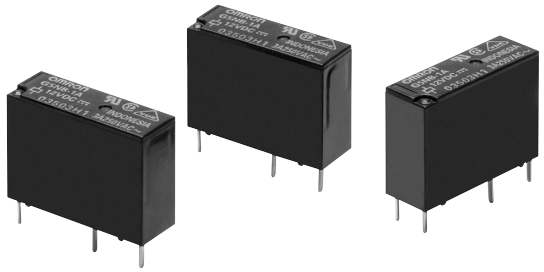
OMRON

PCB Relay

G5NB

A Miniature Relay with 1-pole 3-A Switching Capability and 10-kV Impulse Withstand Voltage

- Highly efficient magnetic circuit for high sensitivity (200 mW) operation.
- 10-kV impulse withstand voltage (between coil and contacts).
- Standard model conforms to UL and CSA and VDE standards.
- RoHS Compliant.



Ordering Information

Classification	Contact form	Enclosure ratings	Model
Standard	SPST-NO	Flux protection	**G5NB-1A**

Note: When ordering, add the rated coil voltage to the model number.
Example: G5NB-1A DC 12
Rated coil voltage

■ Model Number Legend

G5NB-□□ DC□
1 2 3

1. Number of Poles
1: 1 pole
2. Contact Form
A: SPST-NO
3. Rated Coil Voltage
5, 12, 18, 24 VDC

Application Examples

Water heaters, refrigerators, air conditioners, and small electric appliances

Specifications

■ Coil Ratings

Rated voltage	5 VDC	12 VDC	18 VDC	24 VDC
Rated current	40.0 mA	16.7 mA	11.1 mA	8.3 mA
Coil resistance	125 Ω	720 Ω	1,620 Ω	2,880 Ω
Must operate voltage	75% of rated voltage (max.)			
Must release voltage	10% of rated voltage (min.)			
Max. voltage	180% of rated voltage (at 23°C)			
Power consumption	Approx. 200 mW			

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

■ Contact Ratings

Load	Resistive load ($\cos\phi = 1$)
Rated load	3 A at 125 VAC, 3 A at 30 VDC
Max. switching voltage	250 VAC, 30 VDC
Max. switching and carry current	3 A
Max. switching power	375 VA, 90 W

■ Characteristics

Contact resistance (see note 2)	100 mΩ max.
Operate time	10 ms max.
Release time	10 ms max.
Insulation resistance (see note 3)	1,000 MΩ min. (at 500 VDC)
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min. between coil and contacts 750 VAC, 50/60 Hz for 1 min. between contacts of same polarity
Impulse withstand voltage	10,000 V (1.2 x 50 μs) between coil and contacts
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s^2 (approx. 100 G) Malfunction: 100 m/s^2 (approx. 10 G)
Life expectancy	Mechanical: 5,000,000 operations min. Electrical: 200,000 operations min.
Minimum permissible load (reference value) (see note 4)	5 VDC, 10 mA
Ambient temperature	Operating: –40°C to 70°C (with no icing or condensation)
Ambient humidity	Operating: 5% to 85%
Weight	Approx. 4 g

Note: 1. The data shown above are initial value.
2. Measurement conditions: 5 VDC, 1 A, voltage drop method
3. Measurement conditions: Measured at the same points as the dielectric strength using a 500-VDC ohmmeter.
4. This value is for a switching frequency of 120 operations/minute. (P level: $\lambda_{60} = 0.1 \times 10^{-6}$ operations)

■ Approved Standards

UL508 (File No. 41515)

Coil ratings	Contact ratings
5 to 24 VDC	3 A, 30 VDC (resistive) 3 A, 125 VAC (resistive) 1.5 A, 250 VAC (resistive)

CSA C22.2 (No. 0, No. 1, No. 14) (File No. LR31928)

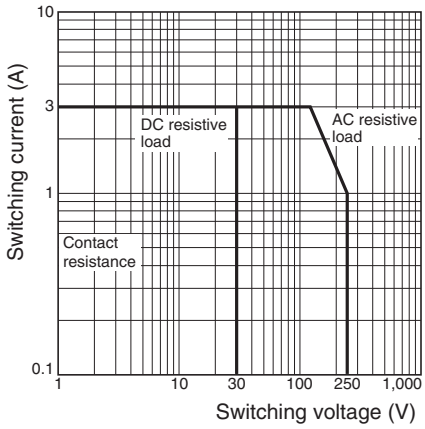
Coil ratings	Contact ratings
5 to 24 VDC	3 A, 30 VDC (resistive) 3 A, 125 VAC (resistive) 1.5 A, 220 VAC (resistive) 1 A, 250 VAC (resistive)

■ Actual Load Life (Reference Values)

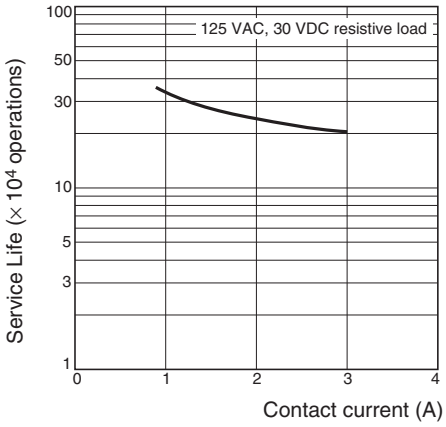
1. 120-VAC motor and lamp load (2.5-A surge and 0.5-A normal): 250,000 operations min. (at 23°C)
2. 160-VDC valve load (with varistor) (0.24-A): 250,000 operations min. (at 23°C)

Engineering Data

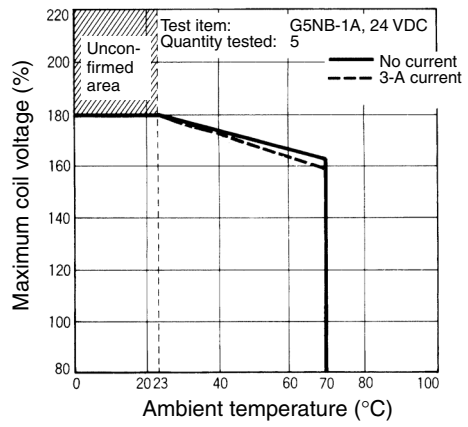
Maximum Switching Capacity



Electrical Service Life

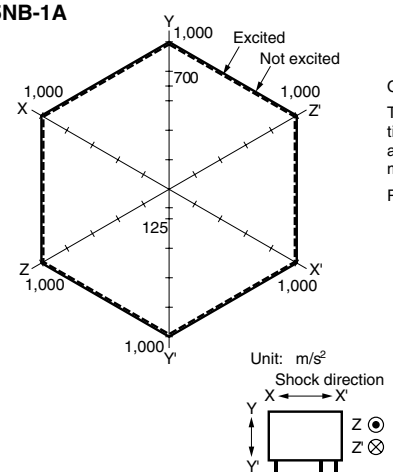


Ambient Temperature vs. Maximum Coil Voltage



Malfunctioning Shock

G5NB-1A



Quantity Tested: 5 units

Test Method: Shock was applied 3 times in 6 directions along 3 axes and the level at which shock caused malfunction was measured.

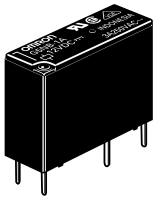
Rating: 100 m/s²

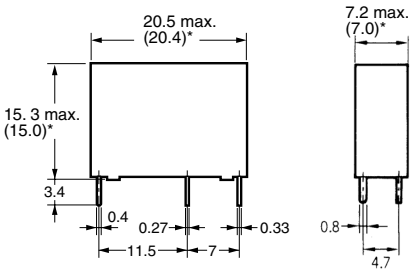
Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

G5NB-1A

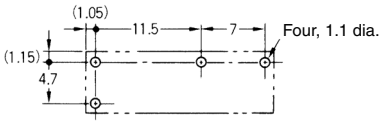




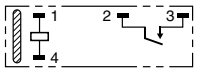
*Average value

PCB Mounting Holes (Bottom View)

Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections (Bottom View)



(No coil polarity)

Precautions

■ Correct Use

Handling

The enclosure rating of the G5NB is suitable for flux protection. Do not use immersion-cleaning.