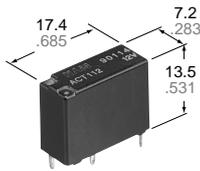




Twin type (8 terminals)



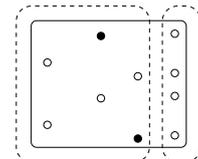
Slim 1c type

FEATURES

- **Ultra small size**
Twin type: 17.4(L)×14.0(W)×13.5(H)mm
.685(L)×.551(W)×.531(H)inch
Slim 1c type: 17.4(L)×7.2(W)×13.5(H)mm
.685(L)×.283(W)×.531(H)inch
- **Twin (1 Form C × 2)**
Forward/reverse motor control is possible with a single relay.

- **Simple footprint enables ease of PC board layout**

※ 10 terminals layout



Contact terminal Coil terminal

○ = 8 terminals

mm inch

SPECIFICATIONS

Contact

| | | | |
|--|------------------------------------|--|--|
| Arrangement | 1 Form C×2 (H bridge), 1 Form C | | |
| Contact material | Silver alloy | | |
| Initial contact resistance, max. (By voltage drop 6 V DC 1 A) | 100mΩ | | |
| Initial contact voltage drop, max. | 0.2 V (at 10 A switching) | | |
| Rating | Nominal switching capacity | N.O.: 20 A 14 V DC N.C.: 10 A 14 V DC | |
| | Max. carrying current | 35 A for 2 minutes, 25 A for 1 hour (14 V, at 20°C 68°F) | |
| Expected life (min. operation) | Mechanical (at 120 cpm) | Min. 10 ⁷ | |
| | | Electrical | Resistive load |
| | Motor load | | Min. 2×10 ^{5*2} Min. 10 ^{5*3} |

Coil

| | |
|-------------------------|--------|
| Nominal operating power | 800 mW |
|-------------------------|--------|

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *¹ At nominal switching capacity, operating frequency: 1s ON, 9s OFF
- *² N.O.: at 5 A (steady), 25 A (inrush)/N.C.: at 20 A (brake) 14 V DC, operating frequency: 0.5s ON, 9.5s OFF
- *³ At 25A 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

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 (without diode)* ⁶ (at nominal voltage) (at 20°C 68° F) | Max. 10ms (Initial) | |
| Shock resistance | Functional* ⁷ | Min. 100 m/s ² {10G} |
| | Destructive* ⁸ | Min. 1,000 m/s ² {100G} |
| Vibration resistance | Functional* ⁹ | 10 to 100 Hz, Min. 44.1m/s ² {4.5G} |
| | Destructive* ¹⁰ | 10 to 500 Hz, Min. 44.1m/s ² {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 to 85% R.H. |
| Unit weight | Approx. 8.0g .28oz (Twin type) Approx. 4.0g .14oz (Slim 1c type) | |

*¹⁰Time of vibration for each direction;



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

*¹¹ Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61)

TYPICAL APPLICATIONS

- Power windows
- Auto door lock
- Power sunroof
- Electrically powered mirrors

ORDERING INFORMATION

| | | | | |
|--------------|----|----|--|---------------------|
| Ex. | A | CT | 1 | 12 |
| Product name | CT | | Contact arrangement | Coil voltage (V DC) |
| | | | 1: 1 Form C 2: 1 Form C × 2 (8 terminals type) 5: 1 Form C × 2 (10 terminals type) | 12: 12 |

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

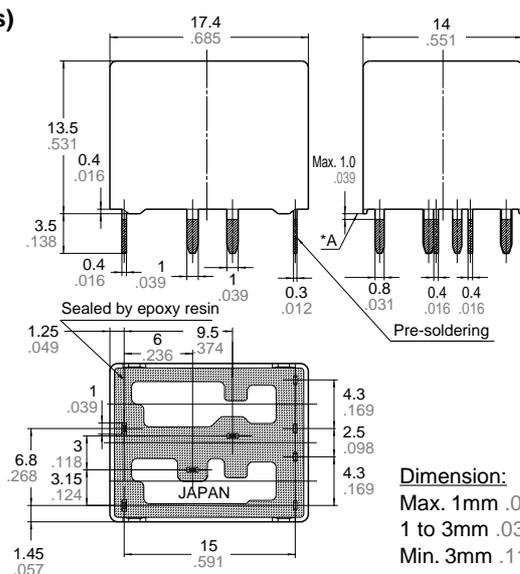
TYPES AND COIL DATA (at 20°C 68°F)

| Contact arrangement | Part No. | Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Coil resistance, Ω (±10%) | Nominal operating current, mA (±10%) | Nominal operating power, mW | Usable voltage range, V DC |
|-------------------------------|----------|-----------------------|------------------------------|-------------------------------|---------------------------|--------------------------------------|-----------------------------|----------------------------|
| 1c | ACT112 | 12 | (Initial) 7.2 | (Initial) 1.0 | 180 | 53.3 | 800 | 10 to 16 |
| 1c × 2 (8 terminals type) | ACT212 | 12 | (Initial) 7.2 | (Initial) 1.0 | 180 | 53.3 | 800 | 10 to 16 |
| 1c × 2 (10 terminals type) | ACT512 | 12 | (Initial) 7.2 | (Initial) 1.0 | 180 | 53.3 | 800 | 10 to 16 |

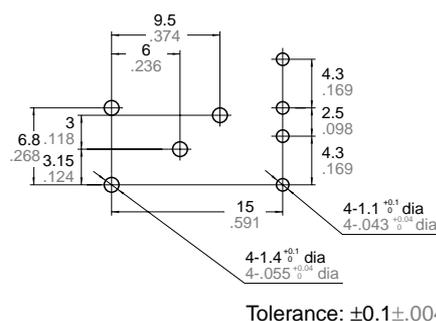
DIMENSIONS

mm inch

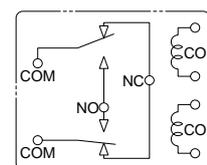
1. Twin type (8 terminals)



PC board pattern (Bottom view)

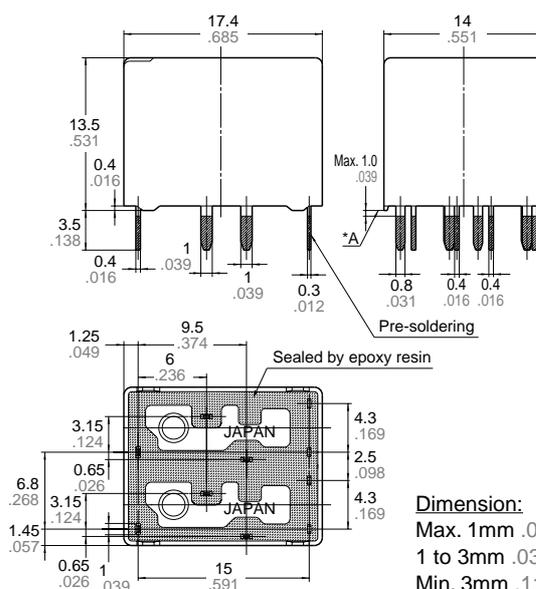


Schematic (Bottom view)

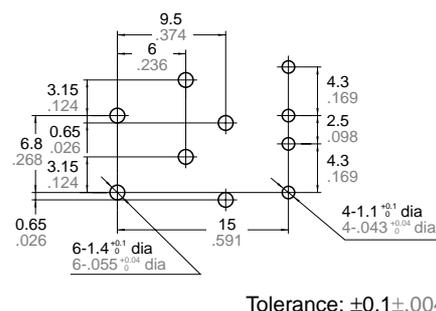


* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

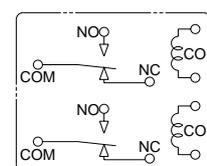
2. Twin type (10 terminals)



PC board pattern (Bottom view)



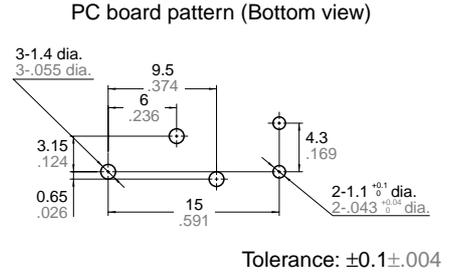
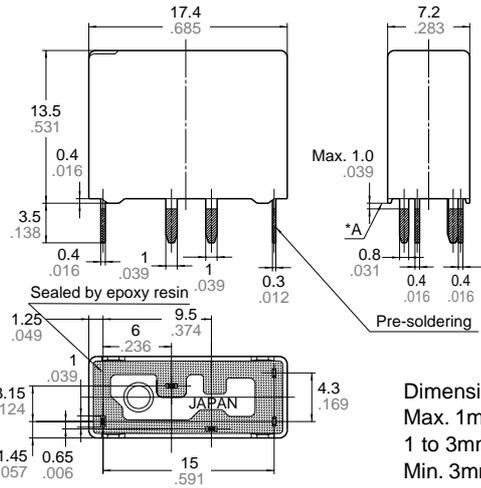
Schematic (Bottom view)



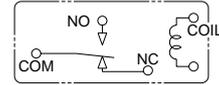
* Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

3. Slim 1c type

mm inch



Schematic (Bottom view)

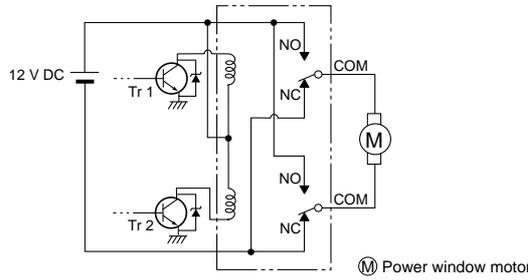


Dimension:
 Max. 1mm .039 inch:
 1 to 3mm .039 to .118 inch:
 Min. 3mm .118 inch:
 Tolerance
 $\pm 0.1 \pm .004$
 $\pm 0.2 \pm .008$
 $\pm 0.3 \pm .012$

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

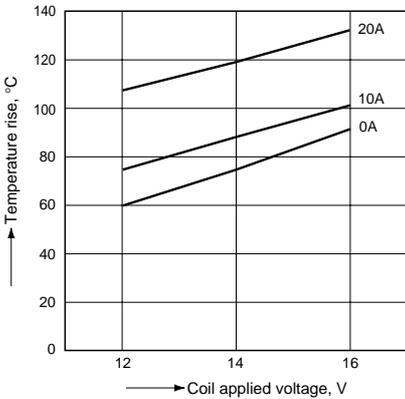
EXAMPLE OF CIRCUIT

Forward/reverse control circuits of DC motor for power windows

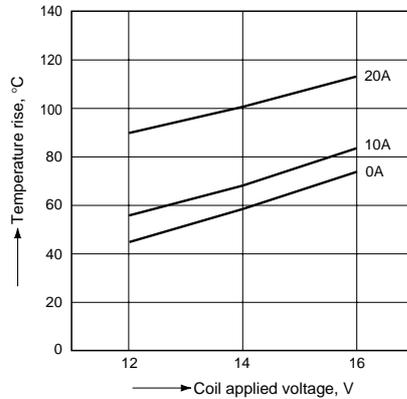


REFERENCE DATA

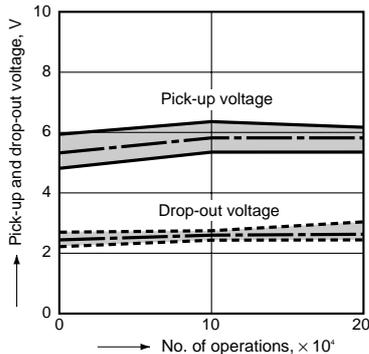
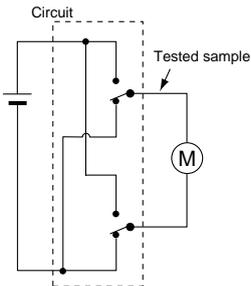
1-(1). Coil temperature rise (at 20°C 68°F)
 Sample: ACT212, 3pcs
 Contact carrying current: 0A, 10A, 20A



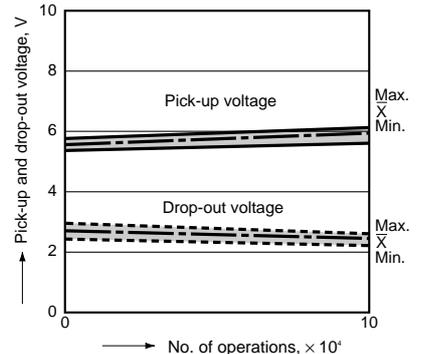
1-(2). Coil temperature rise (at 85°C 185°F)
 Sample: ACT212, 3pcs
 Contact carrying current: 0A, 10A, 20A



2-(1). Electrical life test (Motor load)
 Tested sample: ACT212, 3pcs.
 Load: 5A steady, Inrush 25A, 14V DC
 Operating frequency: ON 0.5s, OFF 9.5s



2-(2). Electrical life test (Motor lock)
 Tested sample: ACT212, 3pcs.
 Load: 25A, 14V DC
 Operating frequency: ON 0.5s, OFF 9.5s



For Cautions for use, see Relay Technical Information (Page 48 to 76).