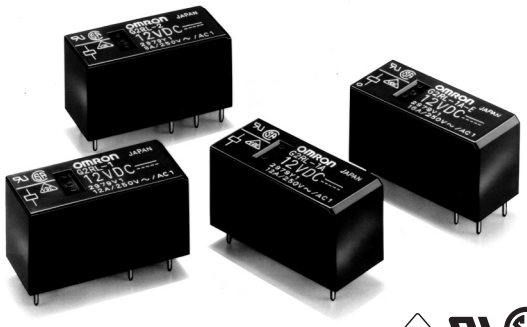
PCB Relay
G2RL

A Power Relay with Various Models

- High-sensitivity (250 mW) and High-capacity (16 A) versions.
- Designed for cooking and HVAC controls: blower motor, damper, active air purification, duct flow boost fans, etc.
- Conforms to VDE (EN61810-1). UL recognized/ CSA certiified
- Meets EN60335-1 requirements for household products.
- Clearance and creepage distance: 10 mm/10 mm.
- Tracking resistance: CTI>250
- Coil Insulation system: Class F.
- RoHS Compliant



Ordering Information

Classification	Enclosure ratings	Contact form			
		SPST-NO	SPDT	DPST-NO	DPDT
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**	---	---
High-sensitivity	Flux protection	**G2RL-1A-H**	**G2RL-1-H**	---	---

Note: When ordering, add the rated coil voltage to the model number.
Example: G2RL-1A DC12
Rated coil voltage

Model Number Legend

G2RL-□□□-□
1 2 3 4

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)
   H: High sensitivity (1 pole)

Specifications

■ Coils Ratings for General-purpose and High-capacity Models

Rated voltage	5 VDC	12 VDC	24 VDC	48 VDC
Rated current	80.0 mA	33.3 mA	16.7 mA	8.96 mA
Coil resistance	62.5 Ω	360 Ω	1,440 Ω	5,358 Ω
Must operate voltage	70% max. of the rated voltage			
Must release voltage	10% min. of the rated voltage			
Max. voltage	180% of rated voltage (at 23°C)			
Power consumption	Approx. 400 mW			Approx. 430 mW

Note: The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

■ Coils Ratings for High-sensitivity Models

Rated voltage	5 VDC	12 VDC	24 VDC
Rated current	50.0 mA	20.8 mA	10.42 mA
Coil resistance	100 Ω	576 Ω	2,304 Ω
Must operate voltage	75% max. of the rated voltage		
Must release voltage	10% min. of the rated voltage		
Max. voltage	180% of rated voltage (at 23°C)		
Power consumption	Approx. 250 mW		

Note: The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

■ Contact Ratings

Item	General-purpose Models		High-capacity Models	High-sensitivity Models
Number of poles	1 pole	2 poles	1 pole	1 pole
Contact material	Ag Alloy (Cd free)			
Load	Resistive load (cosϕ=1)			
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 30 VDC (See note.)	10 A at 250 VAC 10 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.)	10 A (See note.)
Max. switching voltage	440 VAC, 300 VDC			
Max. switching current	12 A	8 A	16 A	10 A
Max. switching power	3,000 VA (4,000 VA)	2,000 VA	4,000 VA	2,500 VA

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

■ Characteristics

Item	General-purpose (High-capacity) Models	General-purpose Models	High-sensitivity Models
Number of poles	1 pole	2 pole	1 pole
Contact resistance	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 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	5,000 VAC, 1 min between coil and contacts 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 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 (approx. 100 G) Malfunction:100 m/s^2 (approx. 10 G)		
Endurance (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	5% to 85%		
Weight	Approx. 12 g		

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

■ Approved Standards

UL Recognized (File No. E41643) / CSA Certified (File No. LR31928) - - Ambient Temp. = 40°C

Model	Contact form	Coil ratings	Contact ratings	Number of test operations
G2RL-1A	SPST-NO	3 to 48 VDC	12 A at 250 VAC (General use)	100,000
G2RL-1	SPDT		12 A at 24 VDC (Resistive)	50,000
G2RL-1A-E	SPST-NO	3 to 48 VDC	16 A at 250 VAC (General use)	100,000
G2RL-1-E	SPDT		16 A at 24 VDC (Resistive)	50,000
G2RL-1A-H	SPST-NO	5 to 24 VDC	10 A at 250 VAC (General use) 10 A at 24 VDC (Resistive)	50,000
G2RL-1-H	SPDT			
G2RL-2A	DPST-NO	3 to 48 VDC	8 A at 277 VAC (General use) 8 A at 30 VDC (Resistive)	100,000
G2RL-2	DPDT			

Note: Consult Omron for additional UL / CSA ratings

VDE (EN61810-1) (License No. 119650)

Model	Contact form	Coil ratings	Contact ratings
G2RL-1(A)	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
G2RL-1(A)-E	1 pole	5, 12, 18, 22, 24, 48 VDC	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
G2RL-1(A)-H	1 pole	5, 9, 12, 24 VDC	10 A at 250 VAC (cosϕ=1) 10 A at 24 VDC (L/R=0 ms)
G2RL-2(A)	2 poles	5, 12, 18, 22, 24, 48 VDC	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

Note: To achieve approved life cycles on sealed models, the relay should be vented by removing the “knock off vent nib” on top of relay case after the soldering/washing process.

Electrical Life Data

G2RL-1-E	16 A at 250 VAC (cosϕ=1)	30,000 operations min.
	16 A at 24 VDC	30,000 operations min.
	8 A at 250 VAC (cosϕ=0.4)	200,000 operation min. (normally open side operation)
	8 A at 30 VDC (L/R=7 ms)	10,000 operation min. (normally open side operation)
G2RL-1	12 A at 250 VAC (cosϕ=1)	50,000 operations min.
	12 A at 24 VDC	30,000 operations min.
	5 A at 250 VAC (cosϕ=0.4)	150,000 operation min. (normally open side operation)
	5 A at 30 VDC (L/R=7 ms)	20,000 operation min. (normally open side operation)
G2RL-1-H	10 A at 250 VAC (cosϕ=1)	100,000 operations min.
	10 A at 24 VDC	50,000 operations min.
G2RL-2	8 A at 250 VAC (cosϕ=1)	30,000 operations min.
	8 A at 30 VDC	30,000 operations min.

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

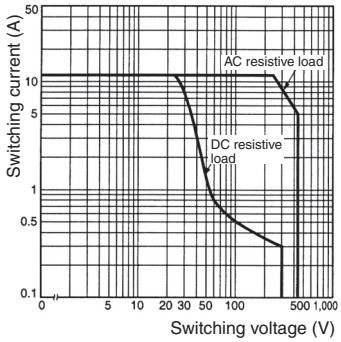
2. In order to obtain the full rated life cycles on the fully sealed models, the relay should be properly vented by removing the “knock off vent nib” on top of the relay case after the soldering/washing process.

3. 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.

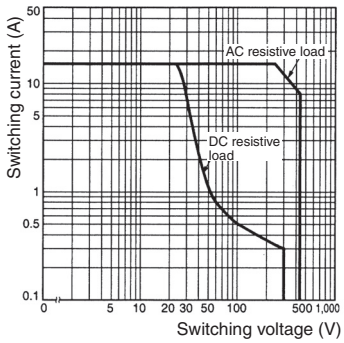
Engineering Data

■ Maximum Switching Capacity

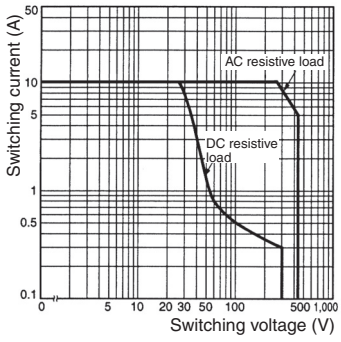
G2RL-1A, G2RL-1



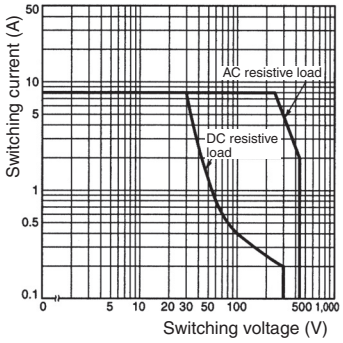
G2RL-1A-E, G2RL-1-E



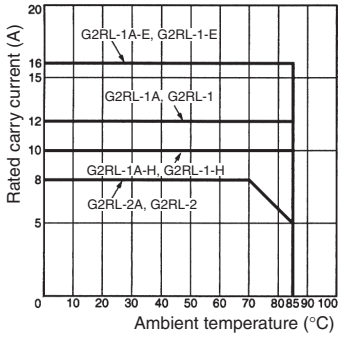
G2RL-1A-H, G2RL-1-H



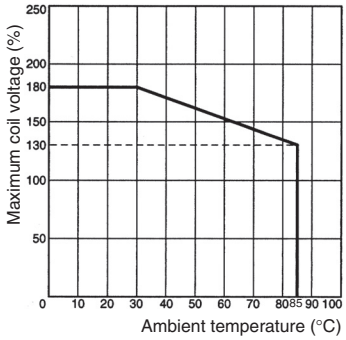
G2RL-2A, G2RL-2



■ Ambient Temperature vs Rated Carry Current



■ Ambient Temperature vs Maximum Coil Voltage



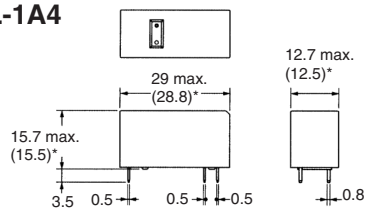
Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

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

Dimensions

Note: All units are in millimeters unless otherwise indicated.

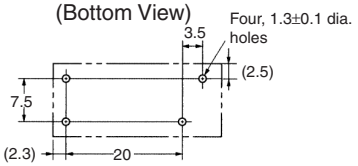
G2RL-1A(-H), G2RL-1A4



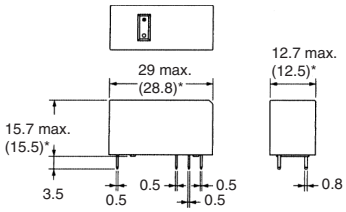
Terminal Arrangement/
Internal Connection
(Bottom View)

* Indicates average dimensions.

Mounting Holes
(Bottom View)



G2RL-1(-H), G2RL-14



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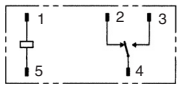
Internal Connection
(Bottom View)



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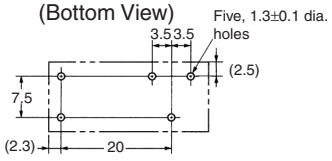
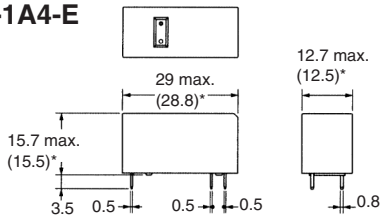
(Bottom View)



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



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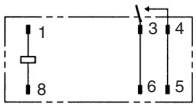

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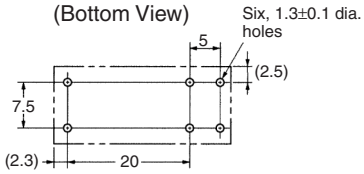
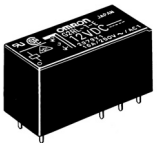
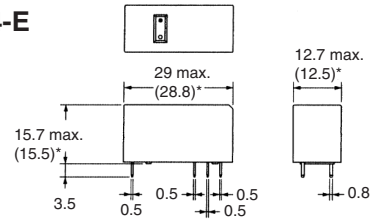


G2RL-1-E, G2RL-14-E





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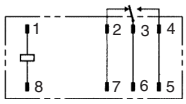
(Bottom View)



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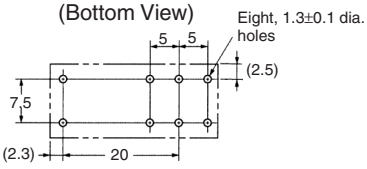
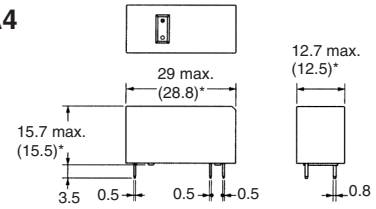


G2RL-2A, G2RL-2A4



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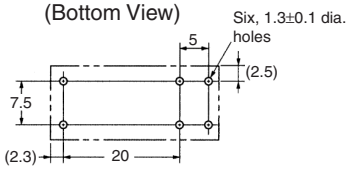
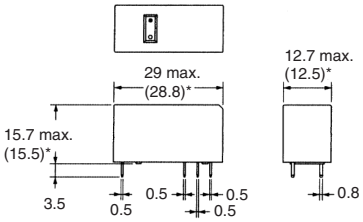
(Bottom View)



G2RL-2, G2RL-24



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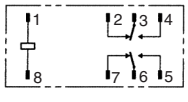

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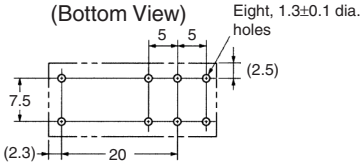

MEMO

Omron Electronic Components, LLC

Terms and Conditions of Sales

I. GENERAL

1. Definitions: The words used herein are defined as follows.
   (a) Terms: These terms and conditions
   (b) Seller: Omron Electronic Components LLC and its subsidiaries
   (c) Buyer: The buyer of Products, including any end user in section III through VI
   (d) Products: Products and/or services of Seller
   (e) Including: Including without limitation
2. Offer: Acceptance: These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
3. Distributor: Any distributor shall inform its customer of the contents after and including section III of these Terms.

II. SALES

1. Prices; Payment: All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at the time the purchase order is accepted by Seller. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
2. Discounts: Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
3. Interest: Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
4. Orders: Seller will accept no order less than 200 U.S. dollars net billing.
5. Currencies: If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
6. Governmental Approvals: Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
7. Taxes: All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
8. Financial: If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
9. Cancellation; Etc: Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
10. Force Majeure: Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
11. Shipping; Delivery: Unless otherwise expressly agreed in writing by Seller:
    (a) All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
    (b) Delivery and shipping dates are estimates only; and
    (c) Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. Claims: Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier or any claim related to pricing or other charges must be presented in detail in writing to Seller within 30 days of receipt of shipment.

III. PRECAUTIONS

1. Suitability: IT IS THE BUYER'S SOLE RESPOINSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in all cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.
2. Use with Attention: The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:
   (a) Outdoor use, use involving potential chemical contamination or electrical interference.
   (b) Use in consumer Products or any use in significant quantities.
   (c) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
   (d) Systems, machines, and equipment that could present a risk to life or property.
3. Prohibited Use: NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
4. Motorized Vehicle Application: USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
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