OMRON

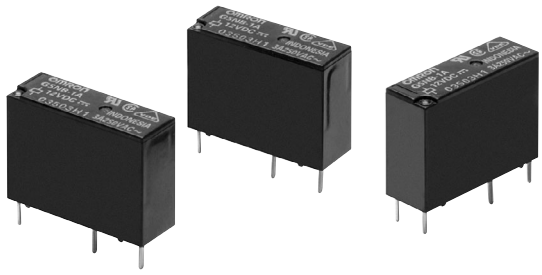
PCB Relay

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).
- Small, yet provides 10-kV impulse withstand voltage (between coil and contacts).
- Standard model conforms to UL and CSA and VDE standards.

RoHS Compliant Refer to pages 16 to 17 for details.



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 12 VDC
Rated coil voltage

Model Number Legend

G5NB-□□ □VDC
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

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% max. of rated voltage			
Must release voltage	10% min. of rated voltage			
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 current	3 A
Max. switching power	375 VA, 90 W
Failure rate (reference value)	10 mA at 5 VDC

Note: P level: $\lambda_{60} = 0.1 \times 10^{-6}$operations

■ 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 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
Endurance	Mechanical: 5,000,000 operations min. Electrical: 200,000 operations min.
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.

■ Approved Standards

UL508 (File No. 41515), CSA C22.2 (No. 0, No. 1, No. 14) (File No. LR31928)

Coil ratings	Contact ratings	Number of test operations
5 to 24 VDC	3 A, 30 VDC (resistive)	6,000
	3 A, 250 VAC (general use) 1 A, 277 VAC (resistive)	30,000

EN/VDE Approval (Registration No. 137575/EN61810-1)

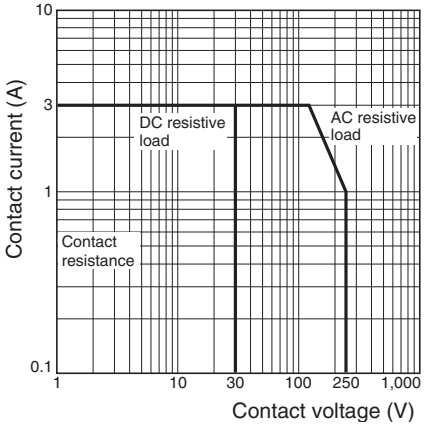
Coil ratings	Contact ratings	Number of test operations
5, 12, 18, 24 VDC	3 A, 250 VAC (resistive) 3 A, 30 VDC (resistive)	100,000

■ Actual Load Life (Reference Values)

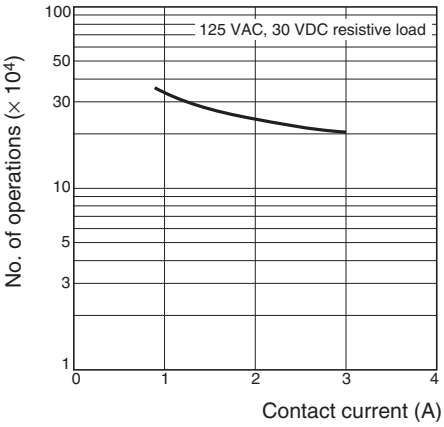
1. 120-VAC motor and lamp load (2.5-A surge and 0.5-A normal): 250,000 operations min. (at 23°C)
2. 160-VDC valve load (with varistor) (0.24-A): 250,000 operations min. (at 23°C)

Engineering Data

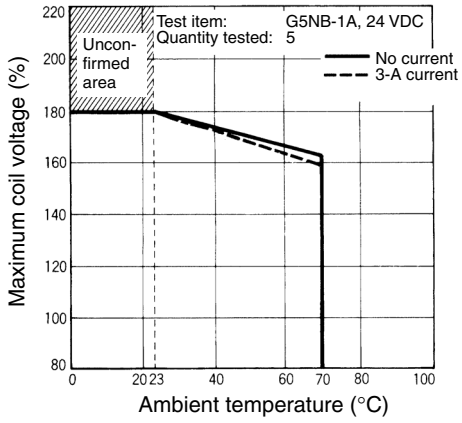
Maximum Switching Capacity



Endurance

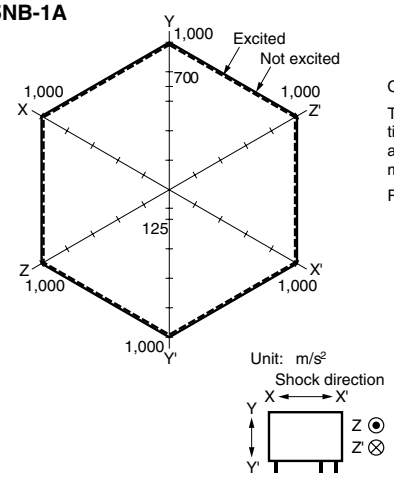


Ambient Temperature vs. Maximum Coil Voltage



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.

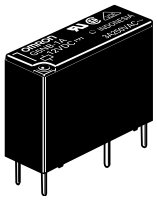
Rating: 100 m/s²

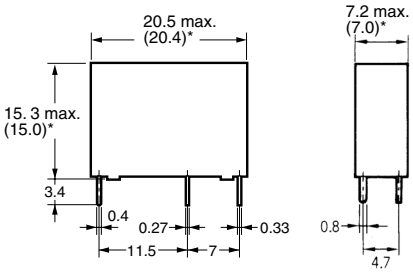
Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

G5NB-1A

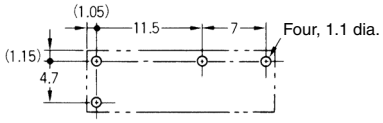




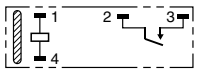
*Average value

PCB Mounting Holes (Bottom View)

Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections (Bottom View)



(No coil polarity)

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. J143-E1-02