

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 9 VDC 12 VDC 24 VDC	100 pcs/ Tray

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.

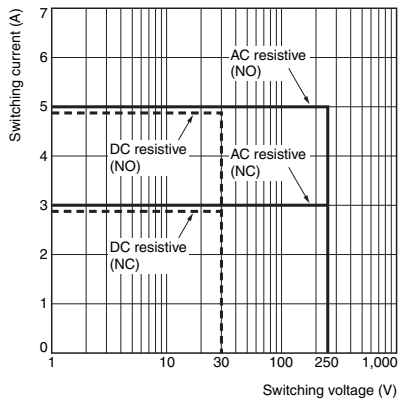
*1. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.

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

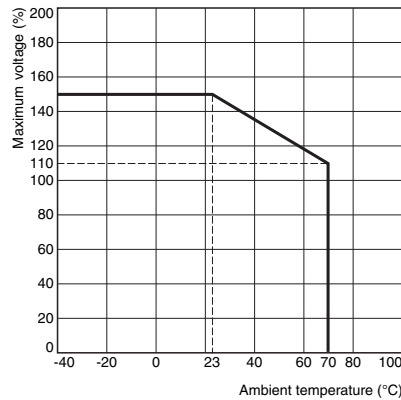
*3. This value was measured at a switching frequency of 120 operations/min.

Engineering Data

Maximum Switching Capacity

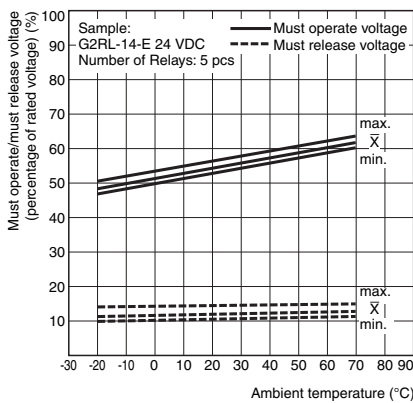


Ambient Temperature vs. Maximum Voltage

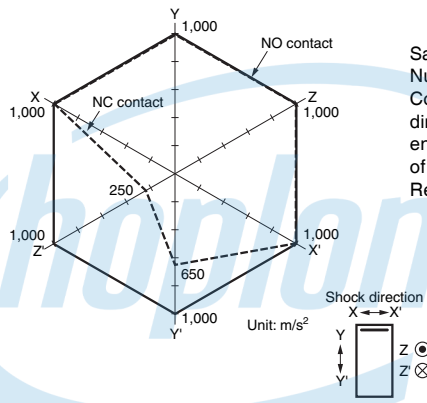


Note. The maximum voltage is the maximum voltage that can be applied to the relay coil.

Ambient Temperature vs Must Operate and Must Release Voltages



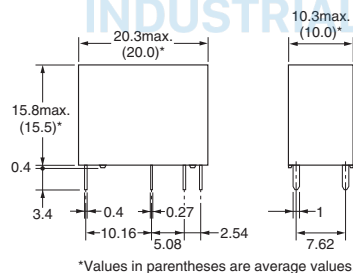
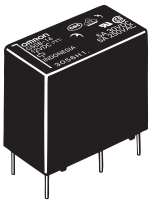
Shock Malfunction



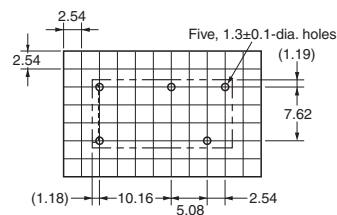
Sample: G5SB-14 12 VDC
Number of Relays: 5 pcs
Conditions: Shock is applied in $\pm X$, $\pm Y$, $\pm Z$ directions three times each with and without energizing the Relays to check the number of malfunctions.
Requirement: None malfunction 100 m/s²

Dimensions (Unit: mm)

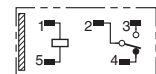
G5SB-14



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.



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• 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.

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