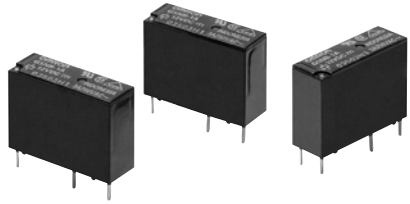


## PCB Power Relay – G5NB-E

### A Miniature Relay with 1-pole 5 A Switching Capability and 10 kV Impulse Withstand Voltage

- 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



## Ordering Information

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

### Model Number Legend

**G5NB-**   **-E**  **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

## Application Examples

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

## Specifications

### ■ Coil Ratings

<b>Rated voltage</b>	5 VDC	12 VDC	18 VDC	24 VDC
<b>Rated current</b>	40.0 mA	16.7 mA	11.1 mA	8.3 mA
<b>Coil resistance</b>	125 Ω	720 Ω	1,620 Ω	2,880 Ω
<b>Must operate voltage</b>	75% max. of rated voltage			
<b>Must release voltage</b>	10% min. of rated voltage			
<b>Max. voltage</b>	170% of rated voltage (at 23°C)			
<b>Power consumption</b>	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

<b>Load</b>	Resistive load ( $\cos\phi = 1$ )
<b>Rated load</b>	5 A at 250 VAC, 3 A at 30 VDC
<b>Contact material</b>	AgNi
<b>Max. switching voltage</b>	250 VAC, 30 VDC
<b>Max. switching current</b>	5 A
<b>Max. switching power</b>	1250 VA, 90 W
<b>Failure rate (reference value)</b>	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

<b>Contact resistance (See note 2.)</b>		100 mΩ max.
<b>Operate time</b>		10 ms max.
<b>Release time</b>		10 ms max.
<b>Insulation resistance (See note 3.)</b>		1,000 MΩ min. (at 500 VDC)
<b>Dielectric strength</b>		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
<b>Impulse withstand voltage</b>		10,000 V (1.2 x 50 ms) between coil and contacts
<b>Insulation Distance</b>	<b>Creepage (Typ)</b>	7.2 mm
	<b>Clearance (Typ)</b>	7.1 mm
<b>Tracking Resistance (CTI)</b>		250 V
<b>Vibration resistance</b>		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)
<b>Shock resistance</b>		Destruction: 1,000 m/s <sup>2</sup> Malfunction: 100 m/s <sup>2</sup>
<b>Endurance</b>		Mechanical: 5,000,000 operations min. Electrical: 100,000 operations min (5 A at 250 VAC), 200,000 operations min. (3 A at 30 VDC)
<b>Ambient temperature</b>		Operating: -40°C to 85°C (with no icing or condensation)
<b>Ambient humidity</b>		Operating: 5% to 85%
<b>Weight</b>		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.

## PCB Power Relay – G5NB-E

### ■ Approved Standards

#### UL508 (File No. 41515)

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

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

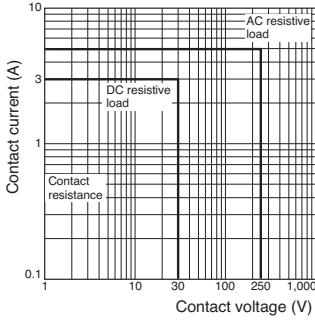
Coil ratings	Contact ratings
5 to 24VDC	5 A, 30 VDC (resistive) 5 A, 250 VAC (general use)

### ■ Actual Load Life (Reference Values)

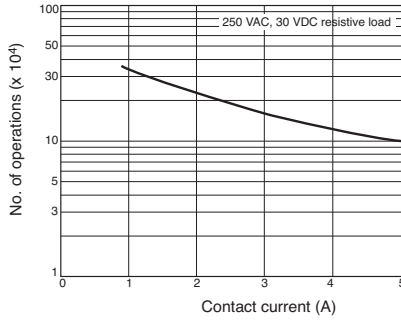
1. 120-VAC motor and lamp load (2.5-A surge and 0.5-A normal): 250,000 operations min.(at 23°C)
2. 160-VDC valve load (with varistor) (0.24-A): 250,000 operations min.(at 23°C)

## Engineering Data

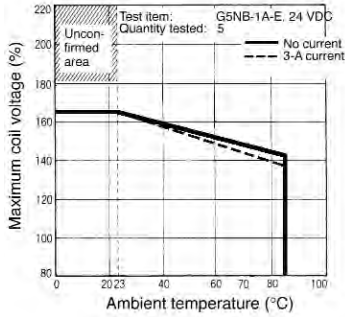
### Maximum Switching Capacity



### Endurance

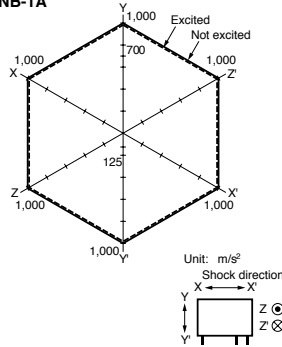


### Ambient Temperature vs. Maximum Coil Voltage



### Malfunctioning Shock

#### G5NB-1A

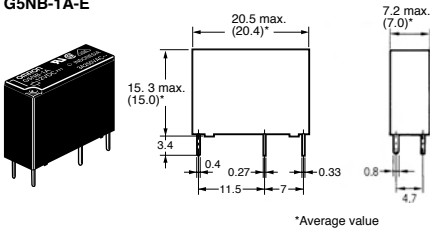


Quantity Tested: 5 units  
 Test Method: Shock was applied 3 times in 6 directions along 3 axes and the level at which shock caused malfunction was measured.  
 Rating: 100 m/s<sup>2</sup>

## Dimensions

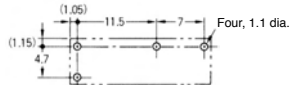
Note: All units are in millimetres unless otherwise indicated.

#### G5NB-1A-E

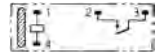


#### PCB Mounting Holes (Bottom View)

Tolerance:  $\pm 0.1$  mm



#### Terminal Arrangement / Internal Connections (Bottom View)



(No coil polarity)