Panasonic
INDUSTRY

Automotive Relays

CP RELAYS POWER TYPE

Product Catalog

IN Your Future

2024.9

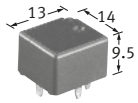
Automotive Relays

RoHS

CP RELAYS POWER TYPE

High Carrying Current Type, Miniature Low Profile Automotive Relay

[Protective construction] Sealed



(Unit: mm)

FEATURES

- Maximum carrying current of 35 A (450 mW type, 16 V applied) made possible through using the same size as CP relays.
- Supports capacitor loads required for power supply applications.

TYPICAL APPLICATIONS

- Defoggers, Ignitions, Heaters, Accessories and Powered windows, etc.

ORDERING INFORMATION (PART NO. : Ordering part number for Japanese market)

ACP P □ □ □

- P: Power type
- Contact arrangement 1: 1c 3: 1a
- Operate voltage 4: Max. 7.2 V DC 6: Max. 6.5 V DC
- Rated coil voltage (DC) 12 V

ORDERING INFORMATION (TYPE NO. : Ordering part number for non Japanese market)

CP □-□-□

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

TYPES

" Type No. " is ordering part number for non Japanese market. " Part No. " is ordering part number for Japanese market.

Contact arrangement	Rated coil voltage	Operate voltage (at 20 ℃) (initial)	Type No.	Part No.	Packing	
					Carton (1-tube)	Case
1 Form C	12 V DC	Max. 7.2 V DC	CP1H-12V	ACPP141	40 pcs.	1,000 pcs.
		Max. 6.5 V DC	CP1H-N-12V	ACPP161		
1 Form A		Max. 7.2 V DC	CP1aH-12V	ACPP341		
		Max. 6.5 V DC	CP1aH-N-12V	ACPP361		

Note) Other operate voltage types are also available. Please inquire our sales representative for details.

RATING

■ Coil data

Rated coil voltage	Operate voltage (at 20 ℃) (initial)	Release voltage (at 20 ℃) (initial)	Rated operating current [±10 %] (at 20 ℃)	Coil resistance [±10 %] (at 20 ℃)	Rated operating power (at 20 ℃)	Usable voltage range (at 85 ℃)
12 V DC	Max. 7.2 V DC	Min. 1.0 V DC	37.5 mA	320 Ω	450 mW	10 to 16 V DC
	Max. 6.5 V DC		53.3 mA	225 Ω	640 mW	9 to 16 V DC

■ Specifications

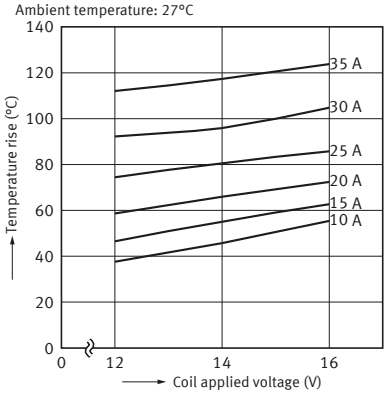
Item		Specifications
Contact data	Contact arrangement	1 Form A, 1 Form C
	Contact resistance (initial)	Max. 100 mΩ (N.O. side: typ. 6 mΩ, N.C. side: typ. 8 mΩ) (By voltage drop 1 A 6 V DC)
	Contact voltage drop (initial)	N.O. side: Max. 0.2 V (at 10 A 12 V DC) N.C. side: Max. 0.2 V (at 10 A 12 V DC)
	Contact material	Ag alloy
	Rated switching capacity(resistive)	N.O. side: 20 A 14 V DC, N.C. side: 10 A 14 V DC
	Max. carrying current*1	N.O. side: < 450 mW > 45 A/2 min, 35 A/1 hour (coil applied voltage 16 V DC, at 20 ℃) 40 A/2 min, 30 A/1 hour (coil applied voltage 16 V DC, at 85 ℃) < 640 mW > 40 A/2 min, 30 A/1 hour (coil applied voltage 16 V DC, at 20 ℃) 35 A/2 min, 25 A/1 hour (coil applied voltage 16 V DC, at 85 ℃)
	Min. switching load (resistive) *2	1 A 14 V DC (at 20 ℃)
Insulated resistance (initial)		Min. 100 MΩ (at 500 V DC, Measurement at same location as " Dielectric strength " section.)
Dielectric strength (initial)	Between open contacts	500 V rms for 1 min (Detection current: 10 mA)
	Between contact and coil	500 V rms for 1 min (Detection current: 10 mA)
Time characteristics (initial)	Operate time (at rated voltage)	Max. 10 ms (at 20 ℃, without contact bounce time)
	Release time (at rated voltage)	Max. 10 ms (at 20 ℃, without contact bounce time) (without diode)
Shock resistance	Functional	Min. 100 m/s² (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs)
	Destructive	Min. 1,000 m/s² (Half-wave pulse of sine wave: 6 ms)
Vibration resistance	Functional	10 to 100 Hz, Min. 44.1 m/s² (Detection time: 10 μs)
	Destructive	10 to 500 Hz, Min. 44.1 m/s² Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours
Expected life	Mechanical	Min. 10×10^6 (at 120 times/min)
	Electrical	< Resistive load > Min. 10^5 (at rated switching capacity, operating frequency: 1 s ON, 9 s OFF) < Capacitive load > N.O. side: Min. 10^5 (at inrush 60 A, steady 1 A 14 V DC, operating frequency: 0.5 s ON, 9.5 s OFF)
Conditions	Conditions for usage, transport and storage*3	Ambient temperature: −40 to +85 ℃, Humidity: 5 to 85 % RH (Avoid icing and condensation)
Weight		Approx. 4.5 g

*1: Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
*2: 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.
*3: The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. For details, please refer to the " Automotive Relay Users Guide ".
Please inquire our sales representative if you will be using the relay in a high temperature atmosphere (110 ℃) .

REFERENCE DATA

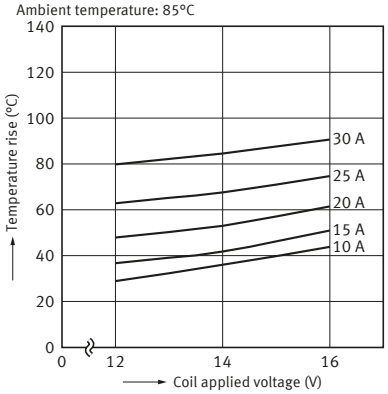
1-1. Coil temperature rise (at room temperature)

Sample: CP1H-12 V, 3 pcs
Point measured: Inside the coil
Carrying current: 10 A, 15 A, 20 A, 25 A, 30 A, 35 A
Ambient temperature: 27°C

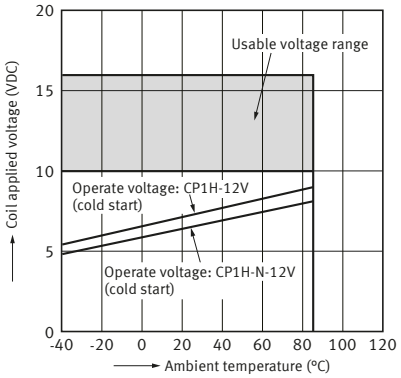


1-2. Coil temperature rise (at 85 ℃)

Sample: CP1H-12 V, 3 pcs
Point measured: Inside the coil
Carrying current: 10 A, 15 A, 20 A, 25 A, 30 A
Ambient temperature: 85°C

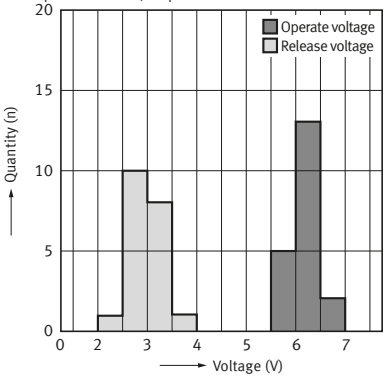


2. Ambient temperature and usable voltage range



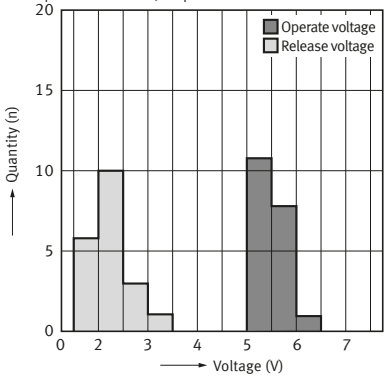
3-1. Distribution of operate and release voltage

Sample: CP1H-12 V, 20 pcs.



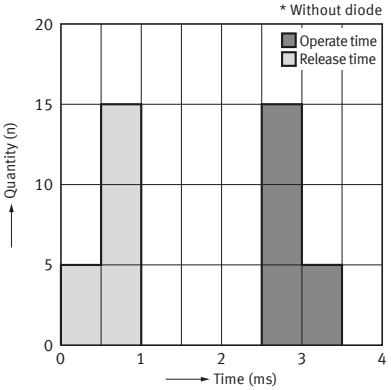
3-2. Distribution of operate and release voltage

Sample: CP1H-N-12 V, 20 pcs.



4. Distribution of operate and release time

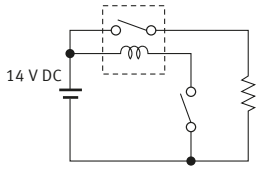
Sample: CP1H-12 V, 20 pcs.



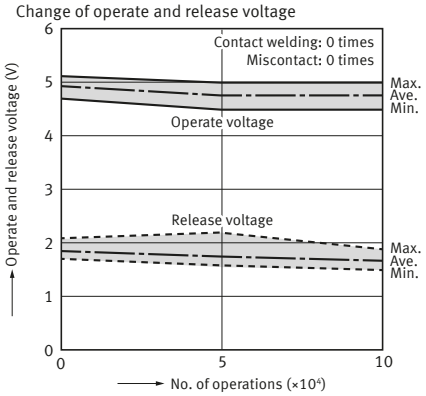
5-1. Electrical life test (Resistive load)

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

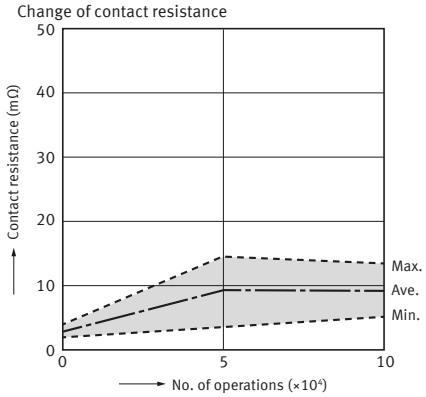
Circuit:



Change of operate and release voltage



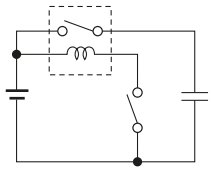
Change of contact resistance



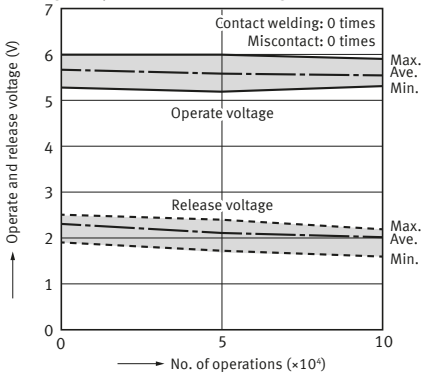
5-2. Electrical life test (Capacitive load)

Sample: CP1H-12 V, 6 pcs.
Load: Inrush current 60 A, steady current 1 A
Operating frequency: ON 1 s, OFF 9 s
Ambient temperature: Room temperature

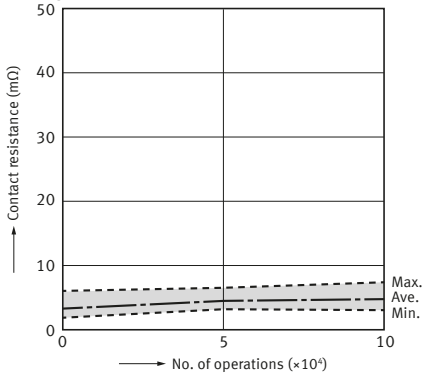
Circuit:



Change of operate and release voltage



Change of contact resistance

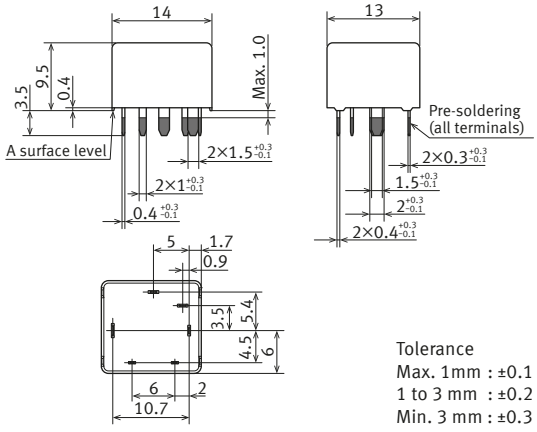


DIMENSIONS (Unit: mm)

CAD The CAD data of the products with a " CAD " mark can be downloaded from our Website.

CAD

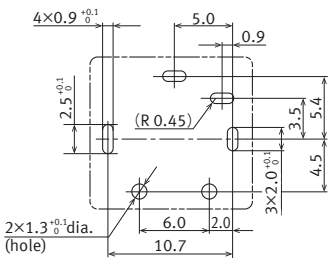
External dimensions



Tolerance
Max. 1mm : ±0.1
1 to 3 mm : ±0.2
Min. 3 mm : ±0.3

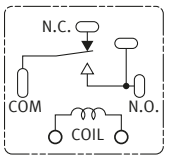
* Dimensions (thickness and width) of terminal is measured after pre-soldering.
Intervals between terminals is measured at A surface level.

PC board pattern
(BOTTOM VIEW)



Tolerance: ±0.1

Schematic
(BOTTOM VIEW)



GUIDELINES FOR USAGE

■ For general cautions for use, please refer to the " Automotive Relay Users Guide ".

Please refer to **" the latest product specifications "** when designing your product.
• Requests to customers:
https://industry.panasonic.com/global/en/salespolicies

■ Global Sales Network Information: industry.panasonic.com/global/en/salesnetwork/globalnetwork

Panasonic
INDUSTRY

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Specifications are subject to change without notice.
ASCTB226E 202409
2024.9