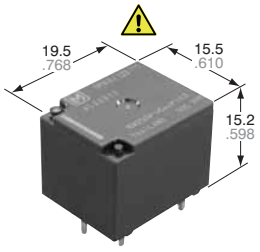
⚠ Discontinued as of February 28, 2011

Panasonic
ideas for life

10A COMPACT CUBE TYPE POWER RELAY

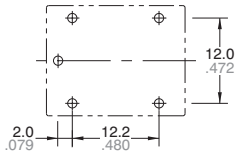
LS RELAYS (ALS)



⚠ Product is discontinued.

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.

SPECIFICATIONS

Contact

Arrangement		1 Form A, 1 Form C
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ
Contact material		AgNi/AgSnO$_2$ type
Rating	Nominal switching capacity (resistive load)	10 A 277 V AC (N.O.) 6 A 277 V AC (N.C.)
	Max. switching power (resistive load)	2,770 VA
	Max. switching voltage	277 V AC
	Max. switching current	10 A (AC)
	Min. switching capacity#1 (Reference value)	100 mA, 5 V DC
Expected life (min. ope.)	Mechanical (at 180 cpm)	10^7
	Electrical at 20°C 68°F (resistive load)	10 A 250 V AC: 5×10^4 (N.O.) 6 A 250 V AC: 10^5 (N.O.) 6 A 250 V AC: 5×10^4 (N.C.)

Coil

Nominal operating power	360 mW

#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 Detection current: 10mA
*2 Excluding contact bounce time
*3 Half-wave pulse of sine wave: 11ms; detection time: 10μs
*4 Half-wave pulse of sine wave: 6ms
*5 Detection time: 10μs
*6 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.
*7 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 allowable voltage range.

Characteristics

Max. operating speed		20 cpm
Initial insulation resistance		Min. 100 MΩ (at 500 V DC)
Initial breakdown voltage*1	Between open contacts	750 Vrms for 1 min.
	Between contacts and coil	1,500 Vrms for 1 min.
Operate time*2 (at nominal voltage)		Max. 10 ms
Release time(without diode)*2 (at nominal voltage)		Max. 10 ms
Temperature rise (at nominal voltage)		Max. 45°C, resistive, nominal voltage applied to coil. Contact carrying current: 10A, at 85°C 185°F
Shock resistance	Functional*3	98 m/s^2 {10 G}
	Destructive*4	980 m/s^2 {100 G}
Vibration resistance	Functional*5	10 to 55 Hz at double amplitude of 1.6 mm
	Destructive	10 to 55 Hz at double amplitude of 2 mm
Conditions for operation, transport and storage*6 (Not freezing and condensing at low temperature)	Ambient temp.*7	–40°C to +85°C –40°F to +185°F
	Humidity	5 to 85% R.H.
Unit weight		Approx.10 g .35 oz

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ORDERING INFORMATION

Ex. A | LS | 1 | B | 1 | 2 | T | W

Product name	Contact arrangement and Protective construction	Coil insulation class	Coil nominal voltage (DC)	Flame resistance and tracking resistance	Packing style
LS	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	B: Class B insulation F: Class F insulation	05: 5 V 06: 6 V 09: 9 V 12: 12 V 18: 18 V 24: 24 V 48: 48 V	T: EN60335-1 (Conform)	W: Carton packing

Note: UL, C-UL, VDE approved type is standard.

TYPES

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

Packing quantity: inner 100 pieces, outer 500 pieces
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.

COIL DATA

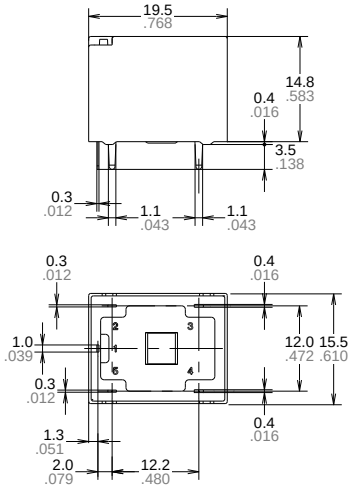
Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Nominal operating current, mA (±10%) (at 20°C 68°F)	Coil resistance, Ω (±10%) (at 20°C 68°F)	Nominal operating power, mW (at 20°C 68°F)	Maximum allowable voltage (at 85°C 185°F)
5	3.75	0.5	72	69.4	360	130%V of nominal voltage*1
6	4.5	0.6	60	100	360	
9	6.75	0.9	40	225	360	
12	9	1.2	30	400	360	
18	13.5	1.8	20	900	360	
24	18	2.4	15	1,600	360	
48	36	4.8	7.5	6,400	360	

*1 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 allowable voltage range.

DIMENSIONS(mm inch)

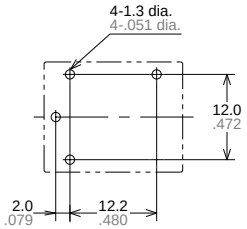
Interested in CAD data? You can obtain CAD data for all products with a CAD Data mark from your local Panasonic Electric Works representative.

CAD Data

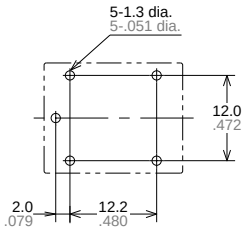


PC board pattern (Bottom view)

1 Form A



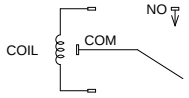
1 Form C



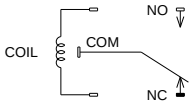
Tolerance: ±0.1 ±.004

Schematic (Bottom view)

1 Form A

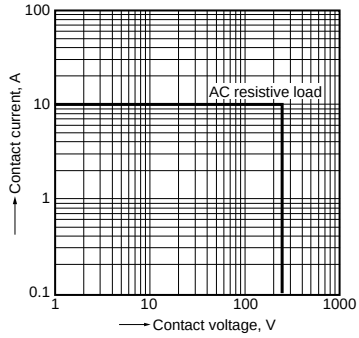


1 Form C



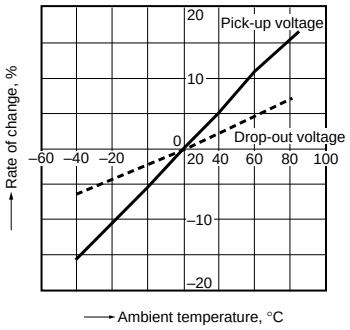
REFERENCE DATA

1. Maximum switching capacity



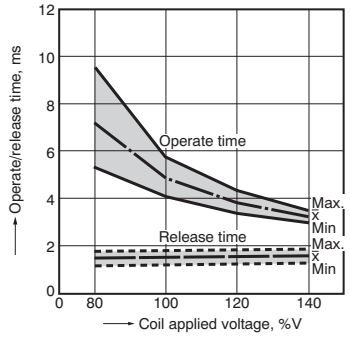
2. Ambient temperature characteristics

Sample: 6 pcs., ALS2B12TW



3. Operate/release time

Sample: 25 pcs., ALS2B12TW



* Rate of change: for nominal voltage

For Cautions for Use, see Relay Technical Information.