

# MINIATURE RELAY

## 1 POLE - 1 to 2 A (For Signal Switching)

### SY Series

#### ■ FEATURES

- Very small size and light weight
  - UL, CSA recognized
  - Conforms to FCC rules and regulations part 68
    - Dielectric strength 1000 VAC between coil and contacts
    - Surge strength 1500 V
  - High sensitivity
  - Wide ambient temperature range (-30°C to +90°C)
  - Wide operating range
  - DIL pitch terminals
  - Plastic sealed type
  - RoHS compliant.
- Please see page 7 for more information



#### ■ PARTNUMBER INFORMATION

[Example]      $\frac{SY}{(a)}$  -  $\frac{12}{(b)}$   $\frac{W}{(c)}$  -  $\frac{K}{(d)}$  -  $\frac{UL}{(e)}$

|     |                    |           |  |
|-----|--------------------|-----------|--|
| (a) | Relay type         | SY        | : SY-Series  |
| (b) | Coil rated voltage | 12        | : 1.5.....24 VDC<br>Coil rating table at page 3            |
| (c) | Contact style      | Nil<br>W  | : Single type<br>: Bifurcated type                         |
| (d) | Enclosure          | K         | : Plastic sealed type                                      |
| (e) | Approvals          | Nil<br>UL | : No UL/CSA marking on relay<br>: UL, CSA marking on relay |

Note: For movable and stationary contact with gold overlay type, add suffix "-OH"

## ■ SPECIFICATION

| Item           |                                |                                  | Single type  | Bifurcated type        |
|----------------|--------------------------------|----------------------------------|--|------------------------|
|                |                                |                                  | SY - ( ) - K   | SY - ( ) W - K         |
| Contact Data   | Configuration                  |                                  | 1 form C (SPDT)  |                        |
|                | Construction                   |                                  | Single (cross bar)   | Bifurcated (cross bar) |
|                | Material                       |                                  | Gold overlay silver palladium  |                        |
|                | Resistance (initial)           |                                  | Max. 100 mΩ at 1 A, 6 VDC  |                        |
|                | Contact rating (resistive)     |                                  | 0.5A, 120VAC or 1A, 24VDC  |                        |
|                | Max. carrying current          |                                  | 2A   |                        |
|                | Max. switching voltage         |                                  | 120VAC / 60VDC   |                        |
|                | Max. switching power           |                                  | 60AV / 24W   |                        |
|                | Max. switching current         |                                  | 1A   |                        |
|                | Min. switching load *          |                                  | 1 mA, 1VDC   | 0.1 mA, 100mVDC        |
|                | Capacitance (at 10 MHz)        |                                  | Approximately 1.4 pF (between open contacts)<br>Approximately 5.0 pF (between coil and contacts) |                        |
| Life           | Mechanical                     |                                  | Min. 5 x 10 <sup>6</sup> operations  |                        |
|                | Electrical (at contact rating) |                                  | Min. 100 x 10 <sup>3</sup> operations  |                        |
| Coil Data      | Rated power                    |                                  | 150 to 175 mW  |                        |
|                | Operate power                  |                                  | 75 to 86 mW  |                        |
|                | Operating temperature range    |                                  | -30 °C to +90 °C (no frost)<br>(18V coil: +85 °C, 24V coil: +80 °C)                              |                        |
| Timing Data    | Operate (at nominal voltage)   |                                  | Max. 5 ms  |                        |
|                | Release (at nominal voltage)   |                                  | Max. 2 ms  |                        |
| Insulation     | Resistance (initial)           |                                  | Min. 1,000MΩ at 500VDC   | Min. 1,000MΩ at 250VDC |
|                | Dielectric strength            | Open contacts                    | 400VAC, 1min   | 300VAC, 1min           |
|                |                                | Contacts to coil                 | 1,000VAC, 1min   |                        |
| Surge strength | Coil to contacts               | 1,500V/ 10 x 160μs standard wave |  |                        |
| Other          | Vibration resistance           | Misoperation                     | 10 to 55Hz double amplitude 1.5mm  |                        |
|                |                                | Endurance                        | 10 to 55Hz double amplitude 1.5mm  |                        |
|                | Shock                          | Misoperation                     | 300m/s <sup>2</sup> (11 ± 1ms)   |                        |
|                |                                | Endurance                        | 1,000m/s <sup>2</sup> (6 ± 1ms)  |                        |
| Weight         |                                |                                  | Approximately 1.7 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

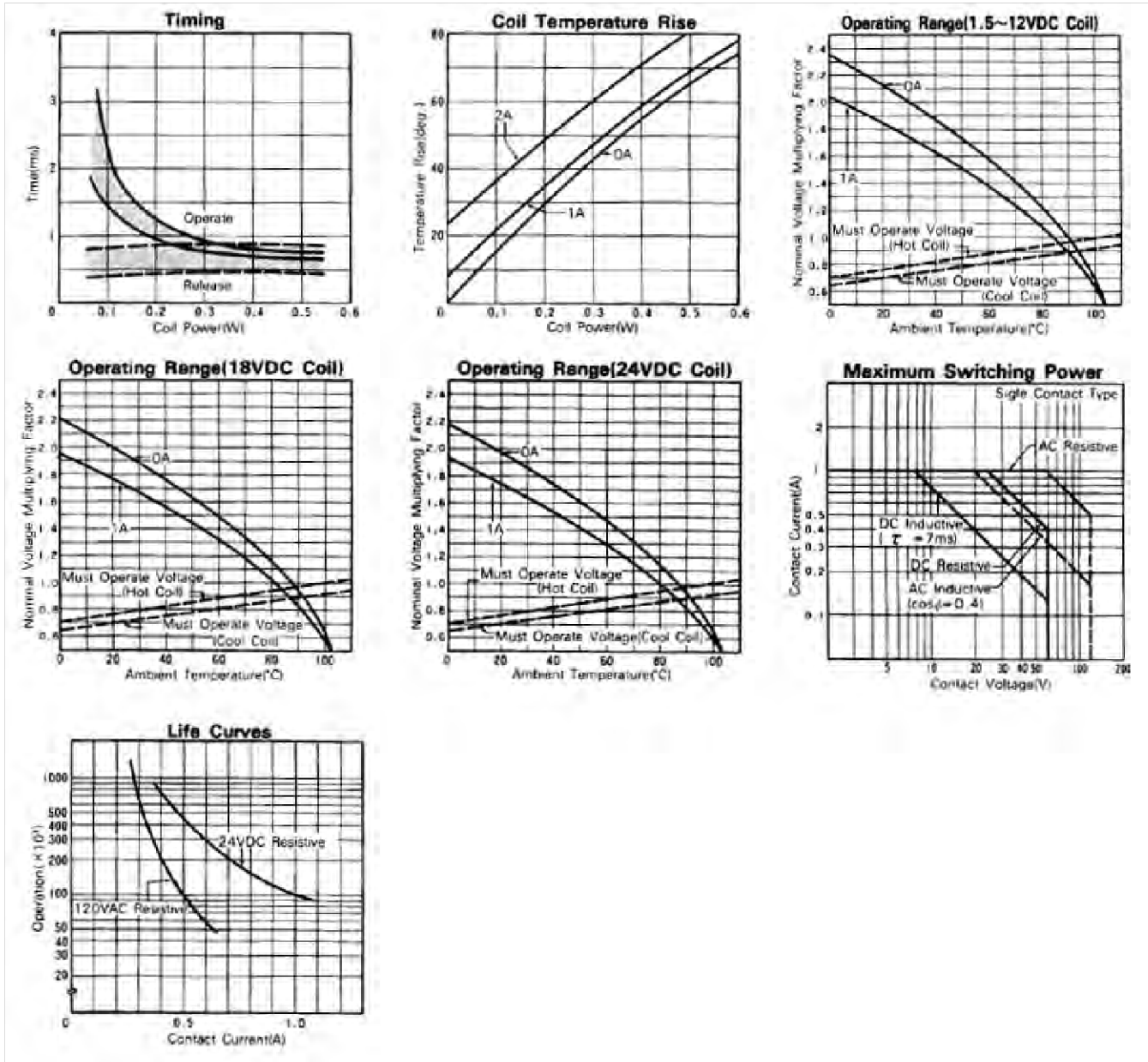
| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release Voltage (VDC) * | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|------------------|
| 1.5       | 1.5                      | 15                            | 1.05                         | 0.08                         | 150              |
| 3         | 3                        | 60                            | 2.1                          | 0.15                         |                  |
| 4.5       | 4.5                      | 135                           | 3.2                          | 0.23                         |                  |
| 5         | 5                        | 167                           | 3.5                          | 0.25                         |                  |
| 6         | 6                        | 240                           | 4.2                          | 0.3                          |                  |
| 9         | 9                        | 540                           | 6.3                          | 0.45                         |                  |
| 12        | 12                       | 960                           | 8.4                          | 0.6                          |                  |
| 18        | 18                       | 1,940                         | 12.6                         | 0.9                          | 170              |
| 24        | 24                       | 3,290                         | 16.8                         | 1.2                          | 175              |

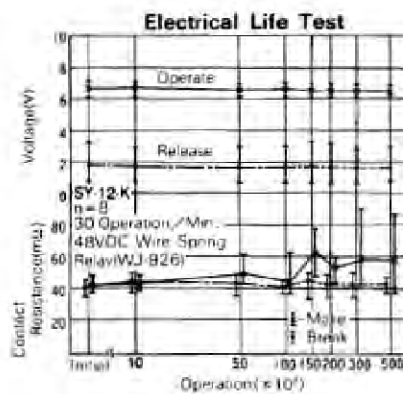
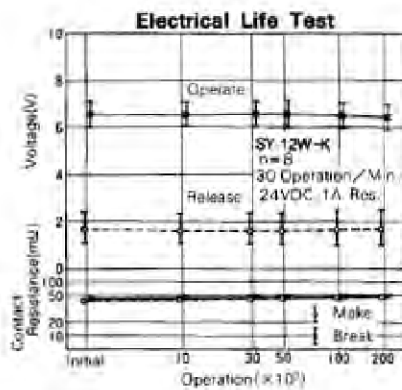
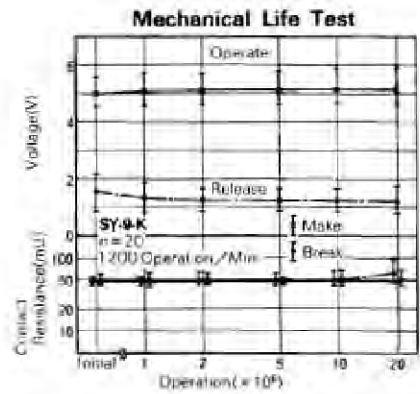
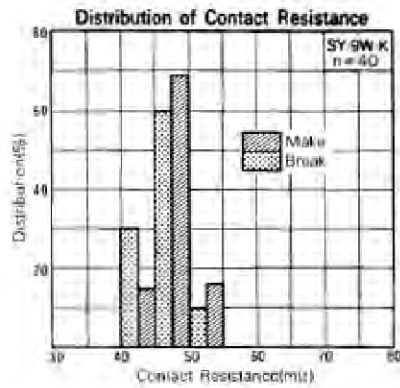
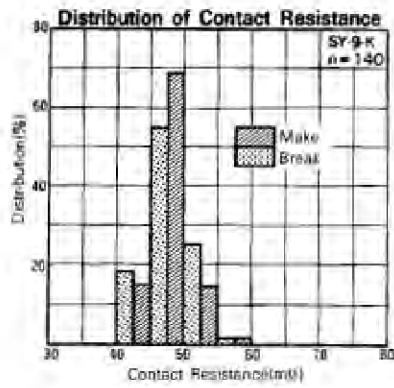
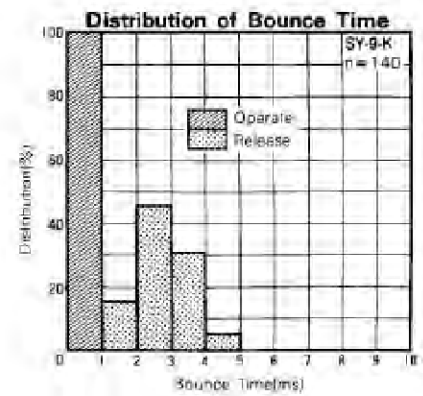
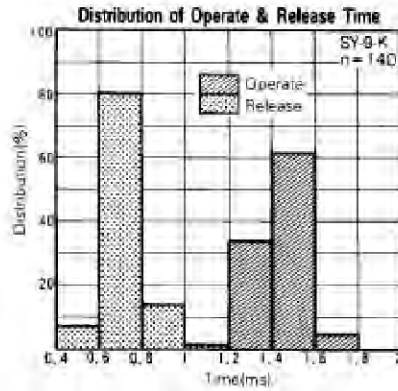
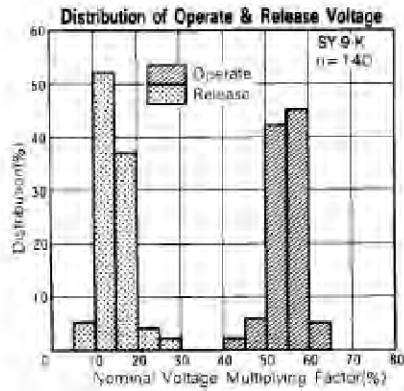
Note: All values in the table are valid for 20°C and zero contact current.  
 \* Specified operate values are valid for pulse wave voltage.

## ■ SAFETY STANDARDS

| Type | Compliance               | Contact rating  |
|------|--------------------------|---|
| UL   | UL 478<br>UL 508         | Flammability: UL 94-V0 (plastics)   |
|      | E 45026                  | 0.5A, 120VAC (resistive)<br>1A, 30VDC (resistive)<br>0.15A, 48VDC (resistive) |
| CSA  | C22.2 No. 14<br>LR 35579 |   |

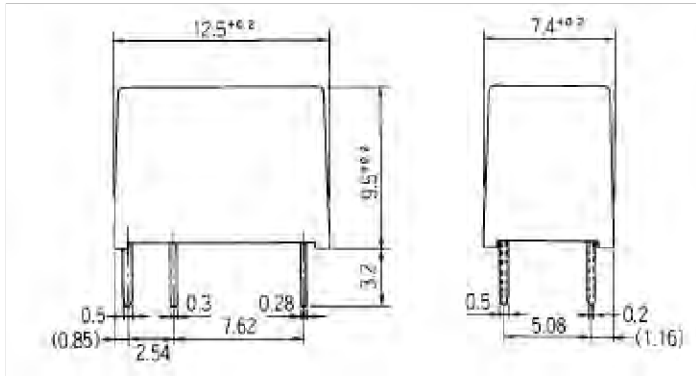
## CHARACTERISTIC DATA



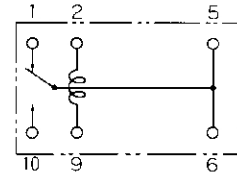


## ■ DIMENSIONS

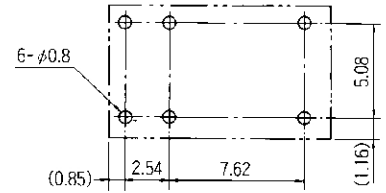
### ● Dimensions



### ● Schematics (BOTTOM VIEW)



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



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 2002/95EC 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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