

# SOLID STATE RELAY

## Maximum Load Current 3A

### SG Series

#### ■ FEATURES

- Conforms to UL, CSA Standards
  - Slim, SIL Terminal Type
    - Size: 9.0 (W) × 40.0 (L) × 20.0(H) mm
    - Weight: approximately 13g
  - High reliability, long life and maintenance free
  - High isolation (between input and output)
    - Dielectric strength: 2,500 Vrms
  - Internal zero cross circuit type available
  - Internal output surge absorber (varistor) type available.
  - RoHS compliant
- Please see page 5 for more information



#### ■ PARTNUMBER INFORMATION

[Example]     SG - 12    A    03    C    V    L  
                   (a)    (b)    (c)    (d)    (e)    (f)    (g)

|     |                         |          |   |
|-----|-------------------------|----------|---|
| (a) | Relay type              | SG       | : SG Series                               |
| (b) | Coil rated voltage      | 12       | : 3...24VDC                               |
| (c) | Load voltage            | A        | : AC type                                 |
| (d) | Load current            | 03       | : 3A rms                                  |
| (e) | Zero cross circuit      | F<br>C   | : No zero cross type<br>: Zero cross type |
| (f) | Output protection       | Nil<br>V | : No varistor<br>: Internal varistor type |
| (g) | Input terminal distance | Nil<br>L | : 7.62 mm<br>: 5.08 mm                    |

# SG SERIES

## ■ SPECIFICATION

| Item        |                                |                       | AC   | Remarks                 |
|-------------|--------------------------------|-----------------------|--|-------------------------|
|             |                                |                       | TYPE 3A  |                         |
| Input side  | Nominal voltage (DC)           |                       | 3V, 5V, 12V, 24V   |                         |
|             | Operate range                  |                       | ± 20% of nominal voltage                                     |                         |
|             | Must operate voltage           |                       | 80% of nominal voltage                                       |                         |
|             | Must release voltage           |                       | Min. 1VDC  |                         |
|             | Input Impedance                | 3VDC Type             |  | 130Ω ± 10%              |
| 5VDC Type   |                                | 330Ω ± 10%            |  |                         |
| 12VDC Type  |                                | 1.0kΩ ± 10%           |  |                         |
| 24VDC Type  |                                | 2.2kΩ ± 10%           |  |                         |
| Output side | Load voltage range             |                       | 75 to 265V rms   |                         |
|             | Maximum load current           |                       | 3.0A rms   | See characteristic data |
|             | Minimum load current           |                       | 10 mA rms  |                         |
|             | 1 cycle surge current          |                       | 132A (60Hz)  |                         |
|             | Max. off-state leakage current |                       | 2.5mA rms (at 100V rms 60Hz)<br>5.0mA rms (at 200V rms 60Hz) |                         |
|             | Max. off-state voltage drop    |                       | 1.5V rms   | At max. load current    |
| Coil Data   | Operating temperature range    |                       | -30 °C to +85 °C   |                         |
|             | Storage temperature range      |                       | -40 °C to +100 °C  |                         |
| Timing Data | Max. operate time              | At no zero cross type | 1ms  |                         |
|             |                                | At zero cross type    | 1/2 cycle + 1ms  |                         |
|             | Maximum release time           |                       | 1/2 cycle + 1ms  |                         |
| Insulation  | Initial resistance             |                       | Min. 1,000MΩ (500VDC) (input-output)                         |                         |
|             | Surge voltage                  |                       | 2,500V rms 1 min. (input-output)                             |                         |
| Other       | Case color                     |                       | Black  |                         |
|             | Weight                         |                       | Approximately 13 g   |                         |

## ■ BLOCK DIAGRAM

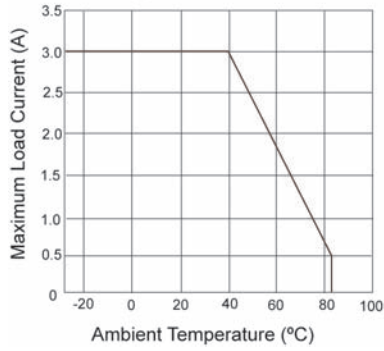
| Load    | Insulation         | Circuit | Input/Output Waveform (resistive load) |
|---------|--------------------|---------|--|
| AC type | Phototriac coupler |         |  |

# SG SERIES

## ■ CHARACTERISTIC DATA

SG- ( ) A03 type (3.0A type)

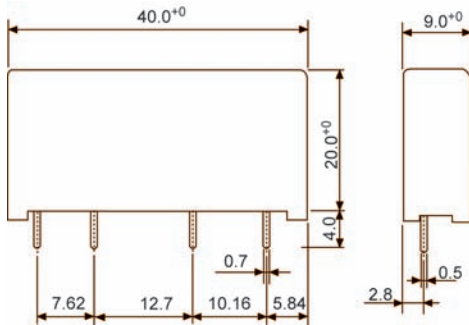
Ambient Temperature vs. Maximum Load Current



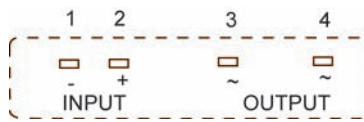
## ■ DIMENSIONS

SG- ( ) A03 type

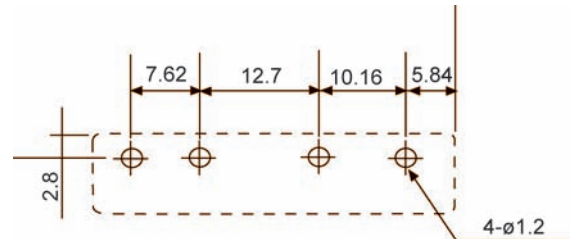
### • Dimensions



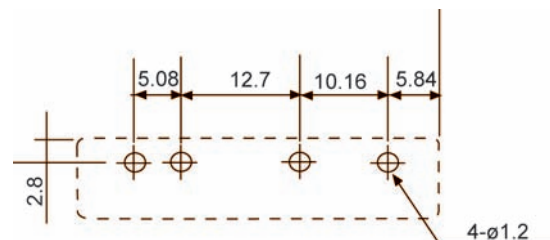
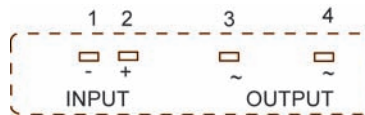
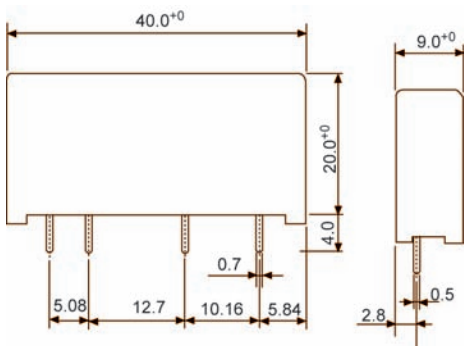
### • Schematic (bottom view)



### • PC board mounting hole layout (bottom view)



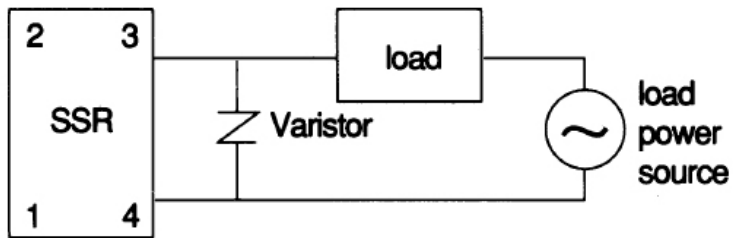
SG- ( ) A03L type



Unit: mm

## ■ NOTES

1. Polarity of terminals are pre-determined. Please design accordingly.
2. If using non-Varistor enclosure type please use Varistor type as in figure 1.



## 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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