC |
|-----------------------|------------------------------|-------------------------------|--|--|----------------------------|---------------------------------|
| 5                     | 3.5                          | 0.5                           | 63                                       | 80   | 0.4                        | 6.5                             |
| 9                     | 6.3                          | 0.9                           | 203                                      | 44.4   |                            | 11.7                            |
| 12                    | 8.4                          | 1.2                           | 360                                      | 33.3   |                            | 15.6                            |
| 18                    | 12.6                         | 1.8                           | 810                                      | 22.2   |                            | 23.4                            |
| 24                    | 16.8                         | 2.4                           | 1,440                                    | 16.7   |                            | 31.2                            |
| 48                    | 33.6                         | 4.8                           | 5,760                                    | 8.3  |                            | 62.4                            |

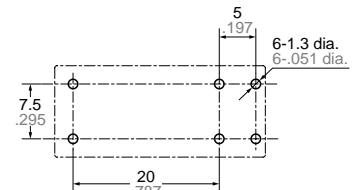
## DIMENSIONS

mm inch

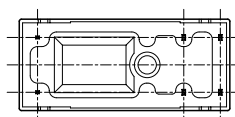
### 1. 1 Form A type



#### PC board pattern (Copper-side view)

Tolerance :  $\pm 0.1 \pm .004$ 

#### Schematic (Bottom view)



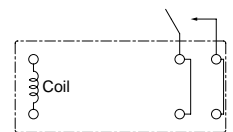
#### Dimension :

Max. 1mm .039 inch:

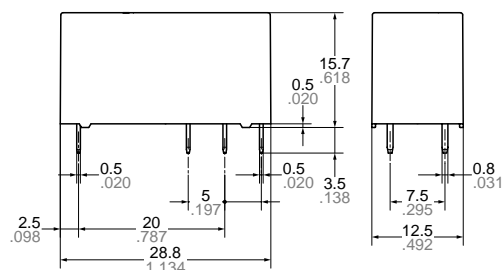
1 to 3mm .039 to .118 inch:

Min. 3mm .118 inch:

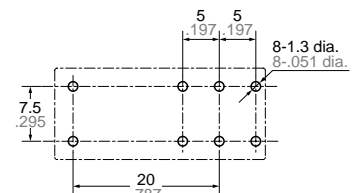
#### Tolerance

 $\pm 0.1 \pm .004$  $\pm 0.2 \pm .008$  $\pm 0.3 \pm .012$ 

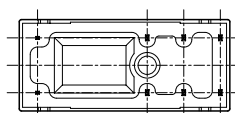
### 2. 1 Form C type



#### PC board pattern (Copper-side view)

Tolerance :  $\pm 0.1 \pm .004$ 

#### Schematic (Bottom view)



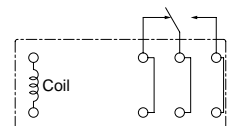
#### Dimension :

Max. 1mm .039 inch:

1 to 3mm .039 to .118 inch:

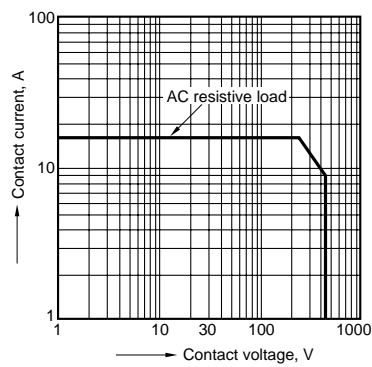
Min. 3mm .118 inch:

#### Tolerance

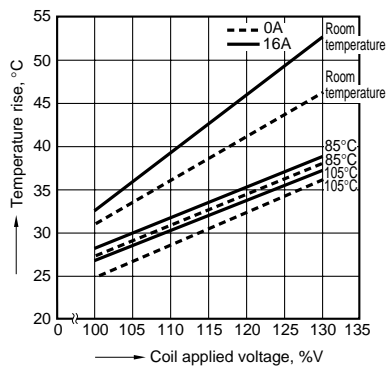
 $\pm 0.1 \pm .004$  $\pm 0.2 \pm .008$  $\pm 0.3 \pm .012$ 

REFERENCE DATA

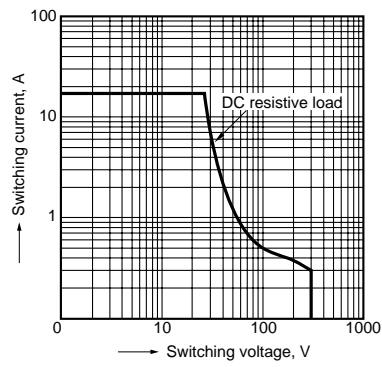
1. Max. switching power



2. Coil temperature rise



3. DC breaking capacity



For Cautions for Use, see Relay Technical Information (Page 11 to 39).