PCB Relay

G2RL

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) (ref. value)	**Armature OFF**	0.18	1.01	4.19	15.91
	Armature ON	0.44	2.47	9.72	33.65
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	$AgSnO_2$	AgNi
Load	Resistive load (cosϕ=1)	Resistive load (cosϕ=1)
Rated load	12 A (16 A) at 250 VAC 12 A (16 A) at 24 VDC (See note 2.)	8 A at 250 VAC 8 A at 30 VDC (See note 2.)
Rated carry current	12 A (16 A) (See note 2.)	8 A (70°C)/5 A (85°C) (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 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 1,000 VAC, 1 min between contacts of same polarity	5,000 VAC, 1 min between coil and contacts 2,500 VAC, 1 min between contacts of different polarity 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 Malfunction: 10 to 55 Hz, 1.5-mm double amplitude	
Shock resistance	Destruction: 1,000 m/s^2 Malfunction: Energized: 100 m/s^2 Not energized: 100 m/s^2	
Life expectancy (Mechanical)	20,000,000 operations (at 18,000 operations/hr)	
Ambient temperature	Operating: –40°C to 85°C (with no icing) 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) 12 A at 24 VDC (Resistive)
G2RL-1	SPDT		
G2RL-1A-E	SPST-NO (High capacity)		16 A at 250 VAC (General use) 16 A at 24 VDC (Resistive)
G2RL-1-E	SPDT (High capacity)		
G2RL-2A	DPST-NO		8 A at 277 VAC (General use) 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) 12 A at 24 VDC (Resistive)
G2RL-1	SPDT		
G2RL-1A-E	SPST-NO (High capacity)		16 A at 250 VAC (General use) 16 A at 24 VDC (Resistive)
G2RL-1-E	SPDT (High capacity)		
G2RL-2A	DPST-NO		8 A at 277 VAC (General use) 8 A at 30 VDC (Resistive)
G2RL-2	DPDT		

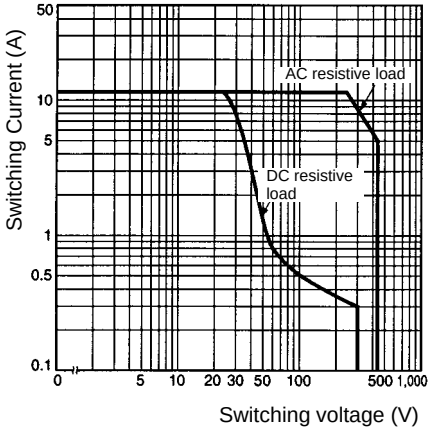
VDE (VDE0435)

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

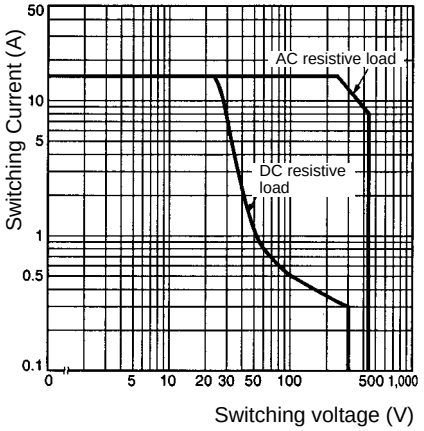
Engineering Data

Maximum Switching Capacity

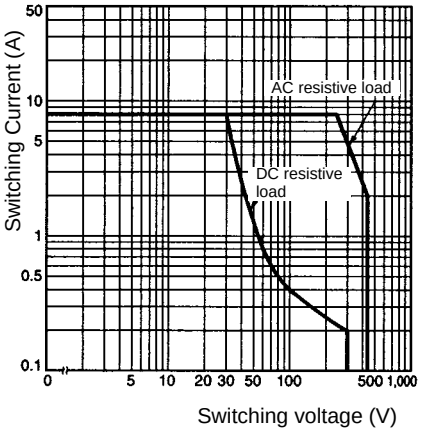
G2RL-1A, G2RL-1



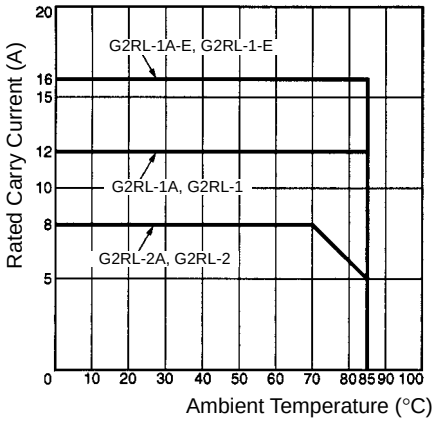
G2RL-1A-E, G2RL-1-E



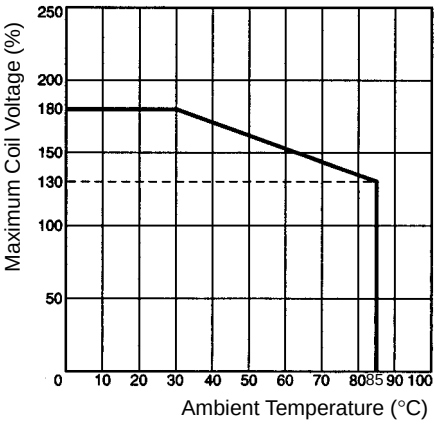
G2RL-2A, G2RL-2



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

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

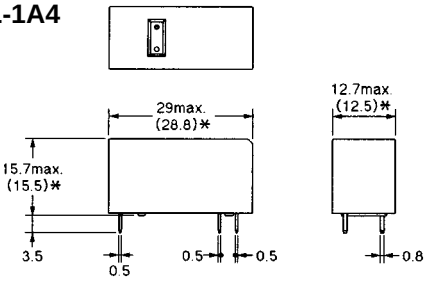
Note: The results shown reflect values measured using very severe test conditions i.e., Duty: 1 sec ON/1 sec OFF. Electrical life will vary depending on the test conditions. Contact your OMRON representative if you require more detailed information for the electrical life under your test conditions.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

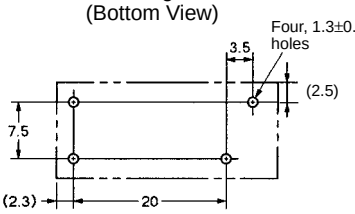
G2RL-1A, G2RL-1A4

* Indicates average dimensions.

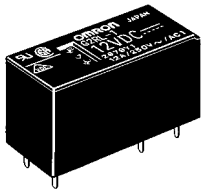


Terminal Arrangement/ Internal Connection (Bottom View)

Mounting Holes (Bottom View)



G2RL-1, G2RL-14



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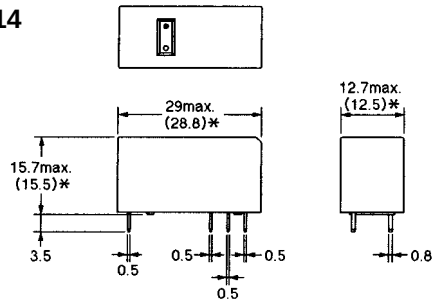

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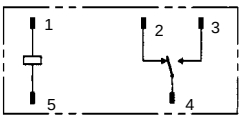
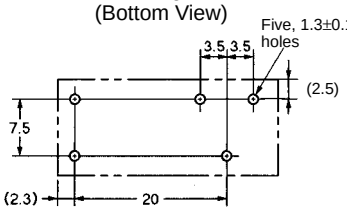
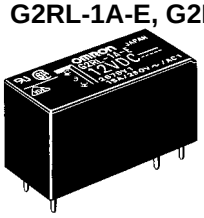


Mounting Holes (Bottom View)



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



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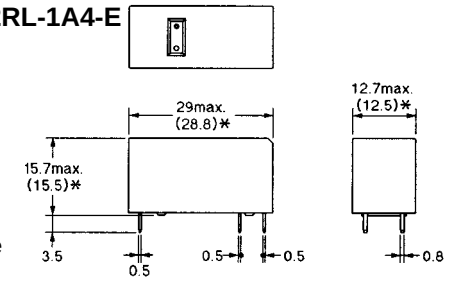

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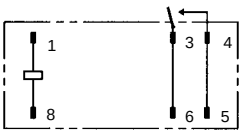
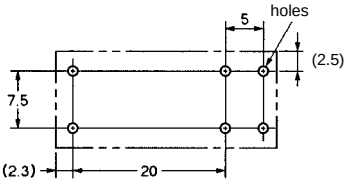


Mounting Holes (Bottom View)



G2RL-1-E, G2RL-14-E

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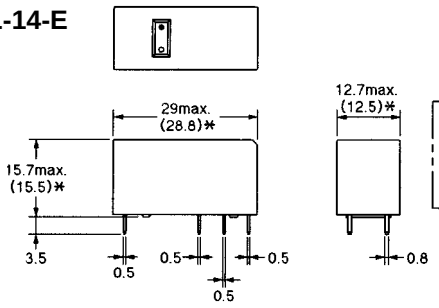
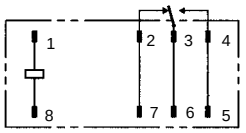
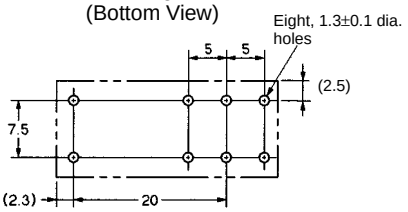


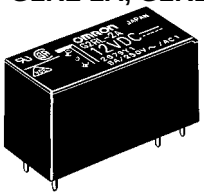
Terminal Arrangement/
Internal Connection
(Bottom View)



Mounting Holes
(Bottom View)



G2RL-2A, G2RL-2A4



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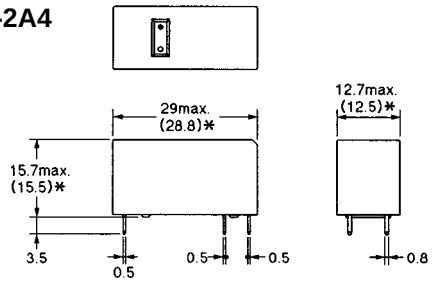
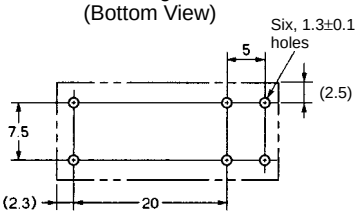
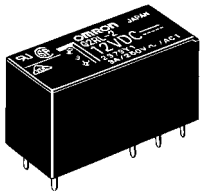


Terminal Arrangement/
Internal Connection
(Bottom View)

Mounting Holes
(Bottom View)



G2RL-2, G2RL-24



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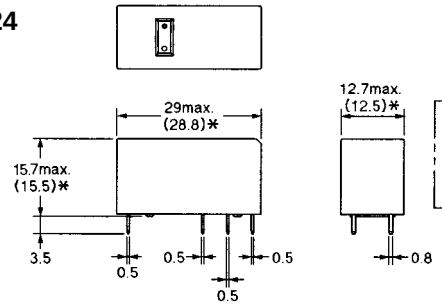

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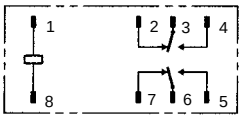
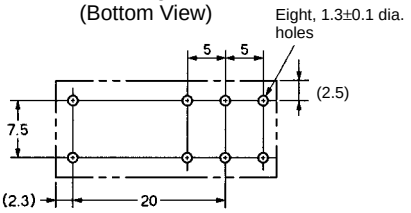
Internal Connection
(Bottom View)



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_2), hydrogen sulfide (H_2S), 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.