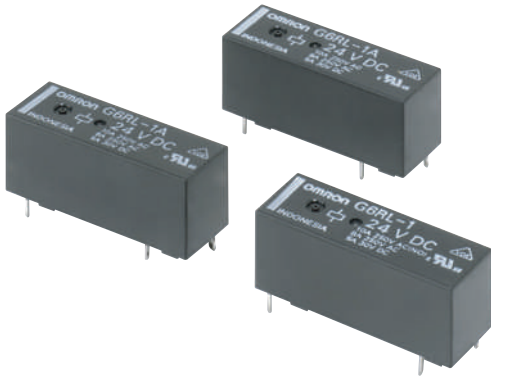
OMRON

# PCB Relay

# G6RL

## Low-profile power relay with maximum switching of 10 A

- Low profile: 12.3 mm in height
- Max. switching capacity: 2,500 VA (NO)
- Dielectric strength: 5 kV
- Clearance and creepage distance: 10 mm.
- Models with high shock resistance (250 m/s$^2$) are available.
- Models for P1 load (2 × 200 W lamps parallel to ignition transformer) are available.



RoHS Compliant

## Applications:

Boilers, PLCs, I/O ports, timers, and temperature controllers

# Ordering Information

| Classification | Enclosure rating | Contact form | Contact material | |
|---|---|---|---|---|
| | | | AgSnIn | AgNi |
| Standard | Flux protection | SPST-NO | G6RL-1A-ASI | G6RL-1A |
| | | SPDT | G6RL-1-ASI | G6RL-1 |
| | Fully sealed | SPST-NO | G6RL-1A4-ASI | --- |
| | | SPDT | G6RL-14-ASI | --- |
| P1 Load | Flux protection | SPST-NO | G6RL-1A-ASI-PL | --- |
| | | SPDT | G6RL-1-ASI-PL | --- |
| Shock resistance | Flux protection | SPST-NO | --- | --- |
| | | SPDT | G6RL-1-SR-ASI | --- |
| | Fully sealed | SPST-NO | --- | --- |
| | | SPDT | G6RL-14-SR-ASI | --- |

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

Examples: G6RL-1A 12 VDC
└ Rated coil voltage

## ■ Model Number Legend:

**G6RL-□□□-□-□-□-□ □VDC**
**1 2 3 4 5 6 7**

1. **Number of Poles**
   1: 1 pole
2. **Contact Form/Contact Construction**
   None: SPDT
   A: SPST-NO
3. **Enclosure Rating**
   None: Flux protection
   4: Fully sealed
4. **Special Function 1**
   SR: Shock resistance of 25 G
5. **Contact material**
   None: AgNi
   ASI: AgSnIn
6. **Special Function 2**
   PL: P1 load (See note.)
7. **Rated Coil Voltage**
   3, 5, 6, 12, 24, or 48

**Note:** Please refer to *Endurance Under Real Load* table on page 5.

# Specifications

## ■ Coil Ratings

| Classification | Standard, P1 load | | | | | | Shock resistance | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rated voltage** | 3 VDC | 5 VDC | 6 VDC | 12 VDC | 24 VDC | 48 VDC | 3 VDC | 5 VDC | 6 VDC | 12 VDC | 24 VDC |
| **Rated current** | 73.3 mA | 44 mA | 36.7 mA | 18.3 mA | 9.2 mA | 5 mA | 101 mA | 60.2 mA | 50.1 mA | 25.2 mA | 12.6 mA |
| **Coil resistance** | 40 Ω | 113 Ω | 163 Ω | 654 Ω | 2,618 Ω | 9,600 Ω | 30 Ω | 83 Ω | 120 Ω | 476 Ω | 1,912 Ω |
| **Must operate voltage** | 70% max. of rated voltage | | | | | | 80% max. of rated voltage | | | | |
| **Must release voltage** | 10% min. of rated voltage | | | | | | 10% min. of rated voltage | | | | |
| **Max. voltage** | 150% of rated voltage | | | | | | 150% of rated voltage (23°C) | | | | |
| **Power consumption** | Approx. 220 mW | | | | | Approx. 240 mW | Approx. 300 mW | | | | |

**Note:** **1.** The above items are measured at a coil temperature of 23°C.
**2.** The tolerance of the rated current is ±10%.

## ■ Contact Ratings

| | |
|---|---|
| **Load** | Resistive load (cos $\phi$ = 1) |
| **Rated load (See note 1.)** | 10 A at 250 VAC, NO resistive load<br>8 A at 250 VAC, resistive load<br>5 A at 30 VDC, resistive load |
| **Rated carry current** | 10 A at 250 VAC<br>5 A at 30 VDC |
| **Max. switching voltage** | 400 VAC, 300 VDC |
| **Max. switching current** | NO: 10 A, NC: 8 A |
| **Max. switching power** | NO: 2,500 VA, NC: 2,000 VA<br>150 W |
| **Failure rate (reference value)** | 10 mA at 5 VDC (P level) (See note 2.) |

**Note:** **1.** G6RL-1(A), G6RL-1(A)4-ASI: 8 A 250 VAC, resistive load; 5 A 24 VDC resistive load.

**2.** P level: $\lambda\ 60 = 0.1 \times 10^{-6}$ / operations

## ■ Characteristics

| | |
|---|---|
| **Contact resistance** | 100 mΩ max. |
| **Operate time** | 10 ms max. (SR Models: 15 ms max.) |
| **Release time** | 5 ms max. |
| **Insulation resistance** | 1,000 MΩ min. (at 500 VDC) |
| **Dielectric strength** | 5,000 VAC, 50/60 Hz for 1 min between coil and contacts<br>1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity |
| **Impulse withstand voltage** | 10 kV between coil and contacts (1.2 × 50 μps) |
| **Vibration resistance** | Destruction: 10 to 55 to 10 Hz, 1.5-mm double amplitude<br>Malfunction: 10 to 55 to 10 Hz, 0.825-mm single amplitude (1.65-mm double amplitude) when energized.<br>10 to 55 to 10 Hz, 0.4-mm single amplitude (0.8-mm double amplitude) when not energized. |
| **Shock resistance** | Destruction: 1,000 m/s$^2$<br>Malfunction: NO: 200 m/s$^2$, NC: 50 m/s$^2$ when not energized<br>SR Models: 250 ms$^2$ (NO and NC) when not energized |
| **Endurance** | Mechanical: 10,000,000 operations min. (at 18,000 operations/h) |
| **Ambient temperature** | Operating: −40°C to 85°C (with no icing) |
| **Ambient humidity** | Operating: 5% to 85% |
| **Weight** | Approx. 7.8 g |

## ■ Other Data

| | | |
|---|---|---|
| **Construction of protection** | Flux protection | Fully sealed |
| **Insulation material group** | IIIa | |
| **Rated insulation voltage** | 250 V | |
| **Pollution degree** | 3 | 2 |
| **Rated voltage system** | 250 V | 400 V |
| **Overvoltage category** | III | |
| **Creepage distance** | 10 mm | |
| **Clearance distance** | 10 mm | |
| **RoHS** | Compliant | |
| **Tracking index of relay base** | PTI 250 | |
| **Flammability class according to UL94** | V-0 | |
| **Flammability-flame**<br>**GWFI (IEC 60695-2-12)**<br>**GWIT (IEC 60695-2-13)** | <br>850°C<br>750°C | |
| **Ball pressure test (IEC 60695-10-2)** | 170°C | |

## ■ Approved Standards

### UL508 (File No. E41643)

| Models | Contact form | Coil rating | Contact rating | |
|---|---|---|---|---|
| G6RL-1A | SPST-NO | 3 to 48 VDC | 10 A at 250 VAC ( NO )<br>8 A at 250 VAC<br>5 A at 30 VDC | 6,000 operations |
| G6RL-1 | SPDT | | | |
| G6RL-1A(4)-ASI | SPST-NO | | | |
| G6RL-1(4)-ASI | SPDT | | | |
| G6RL-1(4)-SR-ASI | SPDT | 3 to 24 VDC | | |

### VDE (EN61810-1) (Certificate No.C266)

| Models | Contact form | Coil rating | Contact rating | Model |
|---|---|---|---|---|
| G6RL-1A-(ASI) | SPST-NO | 3, 5, 6, 12, 24, or 48 VDC | 10 A at 250 VAC (NO) | 10,000 operations at 85°C |
| G6RL-1-(ASI) | SPDT | | 8 A at 250 VAC | 30,000 operations at 85°C |
| | | | 5 A at 30 VDC | 50,000 operations at 85°C |
| G6RL-1A4-ASI (See note.) | SPST-NO | 3, 5, 6, 12, 24, or 48 VDC | 10 A at 250 VAC (NO) | 10,000 operations at 85°C |
| G6RL-14-ASI (See note.) | SPDT | | 8 A at 250 VAC | 10,000 operations at 85°C |
| | | | 5 A at 30 VDC | 10,000 operations at 85°C |
| G6RL-1(4)-SR-ASI | SPDT | 3, 5, 6, 12 or 24 VDC | 10 A at 250 VAC (NO) | 10,000 operations at 85°C |
| | | | 8 A at 250 VAC | 10,000 operations at 85°C |
| | | | 5 A at 30 VDC | 10,000 operations at 85°C |

**Note:** In progress

### VDE (60947-5-1) (Certificate No. C266)

| Models | Contact rating | | | |
|---|---|---|---|---|
| | Utilization category | | Rated voltage (V) | Operations |
| G6RL-1(A) | AC15 (NO) | Ie: 3 A, Ithe: 10 A (A300) 85°C | AC240 | 6,000 |
| | AC15 (NO) | Ie: 3 A, Ithe: 5 A (B300) 85°C | AC120 | 6,000 |
| | AC15 (NO) | Ie: 1.5 A, Ithe: 5 A (B300) 85°C | AC240 | 6,000 |
| | DC13 | Ie: 0.22A, Ithe: 1A (R150) 85°C | DC125 | 6,000 |
| | DC13 (See note.) | Ie: 0.1 A, Ithe: 1 A (R300) 85°C | DC250 | 6,000 |
| G6RL-1(A)-ASI | AC15 | Ie: 3 A, Ithe: 10 A (A300) 85°C | AC240 | 6,000 |
| G6RL-1(A)4-ASI (See note.) | AC15 | Ie: 3 A, Ithe: 5 A (B300) 85°C | AC120 | 6,000 |
| G6RL-1(4)-SR-ASI | AC15 | Ie: 1.5 A, Ithe: 5 A (B300) 85°C | AC240 | 6,000 |
| | DC13 | Ie: 0.22 A, Ithe: 1 A (R150) 85°C | DC125 | 6,000 |
| | DC13 (See note.) | Ie: 0.1 A, Ithe: 1 A (R300) 85°C | DC250 | 6,000 |

**Note:** In progress

### VDE (60947-4-1) (Certificate No. C266)

| Models | Contact rating | | | |
|---|---|---|---|---|
| | Utilization category | | Rated voltage (V) | Operations |
| G6RL-1(A)<br>G6RL-1(A)-ASI (See note.) | AC1 | 8 A 85°C | AC250 | 6,000 |
| | AC3 | 2 A 85°C | AC250 | 6,000 |
| | DC1 | 5 A 85°C | DC24 | 6,000 |
| | DC3 | 2 A 85°C | DC24 | 6,000 |

**Note:** In progress

### VDE (EN60730-1) (Certificate No. C266)

| Models | Contact rating | | | |
|---|---|---|---|---|
| | Utilization category | | Rated voltage (V) | Operations |
| G6RL-1(A) | 2 (2) A | 65°C | AC250 | 100,000 |
| | 8 (4) A (NO) | 85°C | AC250 | 100,000 |
| | 6 (4) A (NO) | 85°C (See note.) | AC250 | 100,000 |
| | 6 (4)A (NO) | 65°C | AC250 | 100,000 |
| | 6 (4) A (NC) | 65°C | AC250 | 100,000 |
| G6RL-1(A)-ASI (See note.) | 2 (2) A | 65°C | AC250 | 100,000 |
| | 8 (4) A (NO) | 85°C | AC250 | 100,000 |
| | 6 (4) A (NO) | 85°C | AC250 | 100,000 |
| | 6 (4) A (NC) | 65°C | AC250 | 100,000 |

**Note:** In progress

# Electrical Endurance Data

| | |
|---|---|
| G6RL-1(A) | 8 A at 250 VAC (cosϕ = 1) NO 50,000 operations min.<br>8 A at 250 VAC (cosϕ = 1) NC 50,000 operations min.<br>5 A at 24 VDC 50,000 operations min. |
| G6RL-1(A)-(SR)-ASI-(PL) | 10 A at 250 VAC (cosϕ = 1) NO 100,000 operations min.<br>8 A at 250 VAC (cosϕ = 1) 100,000 operations min.<br>5 A at 30 VDC 50,000 operations min. |
| G6RL-1(A)4-ASI | 8 A at 250 VAC (cosϕ = 1) NO 50,000 operations min.<br>8 A at 250 VAC (cosϕ = 1) NC 50,000 operations min.<br>5 A at 24 VDC 50,000 operations min. |
| G6RL-14-SR-ASI | 8 A at 250 VAC (cosϕ = 1) NO 50,000 operations min.<br>3 A at 250 VAC (cosϕ = 1) NC 100,000 operations min.<br>5 A at 24 VDC NO 50,000 operations min.<br>5 A at 24 VDC NC 30,000 operations min. |

# Endurance Under Real Load (Reference Only)

### G6RL-1(A)-ASI-PL

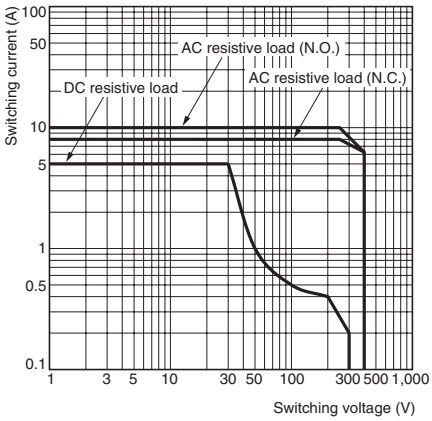
| Rated voltage | Condition | Frequency | Electrical life |
|---|---|---|---|
| 230 VAC | P1 load (2 × 200 W lamps parallel to ignition transformer) | 1.5 s ON/4.5 s OFF | 250,000 operations |

**Note:** The results shown reflect values measured using very sever test conditions, i.e., Duty: 1 s ON/OFF.
Electrical endurance will vary depending on the test conditions. Contact your OMRON representative if you require more detailed information for the electrical endurance under your test conditions.

# Engineering Data

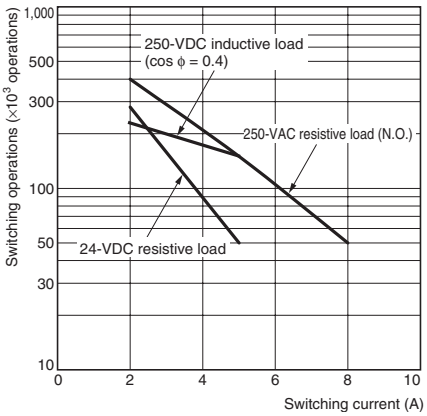
## G6RL-1(A)(4)-(SR)-(ASI)-(PL)

### Maximum Switching Capacity



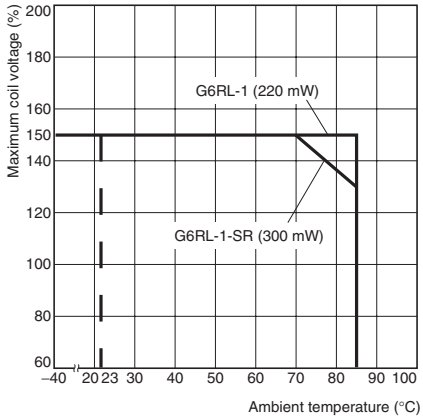

## G6RL-1(A)

### Endurance




## G6RL-1(A)(4)-(SR)-(ASI)-(PL)

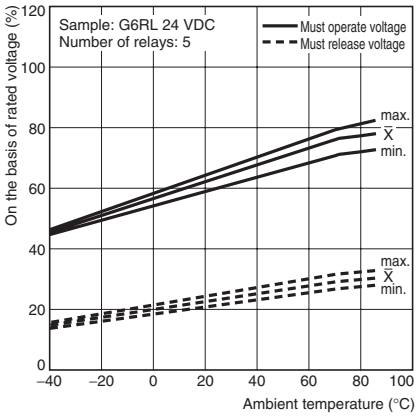
### Ambient Temperature vs. Maximum Coil Voltage




**Note:** The "maximum coil voltage" is the maximum voltage that can be applied to the Relay coil.

## G6RL-1(A)(4)-(ASI)-(PL)

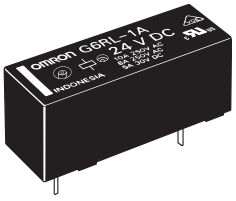
### Ambient Temperature vs. Must Operate or Must Release Voltage

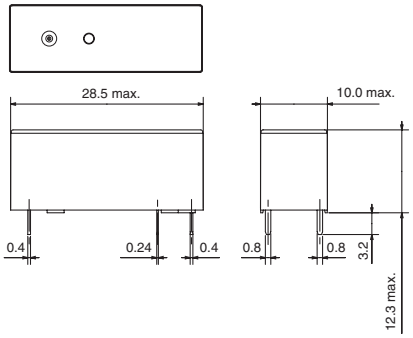


# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

**G6RL-1A(-ASI)**
**-1A4(-ASI)**

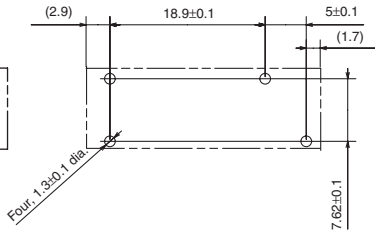



**Terminal Arrangement/ Internal Connections (Bottom View)**

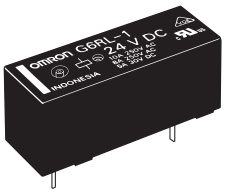


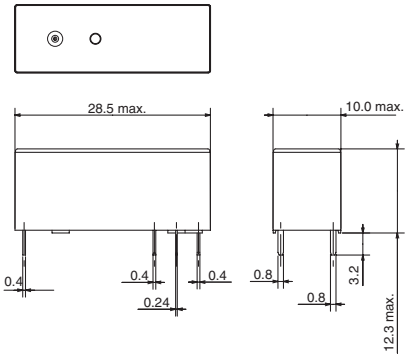

**Mounting Holes (Bottom View)**




**Note:** Indicates average dimensions.

**G6RL-1(-ASI)**
**-14(-ASI)**

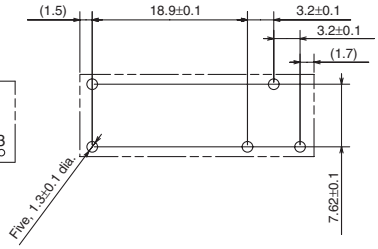



**Terminal Arrangement/ Internal Connections (Bottom View)**




**Mounting Holes (Bottom View)**




**Note:** Indicates average dimensions.

# Precautions

**Disclaimer:**

All technical performance data applies to the product as such; specific conditions of individual applications are not considered. Always check the suitability of the product for your intended purpose. OMRON does not assume any responsibility or liability for noncompliance herein, and we recommend prior technical clarification for applications where requirements, loading, or ambient conditions differ from those applying to general electric applications. Any responsibility for the application of the product remains with the customer alone. THIS COMPONENT CAN NOT BE USED FOR AUTOMOTIVE APPLICATIONS.

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

Cat. No. K133-E1-02 **In the interest of product improvement, specifications are subject to change without notice.**

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