Panasonic
INDUSTRY

Automotive Relays

CN-H RELAYS

Product Catalog

IN Your Future

2024.9

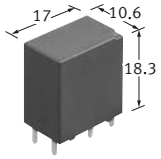
Automotive Relays

RoHS

CN-H RELAYS

High Load Relay for Smart J/B

[Protective construction] Sealed



(Unit: mm)

FEATURES

- Space saving most suitable for smart J/B
- Large capacity switching despite compact size. Can replace micro ISO terminal type relays.
- Terminals for PC board pattern designs are easily allocated.

TYPICAL APPLICATIONS

- Head lamp, Fog lamp, Fan motor, EPS, Defogger and Seat heater, etc.

ORDERING INFORMATION (PART NO.)

ACNH ☐ ☐ ☐

- ☐: Contact arrangement — 3:1 Form A
- ☐: Operate voltage — 1: Max. 5.5 V DC; 2: Max. 6.5 V DC
- ☐: Rated coil voltage (DC) — 12: 12 V

TYPES

Contact arrangement	Rated coil voltage	Operate voltage (at 20 ℃) (initial)	Part No.	Packing	
				Carton (1-tube)	Case
1 Form A	12 V DC	Max. 6.5 V DC	ACNH3212	50 pcs.	1,000 pcs.
		Max. 5.5 V DC	ACNH3112		

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
12 V DC	Max. 6.5 V DC	Min. 1.0 V DC	37.5 mA	320 Ω	450 mW	10 to 16 V DC
	Max. 5.5 V DC	Min. 0.8 V DC	53.3 mA	225 Ω	640 mW	

■ Specifications

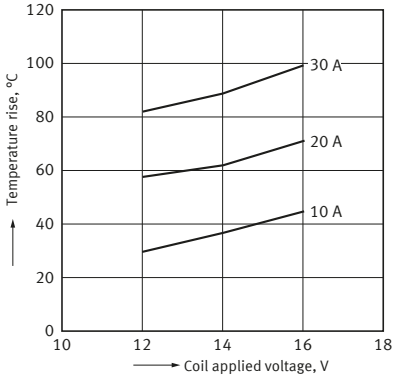
Item		Specifications
Contact data	Contact arrangement	1 Form A
	Contact resistance (initial)	Max. 30 mΩ (typ. 5 mΩ) (By voltage drop 1 A 6 V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	30 A 14 V DC
	Max. carrying current*1	< 450 mW > 35 A/1 hour, 45 A/2 min (coil applied voltage 16 V DC, at 20 ℃) 30 A/1 hour, 40 A/2 min (coil applied voltage 16 V DC, at 85 ℃) 25 A/1 hour, 35 A/2 min (coil applied voltage 16 V DC, at 110 ℃) < 640 mW > 30 A/1 hour, 40 A/2 min (coil applied voltage 16 V DC, at 20 ℃) 25 A/1 hour, 35 A/2 min (coil applied voltage 16 V DC, at 85 ℃) 20 A/1 hour, 30 A/2 min (coil applied voltage 16 V DC, at 110 ℃)
	Min. switching load (resistive)*2	1 A 14 V DC (at 20 ℃)
	Contact voltage drop (initial)	Max. 0.5 V (at 30 A, 12 V DC)
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 contacts 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 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. 100×10^3 at rated switching capacity operating frequency: 1 s ON, 1 s OFF < Motor load > Min. 3×10^5 (motor free) at inrush 84 A, steady 18 A, 14 V DC operating frequency: 2 s ON, 5 s OFF < Lamp load > Min. 2×10^5 at inrush 84 A, steady 12 A, 14 V DC operating frequency: 1 s ON, 14 s OFF
Conditions	Conditions for usage, transport and storage*3	Ambient temperature: −40 to +110 ℃, Humidity: 2 to 85 % RH (Avoid icing and condensation)
Weight		Approx. 9 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

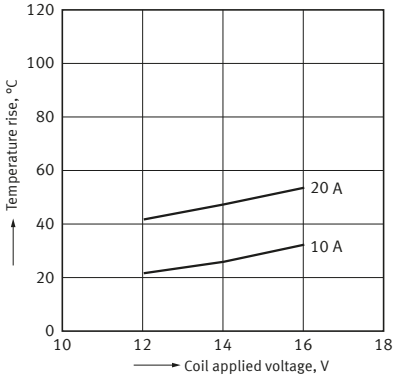
1-1. Coil temperature rise (at room temperature)

Sample: ACNH3212, 3 pcs
Measured portion: Inside the coil
Carrying current: 10 A, 20 A, 30 A
Ambient temperature: 25°C

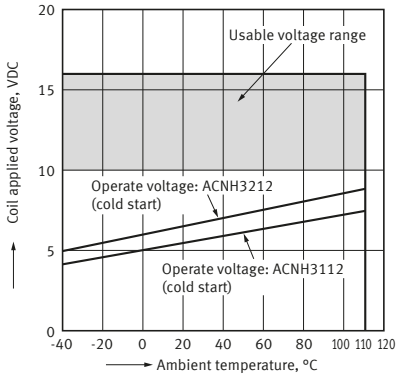


1-2. Coil temperature rise (at 110 ℃)

Sample: ACNH3212, 3 pcs
Measured portion: Inside the coil
Carrying current: 10 A, 20 A
Ambient temperature: 110°C

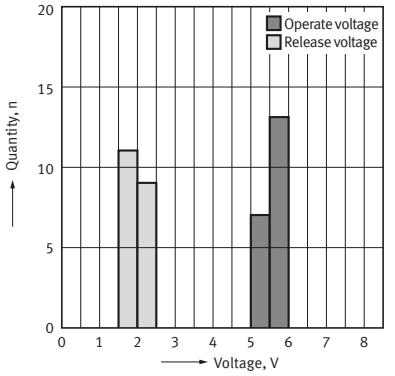


2.Ambient temperature and usable voltage range



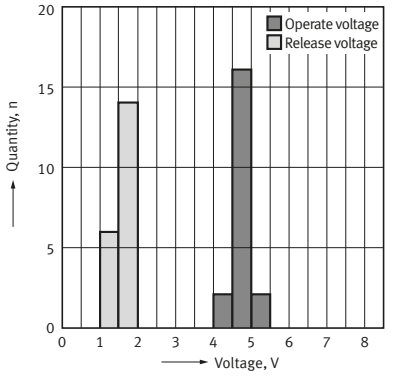
3-1. Distribution of operate and release voltage

Sample: ACNH3212, 20 pcs.



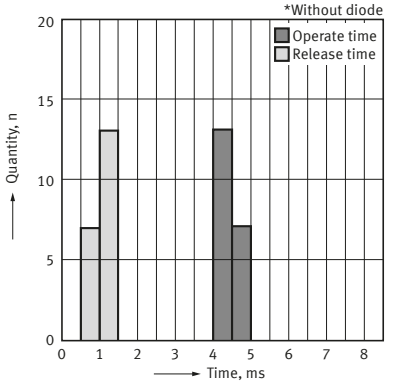
3-2. Distribution of operate and release voltage

Sample: ACNH3112, 20 pcs.



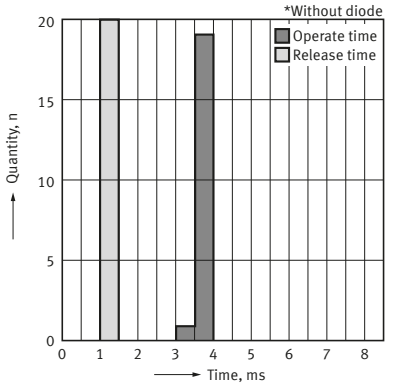
4-1. Distribution of operate and release time

Sample: ACNH3212, 20 pcs.



4-2. Distribution of operate and release time

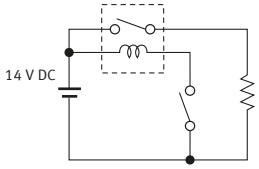
Sample: ACNH3112, 20 pcs.



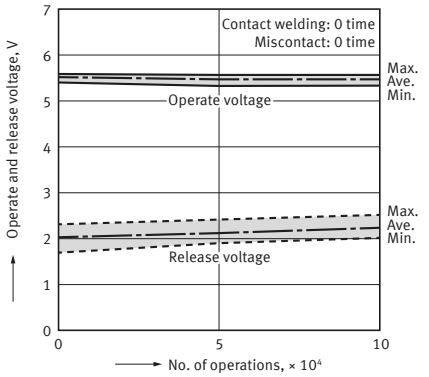
5-1. Electrical life test (Resistive load)

Sample: ACNH3212, 6 pcs.
Load: Resistive load: 30 A 14 V DC
Operating frequency: ON 1 s, OFF 1 s
Ambient temperature: Room temperature

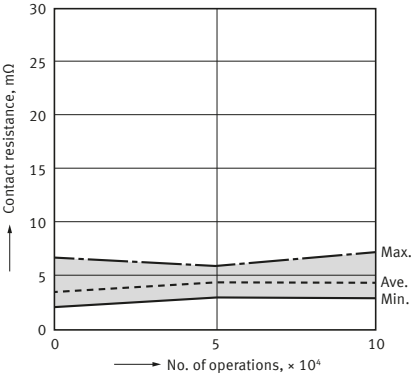
Circuit:



Change of operate and release voltage



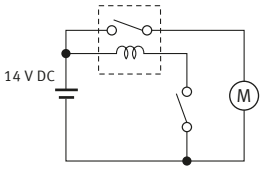
Change of contact resistance



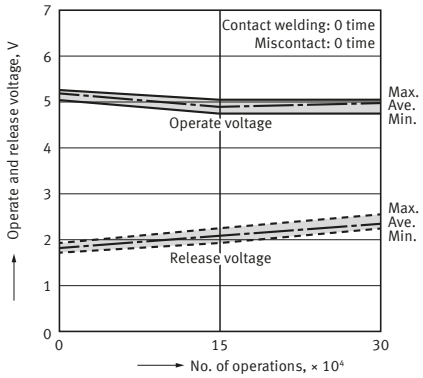
5-2. Electrical life test (Motor load)

Sample: ACNH3212, 3 pcs.
Load: inrush: 84 A, steady: 18 A,
radiator fan actual load (motor free)
Operating frequency: ON 2s, OFF 5 s
Ambient temperature: 110°C

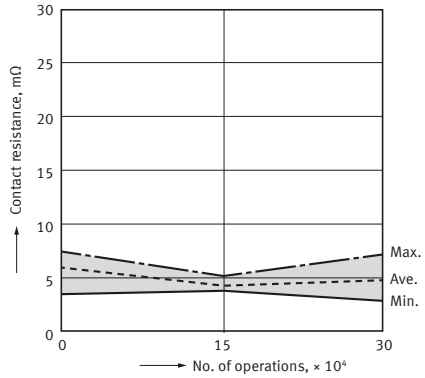
Circuit:



Change of operate and release voltage



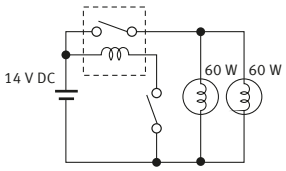
Change of contact resistance



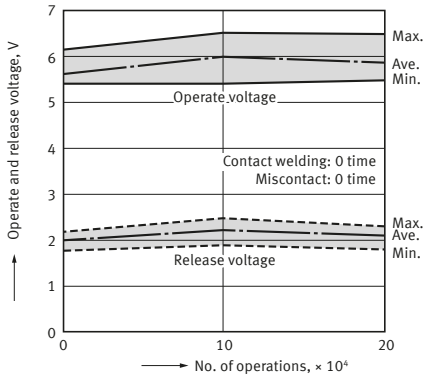
5-3. Electrical life test (Lamp load)

Sample: ACNH3212, 6 pcs.
Load: 60 W×2, inrush: 84 A, steady: 12 A
Operating frequency: ON 1 s, OFF 14 s
Ambient temperature: Room temperature

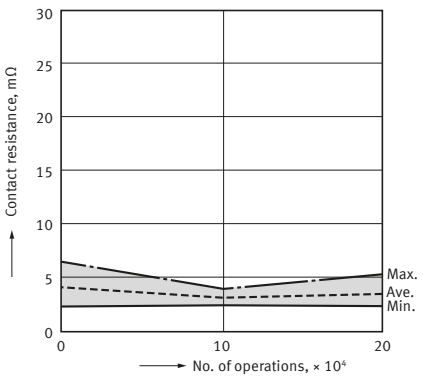
Circuit:



Change of operate and release voltage



Change of contact resistance

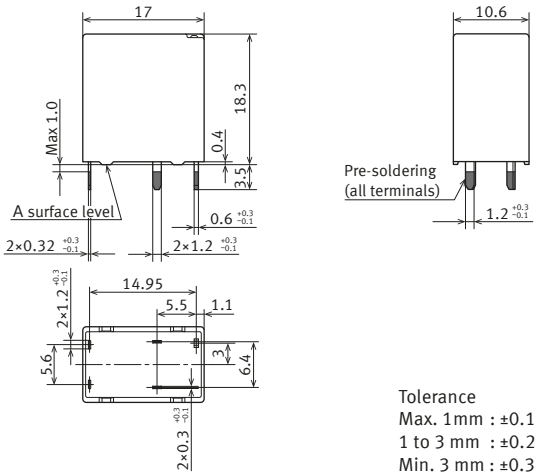


DIMENSIONS (Unit: mm)

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

CAD

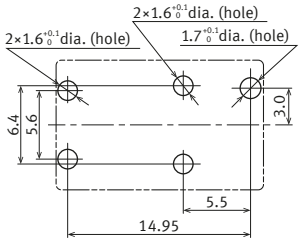
External dimensions



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

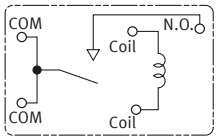
* Dimensions (thickness and width) of terminal is measured before pre-soldering. Intervals between terminals is measured at A surface level.

PC board pattern
(BOTTOM VIEW)



Tolerance: ±0.1

Schematic
(BOTTOM VIEW)



GUIDELINES FOR USAGE

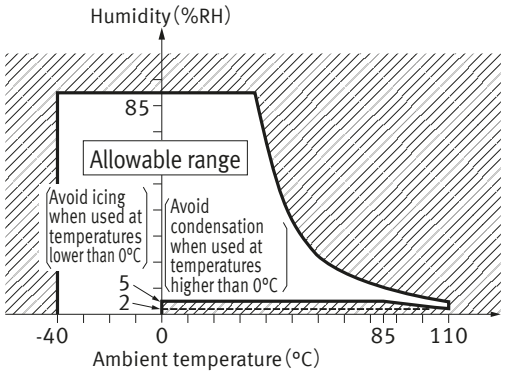
■ For general cautions for use, please refer to the " Automotive Relay Users Guide ".

■ Precautions when using CN-H relays

● Usage, transport and storage conditions

1) Ambient temperature, humidity, and air pressure during usage, transport of the relay
   (1) Temperature: −40 to +110 ℃
   (2) Humidity: 2 to 85 % RH (Avoid icing and condensation)
   (3) Air pressure: 86 to 106 kPa
   Note) The humidity range varies with the temperature. Use within the range indicated in the graph.

[Temperature and humidity range for usage, transport, and storage]



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
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Specifications are subject to change without notice.
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