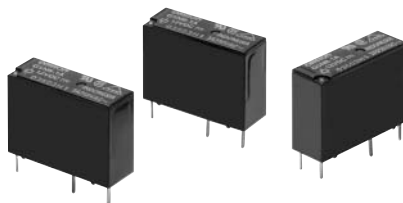


- ROHS compliant.
- Highly efficient magnetic circuit for high sensitivity (200 mW).
- Compact, slim, yet provides 10 kV impulse withstand voltage (between coil and contacts).
- Standard model conforms to UL, CSA and EN standards.
- Tracking resistance: CTI>250



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

Example: G5NB-1A-E 12 VDC

Rated coil voltage

**G5NB-    -E   VDC**  
                  1  2          3

1: 1 pole

A: SPST-NO

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% max. of rated voltage       |         |         |         |
| Must release voltage | 10% min. of rated voltage       |         |         |         |
| Max. voltage         | 170% of rated voltage (at 23°C) |         |         |         |
| Power consumption    | Approx. 200 mW                  |         |         |         |

**Note:** The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

The operating characteristics are measured at a coil temperature of 23°C.

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                     | 5 A at 250 VAC, 3 A at 30 VDC     |
| Max. switching voltage         | 250 VAC, 30 VDC                   |
| Max. switching current         | 5 A                               |
| Max. switching power           | 1250 VA, 90 W                     |
| Failure rate (reference value) | 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

|                                                         |                                                                                                                                                                          |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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<br>750 VAC, 50/60 Hz for 1 min between contacts of same polarity                                                 |
| Impulse withstand voltage                               | 10,000 V (1.2 x 50 ms) between coil and contacts                                                                                                                         |
| Vibration resistance                                    | Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)<br>Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) |
| Shock resistance                                        | Destruction: 1,000 m/s <sup>2</sup><br>Malfunction: 100 m/s <sup>2</sup>                                                                                                 |
| Endurance                                               | Mechanical: 5,000,000 operations min.<br>Electrical: 100,000 operations min (5 A at 250 VAC), 200,000 operations min. (3 A at 30 VDC)                                    |
| Failure rate P level (reference value)<br>(See note 4.) | 5 VDC, 10 mA                                                                                                                                                             |
| Ambient temperature                                     | Operating: -40°C to 85°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.

## ■ Approved Standards

### UL508 (File No. 41515)

| Coil ratings | Contact ratings                                                                   |
|--------------|-----------------------------------------------------------------------------------|
| 5 to 24 VDC  | 5 A, 30 VDC (resistive)<br>5 A, 125 VAC (resistive)<br>5 A, 250 VAC (general use) |

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

| Coil ratings | Contact ratings                                                                   |
|--------------|-----------------------------------------------------------------------------------|
| 5 to 24 VDC  | 5 A, 30 VDC (resistive)<br>5 A, 125 VAC (resistive)<br>5 A, 250 VAC (general use) |

### EN 61810-1 (VDE Reg No 137575)

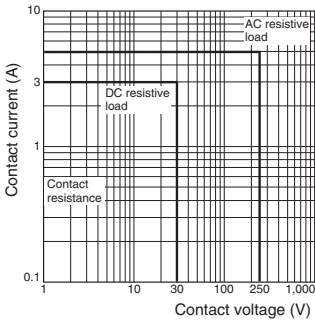
| Coil ratings | Contact ratings                                       |
|--------------|-------------------------------------------------------|
| 5 to 24VDC   | 5 A, 30 VDC (resistive)<br>5 A, 250 VAC (general use) |

## ■ Actual Load Life (Reference Values)

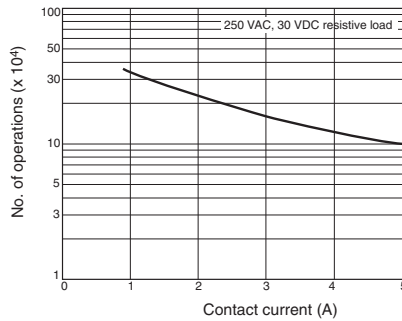
1. 120-VAC motor and lamp load (2.5-A surge and 0.5-A normal): 250,000 operations min.(at 23°C)
2. 160-VDC valve load (with varistor) (0.24-A): 250,000 operations min.(at 23°C)

## Engineering Data

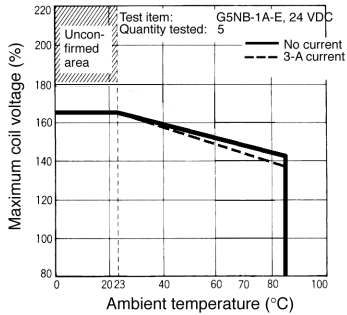
## Maximum Switching Capacity



## Endurance

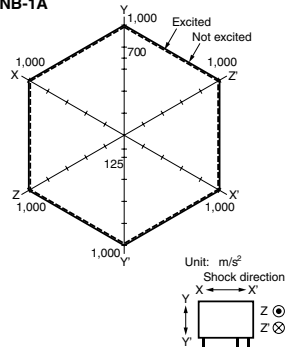


## Ambient Temperature vs. Maximum Coil Voltage



## Malfunctioning Shock

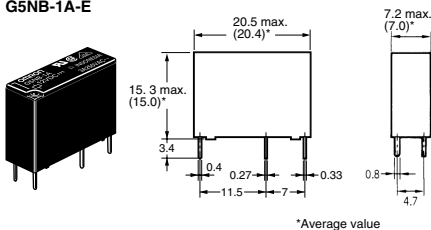
## G5NB-1A



## Dimensions

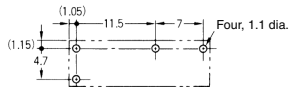
Note: All units are in millimeters unless otherwise indicated.

## G5NB-1A-E

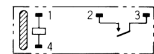


## PCB Mounting Holes (Bottom View)

Tolerance:  $\pm 0.1$  mm



## Terminal Arrangement/ Internal Connections (Bottom View)



(No coil polarity)

## Precautions

## ■ Correct Use

## HANDLING

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

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.