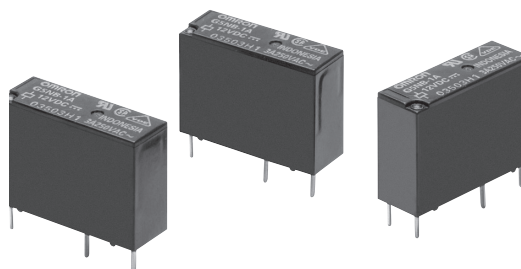


PCB Relay

G5NB

A Slim Compact Relay with 3 A Switching Capability and 10-kV Impulse Withstand Voltage

- Max size 20.5L x 7.2 W x 15.3 W mm.
- Standard models switch up to 3 A
High-capacity models switch up to 5 A (AC loads only).
- Low power consumption (200 mW).
- Semi-sealed and sealed types available.
- UL recognized / CSA certified. VDE Approved.
- RoHS Compliant.



Ordering Information

Contact Form SPST-NO		
Classification	Enclosure ratings	
	Flux-tight model	Sealed model
Standard	G5NB-1A	G5NB-1A4
High Capacity	G5NB-1A-E	G5NB-1A4-E

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

Example: G5NB-1A DC12

Rated coil voltage

Example2: G5NB-1A4-E DC5

Rated coil voltage

Model Number Legend

G5NB-□□□-□ DC□

1 2 3 4 5

1. Number of Poles

1: 1 pole

2. Contact Form

A: SPST-NO

3. Enclosure Ratings

None: Flux protection

4: Sealed

4. Type

None: Standard

E: High Capacity

5. 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	Standard: 180% of rated voltage (at 23°C) High-capacity: 170% 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 $\pm 10\%$.

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	Standard	High-capacity
Rated load (resistive, p.f.= 1)	3 A at 125 VAC 3 A at 30 VDC	5 A at 250 VAC 3 A at 30 VDC
Max. switching voltage	250 VAC, 30 VDC	250 VAC, 30 VDC
Rated carry current	3 A	5A
Max. switching current	3 A	5A (AC load,) 3A (DC load)
Max. switching power	375 VA, 90 W	1,250 VA, 90 W

■ Characteristics

Contact resistance (see note 2)	100 m Ω max.
Operate time	10 ms max.
Release time	10 ms max.
Insulation resistance (see note 3)	1,000 M Ω 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 μ s) 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. (18,000 operations/hour) Electrical: 200,000 operations minimum: <u>High-capacity</u> 5 A at 125 VAC 3 A at 30 VDC <u>Standard</u> 3 A at 125 VAC 3 A at 30 VDC 100,000 operations minimum: <u>High-capacity</u> 5 A at 250 VAC All electrical load ratings are resistive, with operation frequency = 1,800 operations/hour.
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

UL Recognized (File No. E41515)

Coil ratings	Contact ratings
5 to 24 VDC	3 A at 30 VDC (Resistive), 70°C 3 A at 125 VAC (Resistive), 70°C

CSA Certified (File No. LR31928)

Coil ratings	Contact ratings
5 to 24 VDC	3 A at 30 VDC (Resistive) 3 A at 125 VAC (Resistive)

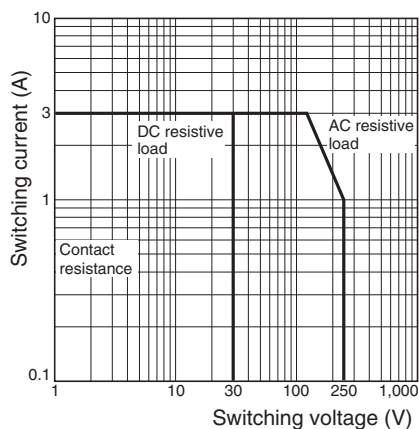
■ Actual Load Life (Reference Values)

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

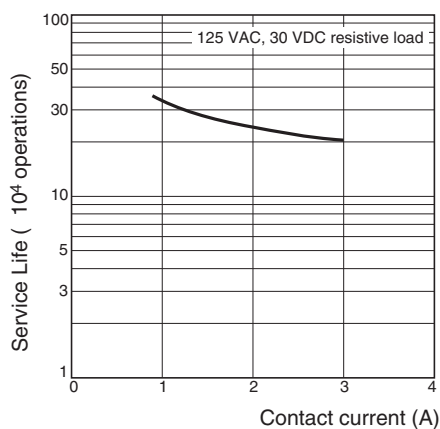
Engineering Data

Standard models

Maximum Switching Capacity

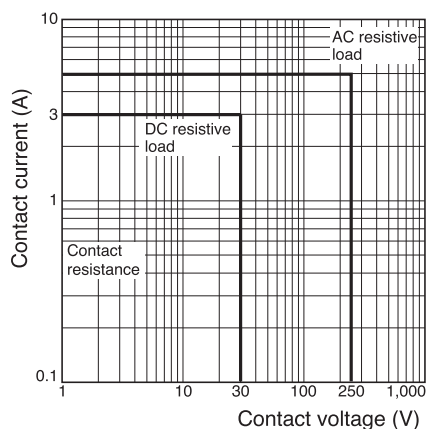


Electrical Service Life

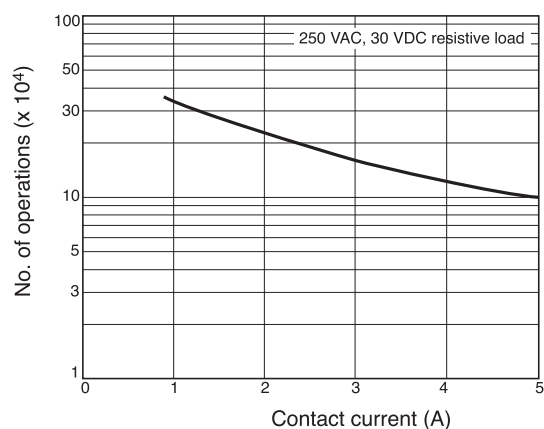


High-capacity models

Maximum Switching Capacity

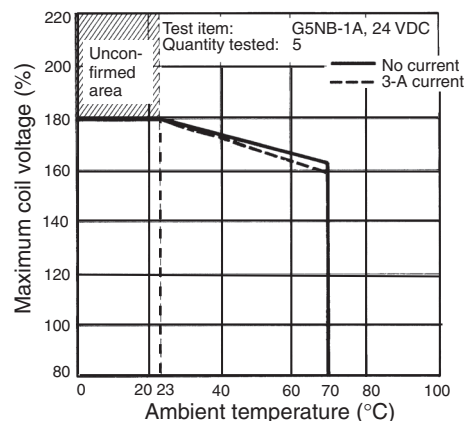


Electrical Service Life



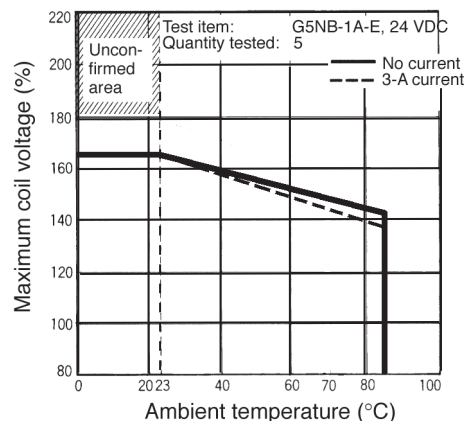
Standard models

Ambient Temperature vs. Maximum Coil Voltage



High-capacity models

Ambient Temperature vs. Maximum Coil Voltage

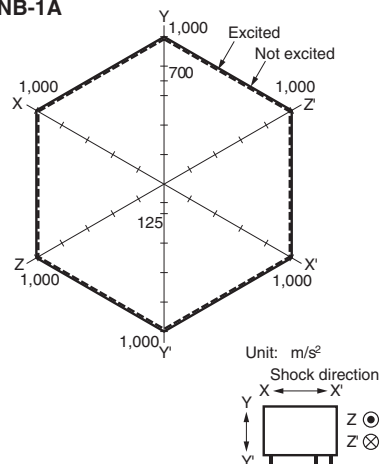


Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

All models

Malfunctioning Shock

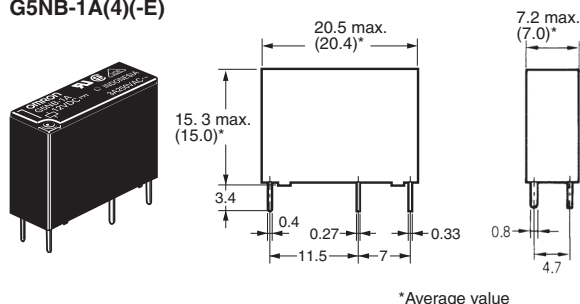
G5NB-1A



Dimensions

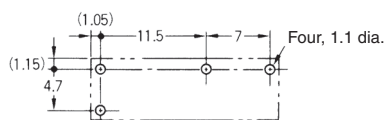
Note: All units are in millimeters unless otherwise indicated.

G5NB-1A(4)-(E)

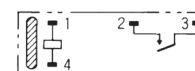


PCB Mounting Holes (Bottom View)

Tolerance: ±0.1 mm



Terminal Arrangement/ Internal Connections (Bottom View)



(No coil polarity)

Precautions

■ Correct Use

Handling

- Note:**
1. The enclosure rating for G5NB-1A and G5NB-1A-E is suitable for flux protection. Do not use immersion-cleaning for these model
 2. Do not ultrasonic clean any G5NB relay.

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