

FEATURES

- **Compact (half-size).**

The base area is approximately half the size of conventional (JSM) relays. The controller unit can be made more compact.

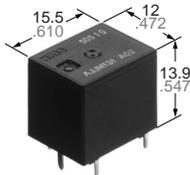
Base area has been reduced by one half

- **Perfect for automobile electrical systems.**

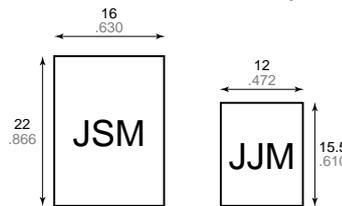
Over 2×10^5 openings possible with a 14 V DC motor load, an inrush current of 25 A, and steady state current of 5 A. (N.O. side)

- **Plastic sealed type.**

Plastically sealed for automatic cleaning.



mm inch



SPECIFICATIONS

Contact

| | | | |
|---|----------------------------|--|--|
| Arrangement | 1 Form A | 1 Form C | |
| Contact material | Silver alloy | | |
| Initial contact resistance, max. (By voltage drop 6V DC 1A) | 100 mΩ | | |
| Rating (resistive load) | Nominal switching capacity | 20 A 14 V DC | |
| | Max. switching power | 400 W | |
| | Max. switching voltage | 16 V DC | |
| | Max. carrying current | 35 A (12V, at 20°C 68°F for 2 minutes) 25 A (12V, at 20°C 68°F for 1 hour) 30 A (12V, at 85°C 185°F for 2 minutes) 20 A (12V, at 85°C 185°F for 1 hour) | |
| Expected life (min. operations) | Mechanical (at 120cpm) | 10 ⁷ | |
| | Electrical (at rated load) | Resistive | 10 ⁵ *1 |
| | | Motor load | 2×10 ⁵ *4 5×10 ⁴ *5 |

Characteristics

| | | |
|--|---------------------------|--|
| Max. operating speed (at rated load) | 20 cpm | |
| Initial insulation resistance*9 | Min. 100 mΩ (at 500 V DC) | |
| Initial breakdown voltage*10 | Between open contacts | 500 Vrms for 1min. |
| | Between contact and coil | 500 Vrms for 1min. |
| Operate time*11 (at nominal voltage) | Max. 10 ms (at 20°C 68°F) | |
| Release time (without diode)*11 (at nominal voltage) | Max. 10 ms (at 20°C 68°F) | |
| Shock resistance | Functional*12 | Min. 100 m/s ² {10 G} |
| | Destructive*13 | Min. 1,000 m/s ² {100 G} |
| Vibration resistance | Functional*14 | 10 to 100 Hz, Min. 44.1 m/s ² {4.5 G} |
| | Destructive | 10 to 100 Hz, Min. 44.1 m/s ² {4.5 G} |
| Conditions in case of operation, transport and storage*15 (Not freezing and condensing at low temperature) | Ambient temp. | -40 to +85°C -40 to +185°F |
| | Humidity | 5 to 85% R.H. |
| Unit weight | Approx. 5 g .176 oz | |

Coil

| | |
|-------------------------|--------|
| Nominal operating power | 640 mW |
|-------------------------|--------|

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *1 at 20 A 14 V DC, at 20 cpm
- *2 at 20 A 14 V DC
- *3 at 10 A 14 V DC, at 20 cpm
- *4 at 5 A (steady), 25 A (inrush) 14 V DC
- *5 at 20 A 14 V DC (Motor lock), operating frequency: 0.5 s ON, 9.5 s OFF
- *6 at 5 A (steady), 25 A (inrush) 14 V DC
- *7 at 20 A 14 V DC (Motor lock)
- *8 at peak 20 A 14 V DC (Braking current) operating frequency: 0.5 s ON, 9.5 s OFF

- *9 Measurement at same location as "Initial break down voltage" section.
- *10 Detection current: 10mA
- *11 Excluding contact bounce time.
- *12 Half-wave pulse of sine wave: 11 ms; detection time: 10 μs
- *13 Half-wave pulse of sine wave: 6 ms
- *14 Detection time: 10 μs
- *15 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61)

TYPICAL APPLICATIONS

Power windows, auto door lock, electrically powered sun roof, electrically powered mirror, cornering lamp.

ORDERING INFORMATION

| | | | |
|-----------------------------|------------------|---|------|
| Ex. JJM | 1a | - | 12 V |
| Contact arrangement | Coil voltage(DC) | | |
| 1a: 1 Form A 1: 1 Form C | 12 V | | |

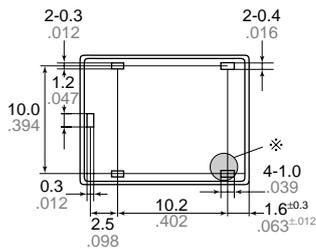
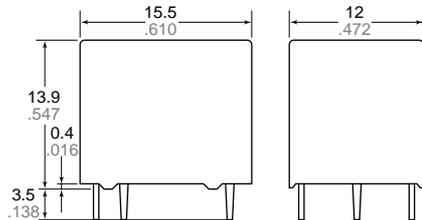
(Note) Standard packing: Carton: 50 pcs.; Case: 1,000 pcs.

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 ($\pm 10\%$) | Nominal operating current mA ($\pm 10\%$) | Nominal operating power mW | Usable voltage range, V DC |
|---------------------|------------|-----------------------|------------------------------|-------------------------------|---|---|----------------------------|----------------------------|
| 1 Form A | JJM1a-12 V | 12 | (Initial) 7.2 | (Initial) 1.0 | 225 | 53.3 | 640 | 10 to 16 |
| 1 Form C | JJM1-12 V | 12 | (Initial) 7.2 | (Initial) 1.0 | 225 | 53.3 | 640 | 10 to 16 |

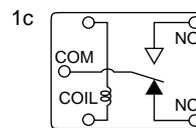
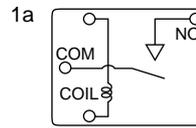
DIMENSIONS

mm inch

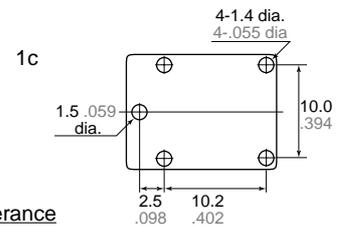
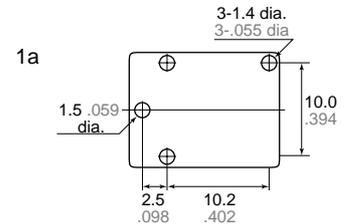


Note: *Marked terminal is only for 1Form C type

Schematic (Bottom view)



PC board pattern (Bottom view)



Dimension:

Max. 1mm .039 inch:

1 to 3mm .039 to .118 inch:

Min. 3mm .118 inch:

General tolerance

$\pm 0.1 \pm 0.04$

$\pm 0.2 \pm 0.08$

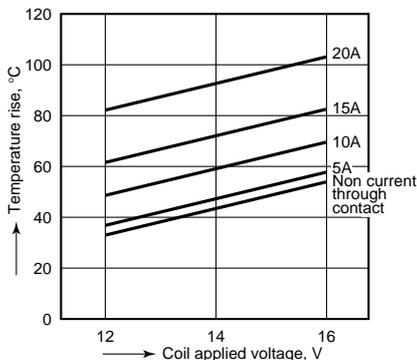
$\pm 0.3 \pm 0.12$

Tolerance: $\pm 0.1 \pm 0.04$

REFERENCE DATA

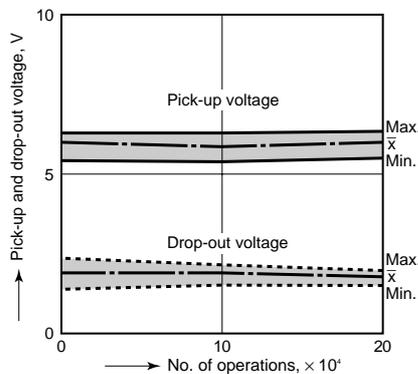
1. Coil temperature rise

Tested sample: JJM1-12V, 6pcs
 Point measured: Inside the coil
 Contact current: Now current through contact, 5A, 10A, 15A, 20A
 Resistance method, ambient temperature 85°C 185°F



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

Tested Sample: JJM1-12V
 Quantity: n = 6 (NC = 3, NO = 3)
 Load: Resistive load
 (NC side: 2A 14 V DC, NO side: 5 A 14 V DC)
 Operating frequency: ON 1.5s, OFF 1.5s

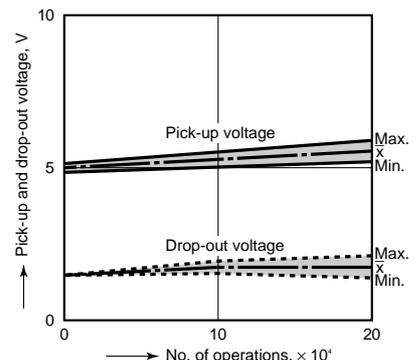
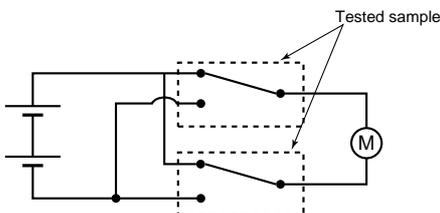


Contact welding: 0 time
 Miscontact: 0 time

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

Tested Sample: JJM1-12V, 2pcs.
 Load: 5A, Inrush 25A, Brake current 18A, Power window motor load (Free condition).
 Operating frequency: ON 0.5s, OFF 9.5s

Circuit :



Contact welding: 0 time
 Miscontact: 0 time

2-(3). Electrical life test (Motor lock)

Tested sample: JJM1-12V, 6pcs.

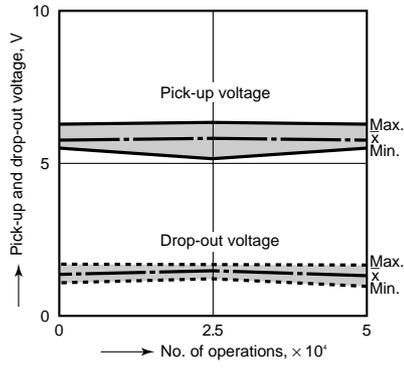
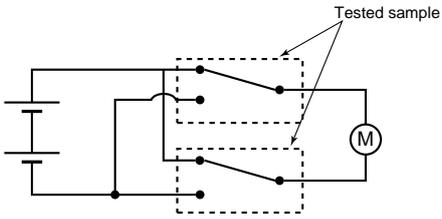
Load: 20A, 14VDC,

Power window motor load

(lock condition).

Operating frequency: ON 1s, OFF 5s

Circuit :



Contact welding: 0 time
Miscontact: 0 time

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