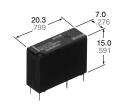




1 FORM A SLIM POWER RELAY

LD RELAYS (ALD)



mm inch

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

FEATURES

1. Slim type: Width 7 mm .276 inch. 20.3(L)×7.0(W)×15.0(H) mm .799(L)×.276(W)×.591(H) inch

2. Perfect for small load switching of home appliances

 10^5 switching operations possible with a 3A 250V AC resistive load.

3. Low operating power

200 mW

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

4. High shock resistance

The relay withstands a functional shock resistance of 300m/s² [approx. 30 G more]

5. High insulation resistance

- Creepage distance and clearances between contact and coil: Min. 6 mm .236 inch (In compliance with IEC65)
- Surge withstand voltage between contact and coil: 10,000 V
- 6. UL/CSA, VDE, TÜV approved.

SPECIFICATIONS

Contact

Arrangement	1 Form A				
Initial contact resi (By voltage drop	Max. 100 mΩ				
Contact material	AgNi type				
Rating (resistive load)	Nominal switch	ing capacity	3 A 277 V AC, 3 A 30V DC		
	Max. switching	power	831 V A (AC), 90W (DC)		
	Max. switching	voltage	277 V AC, 30 V DC		
	Max. switching	current	3 A		
	Min. switching (Reference value	. ,	100 mA, 5 V DC		
Expected life (min.operations)	Mechanical (at	180 cpm)	5×10 ⁶		
	Electrical (at 20 cpm) (at rated load)	3A 125V AC, 3A 30V DC	2×10 ⁵		
		3A 250V AC	10⁵		
Coil					

#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

- * Specifications will vary with foreign standards certification ratings.
 *1 Measurement at same location as "Initial breakdown voltage" section.
- *2 Detection current: 10mA
- *3 Wave is standard shock voltage of ±1.2×50ms according to JEC-212-1981

Nominal operating power

- *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		en	750 Vrms for 1 min.	
	Between contact and coil		ntact and	4,000 Vrms for 1 min.	
Initial surge voltage between contact and coil*3			10,000 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 158°F)			Max. 45°C with nominal coil voltage and at 3 A contact carrying current (resistance method)		
Shock resistance		Functional*5		300 m/s ² {approx. 30 G}	
		Destructive*6		1,000 m/s ² {approx. 100 G}	
Vibration resistance		Functional*7		10 to 55Hz at double amplitude of 1.5mm	
Vibration res	istarice	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		

TYPICAL APPLICATIONS

Air conditioner

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

ORDERING INFORMATION Ex. A LD 1 12

Product name Contact arrangement		Coil voltage (V DC)	Packing style	
LD	1: 1 Form A	4H: 4.5, 09: 9 , 24: 24 05: 5, 12: 12 06: 6, 18: 18	Nil: Tube packing W: Carton packing	

UL/CSA, TÜV, VDE approved type is standard. Note: Tube packing: Tube: 50pcs, Case: 1,000pcs Carton packing: Carton: 100pcs, Case: 500pcs

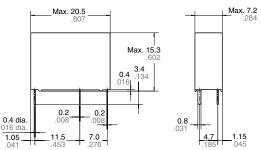
TYPES AND COIL DATA (at 20°C 68°F)

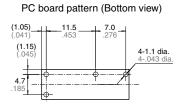
Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.) (Initial)	Drop-out voltage, V DC (min.) (Initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Maximum allowable voltage, V DC (at 20°C 68°F)
ALD14H	4.5	3.38	0.22	101	44.4	200	5.85
ALD105	5	3.75	0.25	125	40.0		6.5
ALD106	6	4.5	0.3	180	33.3		7.8
ALD109	9	6.75	0.45	405	22.2		11.7
ALD112	12	9	0.6	720	16.7		15.6
ALD118	18	13.5	0.9	1,620	11.1		23.4
ALD124	24	18	1.2	2,880	8.3		31.2

DIMENSIONS

mm inch







Tolerance: ±0.1 ±.004

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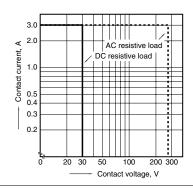
СОМ О

Schematic (Bottom view)

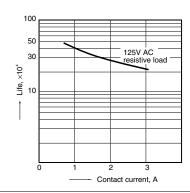
 $\begin{array}{lll} \underline{\text{Dimension:}} & \underline{\text{General tolerance}} \\ \underline{\text{Max. 1mm. 039 inch:}} & \pm 0.1 \pm .004 \\ 1 \text{ to 3mm. 039 to .118 inch:} & \pm 0.2 \pm .008 \\ \underline{\text{Min. 3mm. 118 inch:}} & \pm 0.3 \pm .012 \\ \end{array}$

REFERENCE DATA

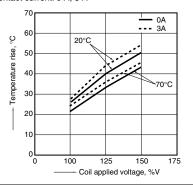
1. Max. switching power



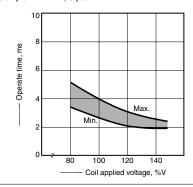
2. Life curve



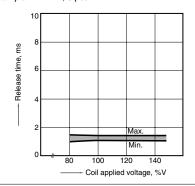
3. Coil temperature rise Sample: ALD112, 6 pcs. Point measured: inside the coil Contact current: 0 A, 3 A



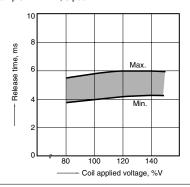
4-(1). Operate time Sample: ALD112, 6 pcs.

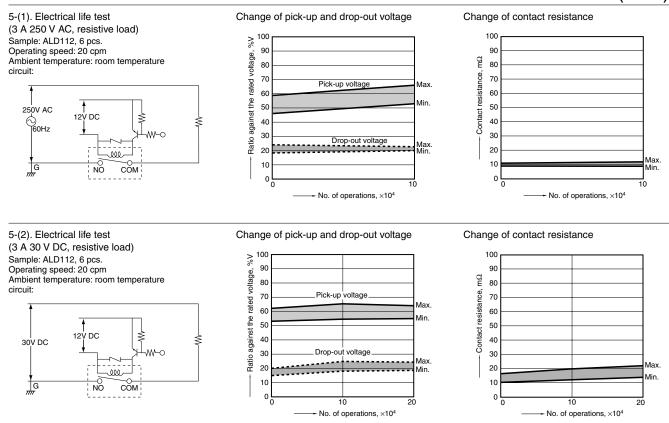


4-(2). Release time (without diode) Sample: ALD112, 6 pcs.



4-(3). Release time (with diode) Sample: ALD112, 6 pcs.





For Cautions for Use, see Relay Technical Information