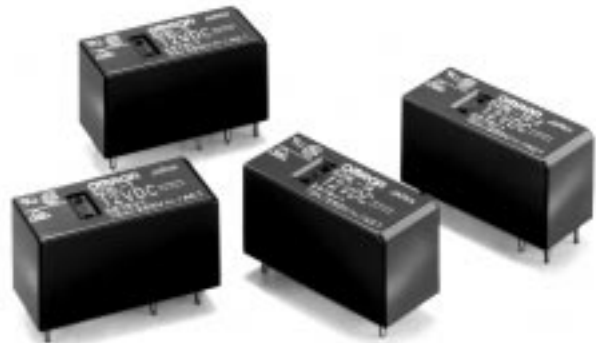


### Next-generation PCB Relay Available in 24 Models

- Low profile: 15.7 mm max. in height
- Contains no lead inside and features cadmium-free contacts ensuring environment-friendly use.
- Conforms to VDE0435 (VDE approval: C250 insulation grade for flux protection models; B400 insulation grade for fully sealed models), UL508 and CSA22.2.
- Meets VDE0700 requirements for household products according to VDE0110.
- Clearance and creepage distance: 10 mm/10 mm.
- Tracking resistance: CTI>250 (Both standard and class F type)
- UL1446 Class F Coil Insulation system available.
- High sensitivity: 400 mW



### Ordering Information

| Classification |                 | Enclosure ratings | Contact form  |              |             |            |
|----------------|-----------------|-------------------|---------------|--------------|-------------|------------|
|                |                 |                   | SPST-NO       | SPDT         | DPST-NO     | DPDT       |
| Standard       | General-purpose | Flux protection   | G2RL-1A       | G2RL-1       | G2RL-2A     | G2RL-2     |
|                |                 | Fully sealed      | G2RL-1A4      | G2RL-14      | G2RL-2A4    | G2RL-24    |
|                | High-capacity   | Flux protection   | G2RL-1A-E     | G2RL-1-E     | ---         | ---        |
|                |                 | Fully sealed      | G2RL-1A4-E    | G2RL-14-E    | ---         | ---        |
| Class-F        | General-purpose | Flux protection   | G2RL-1A-CF    | G2RL-1-CF    | G2RL-2A-CF  | G2RL-2-CF  |
|                |                 | Fully sealed      | G2RL-1A4-CF   | G2RL-14-CF   | G2RL-2A4-CF | G2RL-24-CF |
|                | High-capacity   | Flux protection   | G2RL-1A-E-CF  | G2RL-1-E-CF  | ---         | ---        |
|                |                 | Fully sealed      | G2RL-1A4-E-CF | G2RL-14-E-CF | ---         | ---        |

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

Example: G2RL-1A 12 VDC

Rated coil voltage

### Model Number Legend

G2RL-□□□-□-□  
1 2 3 4 5

#### 1. Number of Poles

- 1: 1 pole
- 2: 2 poles

#### 2. Contact Form

- None: □PDT
- A: □PST-NO

#### 3. Enclosure Ratings

- None: Flux protection
- 4: Fully sealed

#### 4. Classification

- None: General purpose
- E: High capacity (1 pole)

#### 5. Approved Standards

- None: UL, CSA, VDE, UL Class B Insulation
- CF: UL, CSA, VDE, UL Class F Insulation

# Specifications

## ■ Coil Ratings

|                                     |                                   |          |         |                |
|-------------------------------------|-----------------------------------|----------|---------|----------------|
| Rated voltage                       | 5 VDC                             | 12 VDC   | 24 VDC  | 48 VDC         |
| Rated current                       | 80.0 mA                           | 33.33 mA | 16.7 mA | 8.96 mA        |
| Coil resistance                     | 62.5 Ω                            | 360 Ω    | 1,440 Ω | 5,358 Ω        |
| Coil inductance (H)<br>(ref. value) | Armature OFF                      | 0.18     | 1.01    | 4.19           |
|                                     | Armature ON                       | 0.44     | 2.47    | 9.72           |
| Must operate voltage                | 70% max. of the rated voltage     |          |         |                |
| Must release voltage                | 10% min. of the rated voltage     |          |         |                |
| Max. voltage                        | 130% at 85°C of the rated voltage |          |         |                |
| Power consumption                   | Approx. 400 mW                    |          |         | Approx. 430 mW |

## ■ Contact Ratings

|                        |  |  |
|------------------------|--|--|
| Number of poles        | 1 pole   | 2 poles  |
| Contact material       | AgSnO <sub>2</sub>   | AgNi   |
| Load                   | Resistive load (cosφ=1)  | Resistive load (cosφ=1)                          |
| Rated load             | 12 A (16 A) at 250 VAC<br>12 A (16 A) at 24 VDC<br>(See note 2.) | 8 A at 250 VAC<br>8 A at 30 VDC<br>(See note 2.) |
| Rated carry current    | 12 A (16 A)<br>(See note 2.)                                     | 8 A (70°C)/5 A (85°C)<br>(See note 2.)           |
| Max. operating voltage | 440 VAC, 300 VDC   |  |
| Max. operating current | 12 A (16 A)  | 8 A  |
| Max. switching power   | 3,000 VA (4,000 VA)  | 2,000 VA   |

- Note:** 1. Values in parentheses are those for the high-capacity model.  
2. Contact your OMRON representative for the ratings on fully sealed models.

## ■ Characteristics

| Item                         | 1 pole   | 2 poles   |
|------------------------------|--|---|
| Contact resistance           | 100 mΩ max.  |   |
| Operate (set) time           | Approx. 7 ms   |   |
| Release (reset) time         | Approx. 2 ms   |   |
| Max. operating frequency     | Mechanical: 18,000 operation/hr<br>Electrical: 1,800 operation/hr at rated load  |   |
| Insulation resistance        | 1,000 MΩ min. (at 500 VDC)   |   |
| Dielectric strength          | 5,000 VAC, 1 min between coil and contacts<br>1,000 VAC, 1 min between contacts of same polarity                           | 5,000 VAC, 1 min between coil and contacts<br>2,500 VAC, 1 min between contacts of different polarity<br>1,000 VAC, 1 min between contacts of same polarity |
| Impulse withstand voltage    | 10 kV (1.2 × 50 μs) between coil and contact   |   |
| Vibration resistance         | Destruction: 10 to 55 Hz, 1.5-mm double amplitude<br>Malfunction: 10 to 55 Hz, 1.5-mm double amplitude                     |   |
| Shock resistance             | Destruction: 1,000 m/s <sup>2</sup><br>Malfunction: Energized: 100 m/s <sup>2</sup><br>Not energized: 100 m/s <sup>2</sup> |   |
| Life expectancy (Mechanical) | 20,000,000 operations (at 18,000 operations/hr)  |   |
| Ambient temperature          | Operating: -40°C to 85°C (with no icing)<br>Storage: -40°C to 85°C (with no icing)   |   |
| Ambient humidity             | 35% to 85%   |   |
| Weight                       | Approx. 12 g   |   |
| Packaging                    | Standard: 20 relays/stick  |   |

## ■ Approved Standards

### UL508 (File No. E41515)

| Model     | Contact form            | Coil ratings | Contact ratings   |
|-----------|-------------------------|--------------|---|
| G2RL-1A   | SPST-NO                 | 3 to 48 VDC  | 12 A at 250 VAC (General use)<br>12 A at 24 VDC (Resistive) |
| G2RL-1    | SPDT                    |              |   |
| G2RL-1A-E | SPST-NO (High capacity) |              | 16 A at 250 VAC (General use)<br>16 A at 24 VDC (Resistive) |
| G2RL-1-E  | SPDT (High capacity)    |              |   |
| G2RL-2A   | DPST-NO                 |              | 8 A at 277 VAC (General use)<br>8 A at 30 VDC (Resistive)   |
| G2RL-2    | DPDT                    |              |   |

CSA C22.2 (No. 14) (File No. LR31928)

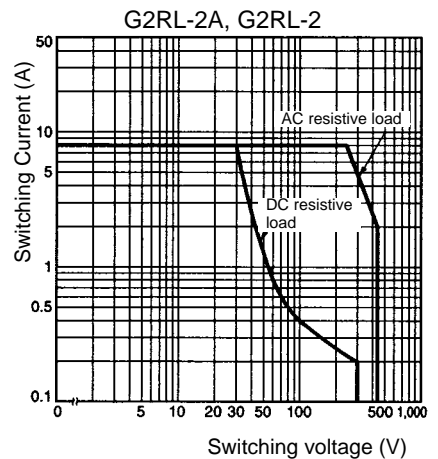
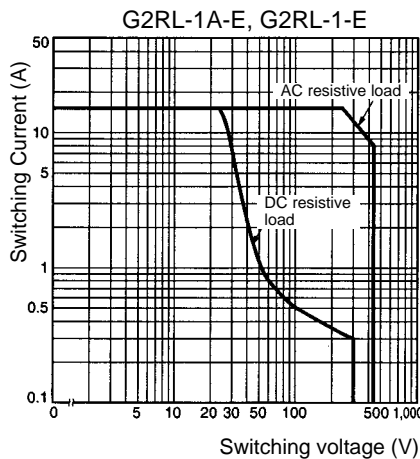
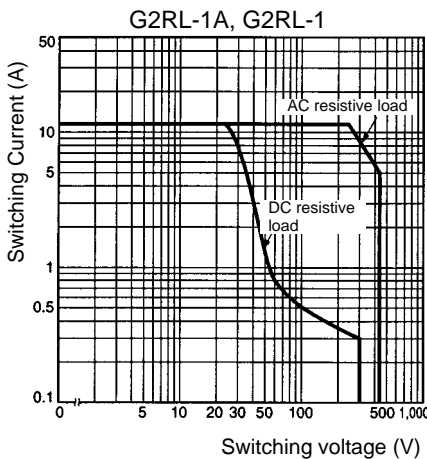
| Model     | Contact form            | Coil ratings | Contact ratings   |
|-----------|-------------------------|--------------|---|
| G2RL-1A   | SPST-NO                 | 3 to 48 VDC  | 12 A at 250 VAC (General use)<br>12 A at 24 VDC (Resistive) |
| G2RL-1    | SPDT                    |              |   |
| G2RL-1A-E | SPST-NO (High capacity) |              | 16 A at 250 VAC (General use)<br>16 A at 24 VDC (Resistive) |
| G2RL-1-E  | SPDT (High capacity)    |              |   |
| G2RL-2A   | DPST-NO                 |              | 8 A at 277 VAC (General use)<br>8 A at 30 VDC (Resistive)   |
| G2RL-2    | DPDT                    |              |   |

VDE (VDE0435)

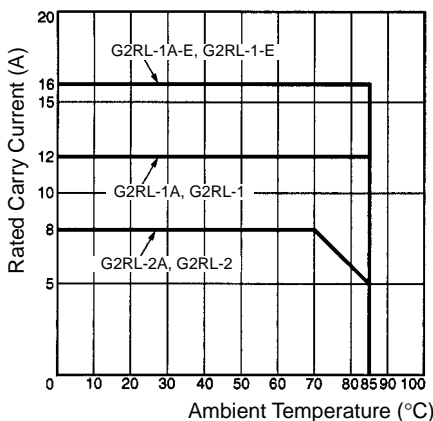
| Model | Contact form           | Coil ratings              | Contact ratings  |
|-------|------------------------|---------------------------|--|
| G2RL  | 1 pole                 | 5, 12, 18, 22, 24, 48 VDC | 12 A at 250 VAC ( $\cos\phi=1$ )<br>12 A at 24 VDC (L/R=0 ms)<br>AC15: 3 A at 240 VAC<br>DC13: 2.5 A at 24 VDC, 50 ms                                    |
|       | 1 pole (High capacity) |                           | 16 A at 250 VAC ( $\cos\phi=1$ )<br>16 A at 24 VDC (L/R=0 ms)<br>AC15: 3 A at 240 VAC (NO)<br>1.5 A at 240 VAC (NC)<br>DC13: 2.5 A at 24 VDC (NO), 50 ms |
|       | 2 poles                |                           | 8 A at 250 VAC ( $\cos\phi=1$ )<br>8 A at 24 VDC (L/R=0 ms)<br>AC15: 1.5 A at 240 VAC<br>DC13: 2 A at 30 VDC, 50 ms                                      |

Engineering Data

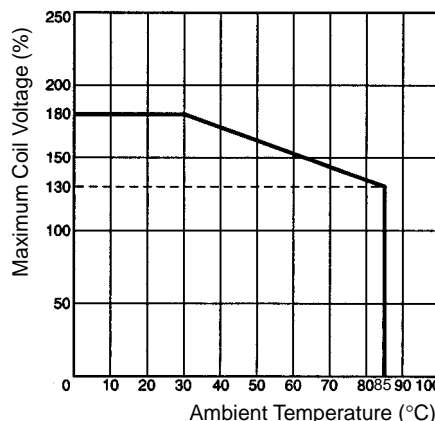
Maximum Switching Capacity



Ambient Temperature vs Rated Carry Current



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.

**Note:** Contact your OMRON representative for the data on fully sealed models.

## Electrical Life Data

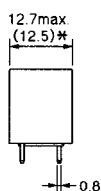
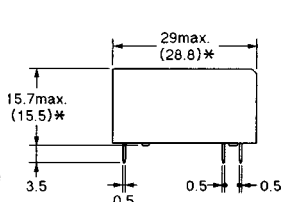
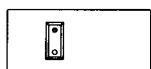
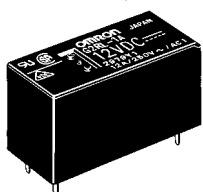
|                  |   |   |
|------------------|---|---|
| <b>G2RL-1-E</b>  | 16 A at 250 VAC ( $\cos\phi=1$ )<br>16 A at 24 VDC<br>8 A at 250 VAC ( $\cos\phi=0.4$ )<br>(NO side operation)<br>8 A at 30 VDC ( $L/R=7$ ms) | 30,000 operations min.<br>30,000 operations min.<br>200,000 operation min.<br>10,000 operation min. |
| <b>G2RL-1</b>    | 12 A at 250 VAC ( $\cos\phi=1$ )<br>12 A at 24 VDC<br>5 A at 250 VAC ( $\cos\phi=0.4$ )<br>5 A at 30 VDC ( $L/R=7$ ms)                        | 50,000 operations min.<br>30,000 operations min.<br>150,000 operation min.<br>20,000 operation min. |
| <b>G2RL-2</b>    | 8 A at 250 VAC ( $\cos\phi=1$ )<br>8 A at 30 VDC  | 30,000 operations min.<br>30,000 operations min.  |
| <b>G2RL-1A-E</b> | Pilot duty (A300), 250 VAC<br>Pilot duty (A300), 125 VAC  | 250,000 operations min.<br>150,000 operations min.  |

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

## Dimensions

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

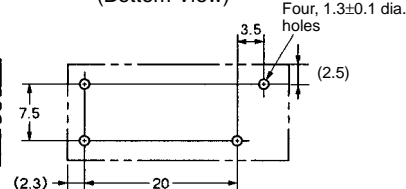
### G2RL-1A, G2RL-1A4



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

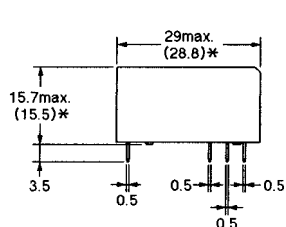
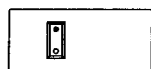
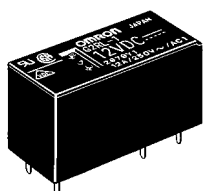


### Mounting Holes (Bottom View)

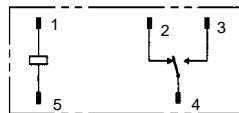


\* Indicates average dimensions.

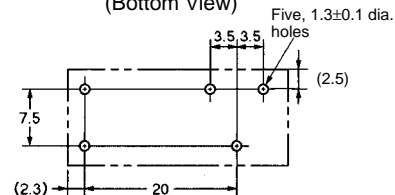
### G2RL-1, G2RL-14



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

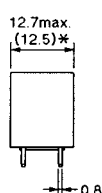
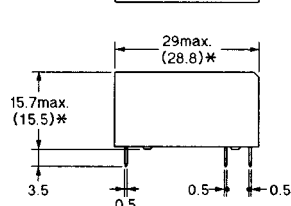
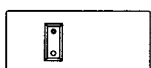
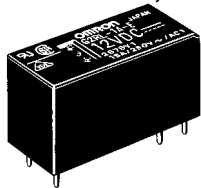


### Mounting Holes (Bottom View)



\* Indicates average dimensions.

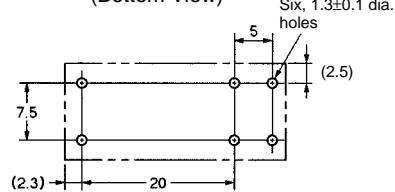
### G2RL-1A-E, G2RL-1A4-E



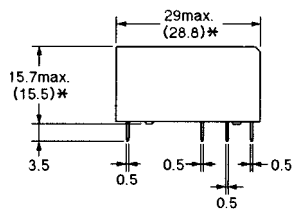
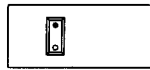
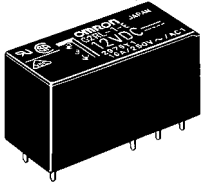
### Terminal Arrangement/ Internal Connection (Bottom View)



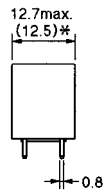
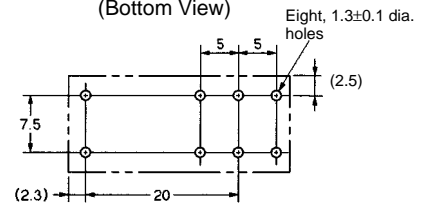
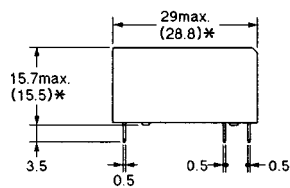
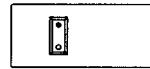
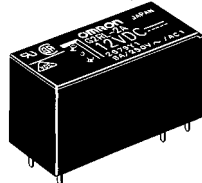
### Mounting Holes (Bottom View)



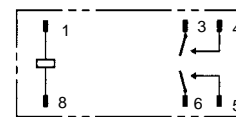
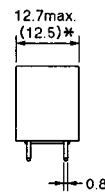
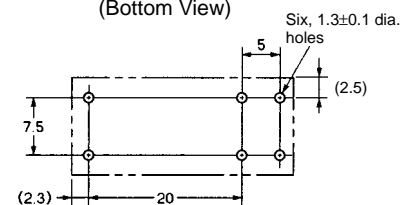
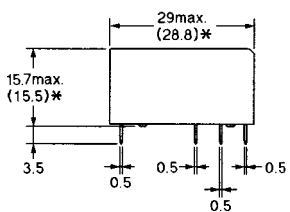
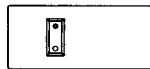
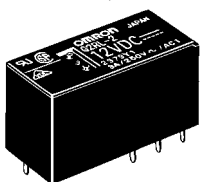
\* Indicates average dimensions.

**G2RL-1-E, G2RL-14-E**

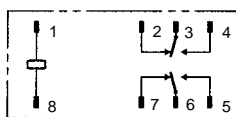
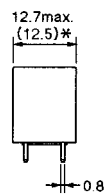
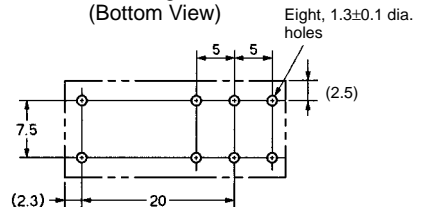
\* Indicates average dimensions.

**Terminal Arrangement/  
Internal Connection  
(Bottom View)****Mounting Holes  
(Bottom View)****G2RL-2A, G2RL-2A4**

\* Indicates average dimensions.

**Terminal Arrangement/  
Internal Connection  
(Bottom View)****Mounting Holes  
(Bottom View)****G2RL-2, G2RL-24**

\* Indicates average dimensions.

**Terminal Arrangement/  
Internal Connection  
(Bottom View)****Mounting Holes  
(Bottom View)**

## Precautions

### Basic Information

Before actually committing any component to a mass-production situation, OMRON strongly recommends situational testing, in as close to actual production situations as possible. One reason is to confirm that the product will still perform as expected after surviving the many handling and mounting processes involved in mass production. Also, even though OMRON relays are individually tested a number of times, and each meets strict requirements, a certain testing tolerance is permissible. When a high-precision product uses many components, each depends upon the rated performance thresholds of the other components. Thus, the overall performance tolerance may accumulate into undesirable levels. To avoid problems, always conduct tests under the actual application conditions.

### General

To maintain the initial characteristics of a relay, exercise care that it is not dropped or mishandled. For the same reason, do not remove the case of the relay; otherwise, the characteristics may degrade. Avoid using the relay in an atmosphere containing sulfuric acid (SO<sub>2</sub>), hydrogen sulfide (H<sub>2</sub>S), or other corrosive gases. Do not continuously apply a voltage higher than the rated maximum voltage to the relay. Never try to operate the relay at a voltage and a current other than those rated. Do not use the relay at temperatures higher than that specified in the catalog or data sheet.

**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. J117-E1-1

In the interest of product improvement, specifications are subject to change without notice.

## OMRON Corporation

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