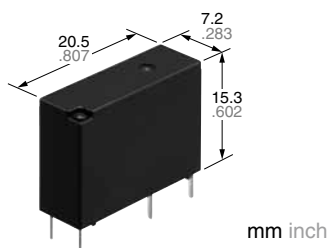




**Slim (7.2mm .283inch),  
1 Form A 5A power relay**

### LD-P RELAYS (ALDP)



**RoHS compliant**

Protective construction: Sealed type

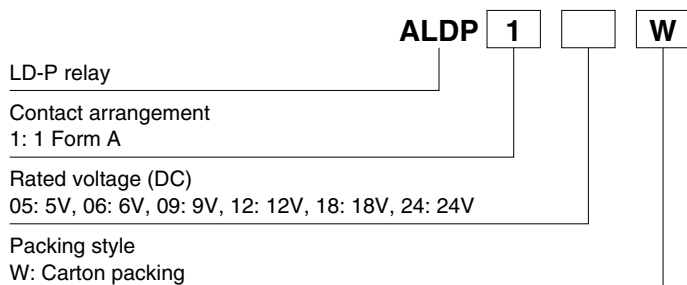
### FEATURES

1. **Nominal switching capacity:**  
5A 277V AC
2. **Excellent heat resistance and tracking performance**  
EN60695 (GWT2-11, GWF12-12, GWIT2-13) data available  
(Please consult us for details.)
3. **Slim type: 20.5 (L) × 7.2 (W) × 15.3 (H) mm .807 (L) × .283 (W) × .602 (H) inch**
4. **Class “B” and “F” coil is available**
5. **Contact rating at 105°C 221°F is approved by UL/C-UL and VDE (Class “F” coil only)**
6. **Clearance and Creepage distance between contact and coil min. 6 mm .236 inch**
7. **High surge voltage: 10,000 V between contact and coil**

### TYPICAL APPLICATIONS

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

## ORDERING INFORMATION



Notes: 1. Class “B” and “F” coil is available (Class “B”: ALDP1B\*\*W, Class “F”: ALDP1F\*\*W)  
 2. The “W” at the end of the part number only appears on the inner and outer packaging. It does not appear on the relay itself.  
 Please consult with our sales office on a tube packing type.

## TYPES

Contact arrangement	Rated voltage	Part No.	Standard packing	
			Carton	Case
1 Form A	5V DC	ALDP105W	100 pcs.	500 pcs.
	6V DC	ALDP106W		
	9V DC	ALDP109W		
	12V DC	ALDP112W		
	18V DC	ALDP118W		
	24V DC	ALDP124W		

## RATING

### 1. Coil data

Rated voltage	Pick-up voltage*1 (at 20°C 68°F)	Drop-out voltage*1 (at 20°C 68°F)	Rated operating current (DC, ±10%, at 20°C 68°F)	Coil resistance (±10%, at 20°C 68°F)	Rated operating power	Max. allowable voltage (at 20°C 68°F)
5V DC	75%V or less of nominal voltage (Initial)	5%V or more of nominal voltage (Initial)	40.0mA	125Ω	200mW	180%V of rated voltage*2
6V DC			33.3mA	180Ω		
9V DC			22.2mA	405Ω		
12V DC			16.7mA	720Ω		
18V DC			11.1mA	1,620Ω		
24V DC			8.3mA	2,880Ω		

Notes: \*1. Square, pulse drive

\*2. Maximum allowable voltage is the maximum voltage which can satisfy the coil temperature rise value.

### 2. Specifications

Characteristics	Item	Specifications
Contact data	Arrangement	1 Form A
	Contact resistance (initial)	Max. 100 mΩ (By voltage drop 6 V DC 1A)
	Contact material	AgNi type
	Contact rating (resistive)	5A 277V AC, 3A 30V DC
	Max. switching power (resistive)	1,385VA, 90W
	Max. switching voltage	277V AC, 30V DC
	Max. switching current	5A (AC), 3A (DC)
	Min. switching load (reference value)*1	100mA 5V DC
Insulation resistance (initial)		Min. 1,000MΩ (at 500V DC) Measured portion is the same as the case of dielectric voltage.
Dielectric strength (initial)	Between open contacts	750 Vrms for 1 min. (detection current: 10 mA)
	Between contact and coil	4,000 Vrms for 1 min. (detection current: 10 mA)
Surge withstand voltage (initial)*2	Between contact and coil	10,000 V
Operate time (initial)		Max. 10 ms (at rated voltage, at 20°C 68°F, excluding contact bounce time)
Release time (initial)		Max. 10 ms (at rated voltage, at 20°C 68°F, excluding contact bounce time, with diode)
Shock resistance	Functional	300 m/s <sup>2</sup> (half-wave pulse of sine wave: 11 ms; detection time: 10μs)
	Destructive	1,000 m/s <sup>2</sup> (half-wave pulse of sine wave: 6 ms)
Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.5 mm (Detection time: 10μs)
	Destructive	10 to 55 Hz at double amplitude of 1.5 mm
Expected life	Mechanical	Min. 5×10 <sup>6</sup> (at 180 times/min.)
Conditions	Conditions for operation, transport and storage*3	Ambient temperature: -40 to +85°C -40 to +185°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
Unit weight		Approx. 4 g .14 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 ±1.2×50μs according to JEC-212-1981

\*3. 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.

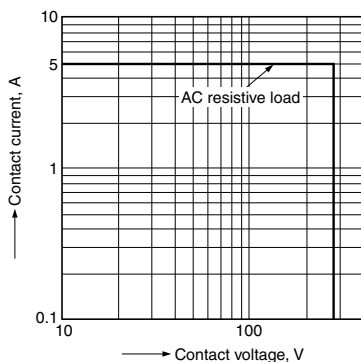
### 3. Expected electrical life

Condition: Resistive, at 20 times/min.

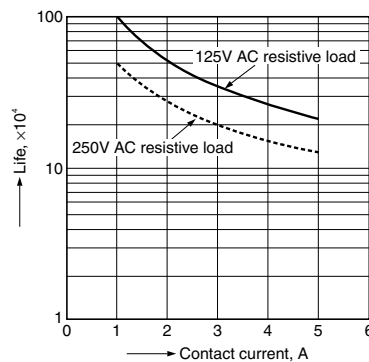
Type	Switching capacity	Number of operations
1 Form A	5A 125V AC	Min. 2×10 <sup>5</sup>
	5A 250V AC	Min. 10 <sup>5</sup>
	3A 30V DC	Min. 10 <sup>5</sup>

## REFERENCE DATA

### 1. Max. switching capacity



### 2. Life curve

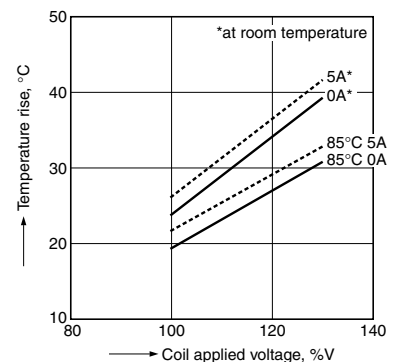


### 3. Coil temperature rise (Ave.)

Sample: ALDP112, 6 pcs.

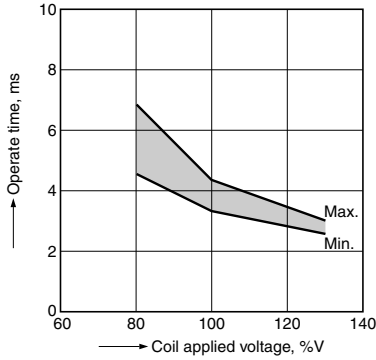
Point measured: inside the coil

Contact current: 0 A, 5 A



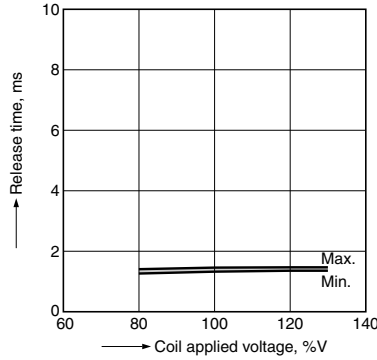
4-(1). Operate time

Sample: ALDP112, 30 pcs.



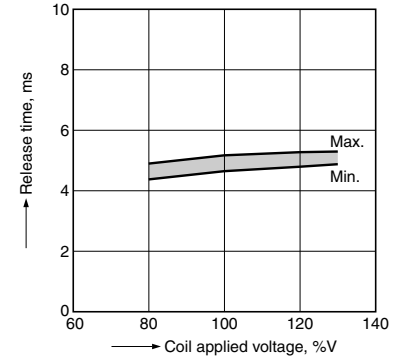
4-(2). Release time (without diode)

Sample: ALDP112, 30 pcs.



4-(3). Release time (with diode)

Sample: ALDP112, 30 pcs.



5. Electrical life test

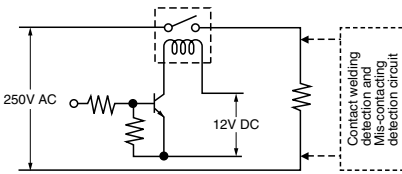
(5A 250V AC Resistive load)

Sample: ALDP112, 6 pcs.

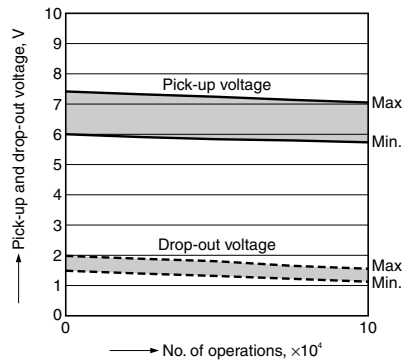
Operation frequency: 20 times/min.

(ON:OFF = 1.5s:1.5s)

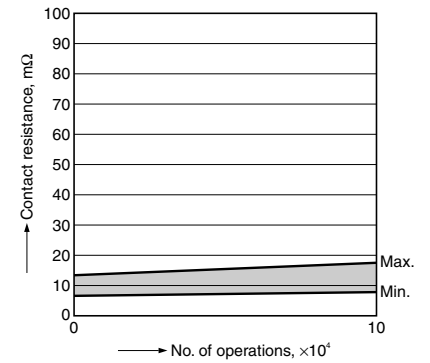
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



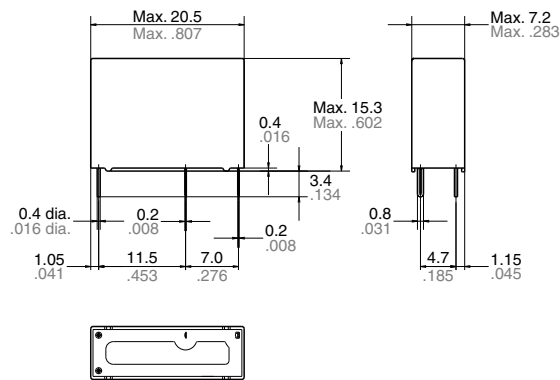
**DIMENSIONS** (mm inch)

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

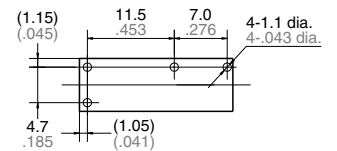
**CAD Data**



External dimensions

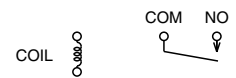


PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

Schematic (Bottom view)



Dimension:

Less than 1mm .039inch:

Min. 1mm .039inch less than 3mm .118 inch:  $\pm 0.2 \pm 0.008$

Min. 3mm .118 inch:

General tolerance

$\pm 0.1 \pm 0.004$

$\pm 0.2 \pm 0.008$

$\pm 0.3 \pm 0.012$

## SAFETY STANDARDS

UL/C-UL(Recognized)*1				VDE (Certified)				CQC			
File No.	Rating	Cycles	Temp.	File No.	Rating	Cycles	Temp.	File No.	Rating	Cycle	Temp.
E43028	5A 277V AC Resistive	10 <sup>5</sup>	85°C 185°F	40014384	5A 250V AC (cosφ=1.0)	10 <sup>5</sup>	85°C 185°F	CQC10002048611	5A 250V AC	10 <sup>4</sup>	85°C 185°F
	5A 30V DC Resistive	10 <sup>5</sup>	—		5A 30V DC (0ms)	10 <sup>4</sup>	25°C 77°F		—	—	—
	6A 277A AC	5 × 10 <sup>4</sup>	—		5A 250V AC (cosφ=1.0)*2	5 × 10 <sup>4</sup>	105°C 221°F		—	—	—
	3A 277V AC General use	12 × 10 <sup>4</sup>	85°C 185°F		—	—	—		—	—	—
	5A 277V AC Resistive*2	5 × 10 <sup>4</sup>	105°C 221°F		—	—	—		—	—	—
	Pilot duty, C300	10 <sup>5</sup>	85°C 185°F		—	—	—		—	—	—
	Pilot duty, 0.65A 277V AC (Inrush 6.5A)	10 <sup>5</sup>	85°C 185°F		—	—	—		—	—	—

Notes: \*1. CSA standard: Certified by C-UL

\*2. For Insulation Class F models only (Coil class F)

## INSULATION CHARACTERISTICS (IEC61810-1)

Item	Characteristics	
Clearance/Creepage distance (IEC61810-1)	Min. 5.5mm/5.5mm	
Category of protection (IEC61810-1)	RTIII	
GWT (IEC60335-1)	GWFI850/GWT750 2s (base)/GWIT775 (cover)	
Tracking resistance (IEC60112)	PTI175	
Insulation material group	IIIa	
Over voltage category	III	III
Impulse Withstand Voltage	4 kV	6 kV
Rated voltage	250V	250V
Pollution degree	3	2
Type of insulation (Between contact and coil)	Basic Insulation	Reinforced Insulation
Type of insulation (Between open contact)	Micro Disconnection	

\*EN/IEC VDE Certified

## NOTES

**1. For cautions for use, please read “GENERAL APPLICATION GUIDELINES”.**

**2. Certification**

UL/C-UL and VDE certified ratings are displayed on the packaging box. (On the relay, only the certification marks are shown and not the certified ratings. Please refer to the product specification diagrams to see what is stamped.)

**3. Maximum Applied Voltage and Temperature Rise**

Proper usage requires that the rated voltage be impressed on the coil. Note, however, that if a voltage greater than or equal to the maximum applied voltage is impressed on the coil, the coil may burn or its layers short due to the temperature rise. Furthermore, do not exceed the usable ambient temperature range listed in the catalog.

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Please contact .....

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