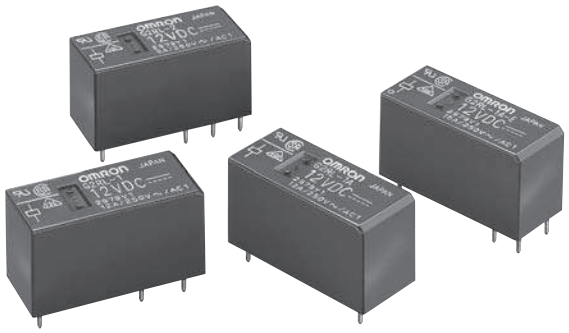
G2RL
PCB Power Relay

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



- A wide variety of single pole, double pole and high-capacity type Relays are available.
- High sensitivity with power consumption of 400 mW.
- Offers high insulation with insulation distance above 8 mm and impulse withstand voltage of 10kV between coil and contacts.
- Satisfies ambient operating temperature requirement of 85°C.
- Standard model conforms to VDE standards.

RoHS Compliant

■Model Number Legend

G2RL-□□□-□ (1 2 3 4)

1. **Number of Poles** — 1: 1-pole; 2: 2-pole
2. **Contact Form** — None : NO/NC; A : NO
3. **Enclosure rating** — None : Flux protection; 4 : Fully sealed
4. **Classification** — None : Standard; E : High-capacity

■Application Examples

- Home appliances
- OA equipments
- Industrial machinery

■Ordering Information

Classification	Contact form	Terminal Shape	Enclosure rating	Model	Rated coil voltage	Minimum packing unit
Standard	SPST-NO (1a)	PCB terminals	Flux protection	G2RL-1A	5 VDC 12 VDC 24 VDC 48 VDC	20 pcs/tube
			Fully sealed	G2RL-1A4		
	SPDT (1c)		Flux protection	G2RL-1		
			Fully sealed	G2RL-14		
	DPST-NO (2a)		Flux protection	G2RL-2A		
			Fully sealed	G2RL-2A4		
	DPDT (2c)		Flux protection	G2RL-2		
			Fully sealed	G2RL-24		
High-capacity	SPST-NO (1a)		Flux protection	G2RL-1A-E		
			Fully sealed	G2RL-1A4-E		
	SPDT (1c)		Flux protection	G2RL-1-E		
			Fully sealed	G2RL-14-E		

Note 1. When ordering, add the rated coil voltage to the model number.
Example: G2RL-1A 5 VDC
Rated coil voltage
Note 2. Place your order in tube (20 pcs/tube) units.
Note 3. Contact your OMRON sales representative for fully 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			
5 VDC	80.0	62.5	75% 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				Approx. 430

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

Classification / Item / Model	General-purpose Models (resistive load)				High-capacity Models (resistive load)	
	G2RL-1A	G2RL-1	G2RL-2A	G2RL-2	G2RL-1A-E	G2RL-1-E
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)	
Rated carry current	12 A (See note)		8 A (70°C)/5 A (85°C) (See note)		16 A (See note)	
Max. switching voltage	440 VAC, 300 VDC					
Max. switching current	12 A		8 A		16 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 fully sealed models.

■Characteristics

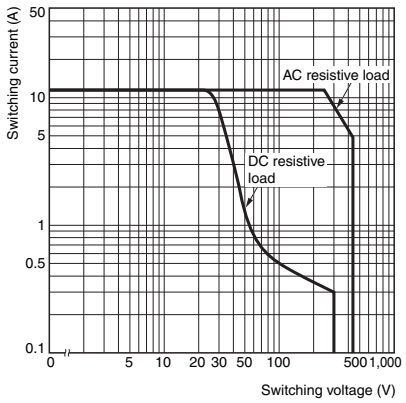
Item \ Classification / Number of poles		General-purpose Models		High-capacity Models
		1-pole	2-pole	1-pole
Contact resistance *1		100 mΩ max.		
Operate (set) time		15 ms max.		
Release (reset) time		5 ms max.		
Max. operating frequency	Mechanical	18,000 operation/hr		
	Electrical	1,800 operation/hr		
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	–
Insulation distance	Between coil and contacts	Clearance: 8 mm, Creepage: 8 mm		
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/s²		
	Malfunction	Energized: 100 m/s², De-energized: 100 m/s²		
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: 30,000 operations at 250 VAC, 16 A 30,000 operations at 24 VDC, 16 A
Ambient operating temperature		-40°C to 85°C (with no icing or condensation)		
Ambient operating humidity		5% to 85% (with no icing or condersation)		
Weight		Approx. 12 g		

Note. Values in the above table are the initial values.
*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.

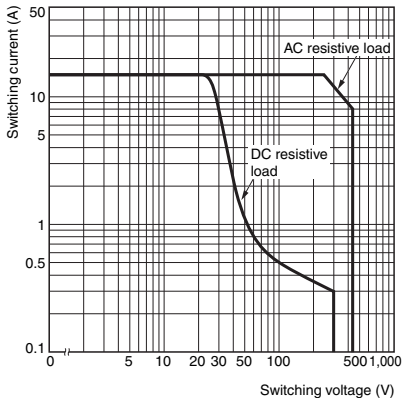
■Engineering Data

●Maximum Switching Capacity

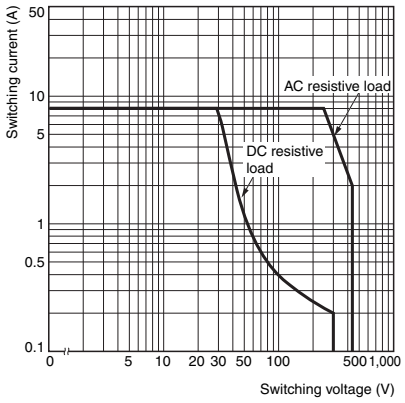
G2RL-1A, G2RL-1



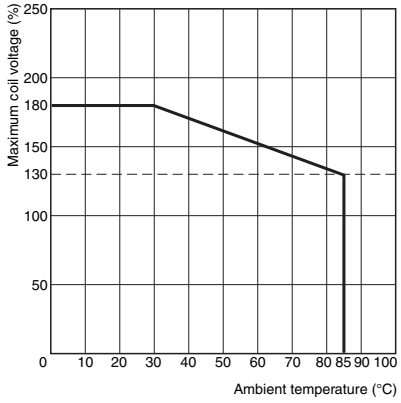
G2RL-1A-E, G2RL-1-E



G2RL-2A, G2RL-2

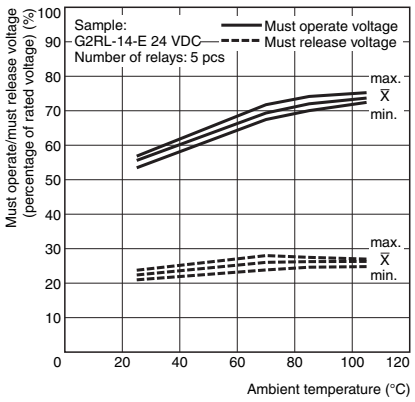


●Ambient Temperature vs. Maximum Coil Voltage



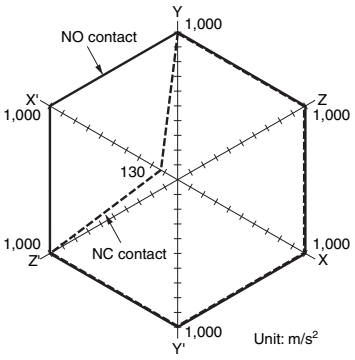
Note. The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

●Ambient Temperature vs. Must Operate and Must Release Voltages

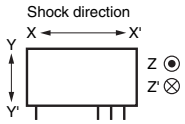


●Shock Malfunction

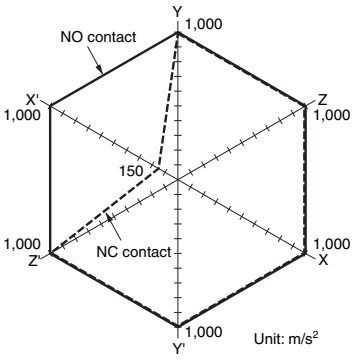
G2RL-1 (A)-E



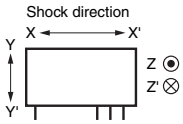
Sample: G2RL-14 12 VDC
Number of Relays: 5 pcs
Test conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with without energizing the Relays to check the number of malfunctions.
Requirement: None malfuction
100 m/s²



G2RL-2 (A)



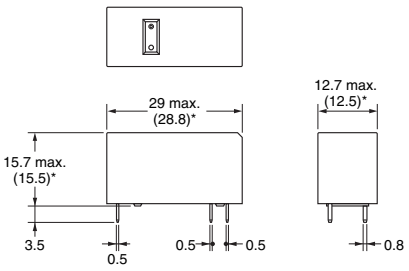
Sample: G2RL-24 12 VDC
Number of Relays: 5 pcs
Test conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with without energizing the Relays to check the number of malfunctions.
Requirement: None malfuction
100 m/s²



■Dimensions (Unit: mm)

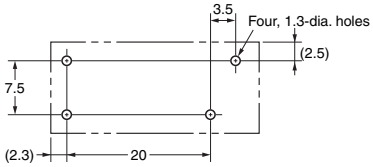
G2RL-1A, G2RL-1A4





* Average value

PCB Mounting Holes
(Bottom View)

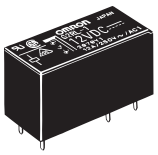


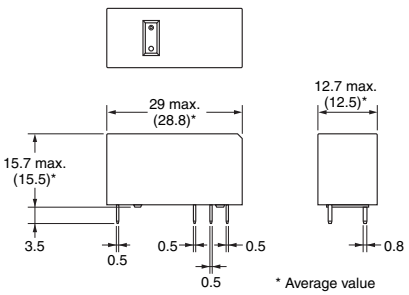
Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

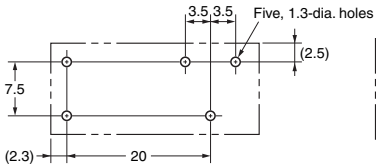
G2RL-1, G2RL-14



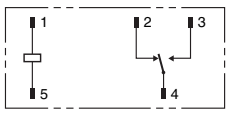


* Average value

PCB Mounting Holes
(Bottom View)

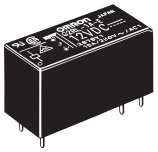


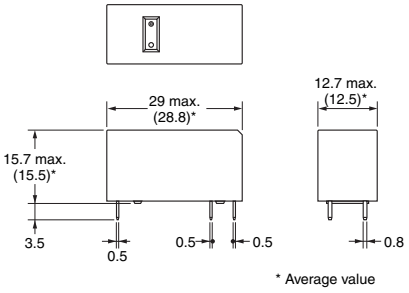
Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

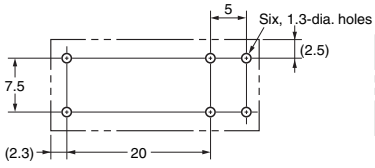
G2RL-1A-E, G2RL-1A4-E



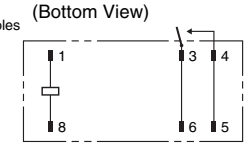


* Average value

PCB Mounting Holes
(Bottom View)

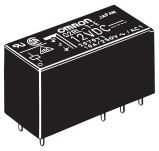


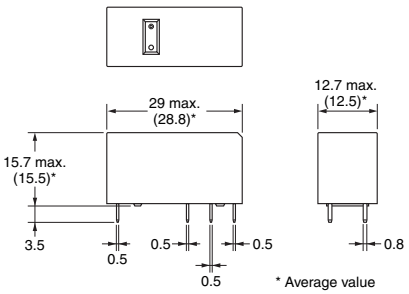
Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

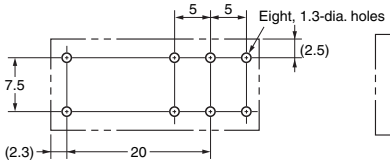
G2RL-1-E, G2RL-14-E



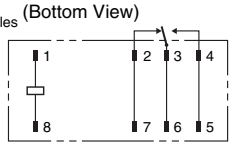


* Average value

PCB Mounting Holes
(Bottom View)



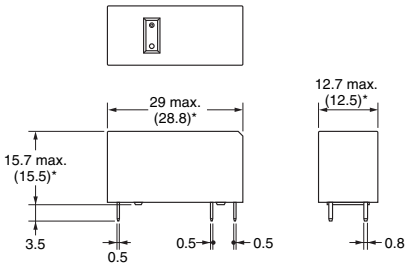
Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

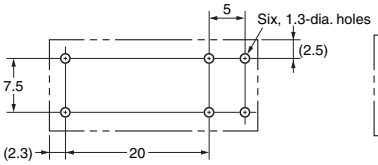
G2RL-2A, G2R-2A4





* Average value

PCB Mounting Holes
(Bottom View)

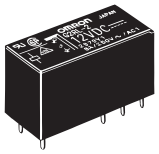


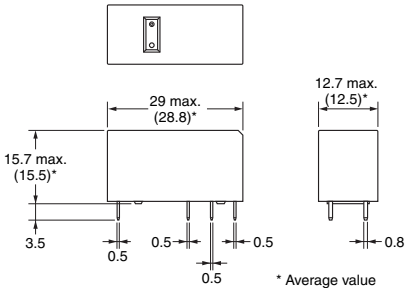
Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

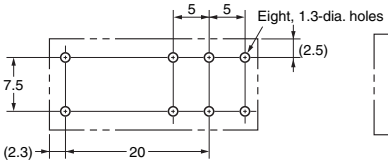
G2RL-2, G2R-24



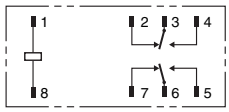


* Average value

PCB Mounting Holes
(Bottom View)



Terminal Arrangement/ Internal Connections
(Bottom View)



(No coil polarity)

■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)	5 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	SPST-NO (1a)		16 A, 250 VAC (General Use) 40°C	100,000
G2RL-1-E	SPDT (1c)		16 A, 24 VDC (Resistive) 40°C	50,000
G2RL-2A	DPST-NO (2a)		8 A, 277 VAC (General Use) 40°C 8 A, 30 VDC (Resistive) 40°C	100,000
G2RL-2	DPDT (2c)			

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

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G2RL-1A	SPST-NO (1a)	5, 12, 24, 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	SPST-NO (1a)		16 A, 250 VAC (cosϕ=1) 85°C	30,000
			16 A, 24 VDC (L/R=0 ms) 85°C	15,000
G2RL-1-E	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-2A	DPST-NO (2a)		8 A, 250 VAC (cosϕ=1) 85°C	30,000
			8 A, 30 VDC (L/R=0 ms) 85°C	15,000
G2RL-2	DPDT (2c)		AC15: 1.5 A at 240VAC at room temperature DC13: 2 A at 30 VDC, 50ms at room temperature	6,000

■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.

OMRON Corporation
Electronic and Mechanical Components Company

Contact: www.omron.com/ecb

Cat. No. J117-E1-07
1014(0207)(O)