

**Panasonic**  
ideas for life

**3A Slim Power Relay**

**LJ RELAYS  
(ALJ)**



⚠ Product is discontinued.

**FEATURES**

**1. Mounting space of the 3A class minimum**

- 17.0(L)×7.0(W)×16.0(H) mm  
.670(L)×.276(W)×.630(H) inch
- At 84% that of its predecessor (comparison made with our LD Relay), the low foot print saves space.

**2. Low operating power**

Compact size, nominal operating power as low as 200mW.

**3. Perfect for small load switching of home appliances**

- 10<sup>5</sup> switching operations possible with a 3A 250V AC resistive load.
- Mechanical life: 2×10<sup>6</sup> (at 180 cpm)

**4. High insulation resistance**

Surge withstand voltage between contact and coil: 6,000 V or more.

**5. Conforms to the various safety standards**

C-UL, VDE approved.

**TYPICAL APPLICATIONS**

- Air conditioner
- Refrigerator
- Hot water units
- Fan heaters
- Microwave ovens

**SPECIFICATIONS**

**Contact**

|  |  |  |
|--|--|--|
| Arrangement  | 1 Form A                                   |  |
| Initial contact resistance, max.<br>(By voltage drop 6 V DC 1 A) | Max. 100 mΩ                                |  |
| Contact material   | Silver alloy                               |  |
| Rating<br>(resistive load)                                       | Nominal switching capacity                 | 3A 250V AC<br>3A 30V DC                                      |
|  | Max. switching power                       | 831VA (AC), 90W (DC)   |
|  | Max. switching voltage                     | 277V AC  |
|  | Max. switching current                     | 5A   |
| Expected life<br>(min. operations)                               | Mechanical (at 180 cpm)                    | 2×10 <sup>6</sup>  |
|  | Electrical (at 20 cpm)<br>(resistive load) | 5A 250V AC: 5×10 <sup>4</sup><br>3A 250V AC: 10 <sup>5</sup> |

**Coil**

|                         |        |
|-------------------------|--------|
| Nominal operating power | 200 mW |
|-------------------------|--------|

**Remarks**

- \*1 Measurement at same location as "Initial breakdown voltage" section.
- \*2 Detection current: 10mA
- \*3 Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- \*4 Excluding contact bounce time.
- \*5 Half-wave pulse of sine wave: 11 ms; detection time: 10 μs
- \*6 Half-wave pulse of sine wave: 6 ms
- \*7 Detection time: 10 μs
- \*8 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT in the "Relay Technical Information".

**Characteristics**

|   |                          |   |
|---|--------------------------|---|
| Max. operating speed  |                          | 20 cpm (at rated load)  |
| Initial insulation resistance*1   |                          | Min. 1,000 MΩ (at 500 V DC)   |
| Initial *2<br>breakdown<br>voltage  | Between open contacts    | 750 Vrms for 1 min.   |
|   | Between contact and coil | 3,000 Vrms for 1 min.   |
| Initial surge voltage between contact and coil*3  |                          | Min. 6,000 V  |
| Operate time*4 (at nominal voltage)   |                          | Max. 10ms (at 20°C 68°F)  |
| Release time (with diode)*4<br>(at nominal voltage)   |                          | Max. 10ms (at 20°C 68°F)  |
| Temperature rise (at 70°C)  |                          | Max. 45°C with nominal coil voltage and at 5 A contact carrying current (resistance method) |
| Shock resistance  | Functional*5             | Min. 100 m/s <sup>2</sup> {approx. 10 G}  |
|   | Destructive*6            | Min. 1,000 m/s <sup>2</sup> {approx. 100 G}   |
| Vibration resistance  | Functional*7             | 10 to 55Hz<br>at double amplitude of 1.5mm  |
|   | Destructive              | 10 to 55Hz<br>at double amplitude of 1.5mm  |
| Conditions for operation, transport and storage*8<br>(Not freezing and condensing at low temperature) | Ambient temp.            | -40°C to +70°C<br>-40°F to +158°F   |
|   | Humidity                 | 5 to 85% R.H.   |
| Unit weight   |                          | Approx. 4 g .14 oz  |

# LJ (ALJ)

## ORDERING INFORMATION

Ex. A       W

| Product name | Contact arrangement | Coil voltage, V DC       |                  | Packing style*    |
|--------------|---------------------|--------------------------|------------------|-------------------|
| LJ           | 1: 1 Form A         | 05: 5<br>09: 9<br>12: 12 | 18: 18<br>24: 24 | W: Carton packing |

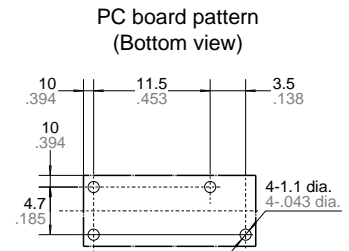
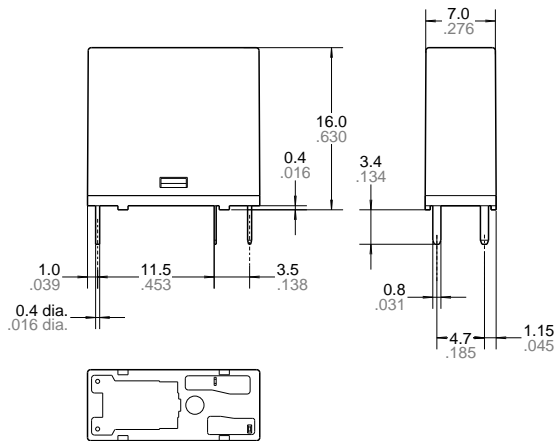
\* Please consult with our sales office on a stick packing type.

## TYPES AND COIL DATA

| Part No. | Nominal voltage, V DC (at 20°C 68°F) | Pick-up voltage, V DC (max.) (Initial) (at 20°C 68°F) | Drop-out voltage, V DC (min.) (Initial) (at 20°C 68°F) | Coil resistance, Ω (±10%) (at 20°C 68°F) | Nominal operating current, mA (±10%) (at 20°C 68°F) | Nominal operating power, mW (at 20°C 68°F) | Maximum allowable voltage, V DC (at 20°C 68°F) |
|----------|--------------------------------------|---|--|--|---|--|--|
| ALJ105W  | 5                                    | (Initial) 3.75  | (Initial) 0.25   | 125                                      | 40  | 200  | 6.5  |
| ALJ109W  | 9                                    | (Initial) 6.75  | (Initial) 0.45   | 405                                      | 22.2  | 200  | 11.7   |
| ALJ112W  | 12                                   | (Initial) 9   | (Initial) 0.6  | 720                                      | 16.7  | 200  | 15.6   |
| ALJ118W  | 18                                   | (Initial) 13.5  | (Initial) 0.9  | 1,620                                    | 11.1  | 200  | 23.4   |
| ALJ124W  | 24                                   | (Initial) 18  | (Initial) 1.2  | 2,880                                    | 8.3   | 200  | 31.2   |

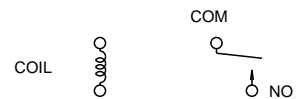
## DIMENSIONS

mm inch



Tolerance:  $\pm 0.1 \pm 0.004$

### Schematic (Bottom view)

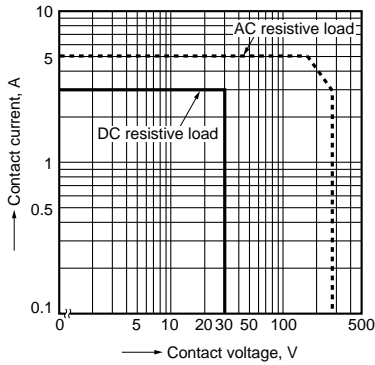


**Dimension :**  
 Max. 1mm .039 inch:  $\pm 0.1 \pm 0.004$   
 1 to 3mm .039 to .118 inch:  $\pm 0.2 \pm 0.008$   
 Min. 3mm .118 inch:  $\pm 0.3 \pm 0.012$

**General tolerance**

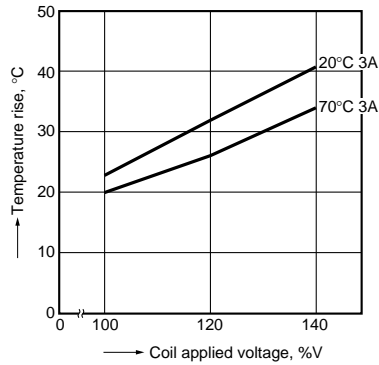
## REFERENCE DATA

### 1. Maximum value for switching capacity

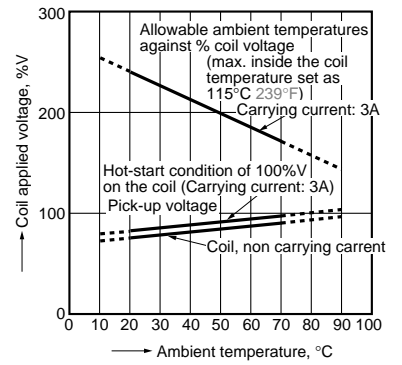


### 2. Coil temperature rise

Sample: ALJ112, 6pcs.  
Point measured: Coil inside,  
contact carrying current: 3A

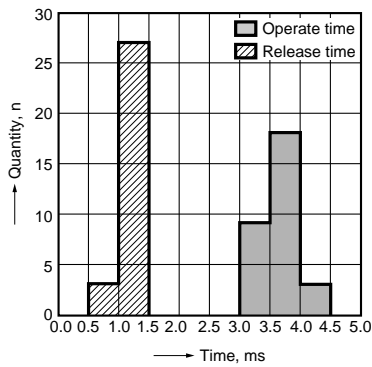


### 3. Ambient temperature characteristics and coil applied voltage



### 4. Distribution of operate and release time

Sample: ALJ112, 30pcs.



**For Cautions for Use, see Relay Technical Information.**