miniature relay 1 POLE - 1 to 2A (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 $\left(-30^{\circ} \mathrm{C}\right.$ to $\left.+90^{\circ} \mathrm{C}\right)$
- Wide operating range
- DIL pitch terminals
- Plastic sealed type
- RoHS compliant.

Please see page 7 for more information


## Part Numbers

[Example] $\frac{S Y}{(a)}-\frac{12}{(b)}-\frac{W}{(c)}-\frac{0 H}{(d)}-\frac{K}{(e)}-\frac{U L}{(f)}$

| (a) | Relay type | SY | : SY series |
| :---: | :---: | :---: | :---: |
| (b) | Coil rated voltage | 012 | : 5..... 24VDC <br> Coil rating table at page 3 |
| (c) | Contact style | $\begin{gathered} \mathrm{Nil} \\ \mathrm{~W} \end{gathered}$ | : Single type <br> : Bifurcated type |
| (d) | Options | Ni <br> HW | : Standard <br> : OH (zeroH), gold overlay on mov- <br> able and stationary contact <br> : Marking on top of relay |
| (e) | Enclosure |  | : Plastic sealed type |
| (f) | Approvals |  | : 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" (zeroH)

## SY Series

| Item |  |  | SY- ()-K | SY- ( ) W - K | Remarks / conditions |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Single type | Bifurcated type |  |
| Contact data | Configuration |  | 1 form C (SPDT) |  |  |
|  | Construction |  | Single (cross bar) | Bifurcated (cross bar) |  |
|  | Material |  | Gold overlay silver palladium |  |  |
|  | Resistance |  | Max. 100m0hm at 1A, 6VDC |  | Initial |
|  | Contact rating |  | $0.5 \mathrm{~A}, 120 \mathrm{VAC}$ or 1A, 24 VDC |  | Resistive |
|  | Max. carrying current |  | 2A |  |  |
|  | Max. switching current |  | 1A |  |  |
|  | Max. switching voltage |  | 120VAC / 60VDC |  |  |
|  | Max. switching power |  | 60AV / 24W |  |  |
|  | Min. switching load * |  | 1mA, 1VDC | $0.1 \mathrm{~mA}, 100 \mathrm{mVDC}$ |  |
|  | Capacitance (at 10 MHz ) |  | Approx. 1.4 pF (between open contacts) Approx. 5.0 pF (between coil and contacts) |  |  |
| Coil | Rated power ( $20^{\circ} \mathrm{C}$ ) |  | 150 to 175 mW |  |  |
|  | Operate power ( $20^{\circ} \mathrm{C}$ ) |  | 75 to 86 mW |  |  |
|  | Operating temperature range |  | $\begin{gathered} -30^{\circ} \mathrm{C} \sim+90^{\circ} \mathrm{C} \\ \text { ( } \left.18 \mathrm{~V} \text { coil: }+85^{\circ} \mathrm{C}, 24 \mathrm{~V} \text { coil: }+80^{\circ} \mathrm{C}\right) \\ \hline \end{gathered}$ |  | No frost |
| Timing data | Operate |  | Max. 5 ms (without bounce) |  | At rated voltage |
|  | Release |  | Max. 2ms (without bounce) |  | At rated voltage |
| Life | Mechanical |  | Min. $5 \times 10^{6}$ operations |  |  |
|  | Electrical |  | Min. $100 \times 10^{3}$ ops. |  | At contact rating |
| Insulation | Insulation resistance |  | Min. 1000M $\Omega$ at 500VDC | Min. $1000 \mathrm{M} \Omega$ at 250VDC | Initial |
|  | Dielectric strength | Open contacts | 400VAC, 1 minute | 300VAC, 1 minute |  |
|  |  | Coil contact | 1000VAC, 1 minute |  |  |
|  | Surge strength | Coil to contacts | $1,500 \mathrm{~V} / 10 \times 160 \mu \mathrm{~s}$ standard wave |  |  |
| Other | Vibration resistance | Misoperation $\geq 1$ us | 10 to 55 Hz to 10 hz Single amplitude 0.75 mm , 3 axis, 6 cycles |  |  |
|  |  | Endurance | 10 to 55 Hz to 10 hz Single amplitude 0.75 mm , 3 axis, 6 hours |  |  |
|  | Shock resistance | Misoperation $\geq 1$ us | Min. $300 \mathrm{~m} / \mathrm{s}^{2}(11 \pm 1 \mathrm{~ms})$ |  |  |
|  |  | Endurance | Min. $1,000 \mathrm{~m} / \mathrm{s}^{2}(6 \pm 1 \mathrm{~ms})$ |  |  |
|  | Dimensions / weight |  | $7.4 \times 12.5 \times 9.5 \mathrm{~mm} / \mathrm{approx}$. |  |  |

[^0]
## SY Series

## Coil Data

| Coil <br> code | Rated Coil Voltage <br> (VDC) | Coil Resistance $+/-10 \%$ <br> $(\Omega)$ | Must Operate Voltage <br> (VDC) | Must Release Voltage <br> (VDC) | Rated Power <br> $(\mathrm{mW})$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1.5 | 1.5 | 15 | 1.05 | 0.08 |  |
| 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 | 150 |
| 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 at $20^{\circ} \mathrm{C}$ and zero contact current, unless otherwise specified.
*: Specified operated values are valid for pulse wave voltage.
Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

## Safety Standards

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

## SY Series

## Dimensions

- Dimensions

*Dimensions of the terminals do not include thickness of pre-solder.
- Schematics
(BOTTOM VIEW)

- PC Board Mounting Hole Layout
(BOTTOM VIEW)

*Tolerance of PC board mounting hole layout : $\pm 0.1$ unless otherwise specified.
( ): Reference value
Unit: mm


## SY Series

## Characteristic Data (Reference)

* Characteristic data is not guaranteed value but measured values of samples from production line.



## SY Series



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## GENERAL INFORMATION

## 1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2001/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf
- Characteristic data is not guaranteed values, but measured values of samples from production line.


## 2. Recommended lead free solder condition

- Lead free solder plating on relay terminals is $\mathrm{Sn}-3.0 \mathrm{Ag}-0.5 \mathrm{Cu}$, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.


## Flow Solder Condition:

Pre-Heating: maximum $120^{\circ} \mathrm{C}$ within 90 sec.
Soldering: dip within 5 sec . at $255^{\circ} \mathrm{C} \pm 5^{\circ} \mathrm{C}$ solder bath
Relay must be cooled by air immediately after soldering

## Solder by Soldering Iron:

Soldering Iron: 30-60W
Temperature: maximum $340-360^{\circ} \mathrm{C}$
Duration: maximum 3 sec .

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

## 3. Moisture Sensitivity

- Moisture Sensitivity Level 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.


## SY Series

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[^0]:    *: 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 contions.

