Panasonic
ideas for life

HIGH CARRYING CURRENT TYPE MINIATURE LOW PROFILE AUTOMOTIVE RELAY

CP RELAYS
<POWER TYPE>

RoHS compliant

FEATURES

• Compact flat type
We successfully developed a high carrying current 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 10^5 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, etc.

ORDERING INFORMATION

CP □ - □ - □

Contact arrangement
1H: 1 Form C Power type
1aH: 1 Form A Power type

Pick-up voltage
Nil: Max. 7.2 V DC
N: Max. 6.5 V DC

Coil voltage (DC)
12 V

TYPES

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

Standard packing: Carton (Tube): 40 pcs.; Case: 1,000 pcs.
Note: THD type only

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)	Usable voltage range (at 85°C 185°F)
12V DC	Max. 7.2 V DC (Initial)	Min. 1.0 V DC (Initial)	37.5 mA	320Ω	450 mW	10 to 16V DC
	Max. 6.5 V DC (Initial)		53.3 mA	225Ω	640 mW	10 to 16V DC

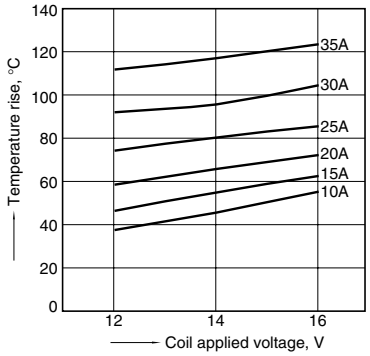
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form A, 1 Form C
	Contact resistance (Initial)		N.O.: Typ 6mΩ, N.C.: Typ 8mΩ (By voltage drop 6V DC 1A)
	Contact material		Ag alloy (Cadmium free)
Rating	Nominal switching capacity (resistive load)		N.O.: 20 A 14V DC, N.C.: 10 A 14V DC
	Max. carrying current (16V DC)*3		N.O.: <For 450 mW> 45 A for 2 minutes, 35 A for 1 hour at 20°C 68°F 40 A for 2 minutes, 30 A for 1 hour at 85°C 185°F <For 640 mW> 40 A for 2 minutes, 30 A for 1 hour at 20°C 68°F 35 A for 2 minutes, 25 A for 1 hour at 85°C 185°F
	Nominal operating power		450 mW for pick-up voltage 7.2 V DC, 640 mW for pick-up voltage 6.5 V DC
	Min. switching capacity (resistive load)*1		1 A 14V DC
Electrical characteristics	Insulation resistance (Initial)		Min. 100 MΩ (at 500V DC, Measurement at same location as “Breakdown voltage” section.)
	Breakdown voltage (Initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
		Between contacts and coil	500 Vrms for 1 min. (Detection current: 10mA)
	Operate time (at nominal voltage)		Max. 10ms (at 20°C 68°F, excluding contact bounce time) (Initial)
	Release time (at nominal voltage)		Max. 10ms (at 20°C 68°F, excluding contact bounce time) (Initial)
Mechanical characteristics	Shock resistance	Functional	Min. 100 m/s² {10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
		Destructive	Min. 1,000 m/s² {100G} (Half-wave pulse of sine wave: 6ms)
	Vibration resistance	Functional	10 Hz to 100 Hz, Min. 44.1 m/s² {4.5G} (Detection time: 10μs)
		Destructive	10 Hz to 500 Hz, Min. 44.1 m/s² {4.5G}, Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours
Expected life	Mechanical		Min. 10^7 (at 120 cpm)
	Electrical		<Resistive load> Min. 10^5 (at nominal switching capacity, operating frequency: 1s ON, 9s OFF) <Capacitor load> Min. 10^5 (at Inrush 60A, Steady 1A 14 V DC, operating frequency: 1s ON, 9s OFF)
Conditions	Conditions for operation, transport and storage*2		Ambient temperature: –40°C to +85°C –40°F to +185°F, Humidity: 5% R.H. to 85% R.H. (Not freezing and condensing at low temperature)
	Max. operating speed		6 cpm (at nominal switching capacity)
Mass			Approx. 4.5 g .16 oz

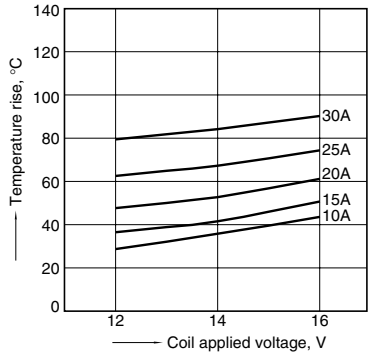
Notes: *1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Please refer to “Usage ambient condition” in CAUTIONS FOR USE OF AUTOMOTIVE RELAYS.
Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).
*3. Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

REFERENCE DATA

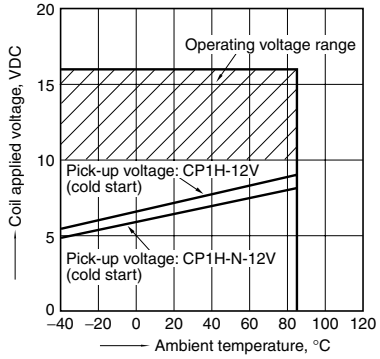
1-(1). Coil temperature rise
Sample : CP1H-12V, 3pcs
Point measured : Inside the coil
Ambient temperature: 27°C 81°F



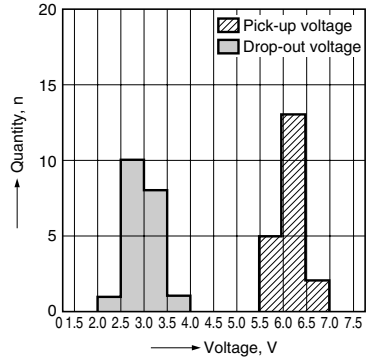
1-(2). Coil temperature rise
Sample : CP1H-12V, 3pcs
Point measured : Inside the coil
Ambient temperature: 85°C 185°F



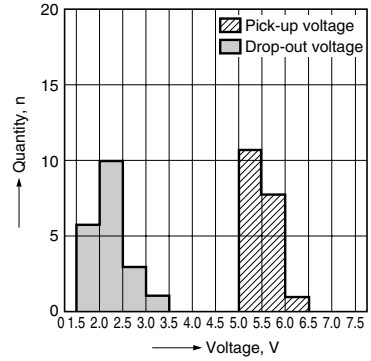
2. Ambient temperature and operating voltage range



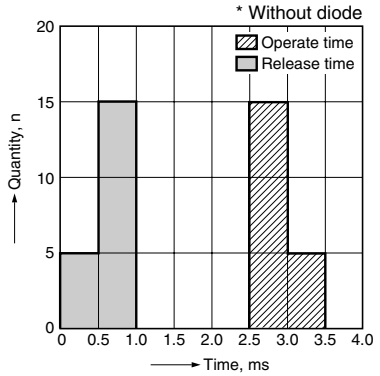
3-(1). Distribution of pick-up and drop-out voltage
Sample : CP1H-12V, 20pcs.



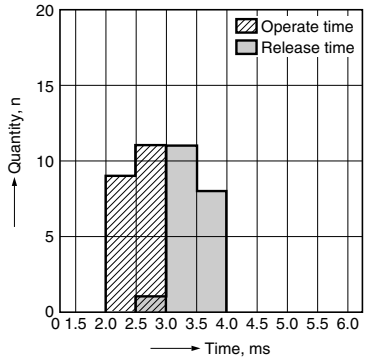
3-(2). Distribution of pick-up and drop-out voltage
Sample : CP1H-N-12V, 20pcs.



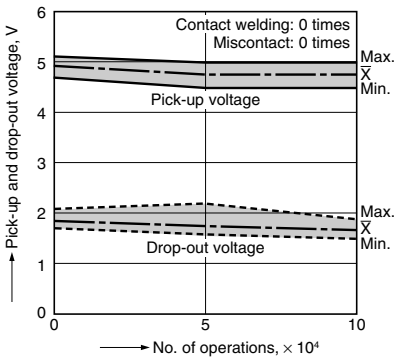
4-(1). Distribution of operate and release time
Sample : CP1H-12V, 20pcs.

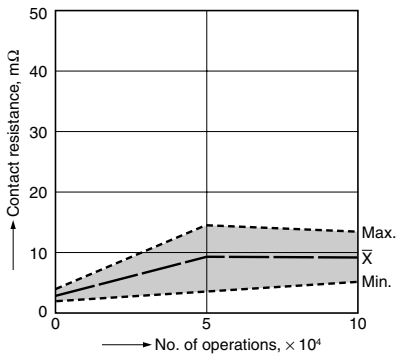


4-(2). Distribution of operate and release time
Sample : CP1H-N-12V, 20pcs.



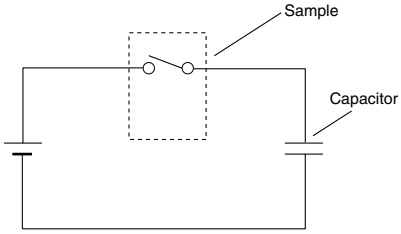
5-(1). Electrical life test (at rated load)
Sample : CP1H-12V
Quantity : n = 6
Load : Resistive load (N.O. side : 20 A 14 V DC)
Operating frequency : ON 1s, OFF 9s
Ambient temperature : Room temperature

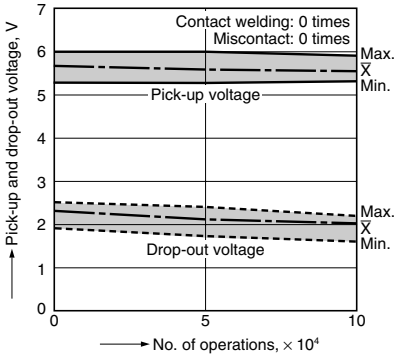


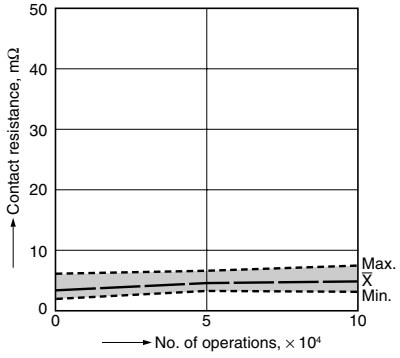


5-(2). Electrical life test (at capacitor load)
Sample : CP1H-12V, 6pcs.
Load : Inrush 60A/steady 1A
Operating frequency : ON 1s, OFF 9s
Ambient temperature : Room temperature

Circuit :





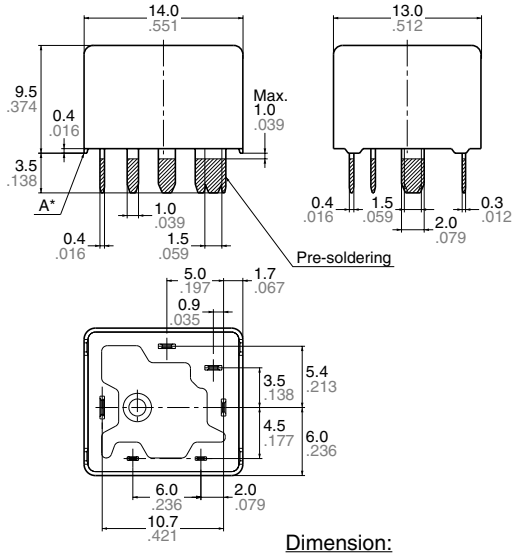


DIMENSIONS (mm inch)

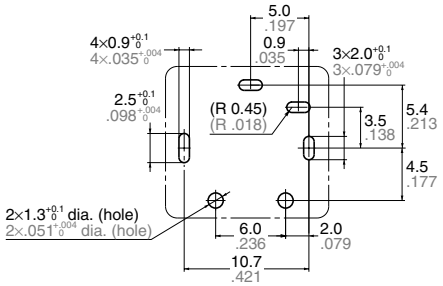
The CAD data of the products with a **CAD Data** mark can be downloaded from: http://industrial.panasonic.com/ac/e/

CAD Data

External dimensions

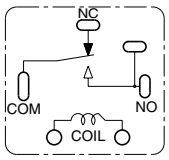


PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



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

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

For general cautions for use, please refer to the "CAUTIONS FOR USE OF AUTOMOTIVE RELAYS"