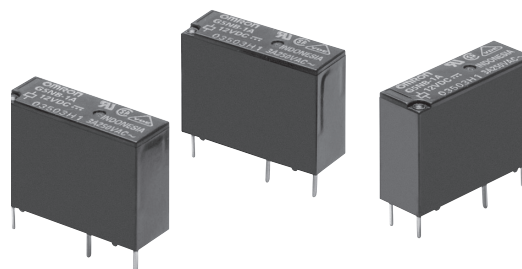


PCB Relay G5NB

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 ±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 Max. switching current | 3 A 3 A | 5A 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 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. (18,000 operations/hour) Electrical: 200,000 operations minimum: <table style="margin-left: 20px;"> <tr> <td><u>High-capacity</u></td> <td><u>Standard</u></td> </tr> <tr> <td>5 A at 125 VAC</td> <td>3 A at 125 VAC</td> </tr> <tr> <td>3 A at 30 VDC</td> <td>3 A at 30 VDC</td> </tr> </table> 100,000 operations minimum: <table style="margin-left: 20px;"> <tr> <td><u>High-capacity</u></td> </tr> <tr> <td>5 A at 250 VAC</td> </tr> </table> All electrical load ratings are resistive, with operation frequency = 1,800 operations/hour. | <u>High-capacity</u> | <u>Standard</u> | 5 A at 125 VAC | 3 A at 125 VAC | 3 A at 30 VDC | 3 A at 30 VDC | <u>High-capacity</u> | 5 A at 250 VAC |
| <u>High-capacity</u> | <u>Standard</u> | | | | | | | | |
| 5 A at 125 VAC | 3 A at 125 VAC | | | | | | | | |
| 3 A at 30 VDC | 3 A at 30 VDC | | | | | | | | |
| <u>High-capacity</u> | | | | | | | | | |
| 5 A at 250 VAC | | | | | | | | | |
| 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) |

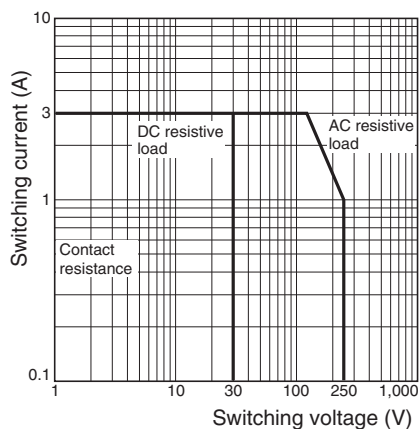
■ Actual Load Life (Reference Values)

- 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)

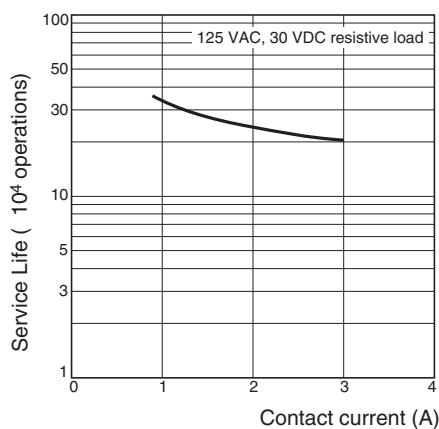
Engineering Data

Standard models

Maximum Switching Capacity

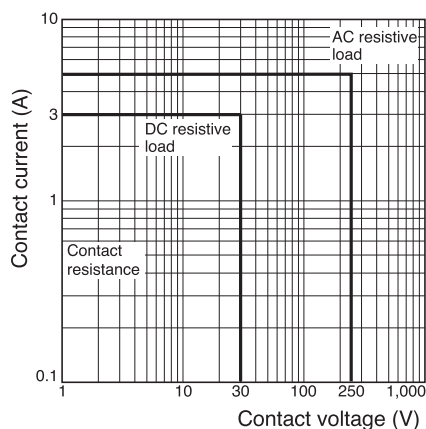


Electrical Service Life

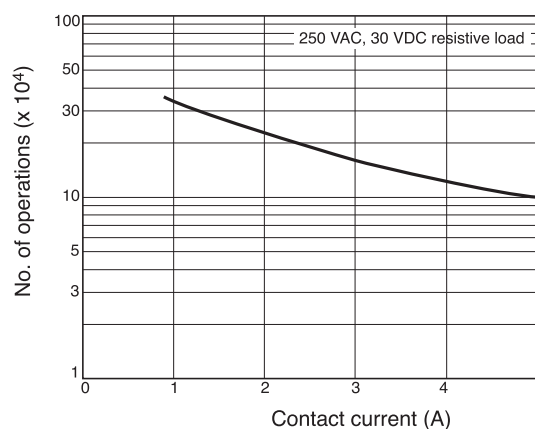


High-capacity models

Maximum Switching Capacity

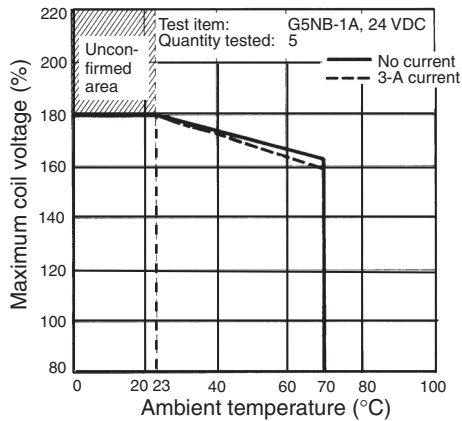


Electrical Service Life



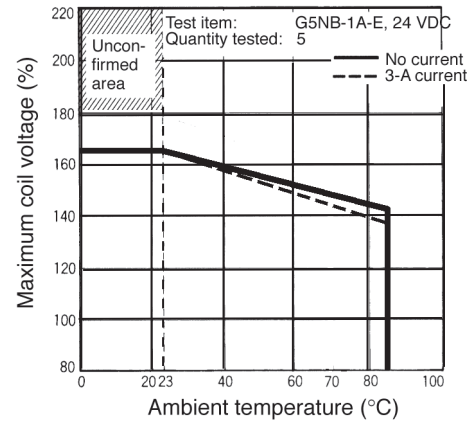
Standard models

Ambient Temperature vs. Maximum Coil Voltage



High-capacity models

Ambient Temperature vs. Maximum Coil Voltage

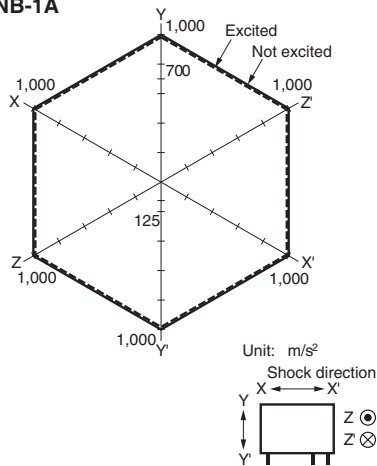


Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

All models

Malfunctioning Shock

G5NB-1A

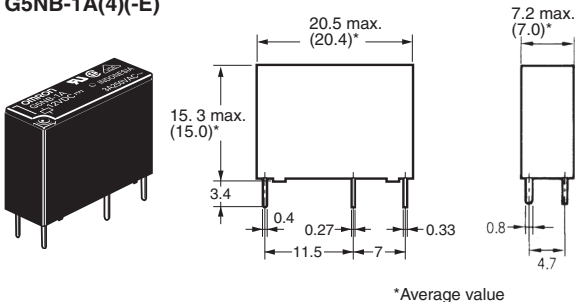


Quantity Tested: 5 units
 Test Method: Shock was applied 3 times in 6 directions along 3 axes and the level at which shock caused malfunction was measured.
 Rating: 100 m/s²

Dimensions

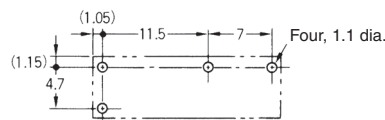
Note: All units are in millimeters unless otherwise indicated.

G5NB-1A(4)-(E)

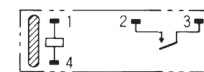


PCB Mounting Holes (Bottom View)

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

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