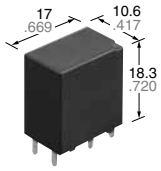
High Load Relay for Smart J/B

CN-H RELAYS

<Protective construction>
Sealed



FEATURES

- **Space saving most suitable for smart J/B**
- **Large capacity switching despite small 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, Seat heater, etc.**

(Unit: mm inch)

RoHS compliant

ORDERING INFORMATION

ACNH □ □ □

Contact arrangement
3: 1 Form A

Operate (Set) voltage
1: Max. 5.5V DC
2: Max. 6.5V DC

Rated coil voltage (DC)
12: 12V

TYPES

Contact arrangement	Rated coil voltage	Operate (Set) voltage (at 20°C 68°F) (Initial)	Part No.	Packing	
				Carton (tube)	Case
1 Form A	12V DC	Max. 6.5 V DC	ACNH3212	50 pcs.	1,000 pcs.
		Max. 5.5 V DC	ACNH3112		

RATING

1. Coil data

Rated coil voltage	Operate (Set) voltage (at 20°C 68°F) (Initial)	Release (Reset) voltage (at 20°C 68°F) (Initial)	Rated operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Rated operating power (at 20°C 68°F)	Usable voltage range
12 V DC	Max. 6.5 V DC	Min. 1.0 V DC	37.5 mA	320Ω	450 mW	10 to 16 V DC
	Max. 5.5 V DC	Min. 0.8 V DC	53.3 mA	225Ω	640 mW	

2. Specifications

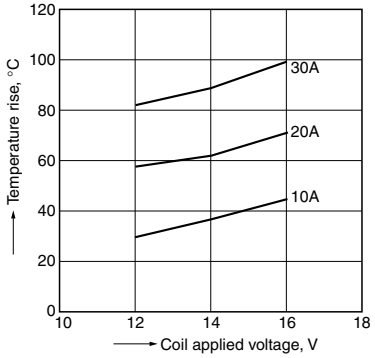
Item		Specifications
Contact data	Contact arrangement	1 Form A
	Contact resistance (initial)	Max. 30mΩ (Typ. 5mΩ) (By voltage drop 1A 6V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	30A 14V DC
	Max. carrying current*1	<450mW> 35A/1 hour, 45A/2 min. (Coil applied voltage 16V DC, at 20°C 68°F) 30A/1 hour, 40A/2 min. (Coil applied voltage 16V DC, at 85°C 185°F) 25A/1 hour, 35A/2 min. (Coil applied voltage 16V DC, at 110°C 230°F) <640mW> 30A/1 hour, 40A/2 min. (Coil applied voltage 16V DC, at 20°C 68°F) 25A/1 hour, 35A/2 min. (Coil applied voltage 16V DC, at 85°C 185°F) 20A/1 hour, 30A/2 min. (Coil applied voltage 16V DC, at 110°C 230°F)
	Continuous carrying current	20A 14V DC (450mW) at 110°C 230°F 15A 14V DC (640mW) at 110°C 230°F
	Min. switching load (resistive)*2	1A 14V DC (at 20°C 68°F)
Insulated resistance (initial)		Min. 100 MΩ (at 500V DC, Measurement at same location as “Dielectric strength” section.)
Dielectric strength (initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
	Between contacts and coil	500 Vrms for 1 min. (Detection current: 10mA)
Time characteristics (initial)	Operate (Set) time (at Rated voltage)	Max. 10ms (at 20°C 68°F, without contact bounce time)
	Release (Reset) time (at Rated voltage)	Max. 10ms (at 20°C 68°F) (without diode)
Shock resistance	Functional	Min. 100 m/s² {approx. 10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
	Destructive	Min. 1,000 m/s² {approx. 100G} (Half-wave pulse of sine wave: 6ms)
Vibration resistance	Functional	10 to 100 Hz, Min. 44.1m/s² {approx. 4.5G} (Detection time: 10μs)
	Destructive	10 to 500 Hz, Min. 44.1m/s² {approx. 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 rated switching capacity, operating frequency: 1s ON, 1s OFF) <Motor load> Min. 3×10^5 (motor free) (at inrush 84 A, steady 18 A, 14 V DC operating frequency: ON 2s, OFF 5s) <Lamp load> Min. 2×10^5 (at inrush 84 A, steady 12 A, 14 V DC operating frequency: ON 1s, OFF 14s)
Conditions	Conditions for usage, transport and storage*3	Ambient temperature: –40 to +110°C –40 to +230°F Humidity: 2 to 85% R.H. (Please avoid icing or condensation)
Weight		Approx. 9 g .32 oz

Notes: *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°C 230°F).

REFERENCE DATA

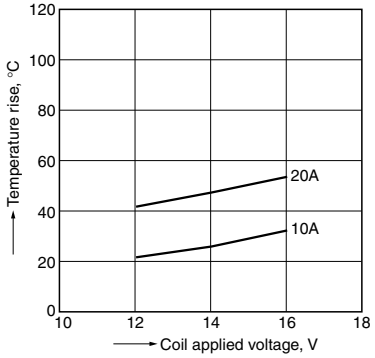
1-(1). Coil temperature rise (at room temperature)

Sample: ACNH3212, 3pcs
Measured portion: Inside the coil
Carrying current: 10A, 20A, 30A
Ambient temperature: 25°C 77°F

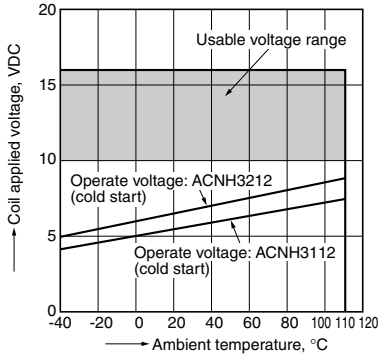


1-(2). Coil temperature rise (at 110°C 230°F)

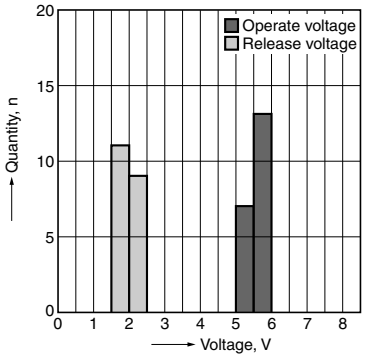
Sample: ACNH3212, 3pcs
Measured portion: Inside the coil
Carrying current: 10A, 20A
Ambient temperature: 110°C 230°F



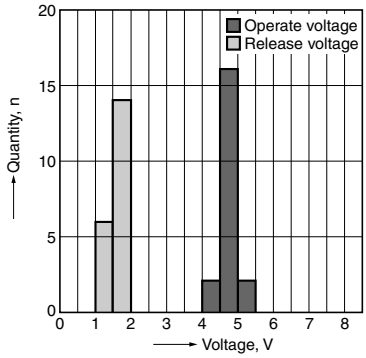
2. Ambient temperature and usable voltage range



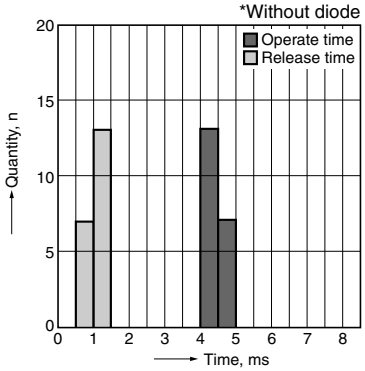
3-(1). Distribution of operate (set) and release (reset) voltage
Sample: ACNH3212, 20pcs.



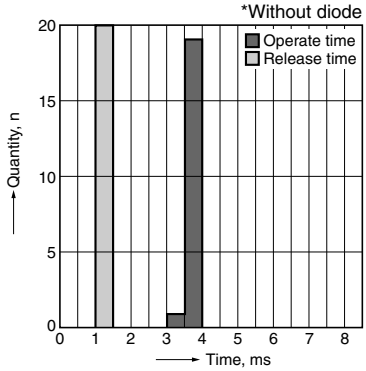
3-(2). Distribution of operate (set) and release (reset) voltage
Sample: ACNH3112, 20pcs.



4-(1). Distribution of operate (set) and release (reset) time
Sample: ACNH3212, 20pcs.

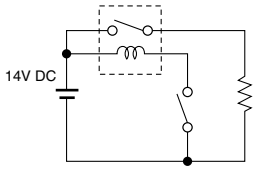


4-(2). Distribution of operate (set) and release (reset) time
Sample: ACNH3112, 20pcs.

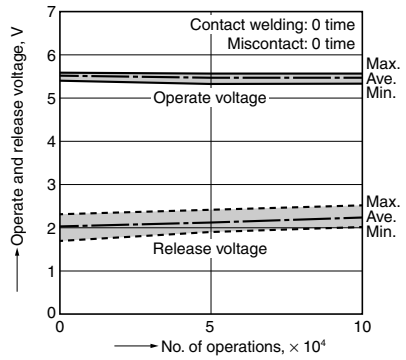


5-(1). Electrical life test (Resistive load)
Sample: ACNH3212, 6pcs.
Load: Resistive load: 30A 14V DC
Operating frequency: ON 1s, OFF 1s
Ambient temperature: Room temperature

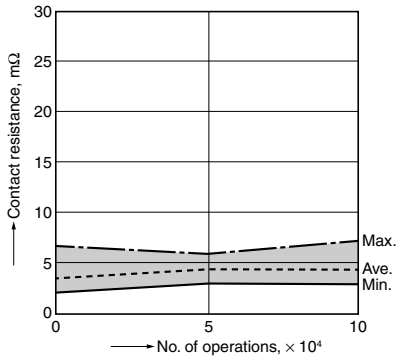
Circuit:



Change of operate (set) and release (reset) voltage

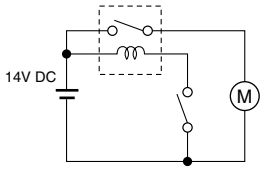


Change of contact resistance

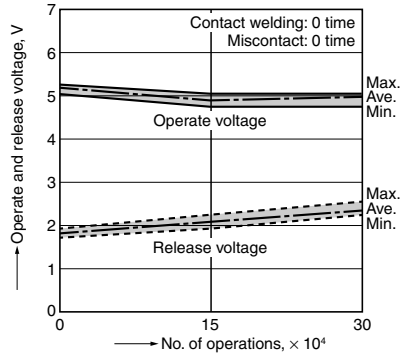


5-(2). Electrical life test (Motor load)
Sample: ACNH3212, 3pcs.
Load: inrush: 84A, steady: 18A,
radiator fan actual load (motor free)
Operating frequency: ON 2s, OFF 5s
Ambient temperature: 110°C 230°F

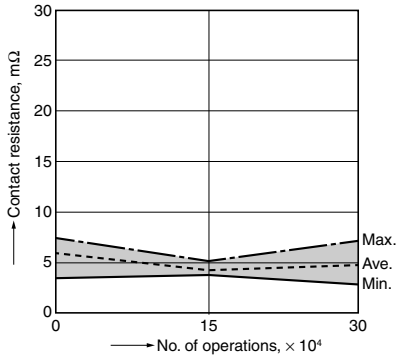
Circuit:



Change of operate (set) and release (reset) voltage

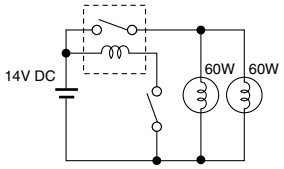


Change of contact resistance

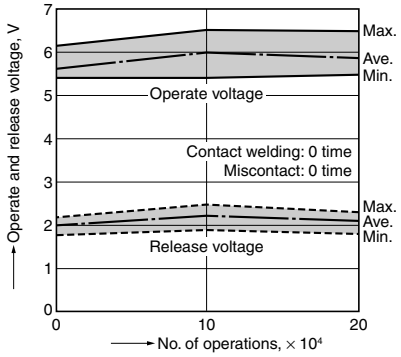


5-(3). Electrical life test (Lamp load)
Sample: ACNH3212, 6pcs.
Load: 60W×2, inrush: 84A, steady: 12A
Operating frequency: ON 1s, OFF 14s
Ambient temperature: Room temperature

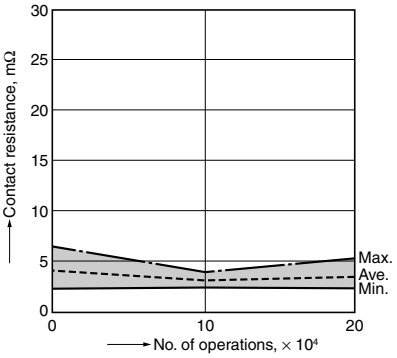
Circuit:



Change of operate (set) and release (reset) voltage



Change of contact resistance

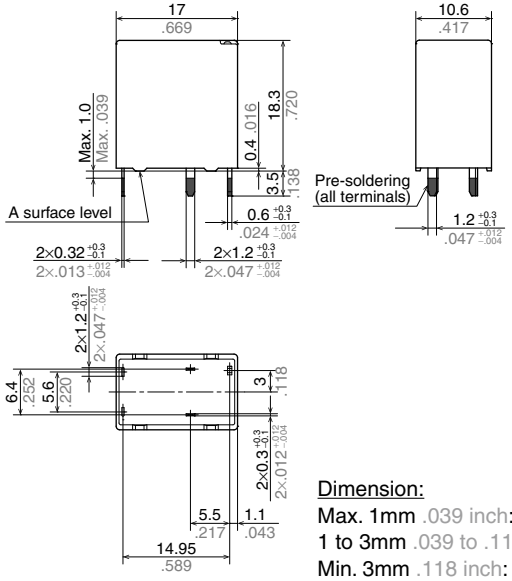


DIMENSIONS (mm inch)

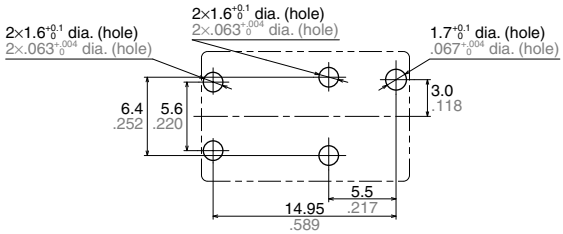
The CAD data of the products with a CAD mark can be downloaded from: http://industrial.panasonic.com/ac/e/

CAD

External dimensions

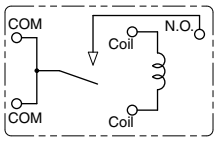


PC board pattern
(Bottom view)



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

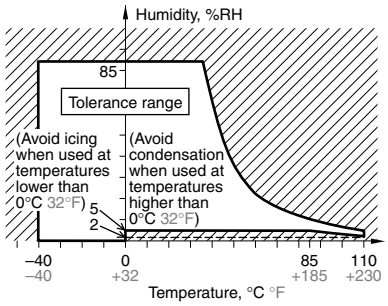
* Dimensions (thickness and width) of terminal is measured before pre-soldering.
Intervals between terminals is measured at A surface level.

NOTES

Usage, transport and storage conditions

1) Ambient temperature, humidity, and air pressure during usage, transport, and storage of the relay:
(1) Temperature:
–40 to +110°C –40 to +230°F
(2) Humidity: 2 to 85% RH
(Avoid icing and condensation.)

(3) Air pressure: 86 to 106 kPa
The humidity range varies with the temperature. Use within the range indicated in the graph below.
(Temperature and humidity range for usage, transport, and storage)



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

Please contact .....

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