Compact Single-pole Relay for Switching 5 A

- Compact SPDT Relay
- Incorporates a normally open contact that switches 5 A max. (N.O. contacts)
- Small, yet provides 8-kV impulse withstand voltage (between coil and contacts)
- Standard model conforms to UL/CSA/VDE standards.

RoHS Compliant

Model Number Legend

G5SB- 1 4 1. Number of Poles 2. Enclosure rating
1: 1-pole/SPDT (1c) 4: Fully sealed

Ordering Information

Classification Contact form Terminal Shape Enclosure rating Model Rated coil voltage Minimum packing unit
Standard SPDT (1c) PCB terminals Fully sealed G5SB-14 5 VDC 100 pcs/Tray

Note. When ordering, add the rated coil voltage to the model number. Example: G5SB-14 DC12

However, the notation of the coil voltage on the product case as well as on the packing will be marked as ¥VDC.

Characteristics

Contact resistance *1 100 mΩ max.
Operate time 10 ms max.
Release time 5 ms max.
Insulation resistance *2 1,000 MΩ min.
Dielectric strength Between coil and contacts 4,000 VAC, 50/60 Hz for 1 min
Between contacts of the same polarity 1,000 VAC, 50/60 Hz for 1 min
Impulse withstand voltage Between coil and contacts 8 kV (1.2 x 50 μs)
Insulation distance Between coil and contacts Clearance: 3.5 mm, Creepage: 6.5 mm
Vibration resistance Destruction 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)
Malfunction 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)
Shock resistance Destruction 1,000 m/s²
Malfunction 100 m/s²
Mechanical Electrical (resistive load) 5,000,000 operations (18,000 operations per hour)
Durability 200,000 operations: 3 A (NO)/3 A (NC) at 125 VAC
50,000 operations: 5 A (NO)/3 A (NC) at 125 VAC
50,000 operations: 5 A (NO) at 250 VAC
100,000 operations: 5 A (NO)/3 A (NC) at 250 VAC
100,000 operations: 5 A (NO)/3 A (NC) at 30 VDC
Switching frequency: 1,800 operations per hour
Failure rate (P level) (reference value) *3 10 mA at 5 VDC
Ambient operating temperature –40°C to 70°C with no icing or condensation
Ambient operating humidity 5% to 85%
Weight Approx. 8.5 g

Note. The data shown above are initial values.
*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.
*2. The insulation resistance is possible between coil and contacts and between contacts of the same polarity at 500 VDC.
*3. This value was measured at a switching frequency of 120 operations/min.

Application Examples

- Ideal for output applications of control equipments

Ratings

Coil

<table>
<thead>
<tr>
<th>Item Load</th>
<th>Coefficient resistance (Ω)</th>
<th>Must operate voltage (V)</th>
<th>Must release voltage (V)</th>
<th>Max. voltage (V)</th>
<th>Power consumption (mW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>5 VDC</td>
<td>63</td>
<td>75%</td>
<td>5% max.</td>
<td>150% (at 23°C)</td>
</tr>
<tr>
<td>9 VDC</td>
<td>202</td>
<td>44.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 VDC</td>
<td>360</td>
<td>33.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 VDC</td>
<td>1,440</td>
<td>16.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.
Note 2. The operating characteristics are measured at a coil temperature of 23°C.
Note 3. The "Max. voltage" is the maximum voltage that can be applied to the relay coil.

Contacts

<table>
<thead>
<tr>
<th>Item</th>
<th>Load</th>
<th>Resistive load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact type</td>
<td>Single</td>
<td></td>
</tr>
<tr>
<td>Contact material</td>
<td>Ag-alloy (Cd free)</td>
<td></td>
</tr>
<tr>
<td>Rated load</td>
<td>3 A (NO)/3 A (NC) at 125 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 A (NO)/3 A (NC) at 125 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 A (NO) at 250 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 A (NC) at 250 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 A (NO)/3 A (NC) at 30 VDC</td>
<td></td>
</tr>
<tr>
<td>Rated carry current</td>
<td>5 A (NO)/3 A (NC)</td>
<td></td>
</tr>
<tr>
<td>Max. switching voltage</td>
<td>250 VAC, 30 VDC</td>
<td></td>
</tr>
<tr>
<td>Max. switching current</td>
<td>5 A (NO)/3 A (NC)</td>
<td></td>
</tr>
</tbody>
</table>

Note. The data shown above are initial values.
G5SB
PCB Power Relay

■ Engineering Data

● Maximum Switching Capacity

- Switching current (A)
  - DC resistive (NO)
  - DC resistive (NC)
  - AC resistive (NO)
  - AC resistive (NC)

- Switching voltage (V)
  - DC resistive
  - AC resistive

Note. The maximum voltage is the maximum voltage that can be applied to the relay coil.

● Ambient Temperature vs. Maximum Voltage

- Maximum voltage (%)
  - 100
  - 80
  - 60
  - 40
  - 20
  - 0

- Ambient temperature (°C)
  - 200
  - 180
  - 160
  - 140
  - 120
  - 100
  - 80
  - 60
  - 40
  - 20
  - 0
  - -40
  - -20
  - 0

Sample: G5SB-14 12 VDC
Number of Relays: 5 pcs
Conditions: Shock is applied in ±X, ±Y, ±Z directions three times each with and without energizing the Relays to check the number of malfunctions.
Requirement: None malfunction 100 m/s²

● Shock Malfunction

- Shock direction
  - X
  - Y
  - Z

Sample: G2RL-14-E 24 VDC
Number of Relays: 5 pcs

- Precautions

● Please refer to “PCB Relays Common Precautions” for correct use.

■ Dimensions (Unit: mm)

G5SB-14

- PCB Mounting Holes (Bottom View)
- Terminal Arrangement/Internal Connections (Bottom View)

- Tolerance: ±0.1 mm

● Approved Standards

UL Recognized: (File No. E41515)
CSA Certified: (File No. LR31928)

- EN/IEC, VDE Certified: (Certificate No. 40003957)

<table>
<thead>
<tr>
<th>Model</th>
<th>Coil ratings</th>
<th>Contact ratings</th>
<th>Number of test operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSSB</td>
<td>12 to 24 VDC</td>
<td>5A 250V AC N.O. only (Resistive) 40°C</td>
<td>6,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3A 125V AC N.O. only (Resistive) 40°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5A 30V DC N.O. only (Resistive) 40°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3A 250V AC N.C. only (Resistive) 40°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2A 125V AC N.C. only (Resistive) 40°C</td>
<td></td>
</tr>
</tbody>
</table>

G5SB-14 PCB Mounting Holes (Bottom View)
Tolerance: ±0.1 mm

(No coil polarity)
Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.