

3A SLIM POWER RELAY

LJ RELAYS (ALJ)



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

- 10⁵ switching operations possible with a 3A 250V AC resistive load.
- Mechanical life: 2×10⁶ (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

RoHS Directive compatibility information
<http://www.nais-e.com/>

SPECIFICATIONS

Contact

Arrangement	1 Form A	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	Max. 100 mΩ	
Contact material	AgSnO ₂ type	
Rating (resistive load)	Nominal switching capacity	3A 250V AC 3A 30V DC
	Max. switching power	831VA (AC), 90W (DC)
	Max. switching voltage	277V AC
	Max. switching current	5A
	Min. switching capacity ^{#1}	100 mA, 5 V DC
Expected life (min. operations)	Mechanical (at 180 cpm)	2×10 ⁶
	Electrical (at 20 cpm) (resistive load)	5A 250V AC: 5×10 ⁴ 3A 250V AC: 10 ⁵

Coil

Nominal operating power	200 mW
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#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.

Remarks

- *1 Measurement at same location as "Initial breakdown voltage" section.
- *2 Detection current: 10mA
- *3 Wave is standard shock voltage of $\pm 1.2 \times 50\mu\text{s}$ 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

Characteristics

Max. operating speed		20 cpm (at rated load)
Initial insulation resistance* ¹		Min. 1,000 MΩ (at 500 V DC)
Initial * ² breakdown 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 (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 ² {approx. 10 G}
	Destructive* ⁶	Min. 1,000 m/s ² {approx. 100 G}
Vibration resistance	Functional* ⁷	10 to 55Hz at double amplitude of 1.5mm
	Destructive	10 to 55Hz at double amplitude of 1.5mm
Conditions for operation, transport and storage* ⁸ (Not freezing and condensing at low temperature)	Ambient temp.	-40°C to +70°C -40°F to +158°F
	Humidity	5 to 85% R.H.
Unit weight		Approx. 4 g .14 oz

ORDERING INFORMATION

Ex. A W

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

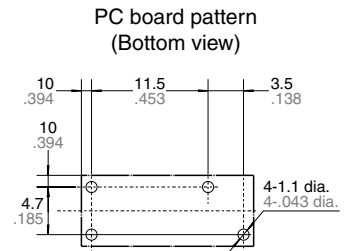
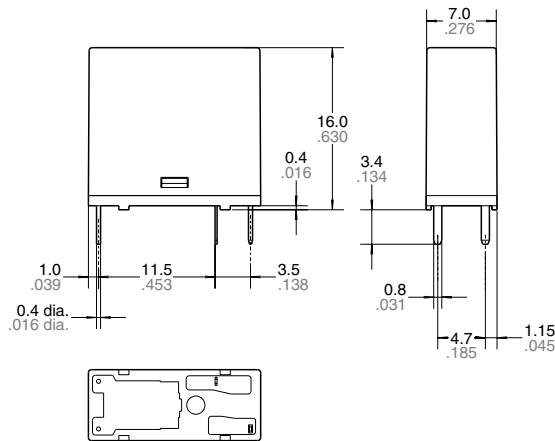
* Please consult with our sales office on a stick packing type.

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

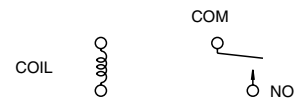
DIMENSIONS

mm inch



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



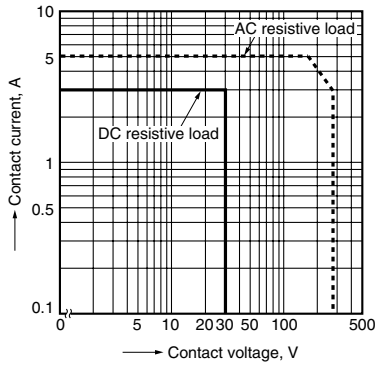
Dimension :
 Max. 1mm .039 inch: ±0.1 ±.004
 1 to 3mm .039 to .118 inch: ±0.2 ±.008
 Min. 3mm .118 inch: ±0.3 ±.012

General tolerance
 ±0.1 ±.004

LJ (ALJ)

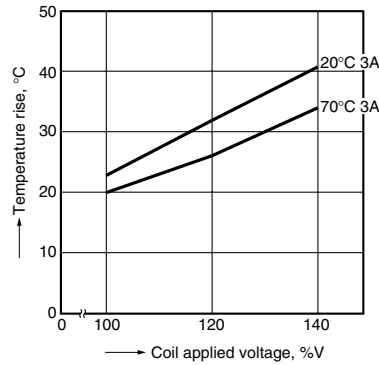
REFERENCE DATA

1. Maximum value for switching capacity

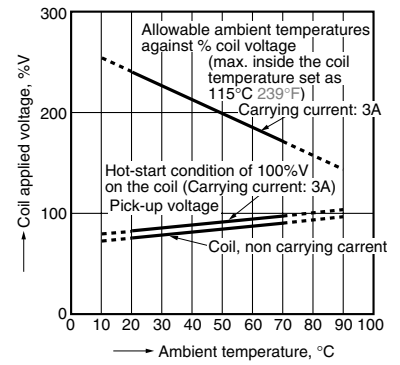


2. Coil temperature rise

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

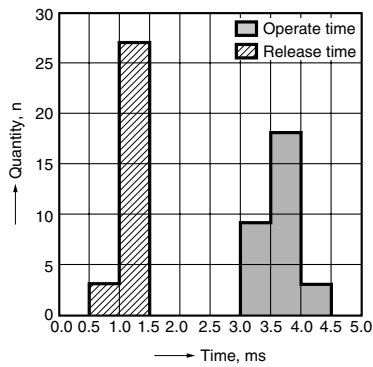


3. Ambient temperature characteristics and coil applied voltage



4. Distribution of operate and release time

Sample: ALJ112, 30pcs.



For Cautions for Use, see Relay Technical Information .