Panasonic
ideas for life

POWER TYPE
SMALL & SLIM
AUTOMOTIVE RELAY

CT RELAYS
<POWER TYPE>

17.4 .685
14 .551
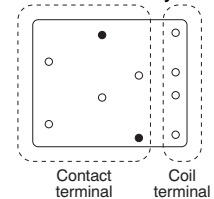13.5 .531

17.4 .685
7.2 .283
13.5 .531

FEATURES

1. Compact type for automotives
We successfully developed a power type that is the same size as our CT relay.
2. 30 A maximum switching capacity
Switching of 30 A motor loads is possible due to change of COM spring material and other improvements.
3. Still top-of-its-class for silent operation
Maintains equally silent operation as our CT relay (ACT).
4. Sealed type
Sealed type makes automatic cleaning possible.

APPLICATIONS

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

10-terminal layout

Contact terminal   Coil terminal

*8-terminal type has no ● terminals.

SPECIFICATIONS

Contact

Arrangement	1 Form C×2, 1 Form C
Contact material	Ag alloy (Cadmium free)
Initial contact resistance (Initial) (By voltage drop 6 V DC 1 A)	Typ. 7 mΩ (N.O.) Typ. 10 mΩ (N.C.)
Rating	Nominal switching capacity	N.O.: 30 A 14 V DC N.C.: 10 A 14 V DC
	Max. carrying current (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)
	Min. switching capacity#1	1 A 12 V DC
Expected life (min. operation)	Mechanical (at 120 cpm)	Min. 10^6
	Electrical	Resistive load	Min. $5×10^{4*1}$
		Motor load	Min. 10^{5*2} (free)
			Min. $5×10^{4*3}$ (lock)

Coil

Nominal operating power	1,000 mW

#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.

Remarks
*1 At nominal switching capacity, operating frequency: 1s ON, 9s OFF
*2 N.O.: at 7 A (steady), 30 A (inrush)/N.C.: at 15 A (brake) 14 V DC, operating frequency: 0.5s ON, 9.5s OFF
*3 At 30A 14 V DC (Motor lock), operating frequency: 0.5s ON, 9.5s OFF
*4 Measurement at same location as "Initial breakdown voltage" section
*5 Detection current: 10mA
*6 Excluding contact bounce time
*7 Half-wave pulse of sine wave: 11ms; detection: 10μs
*8 Half-wave pulse of sine wave: 6ms
*9 Detection time: 10μs
*10 Time of vibration for each direction;

X, Y, direction: 2 hours
Z direction: 4 hours

*11 Refer to "6. Usage, Storage and Transport Conditions" in AMBIENT ENVIRONMENT section in Relay Technical Information.
Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).
* 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.

Characteristics

Max. operating speed (at nominal switching capacity)		6 cpm
Initial insulation resistance*4		Min. 100 MΩ (at 500 V DC)
Initial breakdown voltage*5	Between open contacts	500 Vrms for 1 min.
	Between contacts and coil	500 Vrms for 1 min.
Operate time*6 (at nominal voltage) (at 20°C 68°F)		Max. 10ms (Initial)
Release time*6 (at nominal voltage) (at 20°C 68°F)		Max. 10ms (Initial)
Shock resistance	Functional*7	Min. 100 m/s² {10G}
	Destructive*8	Min. 1,000 m/s² {100G}
Vibration resistance	Functional*9	10 Hz to 100 Hz, Min. 44.1m/s² {4.5G}
	Destructive*10	10 Hz to 500 Hz, Min. 44.1m/s² {4.5G}
Conditions for operation, transport and storage*11 (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		Twin type: approx. 8.0g .28oz 1 Form C type: approx. 4.0g .14oz

CT (ACTP)

TYPES AND COIL DATA (at 20°C 68°F)

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

Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (Initial)	Drop-out voltage, V DC (Initial)	Coil resistance, Ω	Nominal operating current, mA	Nominal operating power, mW	Usable voltage range, V DC
1 Form C	ACTP112	12	Max. 7.2	Min. 1.0	144±10%	83.3±10%	1,000	10 to 16
1 Form C × 2 (8 terminals type)	ACTP212	12	Max. 7.2	Min. 1.0	144±10%	83.3±10%	1,000	10 to 16
1 Form C × 2 (10 terminals type)	ACTP512	12	Max. 7.2	Min. 1.0	144±10%	83.3±10%	1,000	10 to 16

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

DIMENSIONS(mm inch)

Download CAD Data from our Web site.
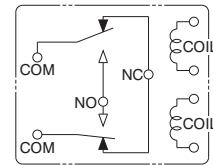
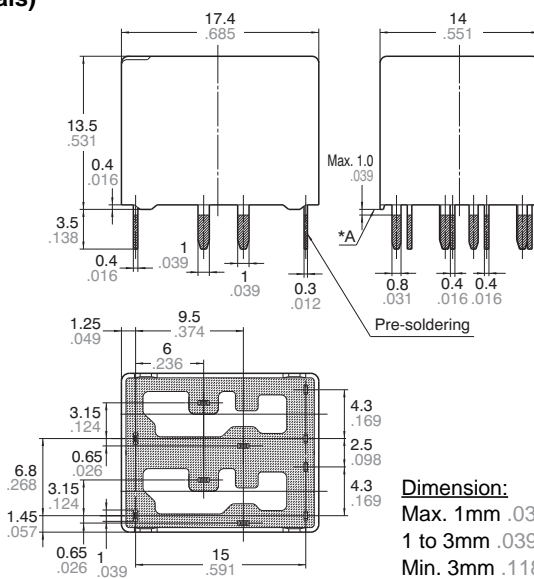### 1. Twin type (8 terminals)

CAD Data
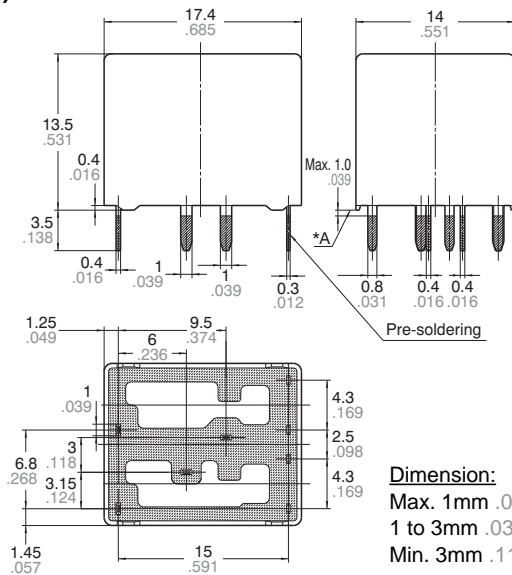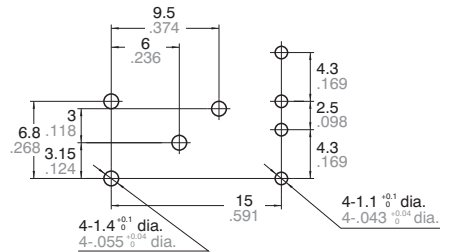
PC board pattern (Bottom view)

Tolerance: ±0.1±.004

Pre-soldering

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

Schematic (Bottom view)

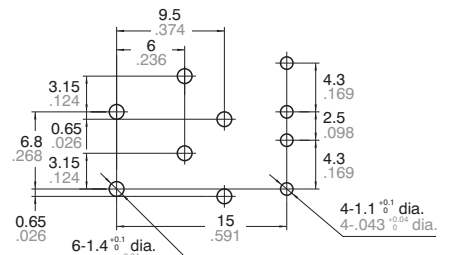COM   NC   NO   COM   COIL   COIL

* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering.
  Intervals between terminals is measured at A surface level.
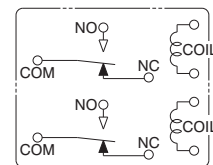
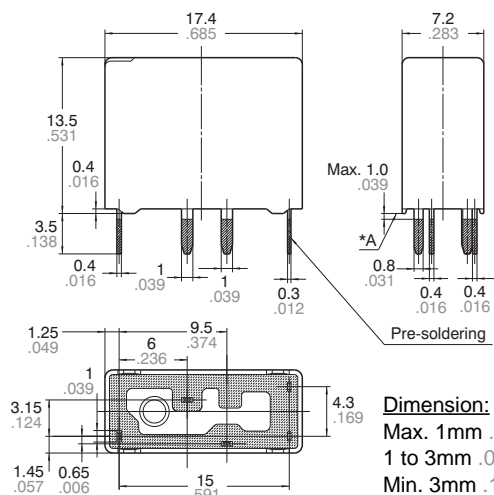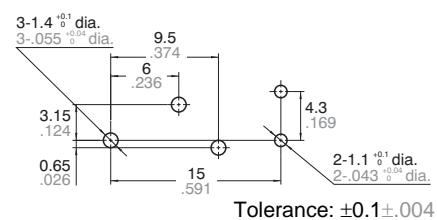### 2. Twin type (10 terminals)

CAD Data

PC board pattern (Bottom view)

Tolerance: ±0.1 ±.004

Pre-soldering

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

Schematic (Bottom view)

NO   COM   NC   NO   COM   NC   COIL   COIL

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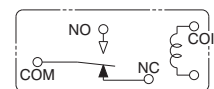 Intervals between terminals is measured at A surface level.

ds_61205_en_ct_power: 010611J

3. Single type (1 Form C)

CAD Data

mm inch

17.4 .685
7.2 .283
13.5 .531
0.4 .016
3.5 .138
0.4 .016
1 .039
1 .039
0.3 .012
Max. 1.0 .039
*A
0.8 .031
0.4 .016
0.4 .016
Pre-soldering

1.25 .049
9.5 .374
6 .236
1 .039
3.15 .124
4.3 .169
1.45 .057
0.65 .006
15 .591

PC board pattern (Bottom view)

3-1.4 +0.1/0 dia.
3-.055 +0.04/0 dia.
9.5 .374
6 .236
3.15 .124
4.3 .169
0.65 .026
15 .591
2-1.1 +0.1/0 dia.
2-.043 +0.04/0 dia.

Tolerance: ±0.1±.004

Schematic (Bottom view)

NO
COIL
COM
NC

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 specified in this catalog is measured before pre-soldering.
  Intervals between terminals is measured at A surface level.
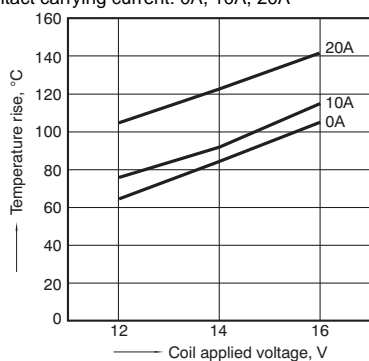
EXAMPLE OF CIRCUIT

Forward/reverse control circuits of DC motor for power windows

12 V DC
NO
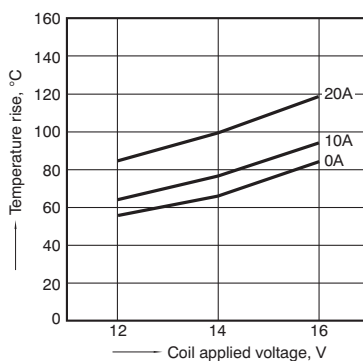COM
M
COM
NO
NC
NC
SW A
SW B

Ⓜ : Power window motor
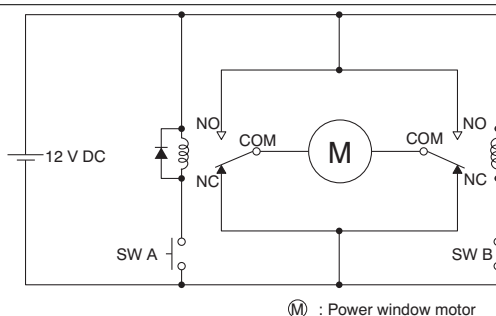
REFERENCE DATA

1-(1). Coil temperature rise (at room temperature)
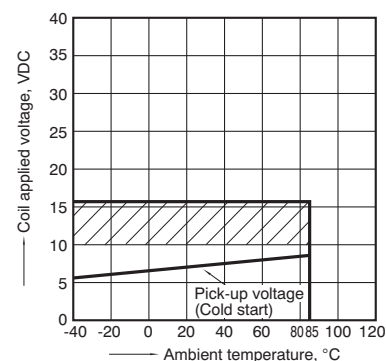Sample: ACTP212, 3pcs.
Contact carrying current: 0A, 10A, 20A

Temperature rise, °C
20A
10A
0A
Coil applied voltage, V

1-(2). Coil temperature rise (at 85°C 185°F)
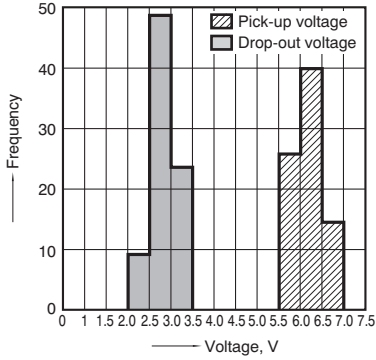Sample: ACTP212, 3pcs.
Contact carrying current: 0A, 10A, 20A

Temperature rise, °C
20A
10A
0A
Coil applied voltage, V

2. Ambient temperature and operating voltage range

Coil applied voltage, VDC
Pick-up voltage (Cold start)
Ambient temperature, °C

CT (ACTP)

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

Sample: ACTP212, 40pcs.

Legend: Pick-up voltage, Drop-out voltage

Y-axis: Frequency
X-axis: Voltage, V

4. Distribution of operate and release time

Sample: ACTP212, 40pcs.
* Without diode

Legend: Operate time, Release time

Y-axis: Quantity, n
X-axis: Operate and release time, ms
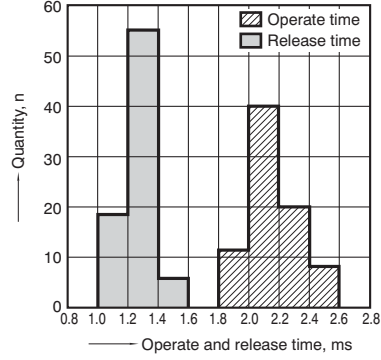
5. Electrical life test (Motor free)
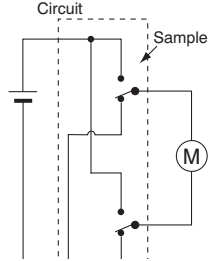
Sample: ACTP212, 3pcs.
Load: 7A steady, Inrush 30A
Brake current: 15A 14V DC,
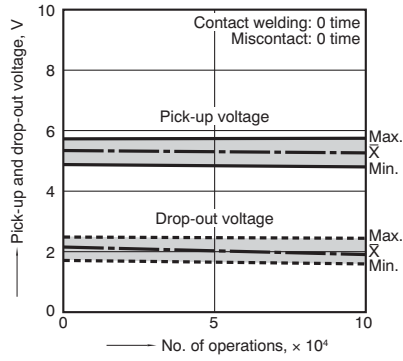Power window motor actual load (free condition)
Operating frequency: (ON : OFF = 0.5s : 9.5s)
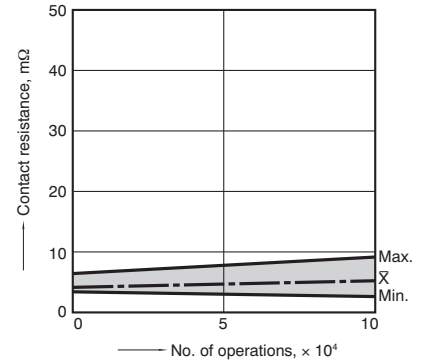Ambient temperature: Room temperature
Circuit:

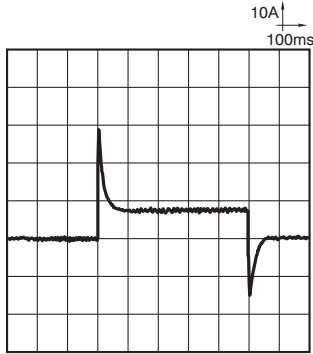### Change of pick-up and drop-out voltage

Contact welding: 0 time
Miscontact: 0 time

Pick-up voltage — Max. / X̄ / Min.
Drop-out voltage — Max. / X̄ / Min.

Y-axis: Pick-up and drop-out voltage, V
X-axis: No. of operations, $\times 10^4$

Change of contact resistance

Max. / X̄ / Min.

Y-axis: Contact resistance, mΩ
X-axis: No. of operations, $\times 10^4$

Load current waveform

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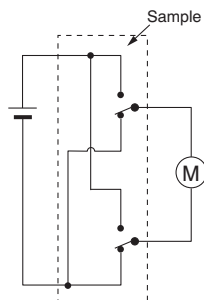

10A
100ms

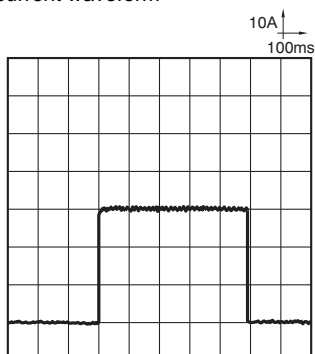6. Electrical life test (Motor lock)
Sample: ACTP212, 3pcs.
Load: 30A 14V DC
Switching frequency: (ON : OFF = 0.5s : 9.5s)
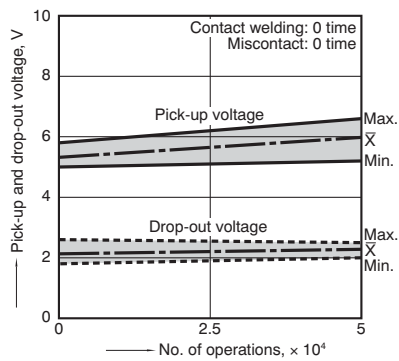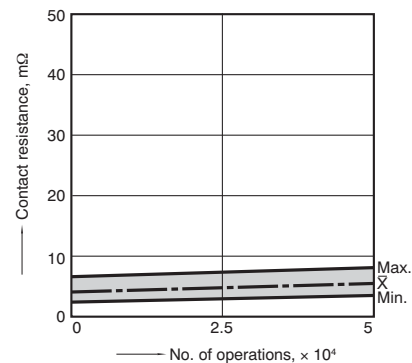Ambient temperature: Room temperature

Circuit:

Sample

Load current waveform

10A
100ms

Change of pick-up and drop-out voltage

Contact welding: 0 time
Miscontact: 0 time

Pick-up voltage

Max.
X̄
Min.

Drop-out voltage

Max.
X̄
Min.

No. of operations, × 10⁴

Change of contact resistance

Max.
X̄
Min.

No. of operations, × 10⁴

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