

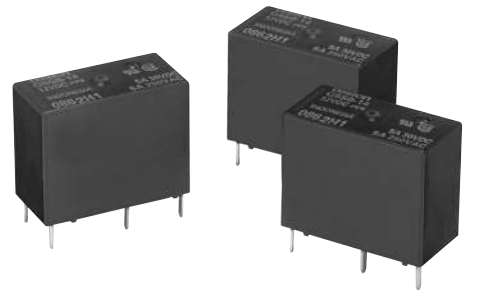
# PCB Relay

## G5SB

**Compact Single-pole Relay for Switching 5 A (Normally Open Contact), Fan Control of Air Conditioners, and Heating Control of Small Appliances.**

- Environment-friendly, Pb-free.
- Compact SPDT Relay with high insulation.
- Incorporates a normally open contact that switches 5 A max.
- Ensures a withstand impulse voltage of 8,000 V between the coil and contacts.
- Conforms to UL and CSA.
  - UL508
  - CSA C22.2 (No.14)
  - VDE approval is in progress.

**Note:** The G5S-1 will be discontinued at the end of March 2004.  
Please change to the G5SB (Environment-friendly Relay).



## Ordering Information

Classification	Contact form	Protective structure	Model
Standard	SPDT	Fully sealed	G5SB-14

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

Example: G5SB-14 12 VDC

Rated coil voltage

## Model Number Legend

G5SB-       VDC  
1 2 3

- Number of Poles**  
1: SPDT
- Protective Structure**  
4: Fully sealed
- Rated Coil Voltage**  
5, 9, 12, 24 VDC

## Specifications

### Coil Ratings

Rated voltage	5 VDC	9 VDC	12 VDC	24 VDC
Rated current	80 mA	44.4 mA	33.3 mA	16.7 mA
Coil resistance	63 Ω	202 Ω	360 Ω	1,440 Ω
Must operate voltage	75% max. of rated voltage			
Must release voltage	5% min. of rated voltage			
Maximum voltage	110% of rated voltage			
Power consumption	Approx. 400 mW			

## ■ Contact Ratings

<b>Load</b>	Resistive load
<b>Rated load</b>	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
<b>Contact material</b>	Ag alloy
<b>Rated carry current</b>	5 A (NO)/3 A (NC)
<b>Max. switching voltage</b>	250 VAC, 30 VDC
<b>Max. switching current</b>	5 A (NO)/3 A (NC)
<b>Max. switching capacity</b>	1,250 VA, 150 W (NO) 750 VA, 30 W (NC)
<b>Min. permissible load</b>	10 mA at 5 VDC

Note: P level:  $\lambda_{60}=0.1 \times 10^{-6}$  operation (with an operating frequency of 120 operations/min.)

## ■ Characteristics

<b>Contact resistance (See note 2.)</b>	100 mΩ max.
<b>Operate time (See note 3.)</b>	10 ms max.
<b>Release time (See note 3.)</b>	5 ms max.
<b>Insulation resistance (See note 4.)</b>	1,000 MΩ min.
<b>Dielectric strength</b>	4,000 VAC, 50/60 Hz for 1 min between coil and contacts 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity
<b>Impulse withstand voltage</b>	8 kV (1.2 x 50 μs)
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)
<b>Shock resistance</b>	Destruction: 1,000 m/s <sup>2</sup> (approx. 100G) Malfunction: Energized: 100 m/s <sup>2</sup> (approximately 10G) Non-energized: 100 m/s <sup>2</sup> (approximately 10G)
<b>Durability (See note 5.)</b>	Mechanical: 5,000,000 operations (18,000 operations per hour) Electrical: 200,000 operations: 3 A (NO)/3 A (NC) at 125 VAC resistive load 50,000 operations: 5 A (NO)/3 A (NC) at 125 VAC resistive load 50,000 operations: 5 A (NO) at 250 VAC resistive load 10,000 operations: 3 A (NC) at 250 VAC resistive load 10,000 operations: 5 A (NO)/3 A (NC) at 30 VDC resistive load Switching frequency: 1,800 operations per hour
<b>Ambient temperature</b>	Operating: -40°C to 70°C with no icing or condensation
<b>Ambient humidity</b>	Operating: 5% to 95%
<b>Weight</b>	Approx. 6.5 g

- Note: 1. The data shown above are initial values.  
2. The contact resistance is possible with 1 A applied at 5 VDC using a fall-of-potential method.  
3. The operating time is possible with the operating voltage imposed with no contact bounce at an ambient temperature of 23°C.  
4. The insulation resistance is possible between coil and contacts and between contacts of the same polarity at 500 VDC.  
5. The electrical durability data items shown are possible at 23°C.

## ■ Approved Standards

**UL508 (File No. E41515)**

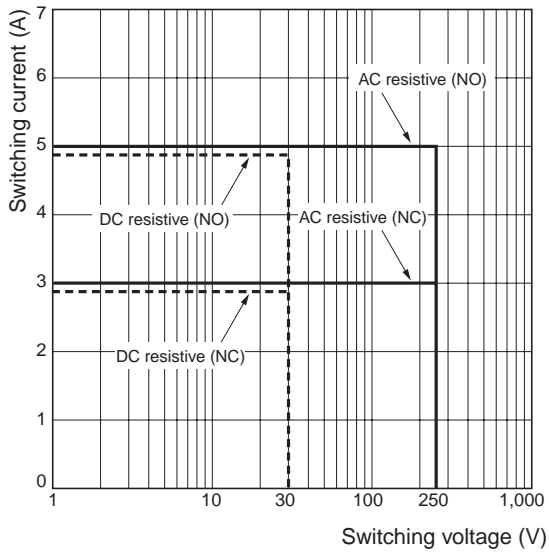
**CSA C22.2 (No. 14) (File No. LR31928)**

Model	Coil ratings	Contact ratings	Number of test operations
G5SB	5 to 24 VDC	3 A, 125 VAC (resistive) NC only 2 A, 125 VAC (resistive) NC only 5 A, 250 VAC (resistive) NO only 3 A, 250 VAC (resistive) NO only 5 A, 30 VDC (resistive) NO only	6,000

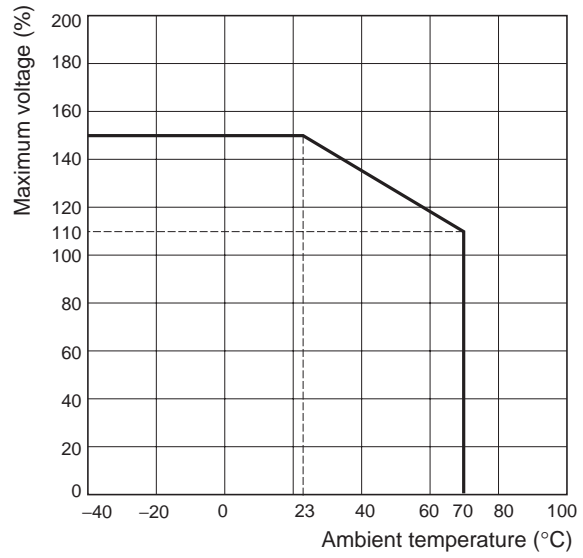
Electrical durability tests are performed at 70°C.

# Engineering Data

## Max. Switching Capacity

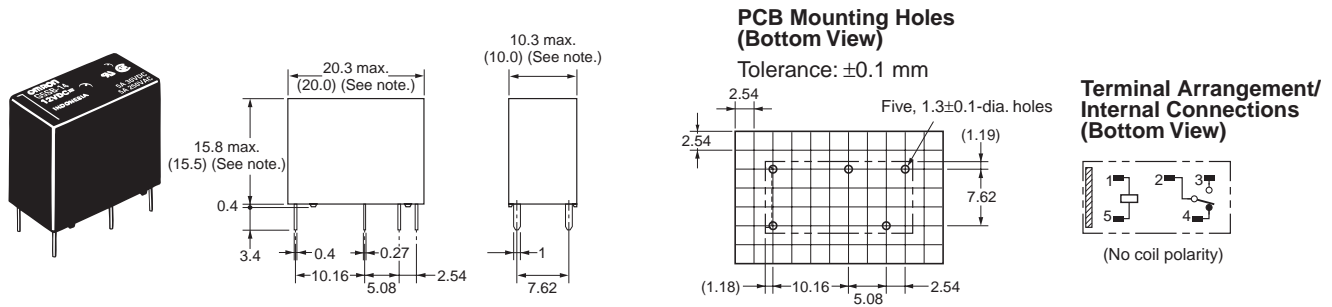


## Ambient Temperature vs. Maximum Voltage



# Dimensions

Note: All units are in millimeters unless otherwise indicated.



Note: Values in parentheses are average values.

# Application Examples

- Fan Motor
- Oven
- Refrigerator
- Washing Machine
- Air Conditioner
- Others

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. K122-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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