

Low Profile Power Relay with 15.7 mm height, ideal for incorporation in miniature equipments



- A wide variety of single pole, double pole, high-capacity (16 A) type and high-sensitivity type (250 mW) Relays are available.
- Low profile; 15.7 mm max. in height.
- Conforms to VDE (EN61810-1), UL508 and CSA22.2.
- IEC/EN 60335-1 conformed. (-HA Model)
- Satisfies ambient operating temperature requirement of 85°C and 105°C (-CV Model).
- Clearance and creepage distance: 8 mm / 8 mm min.
- Coil insulation system: Class F (UL1446).
- G2RL-1A-E-ASI: TV3 Rating models available.

RoHS Compliant

Model Number Legend

G2RL-□□□-□-□-□-□
 1 2 3 4 5 6 7

1. Number of poles

- 1 : 1 pole
- 2 : 2 pole

2. Contact Form

- None : SPDT (1c)
- A : SPST-NO (1a)

3. Enclosure rating

- None : Flux protection
- 4 : Sealed

4. Classification

- None : Standard
- E : High-capacity
- H : High-sensitivity

5. Special Requirement

- None : Standard
- CV : 16 A, pinning 5 mm,; switching at 105°C

6. Market Code

- None : General purpose
- HA : Home Appliance according to IEC/EN60335-1

7. Contact material

- None : Standard (Ag-alloy, Cd free)
- ASI : AgSnIn

Application Examples

- Home appliances
- OA equipments
- Industrial machinery

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 | G2RL-1A | 5 VDC 12 VDC 24 VDC 48 VDC | 20 pcs/tube |
| | | | | Sealed | G2RL-1A4 | | |
| | | | SPDT (1c) | Flux protection | G2RL-1 | | |
| | | | | Sealed | G2RL-14 | | |
| | | | DPST-NO (2a) | Flux protection | G2RL-2A | | |
| | | | | Sealed | G2RL-2A4 | | |
| | | DPDT (2c) | Flux protection | G2RL-2 | | | |
| | | | Sealed | G2RL-24 | | | |
| | | High-capacity | SPST-NO (1a) | Flux protection | G2RL-1A-E | | |
| | | | | Sealed | G2RL-1A-E-ASI | | |
| | | | SPDT (1c) | Flux protection | G2RL-1-E | | |
| | | | | Sealed | G2RL-14-E | | |
| | High-sensitivity | | SPST-NO (1a) | Flux protection | G2RL-1A-E-CV | | |
| | | | SPDT (1c) | Flux protection | G2RL-1A-H | | |
| | Home Appliance | Standard | DPST-NO (2a) | Flux protection | G2RL-2A-HA | 12 VDC 24 VDC | |
| | | | | DPDT (2c) | G2RL-2-HA | | |
| | | | SPST-NO (1a) | Flux protection | G2RL-1A-E-HA | | |
| | | High-capacity | SPST-NO (1a) | Flux protection | G2RL-1-E-HA | | |
| Sealed | | | | G2RL-14-E-HA | | | |
| SPDT (1c) | | | Flux protection | G2RL-1-E-HA | | | |

Note 1. When ordering, add the rated coil voltage to the model number.

Example: G2RL-1A DC5

Rated coil voltage

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

Note 2. Place your order in tube (20 pcs/tube) units.

Note 3. Contact your OMRON sales representative for sealed models.

■ Ratings

● Coil

| Item | Rated voltage | Rated current (mA) | Coil resistance (Ω) | Must operate voltage (V) | Must release voltage (V) | Max. voltage (V) | Power consumption (mW) |
|------------------|---------------|--------------------|---------------------|--------------------------|--------------------------|------------------|------------------------|
| | | | | % of rated voltage | | | |
| Standard | 5 VDC | 80.0 | 62.5 | 70% max. | 10% min. | 130% (at 85°C) | Approx. 400 |
| | 12 VDC | 33.3 | 360 | | | | |
| | 24 VDC | 16.7 | 1,440 | | | | |
| | 48 VDC | 8.96 | 5,358 | | | | |
| High-sensitivity | 12 VDC | 20.8 | 576 | 75% max. | | | Approx. 250 |
| | 24 VDC | 10.42 | 2,304 | | | | |

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 | Classification Model | Standard type (resistive load) | | | | High-capacity type (resistive load) | | High-sensitivity type (resistive load) | |
|---|----------------------|--|--------|--|--------|--|----------|--|----------|
| | | G2RL-1A | G2RL-1 | G2RL-2A | G2RL-2 | G2RL-1A-E (-CV, -ASI) | G2RL-1-E | G2RL-1A-H | G2RL-1-H |
| Contact type | | Single | | | | | | | |
| Contact material | | Ag-alloy (Cd free) | | | | | | | |
| Rated load | | 12 A at 250 VAC 12 A at 24 VDC (See note) | | 8 A at 250 VAC 8 A at 30 VDC (See note) | | 16 A at 250 VAC 16 A at 24 VDC (See note) | | 10 A at 250 VAC (See note) | |
| Rated carry current | | 12 A (See note) | | 8 A (70°C)/5 A (85°C) (See note) | | 16 A (See note) | | 10 A (See note) | |
| Max. switching voltage | | 440 VAC, 300 VDC | | | | | | | |
| Max. switching current | | 12 A | | 8 A | | 16 A | | 10 A | |
| Failure rate (P level) (reference value*) | | 40 mA at 24 VDC | | | | | | | |

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

Note: Contact your OMRON representative for the ratings on sealed models.

■ Characteristics

| Item | Classification Number of poles | Standard type | | High-capacity type | High-sensitivity type |
|-------------------------------|--|---|---|--|--|
| | | 1-pole | 2-pole | 1-pole | |
| Contact resistance *1 | | 100 mΩ max. | | | |
| Operate (set) time | | 15 ms max. | | | |
| Release (reset) time | | 5 ms max. | | | |
| Insulation resistance *2 | | 1,000 MΩ min. | | | |
| Dielectric strength | Between coil and contacts | 5,000 VAC, 50/60 Hz for 1min | | | |
| | Between contacts of the same polarity | 1,000 VAC, 50/60 Hz for 1min | | | |
| | Between contacts of different polarity | – | 2,500 VAC, 50/60 Hz for 1min | – | – |
| Impulse withstand voltage | | 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 ² | | | |
| | Malfunction | Energized: 100 m/s ² , De-energized: 100 m/s ² | | | |
| Durability | Mechanical | 20,000,000 operations (at 18,000 operations/hr) | | | |
| | Electrical *3 (resistive load) | G2RL-1(A): 50,000 operations at 250 VAC, 12 A 30,000 operations at 24 VDC, 12 A | G2RL-2(A): 30,000 operations at 250 VAC, 8 A 30,000 operations at 30 VDC, 8 A | G2RL-1(A)-E, G2RL-1A-E-ASI: 30,000 operations at 250 VAC, 16 A 30,000 operations at 24 VDC, 16 A G2RL-1A-E-CV: 50,000 operations at 250 VAC, 16 A at 105°C | G2RL-1(A)-H: 50,000 operations at 250 VAC, 10 A |
| Ambient operating temperature | | -40°C to 85°C (with no icing or condensation) -40°C to 105°C (with no icing or condensation) by G2RL-1A-E-CV | | | |
| Ambient operating humidity | | 5% to 85% (with no icing or condensation) | | | |
| Weight | | Approx. 12 g | | | |

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

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

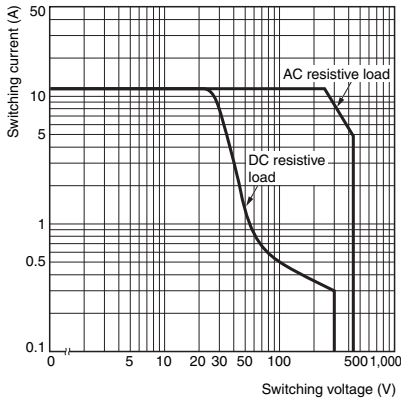
*2. Measurement conditions: Measured at the same points as the dielectric strength using a 500 VDC ohmmeter.

*3. 1,800 operations per hour.

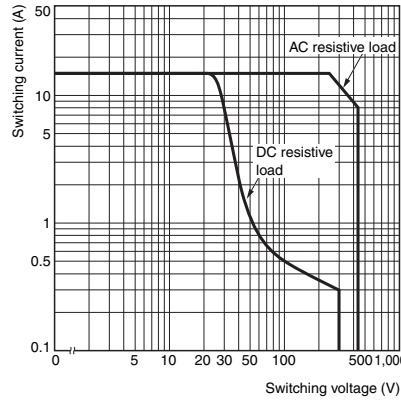
Engineering Data

Maximum Switching Capacity

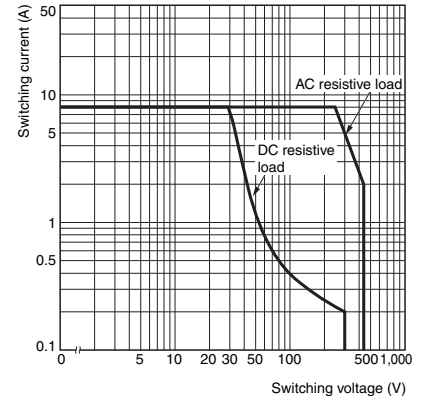
G2RL-1A, G2RL-1



G2RL-1A-E, G2RL-1-E

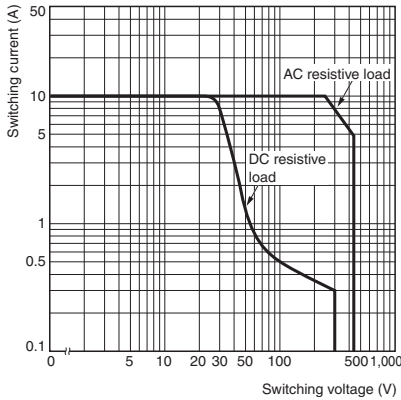


G2RL-2A, G2RL-2

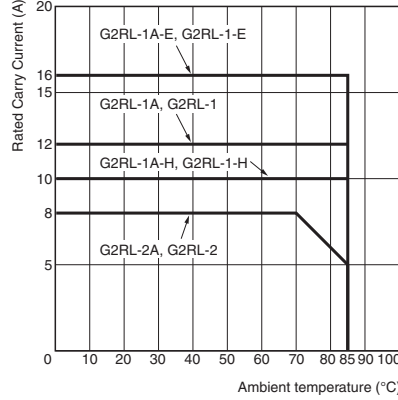


High-sensitivity type

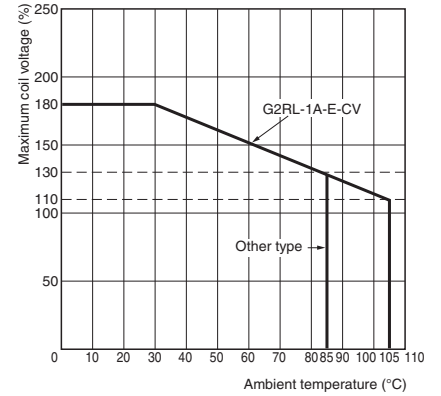
G2RL-1A-H, G2RL-1-H



Ambient Temperature vs. Rated Carry Current

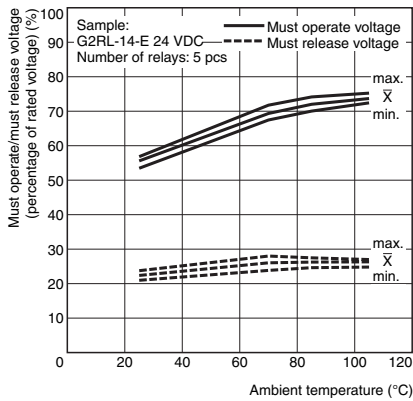


Ambient Temperature vs. Maximum Coil Voltage



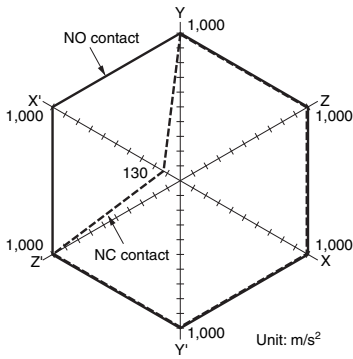
Note. The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Ambient Temperature vs. Must Operate and Must Release Voltages

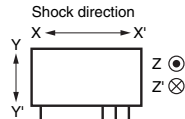


● Shock Malfunction

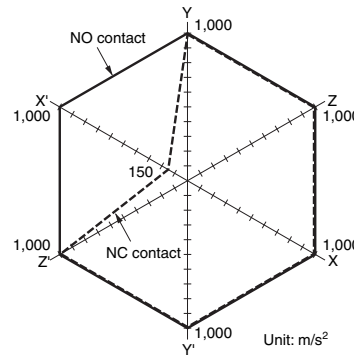
G2RL-1 (A)-E



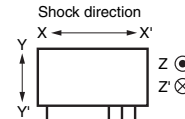
Sample: G2RL-14 12 VDC
 Number of Relays: 5 pcs
 Test conditions: Shock is applied in $\pm X$, $\pm Y$, and $\pm Z$ directions three times each with without energizing the Relays to check the number of malfunctions.
 Requirement: None malfunction
 100 m/s²



G2RL-2 (A)



Sample: G2RL-24 12 VDC
 Number of Relays: 5 pcs
 Test conditions: Shock is applied in $\pm X$, $\pm Y$, and $\pm Z$ directions three times each with without energizing the Relays to check the number of malfunctions.
 Requirement: None malfunction
 100 m/s²



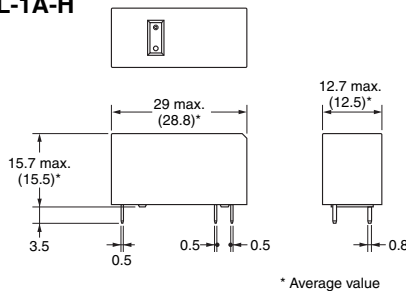
■ Electrical Endurance Data (Reference Value)

| | | |
|-----------|--|---|
| G2RL-1-E | 8 A 250 VAC (cosφ=0.4) 8 A 30 VDC (L/R=7 ms) | 200,000 operation min. (N.O.) 10,000 operation min. (N.O.) |
| G2RL-1 | 5 A 250 VAC (cosφ=0.4) 5 A 30 VDC (L/R=7 ms) | 150,000 operation min. (N.O.) 10,000 operation min. (N.O.) |
| G2RL-2 | 8 A 250 VAC (cosφ=1) 8 A 30 VDC | 30,000 operation min. 10,000 operation min. |
| G2RL-1A-E | Pilot duty (A300), 250 VAC Pilot duty (A300), 125 VAC | 250,000 operation min. 150,000 operation min. |

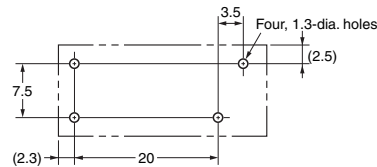
Note. The results shown reflect values at ambient temperature 23°C. Electrical endurance will vary depending on the test conditions.
 Contact your OMRON representative if you require more detailed information for the electrical endurance under your test condition.

■ Dimensions (Unit: mm)

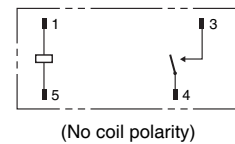
G2RL-1A, G2RL-1A4, G2RL-1A-H



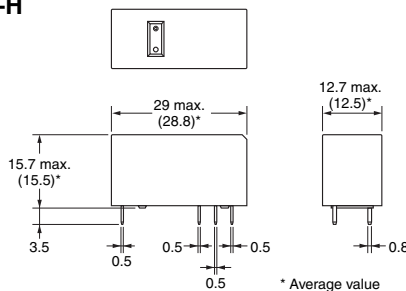
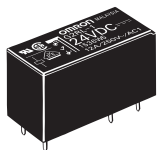
PCB Mounting Holes (Bottom View)



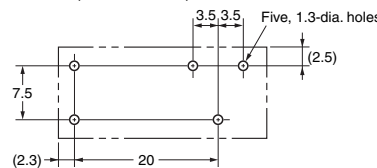
Terminal Arrangement/ Internal Connections (Bottom View)



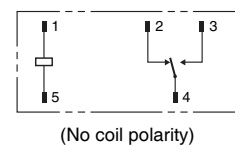
G2RL-1, G2RL-14, G2RL-1-H



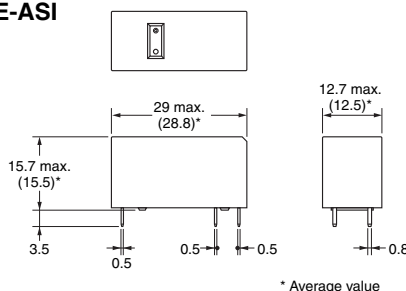
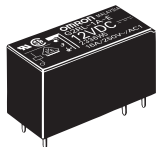
PCB Mounting Holes (Bottom View)



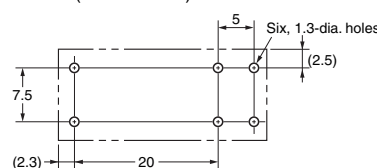
Terminal Arrangement/ Internal Connections (Bottom View)



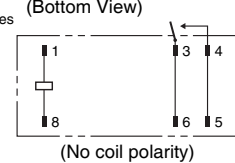
G2RL-1A-E (-HA), G2RL-1A4-E, G2RL-1A-E-CV, G2RL-1A-E-ASI



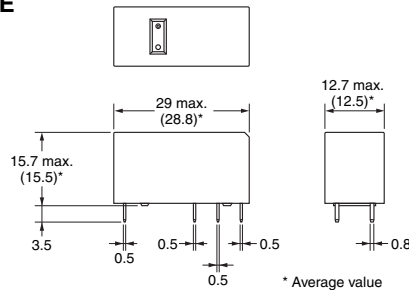
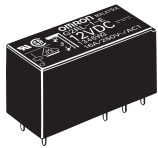
PCB Mounting Holes (Bottom View)



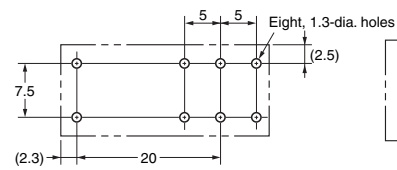
Terminal Arrangement/ Internal Connections (Bottom View)



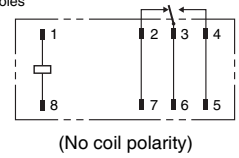
G2RL-1-E (-HA), G2RL-14-E



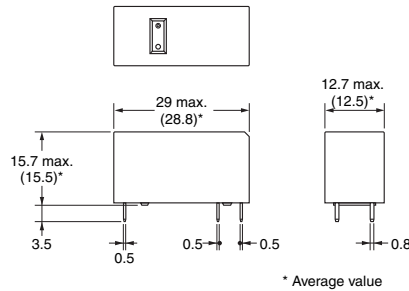
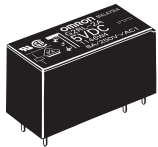
PCB Mounting Holes (Bottom View)



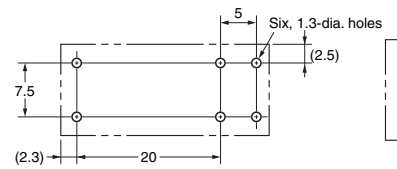
Terminal Arrangement/ Internal Connections (Bottom View)



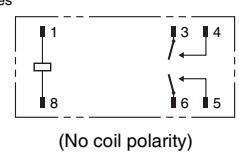
G2RL-2A (-HA), G2R-2A4



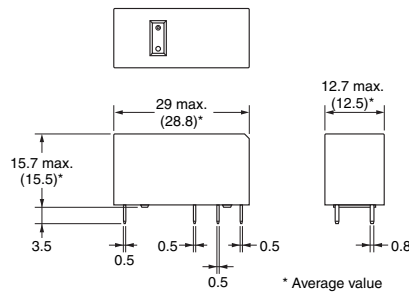
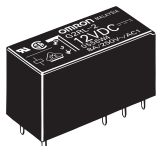
PCB Mounting Holes (Bottom View)



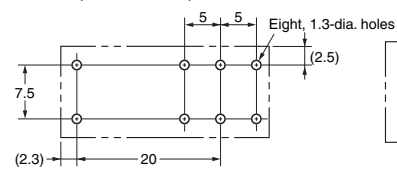
Terminal Arrangement/ Internal Connections (Bottom View)



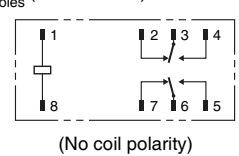
G2RL-2 (-HA), G2R-24



PCB Mounting Holes (Bottom View)



Terminal Arrangement/ Internal Connections (Bottom View)



Approved Standards

- The approval rating values for overseas standards are different from the performance values determined individually. Confirm the values before use.

UL Recognized:  (File No. 41643)

CSA Certified:  (File No. LR31928)

| Model | Contact form | Coil ratings | Contact ratings | Number of test operations |
|-----------------|--------------|--------------|----------------------------------|---------------------------|
| G2RL-1A | SPST-NO (1a) | 3 to 48 VDC | 12 A, 250 VAC (General Use) 40°C | 100,000 |
| G2RL-1 | SPDT (1c) | | 12 A, 24 VDC (Resistive) 40°C | 50,000 |
| G2RL-1A-E (-HA) | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (General Use) 40°C | 100,000 |
| G2RL-1-E (-HA) | SPDT (1c) | | 16 A, 24 VDC (Resistive) 40°C | 50,000 |
| G2RL-1A-E-ASI | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (Resistive) 85°C | 30,000 |
| G2RL-1A-E-CV | SPST-NO (1a) | 3 to 48 VDC | TV-3 40°C | 25,000 |
| G2RL-1A-H | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (Resistive) 105°C | 100,000 |
| G2RL-1-H | SPDT (1c) | | 10 A, 250 VAC (General Use) 40°C | 50,000 |
| G2RL-1-H | SPDT (1c) | | 10 A, 24 VDC (Resistive) 40°C | |
| G2RL-2A (-HA) | DPST-NO (2a) | 3 to 48 VDC | 8 A, 277 VAC (General Use) 40°C | 100,000 |
| G2RL-2 (-HA) | DPDT (2c) | | 8 A, 30 VDC (Resistive) 40°C | |

EN/IEC, VDE Certified  (Certificate No. 119650)

| Model | Contact form | Coil ratings | Contact ratings | Number of test operations |
|-------------------------------|--------------|--------------|---|---------------------------|
| G2RL-1A | SPST-NO (1a) | 3 to 48 VDC | 12 A, 250 VAC (cosφ=1) 85°C 12 A, 24 VDC (L/R=0 ms) 85°C | 100,000 |
| G2RL-1 | SPDT (1c) | | AC15: 3 A at 240 VAC at room temperature DC13: 2.5 A at 24 VDC, 50ms at room temperature | 6,000 |
| G2RL-1A-E (-HA) | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (cosφ=1) 85°C 16 A, 24 VDC (L/R=0 ms) 85°C | 30,000 |
| G2RL-1-E (-HA) | SPDT (1c) | | AC15: 3 A at 240 VAC (NO) at room temperature, 1.5 A at 240V AC (NC) at room temperature DC13: 2.5 A at 24 VDC (NO), 50ms at room temperature | 6,000 |
| G2RL-1A-E-ASI | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (cosφ=1) 85°C | 30,000 |
| G2RL-1A-E-CV | SPST-NO (1a) | 3 to 48 VDC | 16 A, 250 VAC (cosφ=1) 105°C | 100,000 |
| G2RL-1A-H G2RL-1-H | SPST-NO (1a) | 3 to 48 VDC | 10 A, 250 VAC (cosφ=1) 85°C | 50,000 |
| | SPDT (1c) | | 10 A, 250 VAC (cosφ=1) 40°C 10 A, 24 VDC (L/R=0 ms) 85°C | 100,000 50,000 |
| G2RL-2A (-HA) G2RL-2 (-HA) | DPST-NO (2a) | 3 to 48 VDC | 8 A, 250 VAC (cosφ=1) 85°C 8 A, 30 VDC (L/R=0 ms) 85°C | 30,000 15,000 |
| | DPDT (2c) | | AC15: 1.5 A at 240VAC at room temperature DC13: 2 A at 30 VDC, 50ms at room temperature | 6,000 |

| | |
|---|--|
| Creepage distance | 8 mm min. |
| Clearance distance | 8 mm min. |
| Insulation material group | IIIa |
| Type of insulation coil-contact circuit open contact circuit | Reinforced Micro disconnection |
| Rated Insulation voltage | 250 V |
| Pollution degree | 3 (Flux protection / Sealed) |
| Rated voltage system | 250 V / 400 V (Flux protection) |
| Over voltage category | III |
| Category of protection according to IEC 61810-1 | RT II (Flux protection) / RT III (Sealed) |
| Glow wire according to IEC 60335-1 | <HA Models only> GWT 750°C min. (IEC 60695-2-11) / GWF1 850°C min. (IEC 60695-2-12) |
| Tracking Index of relay base | PTI 250 V min. (housing parts) |

Precautions

- Please refer to “PCB Relays Common Precautions” for correct use.

Correct Use

● Mounting Position Compared to G2R Model

- Although the G2RL model and the G2R model are both low profile Relays, their characteristics such as switching capacity are different. Be sure to check operation under the actual operating conditions before use.

● Cleaning

- The G2RL model is flux-resistant with two sealing holes on the case. Thus, do not clean the Relay by boiling or soaking in water. Consult your Omron sales representative for sealed type Relay.

● Using Relays in an Atmosphere Containing Corrosive Gas

- Do not use Relays in an atmosphere containing corrosive gas (sulfuric or organic gas). Otherwise, connection failure due to corrosion on the contact surface may lead to functional faults.

• 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.

Mouser Electronics

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