



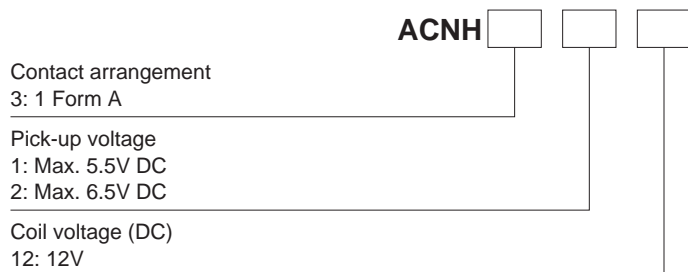
### FEATURES

- Best space savings in its class
- Large capacity switching despite small size. Can replace micro ISO terminal type relays.
- Terminals for PC board pattern designs are easily allocated.
- Sealed type

### TYPICAL APPLICATIONS

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

## ORDERING INFORMATION



## TYPES

Contact arrangement	Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Part No.
1 Form A	12V DC	Max. 6.5 V DC (Initial)	ACNH3212
		Max. 5.5 V DC (Initial)	ACNH3112

Standard packing; Carton (tube): 50 pcs.; Case: 1,000 pcs.

## 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
12 V DC	Max. 6.5 V DC (Initial)	Min. 1.0 V DC (Initial)	37.5 mA	320%	450 mW	10 to 16 V DC
	Max. 5.5 V DC (Initial)	Min. 0.8 V DC (Initial)	53.3 mA	225%	640 mW	

# CN-H (ACNH3)

## 2. Specifications

Characteristics	Item	Specifications	
Contact	Arrangement	1 Form A	
	Contact resistance (Initial)	Typ5mΩ (By voltage drop 6 V DC 1 A)	
	Contact material	Ag alloy (Cadmium free)	
Rating	Nominal switching capacity (resistive load)	30A 14V DC	
	Max. carrying current	<450mW> 35A/1 h, 45A/2 min. at 20°C 68°F 30A/1 h, 40A/2 min. at 85°C 185°F 25A/1 h, 35A/2 min. at 110°C 230°F	
		<640mW> 30A/1 h, 40A/2 min. at 20°C 68°F 25A/1 h, 35A/2 min. at 85°C 185°F 20A/1 h, 30A/2 min. 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
		Nominal operating power	450 mW (for pick-up voltage max. 6.5 V DC), 640 mW (for pick-up voltage max. 5.5 V DC)
Min. switching capacity (resistive load)*1	1A 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) (Initial) (without protective element)		
Mechanical characteristics	Shock resistance	Functional	Min. 100 m/s <sup>2</sup> {10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
		Destructive	Min. 1,000 m/s <sup>2</sup> {100G} (Half-wave pulse of sine wave: 6ms)
	Vibration resistance	Functional	10 Hz to 100 Hz, Min. 44.1m/s <sup>2</sup> {4.5G} (Detection time: 10μs)
		Destructive	10 Hz to 500 Hz, Min. 44.1m/s <sup>2</sup> {4.5G} Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours
Expected life	Mechanical	Min. 10 <sup>7</sup> (at 120 cpm)	
	Electrical	<Resistive load> Min. 10 <sup>5</sup> (at nominal switching capacity, operating frequency: 1s ON, 1s OFF) <Motor load> Min. 3×10 <sup>5</sup> (at inrush 84 A, steady 18 A, 14 V DC operating frequency: ON 2s, OFF 5s) <Lamp load> Min. 2×10 <sup>5</sup> (at inrush 84 A, steady 12 A, 14 V DC operating frequency: ON 1s, OFF 14s)	
Conditions	Conditions for operation, transport and storage	Ambient temperature: -40°C to +110°C -40°F to +230°F Humidity: 2% R.H. to 85% R.H. (Not freezing and condensing at low temperature)	
Mass		Approx. 9 g .32 oz	

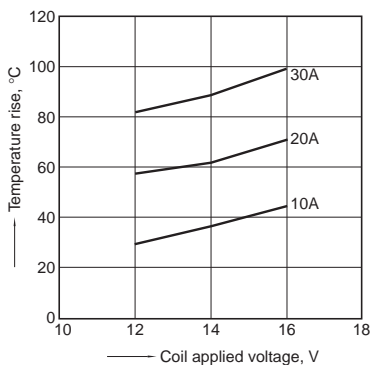
Notes:

\*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.

## REFERENCE DATA

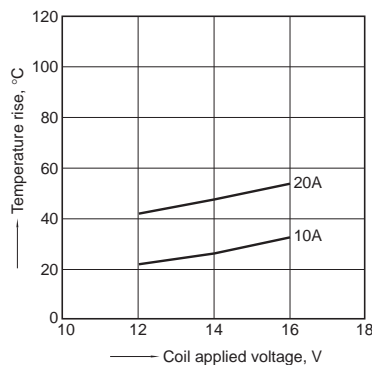
### 1-(1). Coil temperature rise

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

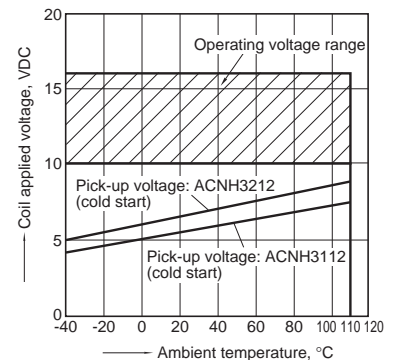


### 1-(2). Coil temperature rise

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

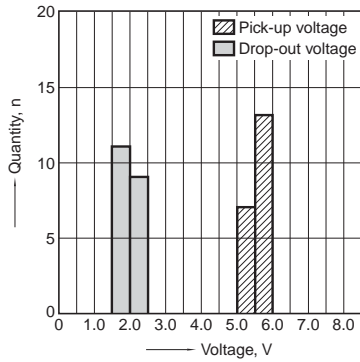


### 2. Ambient temperature and operating voltage range



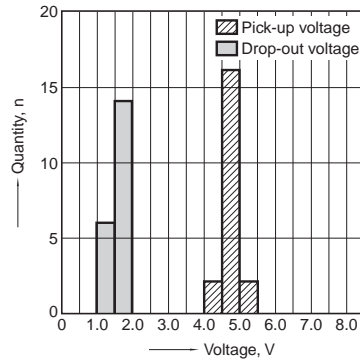
### 3-(1). Distribution of pick-up and drop-out voltage

Sample: ACNH3212, 20pcs.



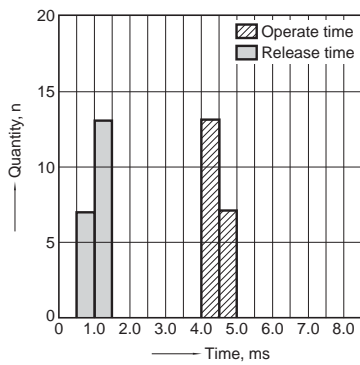
### 3-(2). Distribution of pick-up and drop-out voltage

Sample: ACNH3112, 20pcs.



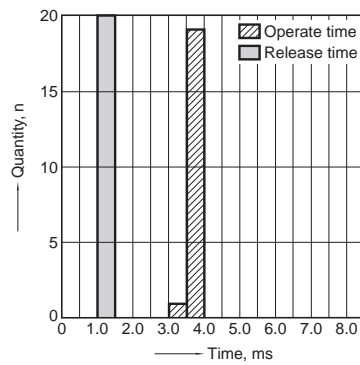
### 4-(1). Distribution of operate and release time

Sample: ACNH3212, 20pcs.



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

Sample: ACNH3112, 20pcs.

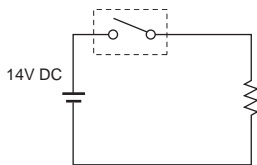


### 5. Electrical life test (Resistive load)

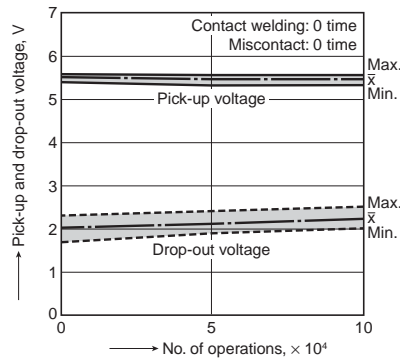
Sample: ACNH3212, 6pcs.

Load: Resistive load (NO side: 30A 14V DC)  
 Operating frequency: ON 1s, OFF 1s  
 Ambient temperature: Room temperature

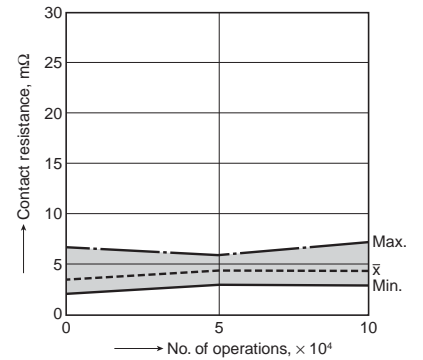
Circuit:



### Change of pick-up and drop-out voltage



### Change of contact resistance

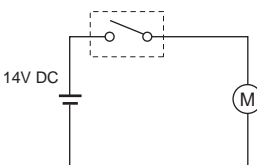


### 6-(1). Electrical life test (Motor load)

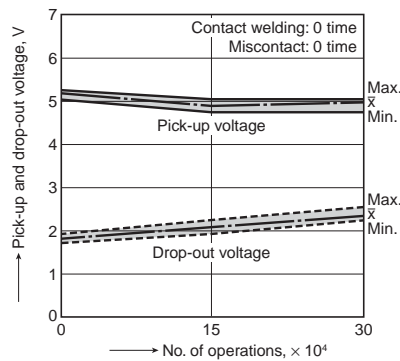
Sample: ACNH3212, 3pcs.

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 pick-up and drop-out voltage



### Change of contact resistance

