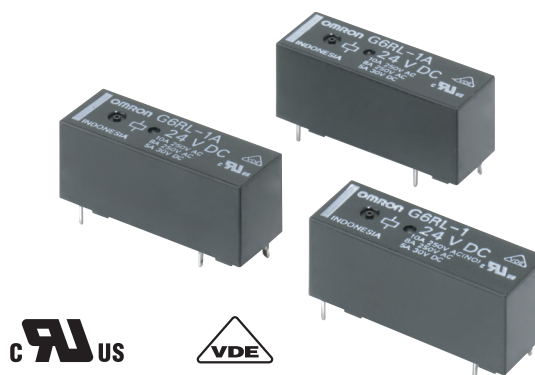


# PCB Relay G6RL

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

- Low profile: 12.3 mm in height
- Max. switching capacity: 2,500 VA (NO)
- IEC 60947-5-1, AC-15, DC13
- Clearance and creepage distance: 10 mm.
- Models with high shock resistance (250 m/s<sup>2</sup>) 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 DC12

Rated coil voltage

## Model Number Legend:

G6RL-      -  -  -   DC  

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 25G

### 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 in this datasheet.

# 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 φ = 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 μs)                                                                                                                                                                                                               |
| 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 <sup>2</sup><br>Malfunction: NO: 200 m/s <sup>2</sup> , NC: 50 m/s <sup>2</sup> when not energized<br>SR Models: 250 m/s <sup>2</sup> (NO and NC) when not energized                                                                 |
| Endurance                 | Mechanical: 10,000,000 operations min. (at 18,000 operations/hr)                                                                                                                                                                                            |
| 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) | 850°C<br>750°C  |              |
| Ball pressure test (IEC 60695-10-2)                                  | 170°C           |              |

## ■ Approved Standards

UL Recognized (File No. E41643) - - Ambient Temp. = 85°C

| Models           | Contact form | Coil rating | Contact rating                                                                              |                  |
|------------------|--------------|-------------|---------------------------------------------------------------------------------------------|------------------|
| G6RL-1A          | SPST-NO      | 3 to 48 VDC | 10 A at 250 VAC (NO) (Resistive)<br>8 A at 250 VAC (Resistive)<br>5 A at 30 VDC (Resistive) | 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)   | AC240             | 6,000      |
|                                                                 | AC15 (NO)            | Ie: 3 A, Ithe: 5 A (B300)    | AC120             | 6,000      |
|                                                                 | AC15 (NO)            | Ie: 1.5 A, Ithe: 5 A (B300)  | AC240             | 6,000      |
|                                                                 | DC13                 | Ie: 0.22A, Ithe: 1A (R150)   | DC125             | 6,000      |
|                                                                 | DC13 (See note.)     | Ie: 0.1 A, Ithe: 1 A (R300)  | DC250             | 6,000      |
| G6RL-1(A)-ASI<br>G6RL-1(A)4-ASI (See note.)<br>G6RL-1(4)-SR-ASI | AC15                 | Ie: 3 A, Ithe: 10 A (A300)   | AC240             | 6,000      |
|                                                                 | AC15                 | Ie: 3 A, Ithe: 5 A (B300)    | AC120             | 6,000      |
|                                                                 | AC15                 | Ie: 1.5 A, Ithe: 5 A (B300)  | AC240             | 6,000      |
|                                                                 | DC13                 | Ie: 0.22 A, Ithe: 1 A (R150) | DC125             | 6,000      |
|                                                                 | DC13 (See note.)     | Ie: 0.1 A, Ithe: 1 A (R300)  | DC250             | 6,000      |

**Note:** 1. In progress  
2. All ratings are valid at Room Temperature

## 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 | AC250             | 6,000      |
|                                        | AC3                  | 2 A | AC250             | 6,000      |
|                                        | DC1                  | 5 A | DC24              | 6,000      |
|                                        | DC3                  | 2 A | DC24              | 6,000      |

**Note:** 1. In progress  
2. All ratings are valid at Room Temperature

## 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 ( $\cos\phi = 1$ ) NO  | 50,000 operations min.  |
|                         | 8 A at 250 VAC ( $\cos\phi = 1$ ) NC  | 50,000 operations min.  |
|                         | 5 A at 24 VDC                         | 50,000 operations min.  |
| G6RL-1(A)-(SR)-ASI-(PL) | 10 A at 250 VAC ( $\cos\phi = 1$ ) NO | 100,000 operations min. |
|                         | 8 A at 250 VAC ( $\cos\phi = 1$ )     | 100,000 operations min. |
|                         | 5 A at 30 VDC                         | 50,000 operations min.  |
| G6RL-1(A)-4-ASI         | 8 A at 250 VAC ( $\cos\phi = 1$ ) NO  | 50,000 operations min.  |
|                         | 8 A at 250 VAC ( $\cos\phi = 1$ ) NC  | 50,000 operations min.  |
|                         | 5 A at 24 VDC                         | 50,000 operations min.  |
| G6RL-14-SR-ASI          | 8 A at 250 VAC ( $\cos\phi = 1$ ) NO  | 50,000 operations min.  |
|                         | 3 A at 250 VAC ( $\cos\phi = 1$ ) NC  | 100,000 operations min. |
|                         | 5 A at 24 VDC NO                      | 50,000 operations min.  |
|                         | 5 A at 24 VDC NC                      | 30,000 operations min.  |

## Endurance Under Real Load (Reference Only)

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

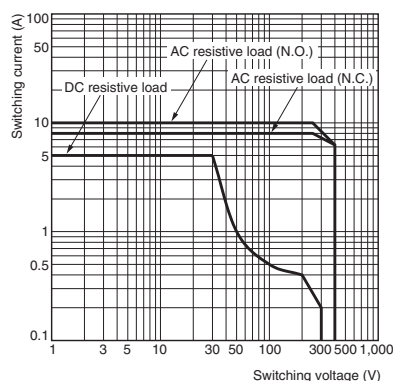
| Rated voltage | Condition                                                  | Frequency          | Electrical life    |
|---------------|------------------------------------------------------------|--------------------|--------------------|
| 230 VAC       | P1 load (2 × 200 W lamps parallel to ignition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

**Note:** The results shown reflect values measured using very severe test conditions, i.e., Duty: 1 s ON/OFF.

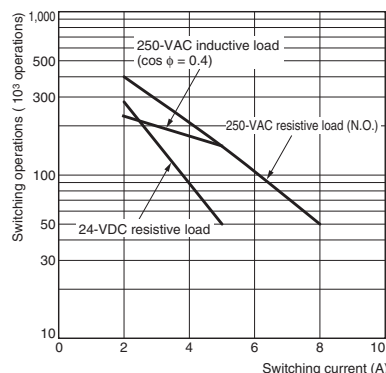
Electrical endurance will vary depending on the test conditions. Contact your OMRON representative if you require more detailed information for the electrical endurance under your test conditions.

# Engineering Data

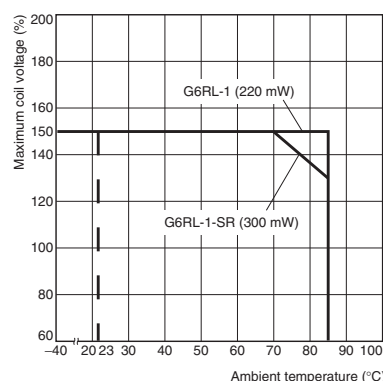
## G6RL-1(A)(4)-(SR)-(ASI)-(PL) Maximum Switching Capacity



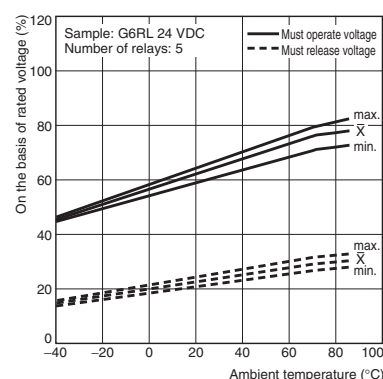
## G6RL-1(A) Endurance



## G6RL-1(A)(4)-(SR)-(ASI)-(PL) Ambient Temperature vs. Maximum Coil Voltage



## G6RL-1(A)(4)-(ASI)-(PL) Ambient Temperature vs. Must Operate or Must Release Voltage

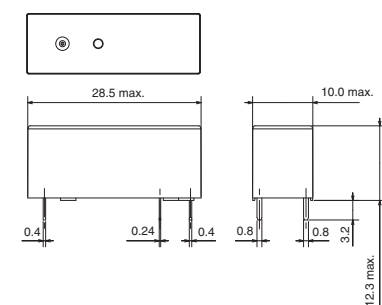
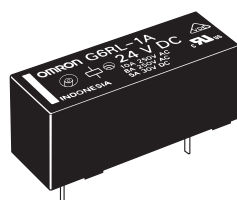


**Note:** The “maximum coil voltage” refers to the maximum value in a varying range of operating voltage, not a continuous voltage.

## Dimensions

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

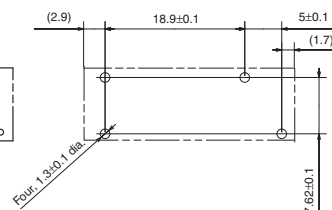
### G6RL-1A(-ASI) G6RL-1A4(-ASI)



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

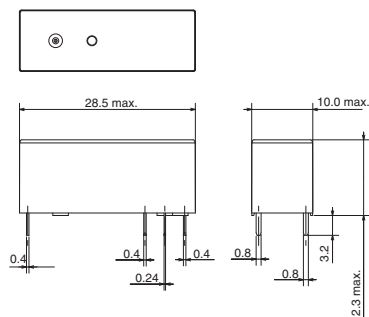
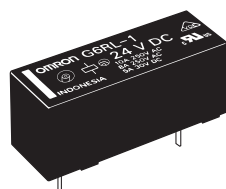


### Mounting Holes (Bottom View)



**Note:** Indicates average dimensions.

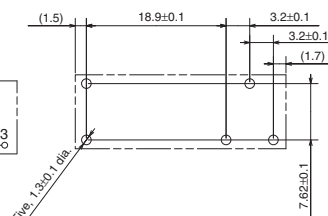
### G6RL-1(-ASI) G6RL-14(-ASI)



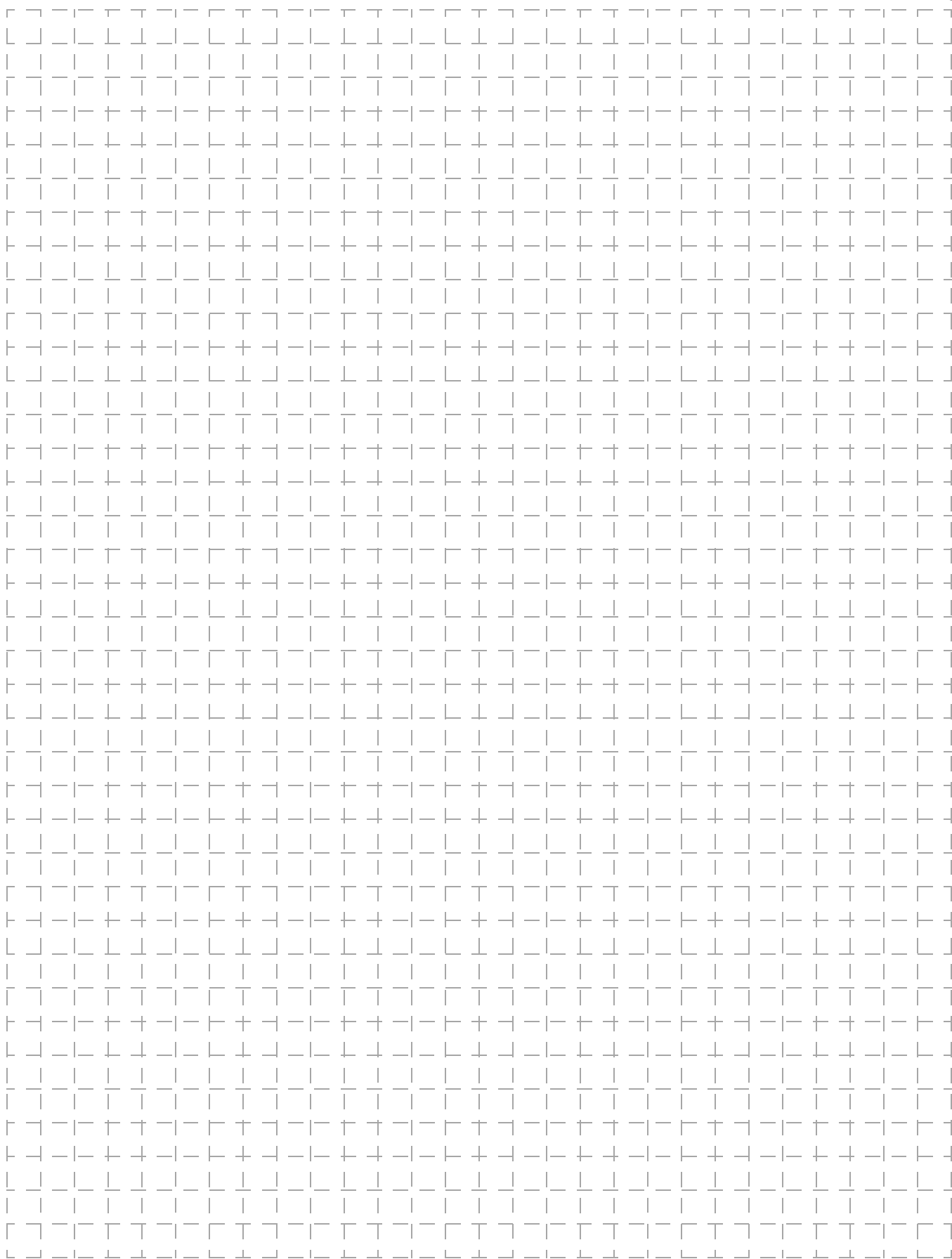
### Terminal Arrangement/ Internal Connections (Bottom View)



### Mounting Holes (Bottom View)



**Note:** Indicates average dimensions.



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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**OMRON ELECTRONIC  
COMPONENTS LLC**

55 E. Commerce Drive, Suite B  
Schaumburg, IL 60173

**847-882-2288**

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