Panasonic
ideas for life

**GLOBAL STANDARD TERMINAL PITCH AUTOMOTIVE POWER RELAY**

# JS-M RELAYS

**RoHS compliant**

## FEATURES

- **Low pick-up voltage for high ambient use**
- **Sealed construction**
- **Global standard terminal pitch**
- **Usable at high temperature: 85°C 185°F**

## TYPICAL APPLICATIONS

- **Power-window**
- **Car antenna**
- **Door lock**
- **Intermittent wiper**
- **Interior lighting**
- **Power seat**
- **Power sunroof**
- **Car stereo**
- **Horn**
- **Lift gate, etc.**

## ORDERING INFORMATION

**JSM** ☐ ☐ - **12V** - ☐

Contact arrangement
1a: 1 Form A
1: 1 Form C

Protective construction
Nil: Sealed type
F: Flux-resistant type

Coil voltage (DC)
12 V

Contact capacity
4: Standard type
5: High capacity type

## TYPES

| Contact arrangement | Coil voltage | Standard type | | High capacity type | |
|---|---|---|---|---|---|
| | | Sealed type | Flux-resistant type | Sealed type | Flux-resistant type |
| | | Part No. | Part No. | Part No. | Part No. |
| 1 Form A | 12 V DC | JSM1a-12V-4 | JSM1aF-12V-4 | JSM1a-12V-5 | JSM1aF-12V-5 |
| 1 Form C | 12 V DC | JSM1-12V-4 | JSM1F-12V-4 | JSM1-12V-5 | JSM1F-12V-5 |

Standard packing; Carton: 100 pcs.; Case: 500 pcs.

## RATING

### 1. Coil data

| Nominal coil voltage | Pick-up voltage (at 20°C 68°F) (Initial) | Drop-out voltage (at 20°C 68°F) (Initial) | Nominal operating current [±10%] (at 20°C 68°F) | Coil resistance [±10%] (at 20°C 68°F) | Nominal operating power | Usable voltage range |
|---|---|---|---|---|---|---|
| 12V DC | Max. 6.3 V DC | Min. 0.9 V DC | 53.3 mA | 225Ω | 640 mW | 10 to 16V DC |

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

## 2. Specifications

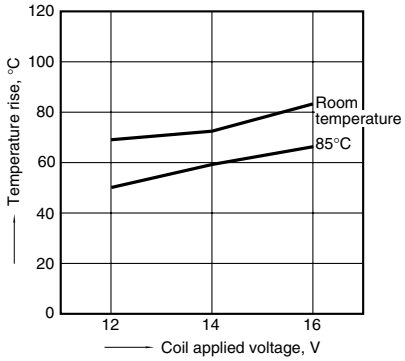
| Characteristics | Item | | Specifications | | | |
|---|---|---|---|---|---|---|
| | | | Standard type | | High capacity type | |
| Contact | Arrangement | | 1 Form A | 1 Form C | 1 Form A | 1 Form C |
| | Contact resistance (Initial) | | Max. 200 mΩ (Measured after operating 5 times, 6V DC 1A) | | Max. 100 mΩ (By voltage drop 6V DC 1A) | |
| | Contact voltage drop | | Max. 0.2 V DC (at 10 A 12 VDC) | | | |
| | Contact material | | Ag alloy (Cadmium free) | | | |
| Rating | Nominal switching capacity (resistive load) | | 10A 16V DC | | 15A 16V DC | |
| | Max. carrying current*3 | | 25 A (at 20°C 68°F for 2 minutes), 15 A (at 20°C 68°F for 1 hour), 20 A (at 85°C 185°F for 2 minutes), 10 A (at 85°C 185°F for 1 hour) | | | |
| | Max. switching power (resistive load) | | 160 mW | | 240 W | |
| | Max. switching voltage | | 16V DC | | | |
| | Max. switching current | | 10 A | | 15 A (Max. 10 A at 85°C 185°F) | |
| | Nominal operating power | | 640 mW | | | |
| | Min. switching capacity (resistive load)*1 | | 1 A 12 V DC | | | |
| Electrical characteristics | Insulation resistance (Initial) | | Min. 100 MΩ (at 500V DC) | | | |
| | Breakdown voltage (Initial) | Between open contacts | 750 Vrms for 1 min. (Detection current: 10mA) | | | |
| | | Between contacts and coil | 1,500 Vrms for 1 min. (Detection current: 10mA) | | | |
| | Operate time (at 20°C 68°F) | | Max. 10ms (at nominal voltage) (excluding contact bounce time) | | | |
| | Release time (at 20°C 68°F) | | Max. 10ms (at nominal voltage) (excluding contact bounce time, without diode) | | | |
| Mechanical characteristics | Shock resistance | Functional | Min. 98 m/s² {10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs) | | | |
| | | Destructive | Min. 980 m/s² {100G} (Half-wave pulse of sine wave: 6ms) | | | |
| | Vibration resistance | Functional | 10 Hz to 55 Hz, at double amplitude of 1.6 mm (Detection time: 10μs) | | | |
| | | Destructive | 10 Hz to 55 Hz, at double amplitude of 2.0 mm | | | |
| Expected life | Electrical (at nominal switching capacity) | | Min. $10^5$ (at 15 cpm) | | N.O.: Min. $10^5$ (at 15 cpm), N.C.: Min. $5 \times 10^4$ (at 15 cpm) | |
| | Mechanical | | Min. $10^7$ (at 180 cpm) | | | |
| 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 | | 15 cps. (at nominal switching capacity) | | | |

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

# REFERENCE DATA

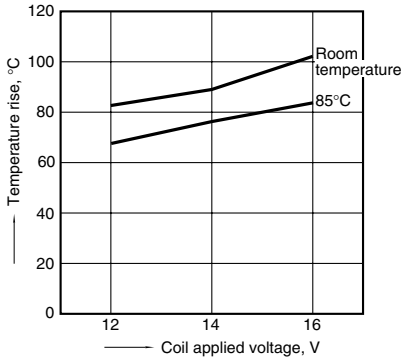
1-(1). Coil temperature rise (10A)

Measured portion: Inside the coil
Contact carrying current, 10A
Ambient temperature: Room temperature, 85°C 185°F

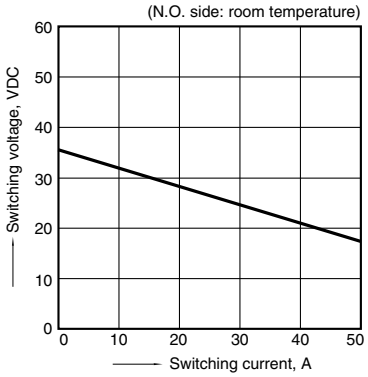



1-(2). Coil temperature rise (15A)

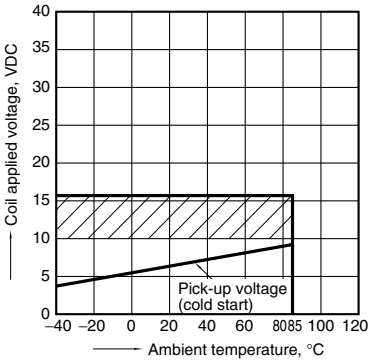
Measured portion: Inside the coil
Contact carrying current, 15A
Ambient temperature: Room temperature, 85°C 185°F



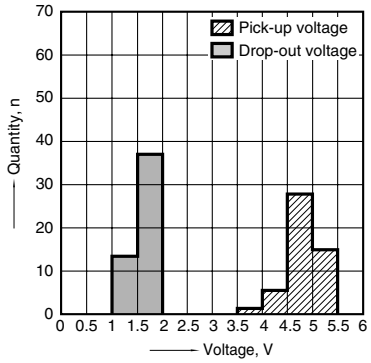

2. Max. switching capability (Resistive load, initial)



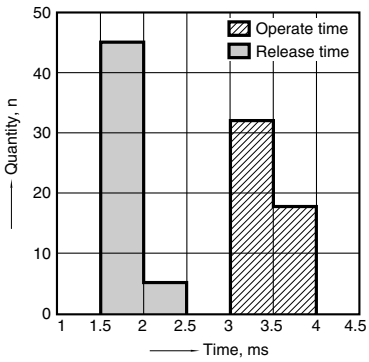
3. Ambient temperature and oprating voltage range




4. Distribution of pick-up and drop-out voltage
Sample: JSM1-12V-5, 50pcs.

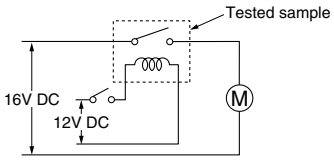


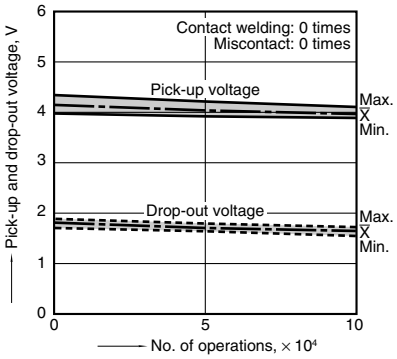

5. Distribution of operate and release time
Sample: JSM1-12V-5, 50pcs.
Coil both side without diode




6-(1). Electrical life test (Motor load)
Sample: JSM1-12V-5, 3pcs.
Load: 50A (Inrush), 10A 16V DC (Steady)
Switching frequency: (ON : OFF = 1s : 9s)

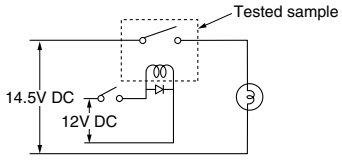
Circuit :

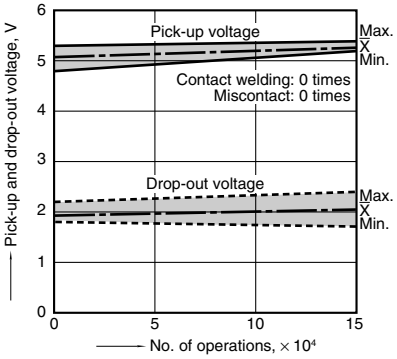



6-(2). Electrical life test (Lamp load)
Sample: JSM1a-12V-5, 4pcs.
Load: 55.2A (Inrush), 9.6A 14.5V DC (Steady)
Switching frequency: (ON : OFF = 1s : 3s)

Circuit :



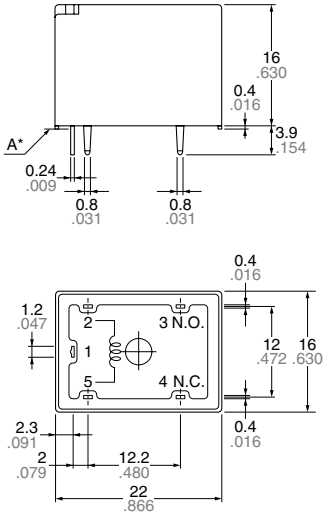



## DIMENSIONS (mm inch)

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

**CAD Data**

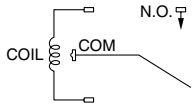
External dimensions



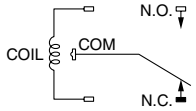

| Dimension: | General tolerance |
|---|---|
| Max. 1mm .039 inch: | ±0.1 ±.004 |
| 1 to 3mm .039 to .118 inch: | ±0.2 ±.008 |
| Min. 3mm .118 inch: | ±0.3 ±.012 |

Schematic (Bottom view)

1a

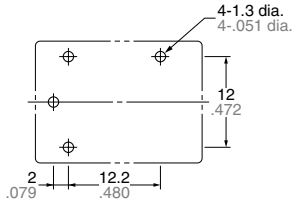



1c

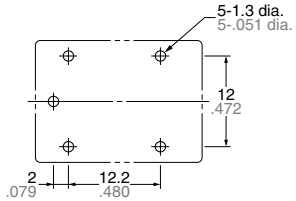



PC board pattern (Bottom view)

1a




1c




Tolerance: ±0.1 ±.004

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

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

# Mouser Electronics

Authorized Distributor

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Panasonic:

JSM1-12V-4 JSM1-12V-5 JSM1a-12V-5 JSM1aF-12V-5 JSM1-9V-4 JSM1-9V-5 JSM1A-9V-4 JSM1A-9V-5 JSM1A-12V-4