

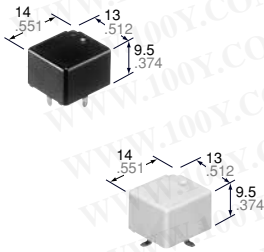
### FEATURES

- **Low profile**  
<Height>  
PC board terminal type:  
9.5 mm .374 inch  
Surface-mount terminal type:  
10.5mm .413inch
- **High capacity**  
CP Relay provides low profile spacesaving advantages while offering high continuous current of 25 A(1 hour).
- **Sealed construction suitable for harsh environments**
- **Simple footprint pattern enables ease of PC board layout**

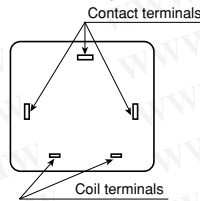
- **“PC board terminal” and “Surface mount terminal” types available**  
SMD automatic mounting is possible for surface mount terminal types because tube packaging is used.

### TYPICAL APPLICATIONS

- Power windows
- Auto door lock
- Power sunroof
- Memory sheet
- Wiper
- Defogger
- Blower fan
- EPS
- ABS etc.



mm inch



RoHS Directive compatibility information  
<http://www.nais-e.com/>

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### SPECIFICATIONS

#### Contact

Arrangement	1 Form A	1 Form C	
Contact material	Ag alloy (Cadmium free)		
Initial contact resistance (Initial) (By voltage drop 6V DC 1A)	Typ. 3 mΩ (N.O.) Typ. 4 mΩ (N.C.)		
Rating	Nominal switching capacity	20 A 14 V DC 20 A 14 V DC (N.O.) 10 A 14 V DC (N.C.)	
	Max. switching voltage	16 V DC	
	Max. carrying current	N.O. 40 A for 2 minutes 30 A for 1 hour (12 V at 20°C 68°F) 35 A for 2 minutes 25 A for 1 hour (12 V at 85°C 185°F)	
	Min. switching capacity <sup>#1</sup>	1 A 12 V DC	
Expected life (min. operations)	Mechanical (at 120cpm)	10 <sup>7</sup>	
	Electrical (at 6cpm)	Resistive load	Min. 10 <sup>5*1</sup>
		Motor load	Min. 2×10 <sup>5*2</sup>
			Min. 10 <sup>5*3</sup> Min. 2×10 <sup>5*4</sup>

#### Coil

Nominal operating power	640 mW
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<sup>#1</sup> 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.

#### Characteristics

Max. operating speed (at rated load)	6cpm	
Initial insulation resistance <sup>*5</sup>	Min. 100MΩ (at 500 V DC)	
Initial breakdown voltage <sup>*6</sup>	Between open contacts	500 Vrms for 1min.
	Between contact and coil	500 Vrms for 1min.
Operate time <sup>*7</sup>	Max. 10ms (at 20°C 68°F)	
Release time (without diode) <sup>*7</sup> (at nominal voltage)	Max. 10ms (at 20°C 68°F)	
Shock resistance	Functional <sup>*8</sup>	Min. 100 m/s <sup>2</sup> {10 G}
	Destructive <sup>*9</sup>	Min. 1,000 m/s <sup>2</sup> {100 G}
Vibration resistance	Functional <sup>*10</sup>	10 Hz to 100 Hz, Min.44.1 m/s <sup>2</sup> {4.5 G}
	Destructive	10 Hz to 500 Hz, Min.44.1 m/s <sup>2</sup> {4.5 G}
Conditions in case of operation, transport and storage <sup>*11</sup> (Not freezing and condensing at low temperature)	Ambient temp	-40°C to +85°C -40°F to +185°F
	Humidity	5% R.H. to 85% R.H.
Mass	Approx. 4g .14 oz	

#### Remarks

- <sup>\*1</sup> At nominal switching capacity, operating frequency: 1s ON, 9s OFF
- <sup>\*2</sup> N.O.: at 5A (steady), 25A (inrush)/14V DC, operating frequency: 0.5s ON, 9.5s OFF
- <sup>\*3</sup> At 20A 14V DC (Motor lock), operating frequency: 0.5s ON, 9.5s OFF
- <sup>\*4</sup> N.C.: at 20A 14V DC (brake), operating frequency: 0.5s ON, 9.5s OFF
- <sup>\*5</sup> Measurement at same location as "Initial breakdown voltage" section
- <sup>\*6</sup> Detection current: 10mA
- <sup>\*7</sup> Excluding contact bounce time
- <sup>\*8</sup> Half-wave pulse of sine wave: 11ms; detection time: 10μs
- <sup>\*9</sup> Half-wave pulse of sine wave: 6ms
- <sup>\*10</sup> Detection time: 10μs
- <sup>\*11</sup> Refer to Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT  
Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).

## ORDERING INFORMATION

Ex. CP   -  -

Contact arrangement	Mounting classification	Coil voltage (DC)	Packing style
1a: 1 Form A 1: 1 Form C	Nil: PC board terminal SA: Surface-mount terminal	12 V	Nil: Tube packing X: Tape and reel packing (picked from the NC terminal side) Z: Tape and reel packing (picked from the coil terminal side)

Notes: 1. Tube packing: Carton (Tube): 40 pcs.; Case: 1,000 pcs. \* PC board terminal type only.  
 2. Tape and reel packing: Carton (Tape and reel): 300 pcs.; Case: 900 pcs. \* Surface-mount terminal type only.  
 3. Surface-mount terminal type is available only for 1 form C contact arrangement.

## TYPES

### 1. PC board terminal type

Contact arrangement	Coil voltage	Part No.
1 Form A	12V DC	CP1a-12V
1 Form C	12V DC	CP1-12V

### 2. Surface mount terminal type

Contact arrangement	Coil voltage*1	Part No.
1 Form C	12V DC	CP1SA-12V-X
1 Form C	12V DC	CP1SA-12V-Z

#### Notes:

1. \*1 24V DC type is also available by request. Please contact us for details.  
 2. Tape and reel packing symbol "z" or "x" are not marked on the relay.

## COIL DATA (at 20°C 68°F)

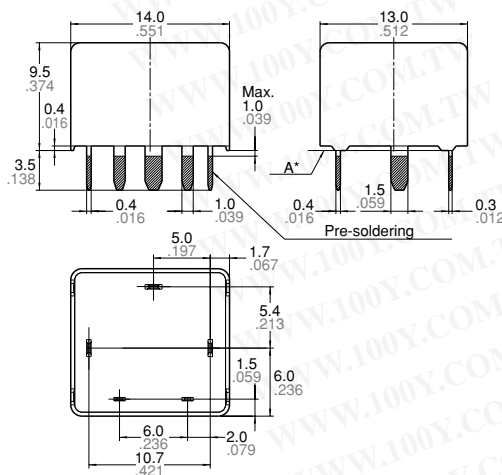
Nominal voltage, V DC	Pick-up voltage, V DC (Initial)	Drop-out voltage, V DC (Initial)	Coil resistance $\Omega$	Nominal operating current mA	Nominal operating power mW	Usable voltage range, V DC
12	Max. 7.2	Min. 1.0	225±10%	53.3±10%	640	10 to 16

\* Other pick-up voltage types are also available. Please contact us for details.

## DIMENSIONS

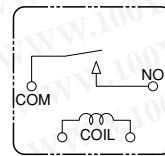
mm inch

### 1. PC board terminal type



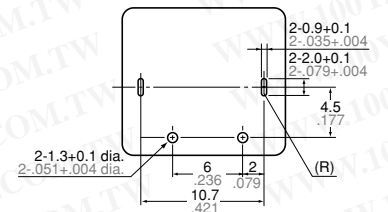
### Schematic (Bottom view)

1a

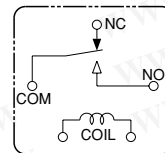


### PC board pattern (Bottom view)

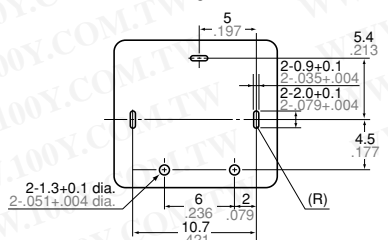
1a



1c



1c



#### Dimension:

Max. 1mm .039 inch: ±0.1 ±0.04  
 1 to 3mm .039 to .118 inch: ±0.2 ±0.08  
 Min. 3mm .118 inch: ±0.3 ±0.12

#### General tolerance

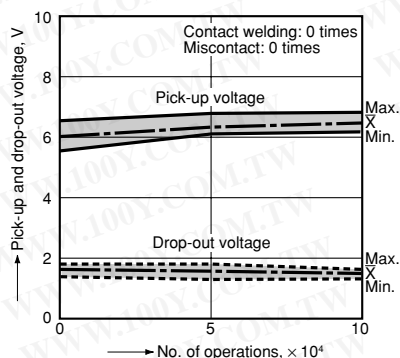
\* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering.  
 Intervals between terminals is measured at A surface level.



7-(1). Electrical life test (at rated load)

Sample : CP1-12V  
 Quantity : n = 4 (NC = 2, NO = 2)  
 Load : Resistive load (NC side : 10A 14 V DC,  
 NO side : 20 A 14 V DC)  
 Operating frequency : ON 1s, OFF 9s

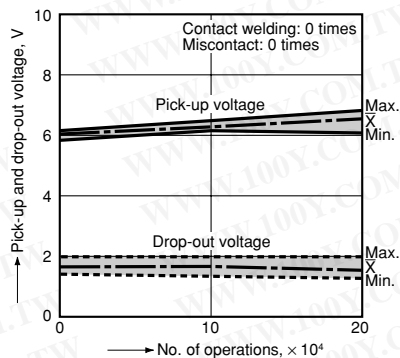
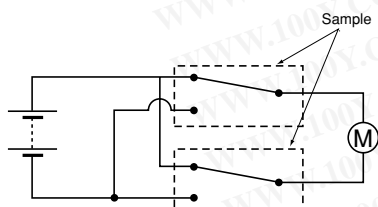
Ambient temperature : Room temperature



7-(2). Electrical life test (Motor free)

Sample : CP1-12V, 3pcs.  
 Load : 5A, Inrush 25A, Brake current 15A,  
 Power window motor load (Free condition).  
 Operating frequency : (ON : OFF = 0.5s : 9.5s)  
 Ambient temperature : Room temperature

Circuit :



**For Cautions for Use, see Relay Technical Information.**

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