

# G6RN

PCB Power Relay

## Miniature Power Relay for Switching 8 A

- Low-profile height of 15 mm (approx. 60% the height of the Omron G2R model).
- Capable of switching with 8 A at 250 VAC despite its small size.
- High sensitivity with 220mW power consumption.
- Offers high insulation with insulation distance of 8 mm and impulse withstand voltage of 10kV between coil and contacts.
- Satisfies ambient operating temperature requirement of 85°C.
- Standard model conforms to VDE standards.



**RoHS Compliant**

### Model Number Legend

G6RN-□□  
1 2

- 1. Number of Poles**    **2. Contact Form**  
 1: 1-pole                      None: SPDT (1c)  
    A: SPST-NO (1a)

### Ordering Information

| Classification | Enclosure rating | Contact form | Terminal shape | Model   | Rated coil voltage     | Minimum packing unit |
|----------------|------------------|--------------|----------------|---------|------------------------|----------------------|
| Standard       | Fully sealed     | SPST-NO (1a) | PCB terminals  | G6RN-1A | 5, 6, 12 VDC<br>24 VDC | 20 pcs/tube          |
|                |                  | SPDT (1c)    |                | G6RN-1  | 5, 6, 12 VDC<br>24 VDC |                      |

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

Example: G6RN-1A 5 VDC  
    Rated coil voltage

### Ratings

#### Coil

| Item          | Rated current (mA) | Coil resistance (Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V) | Power consumption (mW) |
|---------------|--------------------|---------------------|--------------------------|--------------------------|------------------|------------------------|
| Rated voltage |                    |                     | % of rated voltage       |                          |                  |                        |
| 5 VDC         | 43.9               | 114                 | 70% max.                 | 10% min.                 | 150% (at 23°C)   | Approx. 220            |
| 6 VDC         | 36.6               | 164                 |                          |                          |                  |                        |
| 12 VDC        | 18.3               | 655                 |                          |                          |                  |                        |
| 24 VDC        | 9.2                | 2,620               |                          |                          |                  |                        |

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.

#### Contacts

| Item                   | Load                              |
|------------------------|-----------------------------------|
|                        | Resistive load                    |
| Contact type           | Single                            |
| Contact material       | Ag-Alloy + gold plating (Cd free) |
| Rated load             | 8 A at 250 VAC<br>5 A at 30 VDC   |
| Rated carry current    | 8 A                               |
| Max. switching voltage | 250 VAC, 30 VDC                   |
| Max. switching current | 8 A                               |

### Application Examples

- Control equipments

### Characteristics

|   |   |
|---|---|
| Contact resistance *1                                 | 100 mΩ max.   |
| Operate time  | 15 ms max.  |
| Release time  | 5 ms max.   |
| Insulation resistance *2                              | 1,000 MΩ min. (at 500 VDC)  |
| Dielectric strength                                   | Between coil and contacts<br>4,000 VAC, 50/60 Hz for 1 min  |
|   | Between contacts of the same polarity<br>1,000 VAC, 50/60 Hz for 1 min  |
| Impulse withstand voltage (between coil and contacts) | 10,000 V (1.2 x 50 μs)  |
| Vibration resistance                                  | Destruction<br>10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)  |
|   | Malfunction<br>10 to 55 to 10 Hz<br>NO: 0.75 mm single amplitude (1.5 mm double amplitude)<br>NC: 0.4 mm single amplitude (0.8 mm double amplitude) |
| Shock resistance                                      | Destruction<br>1,000 m/s <sup>2</sup>   |
|   | Malfunction<br>NO: 100 m/s <sup>2</sup><br>NC: 50 m/s <sup>2</sup>  |
| Durability  | Mechanical<br>10,000,000 operations min. (at 36,000 operations/hr)<br>50,000 operations min. (8 A at 250 VAC, resistive load)                       |
|   | Electrical *3<br>50,000 operations min. (5 A at 30 VDC, resistive load) (at 360 operations/hr under rated load)                                     |
| Failure rate (P level) (reference value) *4           | 10 mA at 5 VDC  |
| Ambient operating temperature                         | -40°C to 85°C (with no icing or condensation)   |
| Ambient operating humidity                            | 5% to 85%   |
| Weight  | Approx. 9 g   |

Note. The data given above are initial values.

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

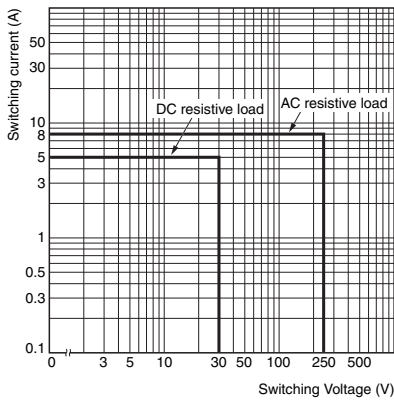
\*2. Measurement conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.

\*3. Test conditions: With diode

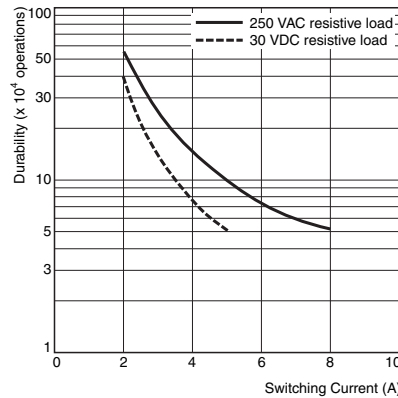
\*4. This value was measured at a switching frequency of 120 operations/min.

## Engineering Data

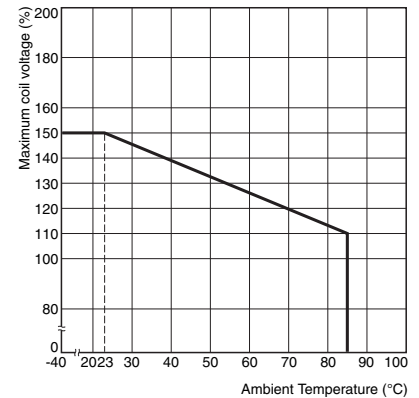
### Maximum Switching Capacity



### Durability

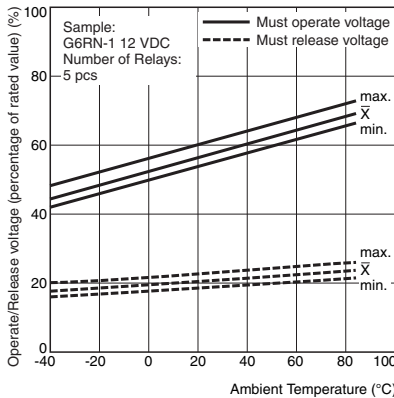


### Ambient Temperature vs. Maximum Coil Voltage

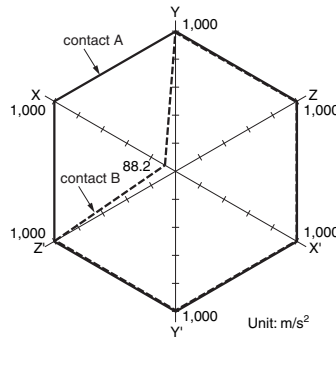


Note. The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

### Ambient Temperature vs. Maximum Coil Voltage



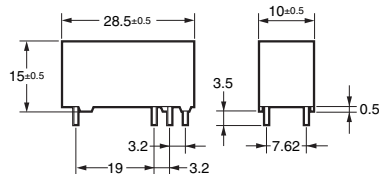
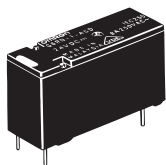
### Shock Malfunction G6RN-1



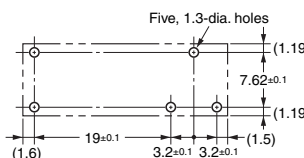
Sample: G6RN-1 24 VDC  
Number of Relays: 5 pcs  
Test conditions: The value at which malfunction occurred was measured after applying shock to the test piece 3 times each in 6 directions along 3 axes.  
Standard value: 100 $\text{m/s}^2$  at contact A, 50 $\text{m/s}^2$  at contact B

## Dimensions

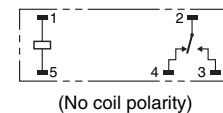
### G6RN-1



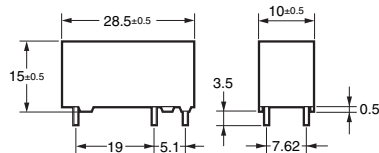
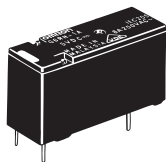
### PCB Mounting Holes (Bottom View)



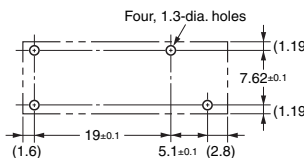
### Terminal Arrangement/ Internal Connections (Bottom View)



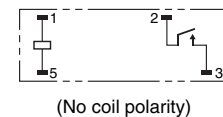
### G6RN-1A



### PCB Mounting Holes (Bottom View)



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



## Approved Standards

The rated values approved by each of the safety standards may be different from the performance characteristics individually defined in this catalog.

UL Recognized (File No. E41515)

| Model  | Number of poles | Coil ratings | Contact ratings                    | Number of test operations |
|--------|-----------------|--------------|------------------------------------|---------------------------|
| G6RN-1 | 1               | 5 to 48 VDC  | 8 A, 250 VAC 85 $^{\circ}\text{C}$ | 6,000                     |

EN/TÜV Certified (Registration No. 6135)

| Model             | Number of poles | Coil ratings         | Contact ratings                                | Approved switching operations |
|-------------------|-----------------|----------------------|--|-------------------------------|
| G6RN-1<br>G6RN-1A | 1               | 5, 6, 12, 24, 48 VDC | 8 A, 250 VAC (Resistive) 85 $^{\circ}\text{C}$ | 10,000                        |

## Precautions

Please refer to "PCB Relays Common Precautions" for correct use.

- Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
- Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**