

G5SB

PCB Power Relay

This announcement is based on product catalogue information previously shown before its discontinuation
Product information of the existing product may be different from the previous version

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 2 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 |
| | | | | | 9 VDC | |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |

Note. When ordering, add the rated coil voltage to the model number.

Example: G5SB-14 DC12

Rated coil voltage

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

Ratings

Coil

| Item | Rated current (mA) | Coil resistance (Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V) | Power consumption (mW) |
|---------------|--------------------|---------------------|--------------------------|--------------------------|------------------|------------------------|
| Rated voltage | | | % of rated voltage | | | |
| 5 VDC | 80 | 63 | 75% max. | 5% min. | 150% (at 23°C) | Approx. 400 |
| 9 VDC | 44.4 | 202 | | | | |
| 12 VDC | 33.3 | 360 | | | | |
| 24 VDC | 16.7 | 1,440 | | | | |

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

| Item | Load | Resistive load |
|------------------------|---|----------------|
| Contact type | Single | |
| Contact material | Ag-alloy (Cd free) | |
| Rated load | 3 A (NO)/3 A (NC) at 125 VAC 5 A (NO)/3 A (NC) at 125 VAC 5 A (NO) at 250 VAC 3 A (NC) at 250 VAC 5 A (NO)/3 A (NC) at 30 VDC | |
| Rated carry current | 5 A (NO)/3 A (NC) | |
| Max. switching voltage | 250 VAC, 30 VDC | |
| Max. switching current | 5 A (NO)/3 A (NC) | |

Application Examples

- Ideal for output applications of control equipments

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/s ² |
| | Malfunction | 100 m/s ² |
| Durability | Mechanical | 5,000,000 operations (18,000 operations per hour) |
| | Electrical (resistive load) | 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: 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. 6.5 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.

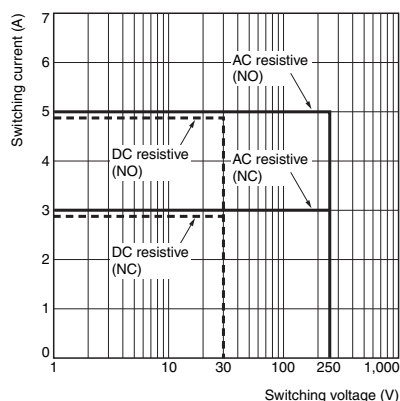
*2. The insulation resistance is possible between coil and contacts and between contacts of the same polarity at 500 VDC.

*3. This value was measured at a switching frequency of 120 operations/min.

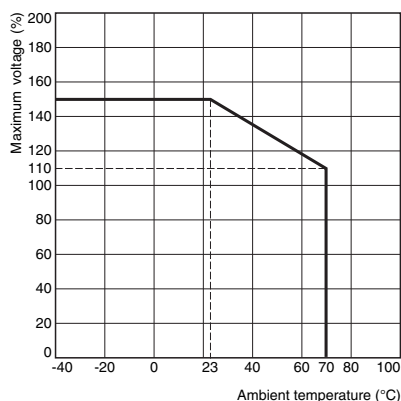
G
5
S
B

Engineering Data

Maximum Switching Capacity

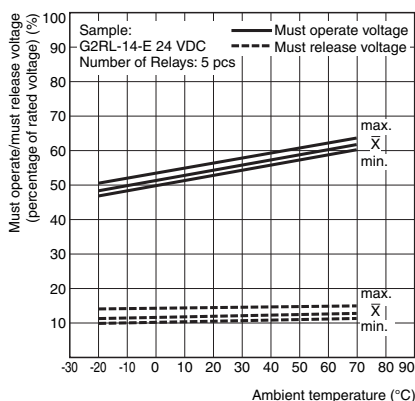


Ambient Temperature vs. Maximum Voltage

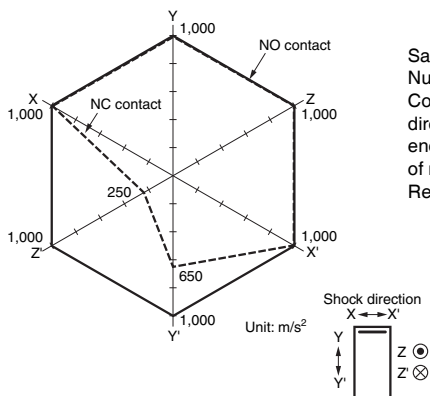


Note. The maximum voltage is the maximum voltage that can be applied to the relay coil.

Ambient Temperature vs Must Operate and Must Release Voltages



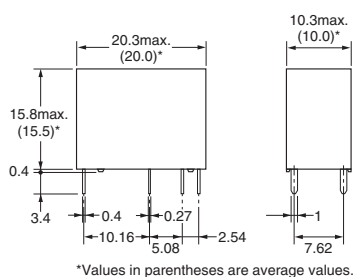
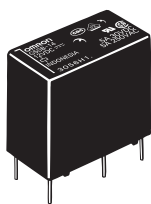
Shock Malfunction



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

Dimensions (Unit: mm)

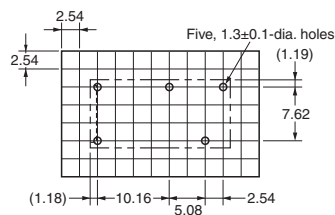
G5SB-14



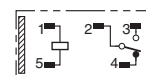
*Values in parentheses are average values.

PCB Mounting Holes (Bottom View)

Tolerance: ± 0.1 mm



Terminal Arrangement/ Internal Connections (Bottom View)



(No coil polarity)

Approved Standards

UL Recognized: (File No. E41515)

CSA Certified: (File No. LR31928)

| Model | Coil ratings | Contact ratings | Number of test operations |
|-------|--------------|---------------------------------------|---------------------------|
| G5SB | 12 to 24 VDC | 5A 250V AC N.O. only (Resistive) 40°C | 6,000 |
| | | 3A 125V AC N.O. only (Resistive) 40°C | |
| | | 5A 30V DC N.O. only (Resistive) 40°C | |
| | | 3A 250V AC N.C. only (Resistive) 40°C | |
| | | 2A 125V AC N.C. only (Resistive) 40°C | |

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

| Model | Coil ratings | Contact ratings | Number of test operations |
|-------|--------------|------------------------------|---------------------------|
| G5SB | 12, 24 VDC | 5A(N.O)/3A(N.C) 250V AC 70°C | 10,000 |

Precautions

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

- 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.