



RoHS compliant

## FEATURES

- **Compact type for automotives**  
We successfully developed a power type that is the same size as our CT relay.
- **30 A maximum switching capacity**  
Switching of 30 A motor loads is possible due to change of COM spring material and other improvements.
- **Still top-of-its-class for silent operation**  
Maintains equally silent operation as our CT relay (ACT).

- **Sealed type**  
Sealed type makes automatic cleaning possible.

## TYPICAL APPLICATIONS

**Power windows, Powered seats, Auto door lock, Slide door closers, Power sunroof, etc.**

## TYPES

Contact arrangement	Coil voltage	Part No.
1 Form C	12 V DC	ACTP112
1 Form C × 2 (8 terminals type)		ACTP212
1 Form C × 2 (10 terminals type)		ACTP512

Standard packing; 1 Form C: Carton (tube) 30pcs. Case 1,500pcs.; 1 Form C × 2: Carton (tube) 30pcs. Case 900pcs.

## 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
12V DC	Max. 7.2 V DC (Initial)	Min. 1.0 V DC (Initial)	83.3 mA	144Ω	1,000 mW	10 to 16V DC

Note: Other pick-up voltage types are also available. Please contact us for details.

### 2. Specifications

Characteristics	Item	Specifications	
Contact	Arrangement	1 Form C × 2, 1 Form C	
	Contact resistance (Initial)	N.O.: Typ 7mΩ, N.C.: Typ 10mΩ (By voltage drop 6V DC 1A)	
	Contact material	Ag alloy (Cadmium free)	
Rating	Nominal switching capacity (resistive load)	N.O.: 30 A 14V DC, N.C.: 10 A 14V DC	
	Max. carrying current (14V DC)*3	N.O.: 40 A for 2 minutes, 25 A for 1 hour at 20°C 68°F, 35 A for 2 minutes, 20 A for 1 hour at 85°C 185°F	
	Nominal operating power	1,000 mW	
	Min. switching capacity (resistive load)*1	1 A 12V DC	
Electrical characteristics	Insulation resistance (Initial)	Min. 100 MΩ (at 500V DC)	
	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, excluding contact bounce time) (Initial)		
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. 44.1 m/s <sup>2</sup> {4.5G} (Detection time: 10μs)
		Destructive	10 Hz to 500 Hz, Min. 44.1 m/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. 5 × 10 <sup>4</sup> (at nominal switching capacity, operating frequency: 1s ON, 9s OFF) <Motor load> N.O. side: Min. 10 <sup>5</sup> (at Inrush 30A, Steady 7A 14 V DC), Min. 5 × 10 <sup>4</sup> (at 30A 14 V DC motor lock condition) N.C. side: Min. 10 <sup>5</sup> (at brake current 15A 14 V DC) (operating frequency: 0.5s ON, 9.5s OFF)	
Conditions	Conditions for operation, transport and storage*2	Ambient temperature: -40°C to +85°C -40°F to +185°F, Humidity: 5% R.H. to 85% R.H. (Not freezing and condensing at low temperature)	
	Max. operating speed	6 cpm (at nominal switching capacity)	
Mass		Twin type: approx. 8 g .28 oz, 1 Form C type: approx. 4 g .14 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.

\*2. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Please refer to "Usage ambient condition" in CAUTIONS FOR USE OF AUTOMOTIVE RELAYS. Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).

\*3. Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

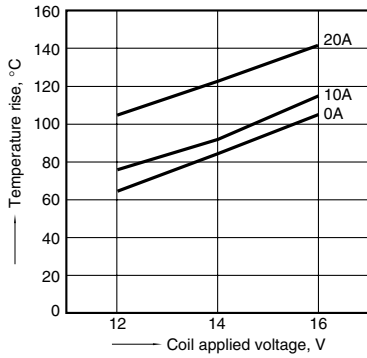
\* If the relay is used continuously for long periods of time with coils on both sides in an energized condition, breakdown might occur due to abnormal heating depending on the carrying condition. Therefore, please inquire when using with a circuit that causes an energized condition on both sides simultaneously.

# CT (ACTP)

## REFERENCE DATA

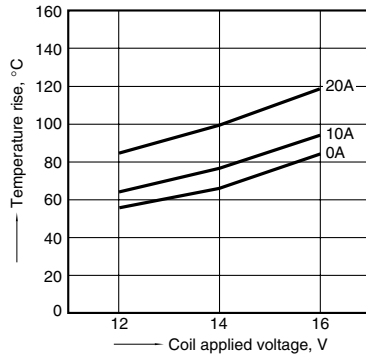
1-(1). Coil temperature rise (at room temperature)

Sample: ACTP212, 3pcs.  
Contact carrying current: 0A, 10A, 20A  
Ambient temperature: Room temperature

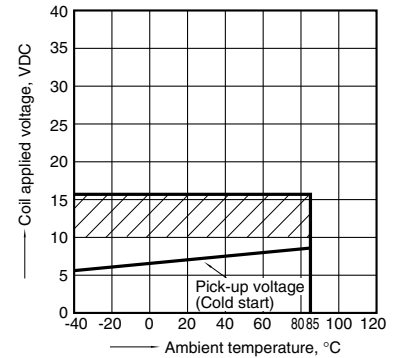


1-(2). Coil temperature rise (at 85°C 185°F)

Sample: ACTP212, 3pcs.  
Contact carrying current: 0A, 10A, 20A  
Ambient temperature: 85°C 185°F

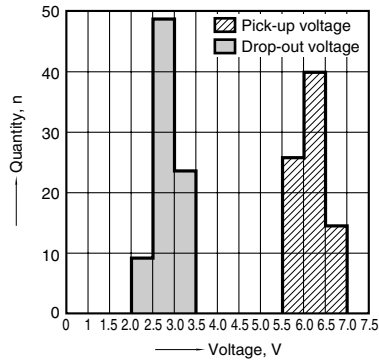


2. Ambient temperature and operating voltage range



3. Distribution of pick-up and drop-out voltage

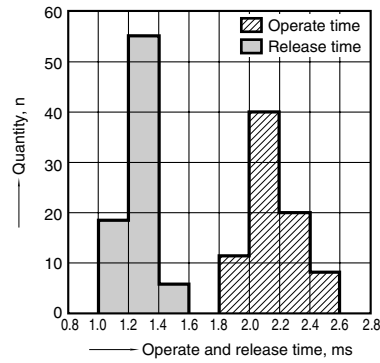
Sample: ACTP212, 80pcs.



4. Distribution of operate and release time

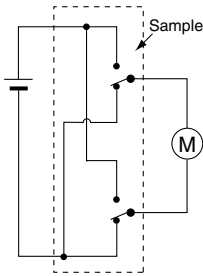
Sample: ACTP212, 80pcs.

\* Without diode

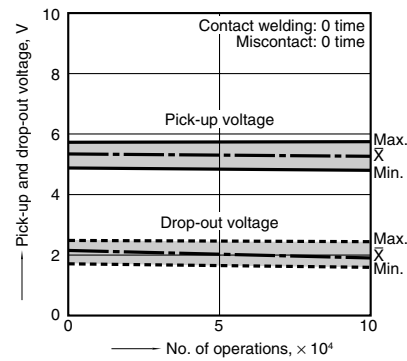


5. Electrical life test (Motor free)

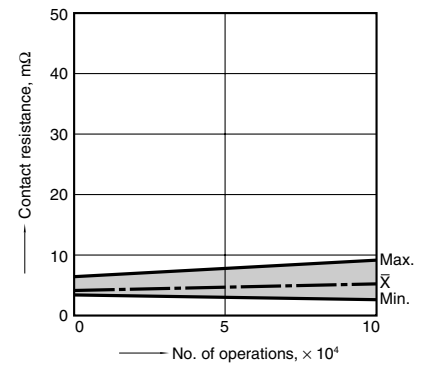
Sample: ACTP212, 3pcs.  
Load: Inrush 30A, Steady 7A  
Brake current: 15A 14V DC,  
Power window motor actual load (free condition)  
Operating frequency: ON 0.5s, OFF 9.5s  
Ambient temperature: Room temperature  
Circuit:



Change of pick-up and drop-out voltage

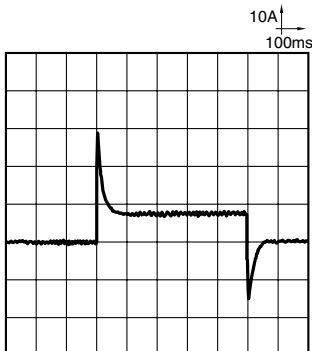


Change of contact resistance



Load current waveform

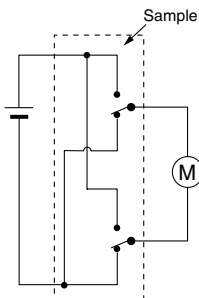
Inrush current: 30A, Steady current: 7A  
Brake current: 15A



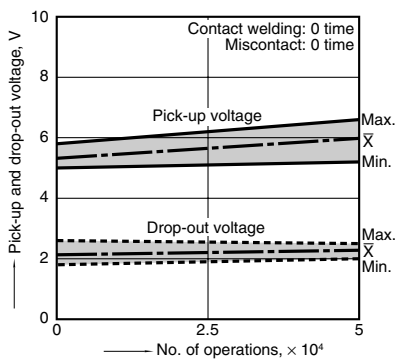
## 6. Electrical life test (Motor lock)

Sample: ACTP212, 3pcs.  
 Load: 30A 14V DC  
 Operating frequency: ON 0.5s, OFF 9.5s  
 Ambient temperature: Room temperature

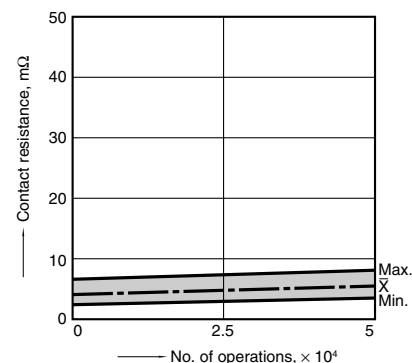
Circuit:



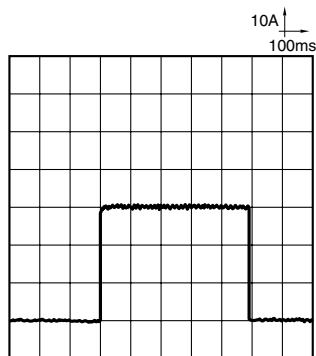
## Change of pick-up and drop-out voltage



## Change of contact resistance



## Load current waveform



## DIMENSIONS (mm inch)

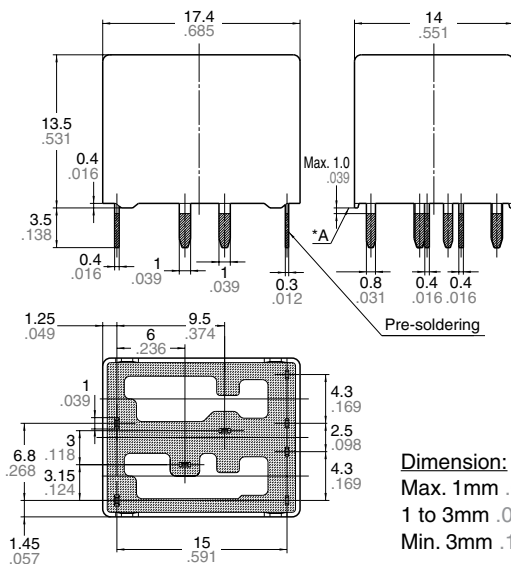
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e>

### 1. Twin type (8 terminals)

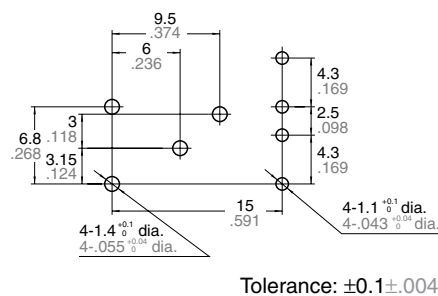
**CAD Data**



### External dimensions

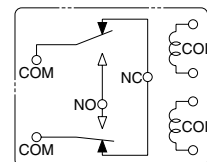


### PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

### Schematic (Bottom view)



Dimension:	Tolerance
Max. 1mm .039 inch:	$\pm 0.1 \pm 0.004$
1 to 3mm .039 to .118 inch:	$\pm 0.2 \pm 0.008$
Min. 3mm .118 inch:	$\pm 0.3 \pm 0.012$

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

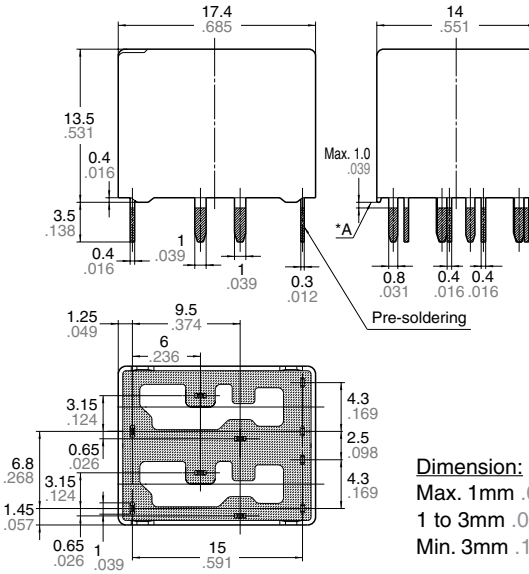
# CT (ACTP)

## 2. Twin type (10 terminals)

**CAD Data**



### External dimensions

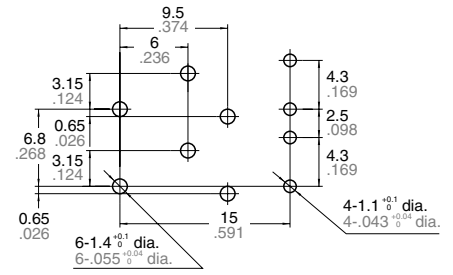


**Dimension:**  
 Max. 1mm .039 inch:  
 1 to 3mm .039 to .118 inch:  
 Min. 3mm .118 inch:

**Tolerance**  
 $\pm 0.1 \pm 0.004$   
 $\pm 0.2 \pm 0.008$   
 $\pm 0.3 \pm 0.012$

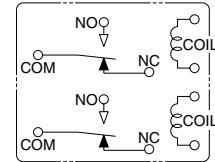
\* Dimensions (thickness and width) of terminal is measured before pre-soldering.  
 Intervals between terminals is measured at A surface level.

### PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

### Schematic (Bottom view)

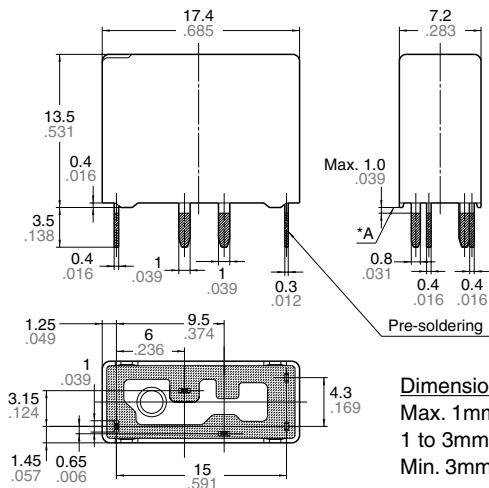


## 3. Single type (1 Form C)

**CAD Data**



### External dimensions

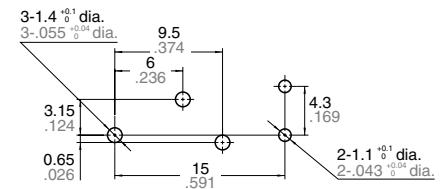


**Dimension:**  
 Max. 1mm .039 inch:  
 1 to 3mm .039 to .118 inch:  
 Min. 3mm .118 inch:

**Tolerance**  
 $\pm 0.1 \pm 0.004$   
 $\pm 0.2 \pm 0.008$   
 $\pm 0.3 \pm 0.012$

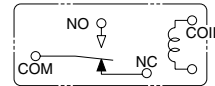
\* Dimensions (thickness and width) of is measured before pre-soldering.  
 Intervals between terminals is measured at A surface level.

### PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

### Schematic (Bottom view)



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