

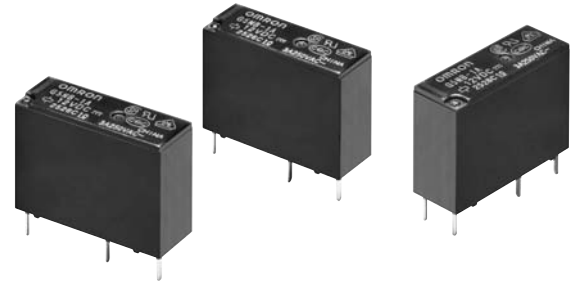
# G5NB

PCB Power Relay

## A Miniature Relay with 1-pole 3A/5A 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/CSA/VDE standards.
- Satisfies EN61010 reinforced insulation requirements.
- IEC/EN 60335-1 conformed. (-HA Model)



RoHS Compliant

### Model Number Legend

G5NB-□□□-□-□-□  
1 2 3 4 5 6

#### 1. Number of Poles

1: 1-pole

#### 2. Contact Form

A: SPST-NO (1a)

#### 3. Enclosure rating

None: Flux protection

4 :Sealed

#### 4. Classification

None: Standard

E :High-capacity

#### 5. Market Code

None: General purpose

HA :Home Appliance according to IEC/EN60335-1

#### 6. Packing

None: Tray Packing

SP :Tube packing

### Application Examples

- Water heaters
- Refrigerators
- Air conditioners
- Home appliances
- Small electric appliances

G  
5  
N  
B

### Ordering Information

| Terminal Shape | Market Code     | Classification  | Contact form | Enclosure rating | Model              | Rated coil voltage | Minimum packing unit          |
|----------------|-----------------|-----------------|--------------|------------------|--------------------|--------------------|-------------------------------|
| PCB terminals  | General purpose | Standard        | SPST-NO (1a) | Flux protection  | G5NB-1A (-SP)      | 5VDC               | 100 pcs/Tray<br>(50 pcs/tube) |
|                |                 |                 |              | Sealed           | G5NB-1A4 (-SP)     | 12VDC              |                               |
|                |                 | Flux protection |              | G5NB-1A-E (-SP)  | 18VDC              |                    |                               |
|                |                 | Sealed          |              | G5NB-1A4-E (-SP) | 24VDC              |                    |                               |
|                | Home Appliance  | High-capacity   |              | Flux protection  | G5NB-1A-E-HA (-SP) | 12VDC              |                               |
|                |                 |                 |              |                  |                    | 24VDC              |                               |

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

Example: G5NB-1A DC5

Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as □□VDC.

## ■ Ratings

### ● Coil

| Item          | Rated current (mA) | Coil resistance (Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V)  | Power consumption (mW) |
|---------------|--------------------|---------------------|--------------------------|--------------------------|---|------------------------|
|               |                    |                     | % of rated voltage       |                          |   |                        |
| Rated voltage |                    |                     |                          |                          |   |                        |
| 5 VDC         | 40                 | 125                 | 75% max.                 | 10% min.                 | Standard:<br>180% (at 23°C)<br>High-capacity:<br>170% (at 23°C) | Approx. 200            |
| 12 VDC        | 16.7               | 720                 |                          |                          |   |                        |
| 18 VDC        | 11.1               | 1,620               |                          |                          |   |                        |
| 24 VDC        | 8.3                | 2,880               |                          |                          |   |                        |

Note 1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

Note 2. The operating characteristics are measured at a coil temperature of 23°C.

Note 3. The "Max. voltage" is the maximum voltage that can be applied to the relay coil.

### ● Contacts

| Item                   | Load | Resistive load     |                |
|------------------------|------|--------------------|----------------|
|                        |      | Standard           | High-capacity  |
| Contact Type           |      | Single             |                |
| Contact material       |      | Ag-alloy (Cd free) |                |
| Rated load             |      | 3 A at 125 VAC     | 5 A at 250 VAC |
| Rated carry current    |      | 3 A at 30 VDC      | 3 A at 30 VDC  |
| Rated carry current    |      | 3 A                | 5 A            |
| Max. switching voltage |      | 250 VAC, 30 VDC    |                |
| Max. switching current |      | 3 A                | 5 A            |

## ■ Characteristics

|   |                                       |   |
|---|---------------------------------------|---|
| Contact resistance *1                       |                                       | 100 mΩ max.   |
| Operate time                                |                                       | 10 ms max.  |
| Release time                                |                                       | 10 ms max.  |
| Insulation resistance *2                    |                                       | 1,000 MΩ min.   |
| Dielectric strength                         | Between coil and contacts             | 4,000 VAC, 50/60 Hz for 1 min   |
|   | Between contacts of the same polarity | 750 VAC, 50/60 Hz for 1 min   |
| Impulse withstand voltage                   | Between coil and contacts             | 10 kV (1.2 x 50 μs)   |
| 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 <sup>2</sup>  |
|   | Malfunction                           | 100 m/s <sup>2</sup>  |
| Durability                                  | Mechanical                            | 5,000,000 operations min.   |
|   | Electrical (resistive load)           | Standard (G5NB-1A, -1A4)<br>200,000 operations at 125 VAC, 3A<br>200,000 operations at 30 VDC, 3A<br>High-capacity (G5NB-1A-E, -1A4-E)<br>100,000 operations at 250 VAC, 5A<br>200,000 operations at 30 VDC, 3A<br>(with a rated load at 1,800 operations/hour) |
| Failure rate (P level) (reference value) *3 |                                       | DC5V 10mA   |
| Ambient operating temperature *4            |                                       | -40°C to 85°C (with no icing or condensation)   |
| Ambient operating humidity                  |                                       | 5% to 85%   |
| Weight                                      |                                       | Approx. 4 g   |

Note. Values in the above table are the initial values at 23°C.

\*1. Measurement conditions: 5 VDC, 1 A, voltage drop method

\*2. Measurement conditions: Measured at the same points as the dielectric strength using a 500 VDC ohmmeter.

\*3. This value was measured at a switching frequency of 120 operations/min.

\*4. Sealed (G5NB-1A4, -1A4-E): -40°C to 70°C

## ■ Actual Load Life (Reference Values)

- 120 VAC** motor and lamp load  
2.5A surge and 0.5A normal:  
250,000 operations min. (at 23°C)
- 160 VDC** valve load (with varistor)  
0.24A:  
250,000 operations min. (at 23°C)
- 140 VAC** pump load  
Inrush: 5.4 A (o-p), Steady state: 1.6 A  
200,000 operations min. (Ambient temperature: 23°C)
- 100 VAC** motor load  
Inrush: 10.7 A (o-p), Steady state: 1.1 A  
200,000 operations min. (Ambient temperature: 23°C)