

# POWER RELAY

## 1 POLE - 8A Medium Load Control

### JS Series

#### ■ FEATURES

- UL, CSA, VDE, SEV, SEMKO, FIMKO, NEMKO, DEMKO, ÖVE, CQC, BSI compliance
- UL class B (130°C) coil wire insulation
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Low profile and space saving
  - Height: 12.5 mm - Mounting space: 290 mm<sup>2</sup>
- High sensitivity in small package
  - Operating power 110 to 140 mW
  - Nominal power 220 to 290 mW
- High insulation in small package
  - Insulation distance : 8 mm (between coil and contacts)
  - Dielectric strength : 5,000 VAC - Surge strength : 10,000 V
- Plastic materials
  - UL 94 flame class V-0 - UL CTI level class 2
- Plastic sealed type
- Various contact material options
- RoHS compliant. Please see page 7 for more information



#### ■ PARTNUMBER INFORMATION

[Example]      JS - 12 M E - K T - V3 \*

                  (a)    (b)   (c)   (d)   (e)   (f)    (g)

|     |                       |                         |                                                                                                                                                                            |
|-----|-----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) | Relay type            | JS: JS Series           |                                                                                                                                                                            |
| (b) | Coil rated voltage    | 12                      | : 5.....60 VDC<br>Coil rating table at page 3                                                                                                                              |
| (c) | Contact configuration | Nil<br>M                | : 1 form C (SPDT)<br>: 1 form A (SPST-NO)                                                                                                                                  |
| (d) | Contact material      | Nil<br>D<br>E<br>F<br>N | : Gold plate silver cadmium oxide<br>: Silver nickel<br>: Silver cadmium oxide<br>: Gold plate silver nickel<br>: Gold plate silver tin oxide                              |
| (e) | Enclosure             | K                       | : Plastic sealed type                                                                                                                                                      |
| (f) | Construction          | Nil<br>T                | : 3.2 mm<br>: 5.0 mm (only JS-MN, MD, MF)                                                                                                                                  |
| (g) | Gold plating          | Nil<br>V3               | : 0.3μ gold overlay (available with Nil, N and F contact)<br>: 3μ gold overlay for lower current applications (available with Nil, N) and not available for T (5.0mm type) |

Note: Actual marking omits the hyphen (-) or (\*)

\*: V3 is marked at different position on the relay

# JS SERIES

## ■ SPECIFICATION

| Item         |                                        |                   | Non V3 type                                                                                      | V3 type                        |
|--------------|----------------------------------------|-------------------|--------------------------------------------------------------------------------------------------|--------------------------------|
|              |                                        |                   | JS - ( ) - K<br>JS - ( ) D/E/F/N - K                                                             | JS - ( ) - K<br>JS - ( ) N - K |
| Contact Data | Configuration                          |                   | 1 form A (SPST-NO), 1 form C (SPDT)                                                              |                                |
|              | Construction                           |                   | Single                                                                                           |                                |
|              | Material (see part number information) |                   | 0.3μ Ag plated                                                                                   | 3μ Ag plated                   |
|              | Resistance (initial)                   |                   | ≤ 100 mΩ at 6 VDC, 1 A                                                                           | ≤ 30 mΩ at 6 VDC, 1 A          |
|              | Contact rating                         |                   | 8A, 250VAC / 24VDC                                                                               |                                |
|              | Max. carrying current                  |                   | 10A                                                                                              |                                |
|              | Max. switching voltage                 |                   | 400VAC / 150 VDC                                                                                 |                                |
|              | Max. switching power                   |                   | 2,000VA / 192W                                                                                   |                                |
|              | Min. switching load *                  |                   | 100 mA, 5 VDC                                                                                    | 10 mA, 5 VDC                   |
| Life         | Mechanical                             |                   | 20 x 10 <sup>6</sup> operations minimum                                                          |                                |
|              | Electrical                             | AC contact rating | 100 x 10 <sup>3</sup> operations minimum<br>(JS-( ) N-K 50 x 10 <sup>3</sup> operations minimum) |                                |
|              |                                        | DC contact rating | 100 x 10 <sup>3</sup> operations minimum<br>(JS-( ) N-K 50 x 10 <sup>3</sup> operations minimum) |                                |
| Coil Data    | Rated power (at 20 °C)                 |                   | 220 - 290 mW                                                                                     |                                |
|              | Operate power (at 20 °C)               |                   | 110 - 140 mW                                                                                     |                                |
|              | Operating temperature range            |                   | -40 °C to +85 °C (no frost)                                                                      |                                |
| Timing Data  | Operate (at nominal voltage)           |                   | ≤ 10ms (no bounce)                                                                               |                                |
|              | Release (at nominal voltage)           |                   | ≤ 5ms (no diode, no bounce)                                                                      |                                |
| Insulation   | Resistance (initial)                   |                   | ≥ 1,000MΩ at 500VDC                                                                              |                                |
|              | Dielectric strength                    | Open contacts     | 1,000VAC (50/60Hz) 1min                                                                          |                                |
|              |                                        | Contacts to coil  | 5,000VAC (50/60Hz) 1min                                                                          |                                |
|              | Surge strength                         | Coil to contacts  | 10,000V / 1.2 x 50μs standard wave                                                               |                                |
|              | Clearance                              |                   | 6 mm                                                                                             |                                |
|              | Creepage                               |                   | 8 mm                                                                                             |                                |
|              | EN61810-1, VDE0435                     | Voltage           | 250V                                                                                             |                                |
|              |                                        | Pollution degree  | 3                                                                                                |                                |
|              |                                        | Material group    | III a                                                                                            |                                |
|              |                                        | Category          | C / 250V (reference voltage) (VDE 01106)                                                         |                                |
| Other        | Vibration resistance                   | Misoperation>1us  | 10 to 55Hz double amplitude 1.65mm                                                               |                                |
|              |                                        | Endurance         | 10 to 55Hz double amplitude 3.3mm                                                                |                                |
|              | Shock                                  | Misoperation>1us  | Min. 100m/s <sup>2</sup> (11 ± 1ms)                                                              |                                |
|              |                                        | Endurance         | Min. 1,000m/s <sup>2</sup> (6 ± 1ms)                                                             |                                |
|              | Weight                                 |                   | Approximately 8 g                                                                                |                                |

\* Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## ■ COIL RATING

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release-Voltage (VDC) * | Max. Coil Voltage (VDC) | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|-------------------------|------------------|
| 5         | 5                        | 112                           | 3.5                          | 0.5                          | 11.8                    | 225              |
| 6         | 6                        | 160                           | 4.2                          | 0.6                          | 14.1                    |                  |
| 9         | 9                        | 360                           | 6.3                          | 0.9                          | 21.2                    |                  |
| 12        | 12                       | 660                           | 8.5                          | 1.2                          | 28.3                    | 220              |
| 18        | 18                       | 1,455                         | 12.7                         | 1.8                          | 42.4                    | 225              |
| 24        | 24                       | 2,350                         | 16.8                         | 2.4                          | 56.6                    | 245              |
| 48        | 48                       | 8,000                         | 33.4                         | 4.8                          | 105.6                   | 290              |
| 60        | 60                       | 12,500                        | 41.7                         | 6                            | 132                     |                  |

Note: All values in the table are valid for 20°C and zero contact current.

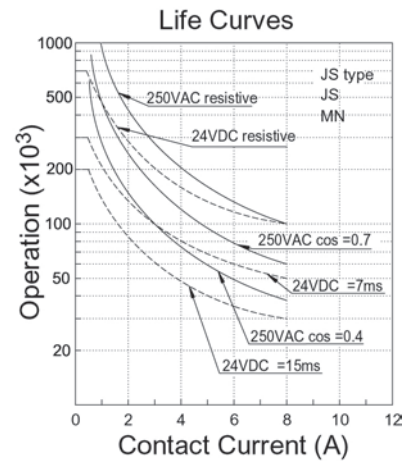
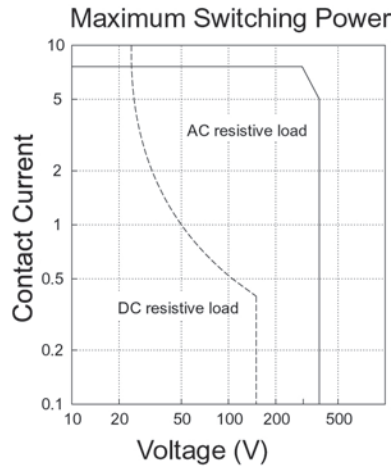
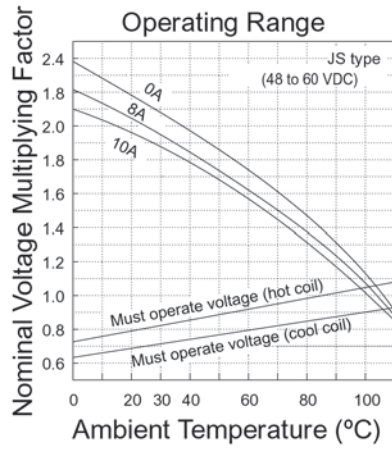
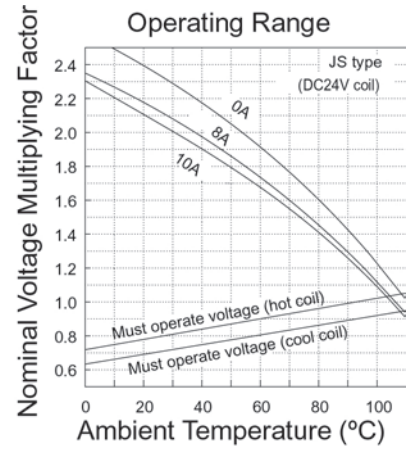
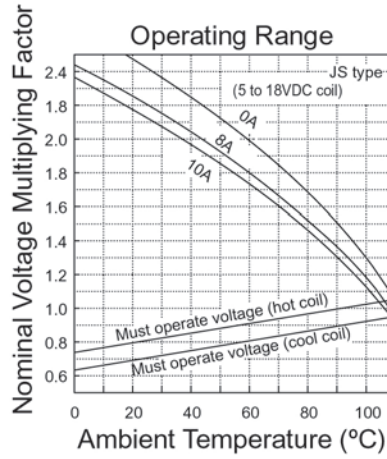
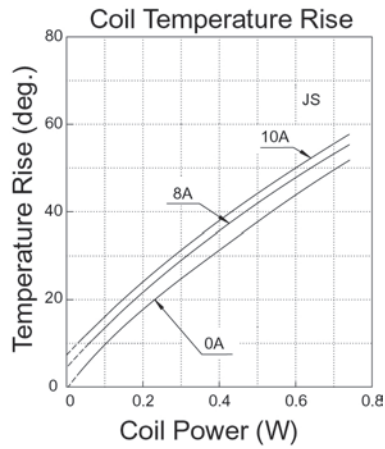
\* Specified operate values are valid for pulse wave voltage.

## ■ SAFETY STANDARDS

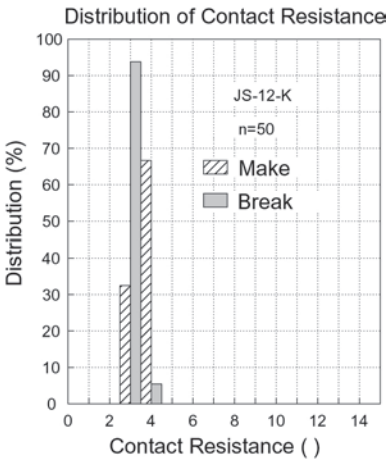
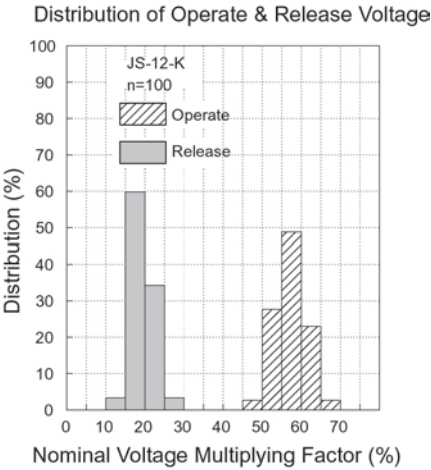
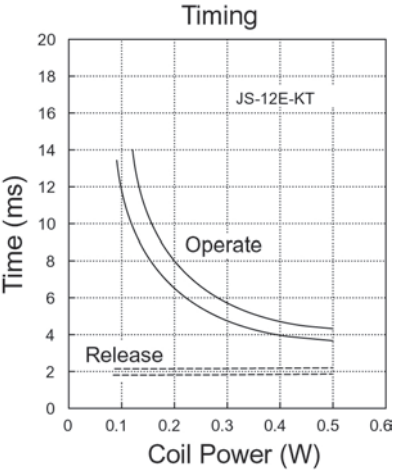
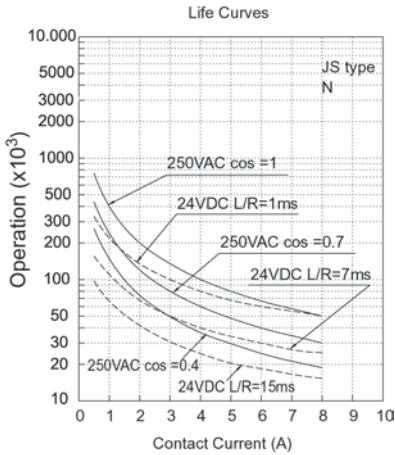
| Type  | Compliance                                   | Contact rating                                                                                                                                                                                                                               |                                                                                                                                                                                                                               |
|-------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UL    | UL 508                                       | Flammability: UL 94-V0 (plastics)                                                                                                                                                                                                            |                                                                                                                                                                                                                               |
|       | E 56140                                      | Contact material: Nil, E                                                                                                                                                                                                                     | N                                                                                                                                                                                                                             |
| CSA   | C22.2 No. 14<br>LR 35579                     | 8 A 24 VDC (resistive) 100k<br>8 A, 250 VDC (resistive) 100k<br>10 A, 30 VDC (resistive)<br>10 A, 250 VAC (resistive)<br>1/4 HP, 125 V/ 250 VAC<br>1/3 HP, 125 VAC<br>1/2 HP, 250 VAC<br>Pilot duty: C150, B300<br>Pilot duty: 0.27A, 250VDC | 8 A 24 VDC (resistive) 100k<br>8 A, 250 VDC (resistive) 100k<br>10 A, 30 VDC (resistive)<br>10 A, 250 VAC (resistive)<br>1/4 HP, 125 V/ 250 VAC<br>1/3 HP, 125 VAC<br>1/2 HP, 250 VAC<br>Pilot duty: A300, B300<br>C150, R300 |
| VDE   | 0435, 0631, 0700,<br>40013847                | 8 A 250 VAC (cos Ø=1)<br>8 A 24 VDC (0 ms)                                                                                                                                                                                                   |                                                                                                                                                                                                                               |
| SEMKO | EN 61058-1 + A1: 1993<br>EN 61095:1993 + A11 | Rated Voltage (V): 250<br>Rated Current (A): 8 (2)<br>or 8                                                                                                                                                                                   |                                                                                                                                                                                                                               |

Also complies with SEV, ÖVE, FIMKO, BSI, CQC, NEMKO, DEMKO

## ■ CHARACTERISTIC DATA



■ REFERENCE DATA

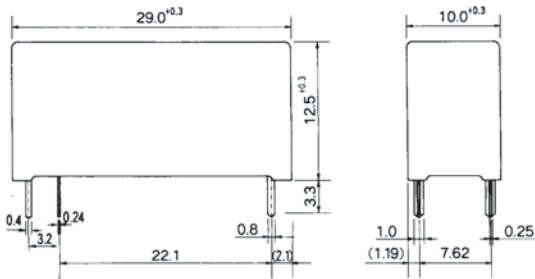


# JS SERIES

## ■ DIMENSIONS

### ● Dimensions

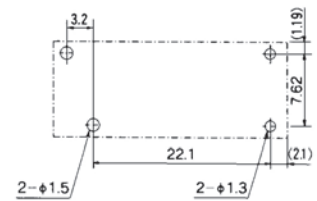
#### JS-MK type



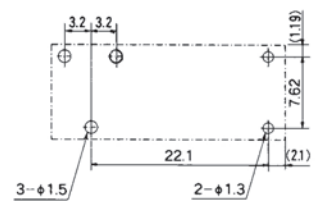
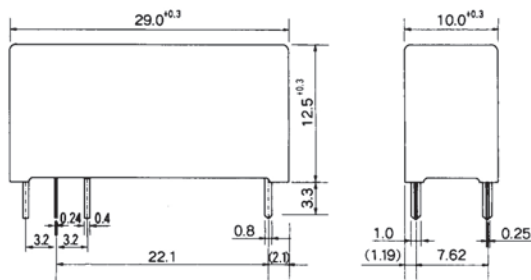
### ● Schematics (BOTTOM VIEW)



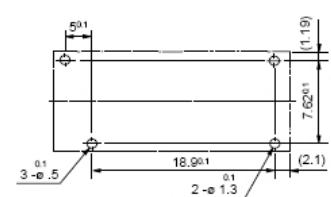
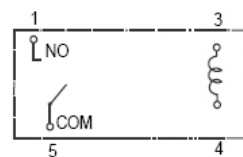
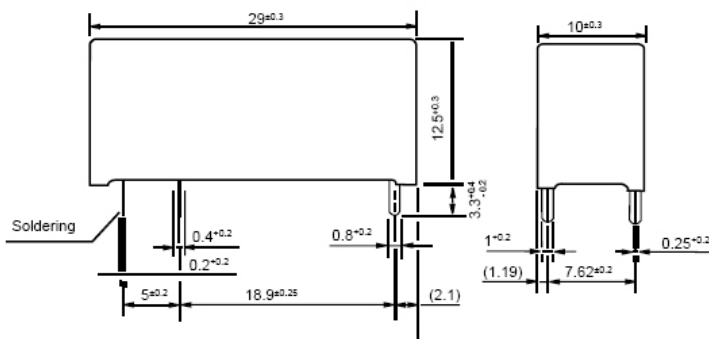
### ● PC board mounting hole layout (BOTTOM VIEW)



#### JS-K type



#### JS-MN( )-KT type



Unit: mm

## RoHS Compliance and Lead Free Information

### 1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95/EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

### 2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

**Flow Solder condition:**

Pre-heating: maximum 120°C  
Soldering: dip within 5 sec. at  
260°C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 360°C  
Duration: maximum 3 sec.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

### 4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

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