Discontinued as of August 31, 2011

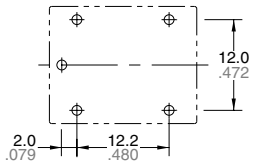
Panasonic
ideas for life

1a/1c 10A small cubic type power relays

LS RELAYS (ALS)

FEATURES

1. Universal terminal footprint
Same terminal pitch as our JS relay



2. Space-saving and Compact cube type
19.5 (L) × 15.5 (W) × 15.2 (H) mm
.768 (L) × .610 (W) × .598 (H) inch
Comparison with our JS relay:
• PCB mount area: 86%

3. Excellent heat resistance and tracking performance
• 85°C 185°F ambient operating temperature (UL Class B)
• Compatibility available for UL Class F
• Uses PTI250 material
• EN60335-1 GWT compliant (Tested by VDE)

4. Supports all safety standards
• UL/C-UL and VDE certified

TYPICAL APPLICATIONS

1. Household appliances
Refrigerator, Heater, Washing machine, Dishwasher, Rice cooker, etc.
2. Office automation equipment, Home appliances, etc.
3. Game machines, etc.

Compliance with RoHS Directive

ORDERING INFORMATION

ALS [ ] [ ] [ ] T W

LS relay

Contact arrangement and Protective construction
1: 1 Form C, Flux-resistant type
2: 1 Form C, Sealed type
3: 1 Form A, Flux-resistant type
4: 1 Form A, Sealed type

Coil insulation class
B: Class B insulation
F: Class F insulation

Nominal coil voltage (DC)
05: 5 V, 06: 6 V, 09: 9 V, 12: 12 V, 18: 18 V, 24: 24 V, 48: 48 V

Flame resistance and tracking resistance
T: EN60335-1 (Conform)

Packing style
W: Carton packing

Note: Certified by UL/C-UL and VDE

TYPES

Contact arrangement	Nominal coil voltage	Part No.	
		Sealed type	Flux-resistant type
1 Form A	5V DC	ALS4❍05TW	ALS3❍05TW
	6V DC	ALS4❍06TW	ALS3❍06TW
	9V DC	ALS4❍09TW	ALS3❍09TW
	12V DC	ALS4❍12TW	ALS3❍12TW
	18V DC	ALS4❍18TW	ALS3❍18TW
	24V DC	ALS4❍24TW	ALS3❍24TW
	48V DC	ALS4❍48TW	ALS3❍48TW
1 Form C	5V DC	ALS2❍05TW	ALS1❍05TW
	6V DC	ALS2❍06TW	ALS1❍06TW
	9V DC	ALS2❍09TW	ALS1❍09TW
	12V DC	ALS2❍12TW	ALS1❍12TW
	18V DC	ALS2❍18TW	ALS1❍18TW
	24V DC	ALS2❍24TW	ALS1❍24TW
	48V DC	ALS2❍48TW	ALS1❍48TW

Standard packing: Carton: 100 pcs.; Case: 500 pcs.

Notes: 1. ❍: Input the following letter. Class B insulation: B, Class F insulation: F
2. Carton packing symbol "W" is not marked on the relay.
3. Please consult with our sales office on a tube packing type.

RATING

1. Coil data

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power (at 20°C 68°F)	Max. applied voltage (at 20°C 68°F)
5V DC	75%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	72 mA	69.4Ω	360mW	130%V of nominal voltage*
6V DC			60 mA	100 Ω		
9V DC			40 mA	225 Ω		
12V DC			30 mA	400 Ω		
18V DC			20 mA	900 Ω		
24V DC			15 mA	1,600 Ω		
48V DC			7.5mA	6,400 Ω		

* Pick-up and drop-out voltages increase approximately 0.4% for each 1°C 33.8°F where the standard temperature is 20°C 68°F. Therefore, when using the relay where the ambient temperature is high, please take into consideration the rise in pick-up voltage due to ambient temperature and determine a coil nominal voltage that is within the maximum applied voltage range.

2. Specifications

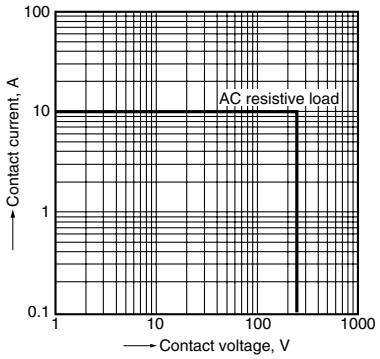
Characteristics	Item		Specifications
Contact	Contact material		AgNi/AgSnO$_2$ type
	Arrangement		1 Form A, 1 Form C
	Contact resistance (Initial)		Max. 100 mΩ (By voltage drop 6 V DC 1A)
Rating	Nominal switching capacity (resistive load)		10A 277V AC (N.O.), 6A 277V AC (N.C.)
	Max. switching power (resistive load)		2,770VA (N.O.), 1,662VA (N.C.)
	Max. switching voltage		277V AC
	Max. switching current		10A AC (N.O.), 6A AC (N.C.)
	Min. switching capacity (reference value)*1		100mA, 5V DC
Electrical characteristics	Insulation resistance (Initial)		Min. 100MΩ (at 500V DC) Measurement at same location as "Breakdown voltage" section.
	Breakdown voltage (Initial)	Between open contacts	750 Vrms for 1 min. (Detection current: 10 mA)
		Between contact and coil	1,500 Vrms for 1 min. (Detection current: 10 mA)
	Temperature rise (coil)		Max. 45°C 113°F (By resistive method, nominal coil voltage applied to the coil; contact carrying current: 10A, at 85°C 185°F)
	Operate time (at nominal voltage) (at 20°C 68°F)		Max. 10 ms (nominal coil voltage applied to the coil, excluding contact bounce time.)
	Release time (at nominal voltage) (at 20°C 68°F)		Max. 10 ms (nominal coil voltage applied to the coil, excluding contact bounce time) (Without diode)
Mechanical characteristics	Shock resistance	Functional	98 m/s^2 (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	980 m/s^2 (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.6 mm (Detection time: 10μs.)
		Destructive	10 to 55 Hz at double amplitude of 2 mm
Expected life	Mechanical (at 180 times/min.)		Min. 10^7
	Electrical (at 20 times/min.) (at 20°C 68°F) (resistive load)		10A 250V AC: 5×10^4 (N.O.), 6A 250V AC: 10^5 (N.O.), 6A 250V AC: 5×10^4 (N.C.)
Conditions	Conditions for operation, transport and storage*2		Ambient temperature*3: –40°C to +85°C –40°F to +185°F (class B insulation) –40°C to +105°C –40°F to +253°F (class F insulation) Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
	Max. operating speed		20 times/min. (at nominal switching capacity)
Unit weight			Approx. 10 g .35 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. 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. The pick-up and drop out voltages rise approximately 0.4% for every 1°C 33.8°F given a standard ambient temperature of 20°C 68°F. Therefore, when using relays where the ambient temperature is high, please take into consideration the rise in pick-up and drop out voltages and keep the coil applied voltage within the maximum applied voltage.

Discontinued as of August 31, 2011

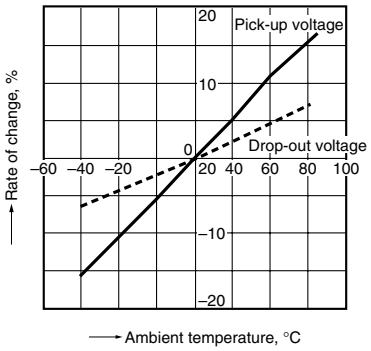
REFERENCE DATA

1. Maximum switching capacity



2. Ambient temperature characteristics

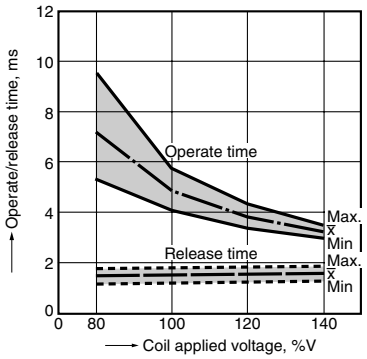
Sample: 6 pcs., ALS2B12TW



* Rate of change: for nominal voltage

3. Operate/release time

Sample: 25 pcs., ALS2B12TW

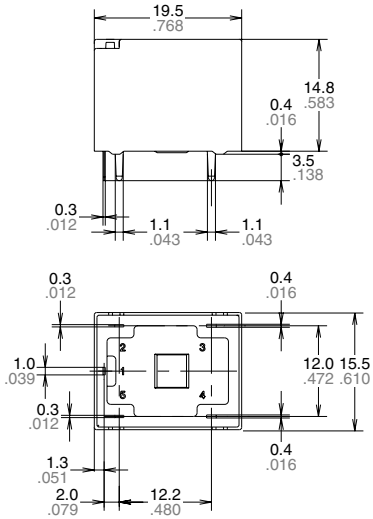


DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: http://panasonic-electric-works.net/ac

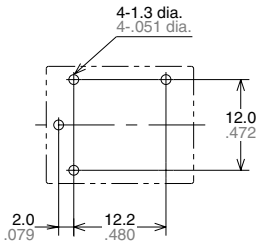
CAD Data

External dimensions

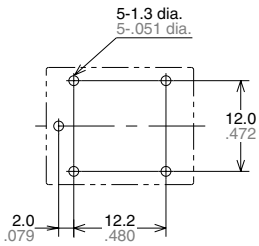


PC board pattern (Bottom view)

1 Form A



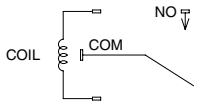
1 Form C



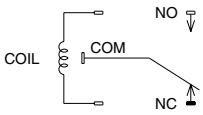
Tolerance: ±0.1 ±.004

Schematic (Bottom view)

1 Form A



1 Form C



SAFETY STANDARDS

UL/C-UL (Recognized)		VDE (Certified)	
File No.	Contact rating	File No.	Contact rating
E43149	6A 277V AC (N.C.), 10A 277V AC (N.O.)	40017642	6A 250V AC (N.C.) (cosϕ=1.0), 10A 250V AC (N.O.) (cosϕ=1.0)

For Cautions for Use.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Panasonic:

ALS2F05TW ALS2F12TW ALS2F24TW ALS1B05TW ALS1B06TW ALS1B09TW ALS1B12TW ALS1B24TW ALS1F05TW ALS1F09TW ALS1F18TW ALS1F48TW ALS2B05TW ALS2B06TW ALS2B12TW ALS2B24TW ALS2F06TW ALS2F18TW ALS2F48TW ALS3B05TW ALS3B09TW ALS3B18TW ALS3B48TW ALS3F06TW ALS3F12TW ALS3F24TW ALS4B05TW ALS4B09TW ALS4B12TW ALS4B18TW ALS4B24TW ALS4B48TW ALS4F06TW ALS4F12TW ALS4F24TW