

FEATURES

- **Compact flat type**

We successfully developed a power type that is the same size as our CP relay (14 mm (L) x 13 mm (W) x 9.5 mm (H) .551 inch (L) x .512 inch (W) x .374 inch (H)).

- **35A maximum carrying current**

Current carrying of 35 A/1h and 45 A/2 min. at 20°C (450 W type, 16 V applied) is possible due to use of N.O. double pin terminals and COM terminal width expansion.

- **Supports capacitor loads required for power supply applications**

Inrush current: 60A, steady-state current: 1A and 10⁵ switching times possible.

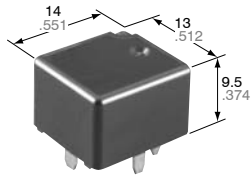
- **Plastic sealed type**

This plastic sealed type can be automatically cleaned.

TYPICAL APPLICATIONS

For automotive system

Defoggers, Ignitions, Heaters, Accessories, Power windows, EPS and ABS etc.



SPECIFICATIONS

Contact

Arrangement	1 Form A, 1 Form C	
Contact material	Ag alloy (Cadmium free)	
Initial contact resistance (Initial) (By voltage drop 6V DC 1A)	Typ. 3 mΩ (N.O.) Typ. 4 mΩ (N.C.)	
Rating	Nominal switching capacity	20A 14V DC (N.O.) 10A 14V DC (N.C.)
	Max. carrying current (16V DC)	N.O.: For 450mW 45A/2 minutes, 35A/1 hour at 20°C 68°F 40A/2 minutes, 30A/1 hour at 85°C 185°F 35A/2 minutes, 25A/1 hour at 110°C 230°F For 640mW 40A/2 minutes, 30A/1 hour at 20°C 68°F 35A/2 minutes, 25A/1 hour at 85°C 185°F 30A/2 minutes, 20A/1 hour at 110°C 230°F
	Min. switching capacity#1	1A 12V DC
	Expected life (min. operations)	Mechanical (at 120cpm) Min. 10 ⁷ Electrical (at 6cpm) Resistive load Min. 10 ⁵ *1 Capacitor load Min. 10 ⁵ *2

Coil

Nominal operating power	450 mW for pick-up voltage 7.2V DC 640 mW for pick-up voltage 6.5V DC
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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.

Characteristics

Max. operating speed (at nominal switching capacity)	6cpm	
Initial insulation resistance	Min. 100MΩ (at 500 V DC)	
Initial breakdown voltage*3	Between open contacts	500 Vrms for 1min.
	Between contact and coil	500 Vrms for 1min.
Operate time*4 (at nominal voltage) (Initial)	Max. 10ms (at 20°C 68°F)	
Release time*4 (at nominal voltage) (Initial)	Max. 10ms (at 20°C 68°F)	
Shock resistance	Functional ⁵	Min. 100 m/s ² {10 G}
	Destructive*6	Min. 1,000 m/s ² {100 G}
Vibration resistance	Functional*7	10 Hz to 100 Hz, Min.44.1 m/s ² {4.5 G}
	Destructive*8	10 Hz to 500 Hz, Min.44.1 m/s ² {4.5 G}
Conditions in case of operation, transport and storage*9 (Not freezing and condensing at low temperature)	Ambient temp	-40°C to +85°C -40 to +185°F
	Humidity	5% R.H. to 85% R.H.
Mass	Approx. 4.5g .16 oz	

Remarks

- *1 At nominal switching capacity, operating frequency: 1s ON, 9s OFF
- *2 At 1A (steady), 60A (inrush), 14V DC, operating frequency: 1s ON, 9s OFF
- *3 Detection current: 10mA
- *4 Excluding contact bounce time
- *5 Half-wave pulse of sine wave: 11ms; detection time: 10μs
- *6 Half-wave pulse of sine wave: 6ms
- *7 Detection time: 10μs
- *8 Time of vibration for each direction;
 - X, Y direction: 2 hours
 - Z direction: 4 hours
- *9 Refer to 6. Conditions for operation, transport and storage mentioned in [AMBIENT ENVIRONMENT \(p. 19, Relay Technical Information\)](#). Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).

CP POWER

ORDERING INFORMATION

Ex. CP - -

Contact arrangement	Pick-up voltage	Coil voltage (DC)
1H: 1 Form C Power type 1aH: 1 Form A Power type	Nil: Max. 7.2 V DC N: Max. 6.5 V DC	12 V

Note: Tube packing: Carton (Tube): 40 pcs.; Case: 1,000 pcs.

TYPES

Contact arrangement	Coil voltage	Pick-up voltage, V DC (Initial) (at 20°C 68°F)	Part No.
1 Form C	12 V DC	Max. 7.2	CP1H-12V
		Max. 6.5	CP1H-N-12V
1 Form A		Max. 7.2	CP1aH-12V
		Max. 6.5	CP1aH-N-12V

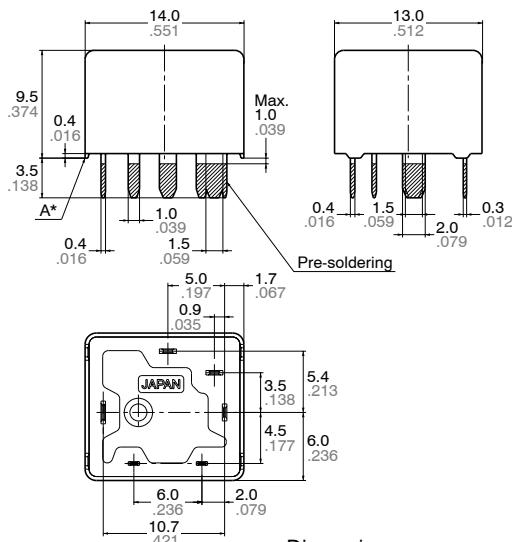
Note: THD type only

COIL DATA (at 20°C 68°F)

Nominal voltage, V DC (at 20°C 68°F)	Pick-up voltage, V DC (Initial) (at 20°C 68°F)	Drop-out voltage, V DC (Initial) (at 20°C 68°F)	Coil resistance Ω (at 20°C 68°F)	Nominal operating current mA (at 20°C 68°F)	Nominal operating power mW (at 20°C 68°F)	Usable voltage range, V DC (at 85°C 185°F)
12	Max. 7.2	Min. 1.0	320±10%	37.5±10%	450	10 to 16
	Max. 6.5		225±10%	53.3±10%	640	9 to 16

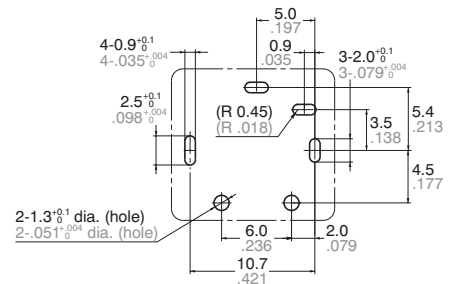
DIMENSIONS

mm inch



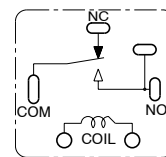
Dimension:
 Max. 1mm .039 inch: **Tolerance**
 1 to 3mm .039 to .118 inch: ±0.1 ±.004
 Min. 3mm .118 inch: ±0.2 ±.008
 ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

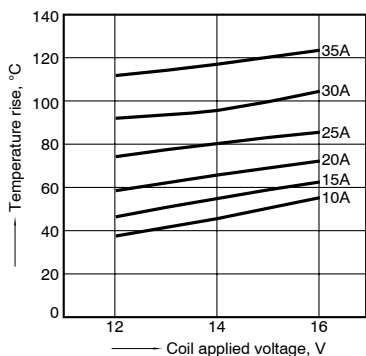


*Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering.
 Intervals between terminals is measured at A surface level.

REFERENCE DATA

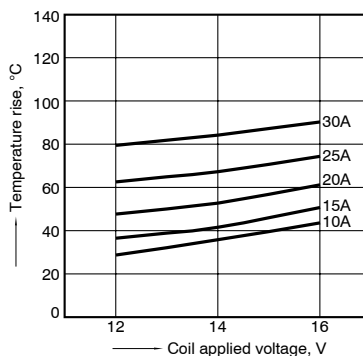
1-(1). Coil temperature rise

Sample : CP1H-12V, 3pcs
 Point measured : Inside the coil
 Ambient temperature: 27°C 81°F

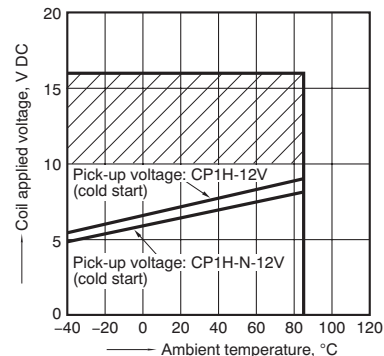


1-(2). Coil temperature rise

Sample : CP1H-12V, 3pcs
 Point measured : Inside the coil
 Ambient temperature: 85°C 185°F

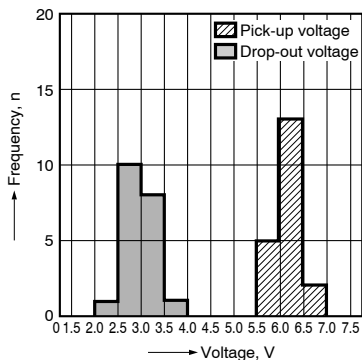


2. Ambient temperature and operating voltage range



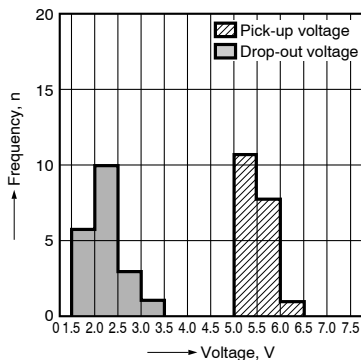
3-(1). Distribution of pick-up and drop-out voltage

Sample : CP1H-12V



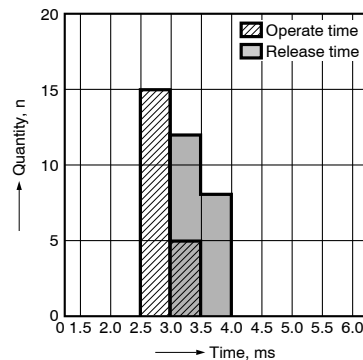
3-(2). Distribution of pick-up and drop-out voltage

Sample : CP1H-N-12V



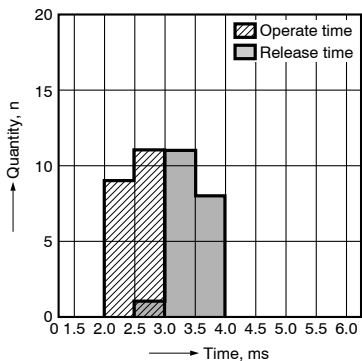
4-(1). Distribution of operate and release time

Sample : CP1H-12V



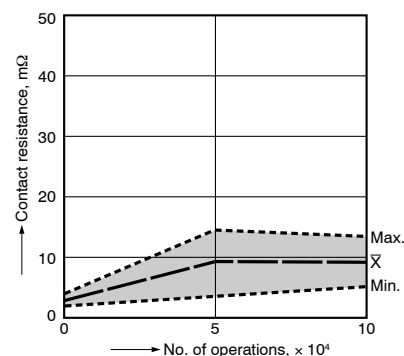
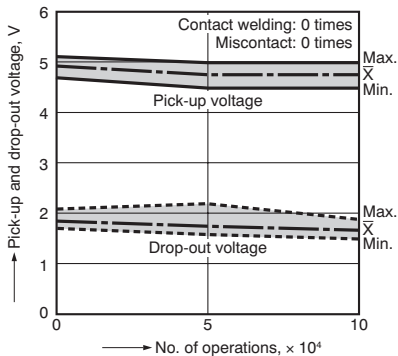
4-(2). Distribution of operate and release time

Sample : CP1H-N-12V



5-(1). Electrical life test (at rated load)

Sample : CP1H-12V
 Quantity : n = 6
 Load : Resistive load (NO side : 20 A 14 V DC)
 Operating frequency : ON 1s, OFF 9s
 Ambient temperature : Room temperature



CP POWER

5-(2). Electrical life test (at capacitor load)

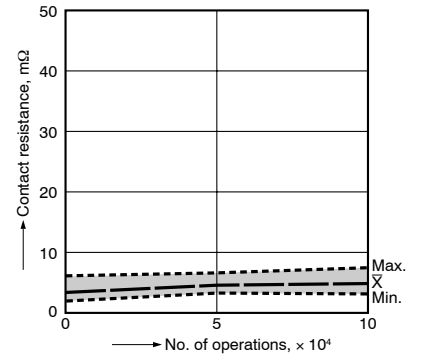
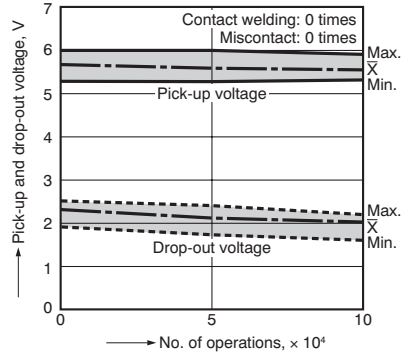
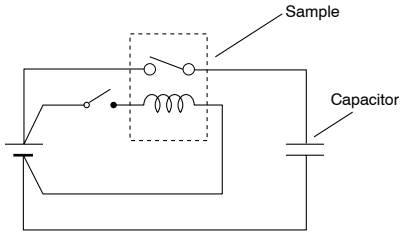
Sample : CP1H-12V, 6pcs.

Load : Inrush 60A/steady 1A

Operating frequency : (ON : OFF = 1s : 9s)

Ambient temperature : Room temperature

Circuit :



For Cautions for Use, see [Relay Technical Information](#).