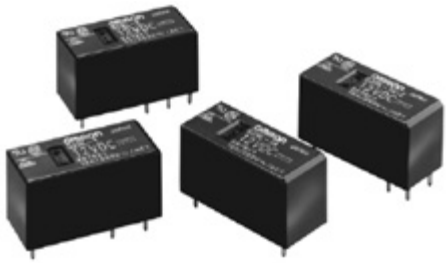
OMRON

PCB Relay
G2RL

High Capacity, Low Profile Relay

- Low profile: 15.7 mm max. in height.
- Cadmium-free contacts ensuring environment-friendly use.
- 10 kV impulse surge withstand.
- Clearance and creepage distance: 10 mm/10 mm.
- Tracking resistance: CTI>250.
- Choose from UL Class-B or Class-F insulation systems.
- Low coil power of 400 mW.
- UL, CSA and VDE approved.



Ordering Information

Classification		Enclosure ratings	Contact form			
			SPST-NO	SPDT	DPST-NO	DPDT
			Model			
Class-B	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 part number. Example: G2RL-1A *DC12*

■ 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 (vented)
4: Fully sealed (with “knock off vent nib”)

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% of the rated voltage (at 85°C)			
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	8 A at 250 VAC 8 A at 30 VDC
Rated carry current	12 A (16 A)	8 A (70°C)/5 A (85°C)
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), 288 W (384 W)	2,000 VA, 240 W

Note: Values in parentheses are those for the high-capacity model.

■ 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. E41643)/CSA C22.2 (No.14) (File No. LR31928)

Part number	Contact form	Coil ratings	Contact ratings
G2RL-1A	SPST-NO	3 to 48 VDC	12 A at 250 VAC (General use), 100k ops. 12 A at 24 VDC (Resistive), 50k ops. 1/3 hp, 120 VAC, 30k ops., 60°C
G2RL-1	SPDT		
G2RL-1A-E	SPST-NO (High capacity)		16 A at 250 VAC (General use), 100k ops. 16 A at 24 VDC (Resistive), 50k ops. 20 A at 240 VAC (General use), 85°C 15 A at 240 VAC (General use), 105°C 1/2 hp, 120 VAC, 100k ops., 70°C (NO)
G2RL-1-E	SPDT (High capacity)		
G2RL-2A	DPST-NO		8 A at 277 VAC (General use), 100k ops. 8 A at 30 VDC (Resistive), 100k ops.
G2RL-2	DPDT		

VDE (VDE0435)

Part number	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

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

Electrical Life Data

Part number	Contact rating	Minimum operations
G2RL-1-E	16 A at 250 VAC (cosϕ=1)	100,000 operations min. (1 sec. ON / 9 sec. OFF)
	16 A at 24 VDC	30,000 operations min.
	8 A at 250 VAC (cosϕ=0.4)	200,000 operations min. (N.O. side operation)
	8 A at 30 VDC (L/R=7 ms)	10,000 operations min.
G2RL-1	12 A at 250 VAC (cosϕ=1)	100,000 operations min. (1 sec. ON / 9 sec. OFF)
	12 A at 24 VDC	30,000 operations min.
	5 A at 250 VAC (cosϕ=0.4)	150,000 operations min.
	5 A at 30 VDC (L/R=7 ms)	20,000 operations min.
G2RL-2	8 A at 250 VAC (cosϕ=1)	100,000 operations min. (1 sec. ON / 9 sec. OFF)
	8 A at 30 VDC	30,000 operations min.
G2RL-1A-E	Pilot duty (A300), 250 VAC	250,000 operations min. (1 sec. ON / 9 sec OFF)
	Pilot duty (A300), 125 VAC	150,000 operations min. (1 sec. ON / 9 sec OFF)

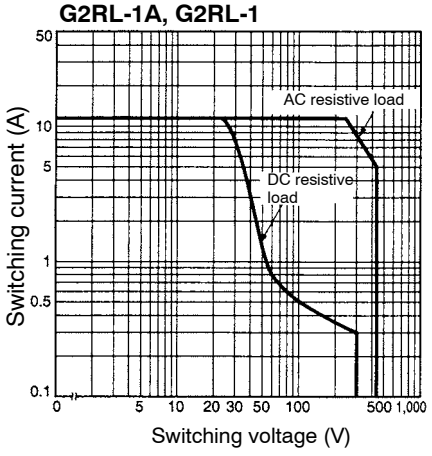
Note: 1. The results shown reflect minimum cycles using a very severe duty cycle of 1 sec ON/1 sec OFF (unless otherwise specified above).

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 of the P.C.B.
Contact Omron for applications where venting of the sealed relay is not possible.

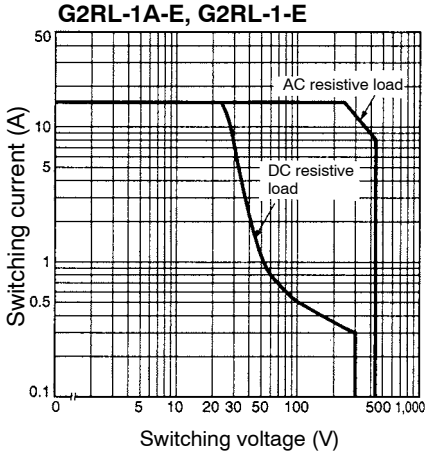
Engineering Data

■ MAXIMUM SWITCHING CAPACITY

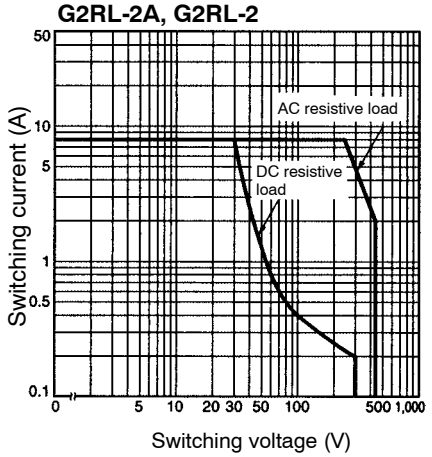
G2RL-1A, G2RL-1



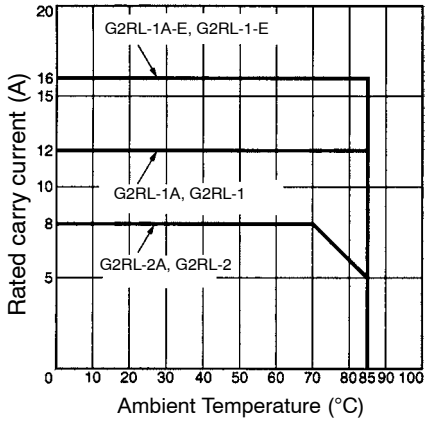
G2RL-1A-E, G2RL-1-E



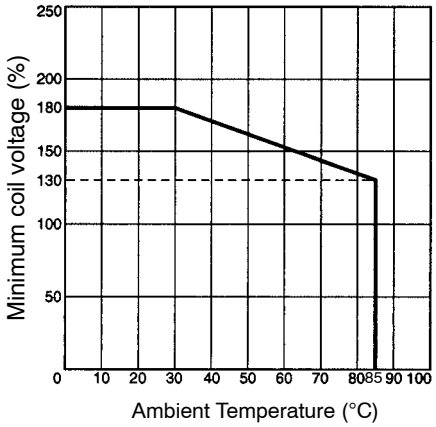
G2RL-2A, G2RL-2



■ AMBIENT TEMPERATURE VS RATED CARRY CURRENT



■ AMBIENT TEMPERATURE VS MAXIMUM COIL VOLTAGE

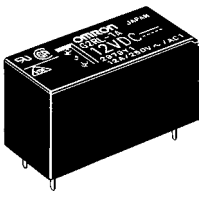


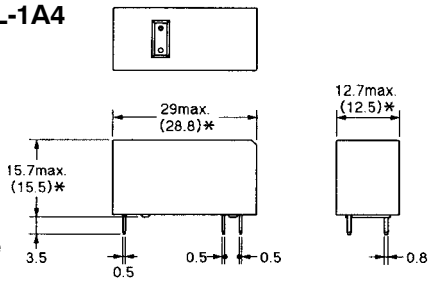
Note: The maximum coil voltage refers to the maximum value in a varying range of operating power voltage, not a continuous voltage.

Dimensions

Unit: mm (inch)

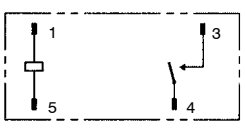
G2RL-1A, G2RL-1A4



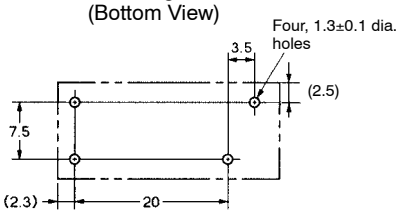


* Indicates average dimensions.

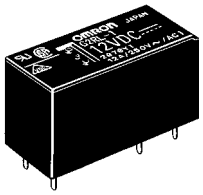
Terminal Arrangement/
Internal Connection
(Bottom View)

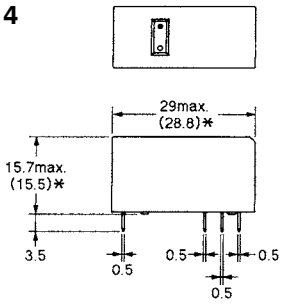


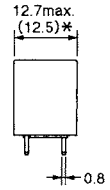
Mounting Holes
(Bottom View)



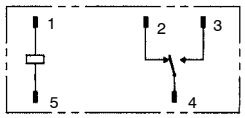
G2RL-1, G2RL-14



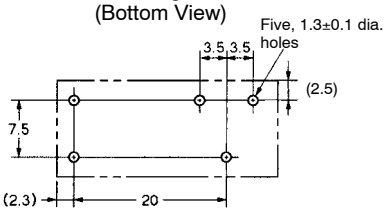




Terminal Arrangement/
Internal Connection
(Bottom View)

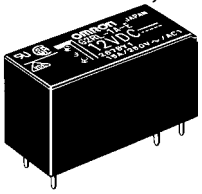


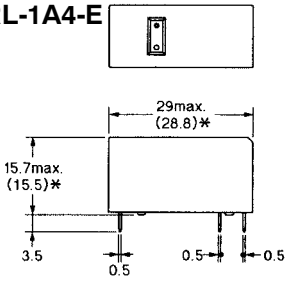
Mounting Holes
(Bottom View)

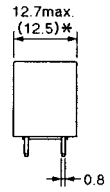


* Indicates average dimensions.

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







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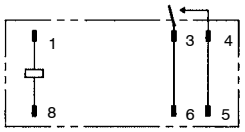
(Bottom View)



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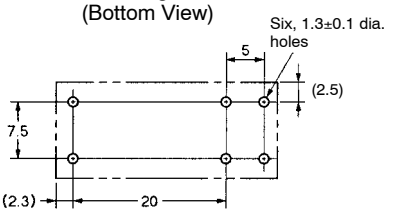
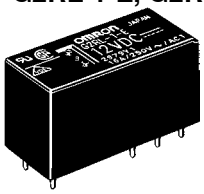
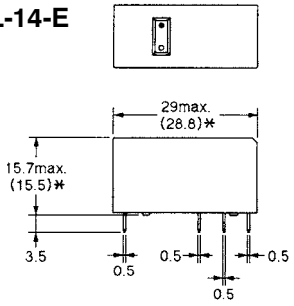
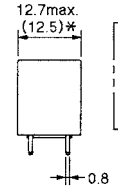


* Indicates average dimensions.

G2RL-1-E, G2RL-14-E







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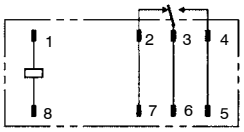
Internal Connection
(Bottom View)



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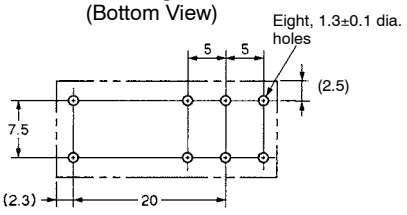
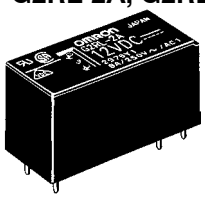
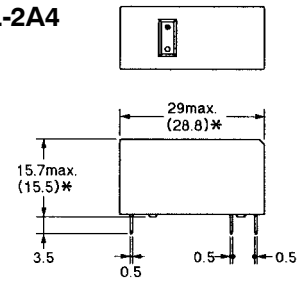
(Bottom View)

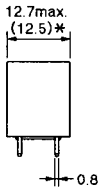


* Indicates average dimensions.

G2RL-2A, G2RL-2A4



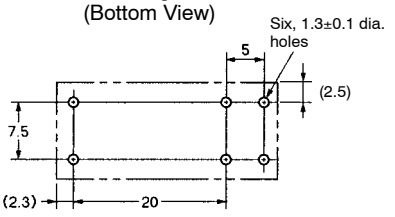




Terminal Arrangement/
Internal Connection
(Bottom View)

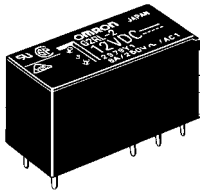


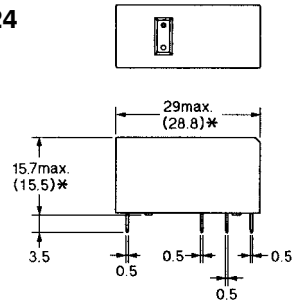
Mounting Holes
(Bottom View)

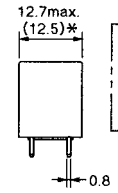


* Indicates average dimensions.

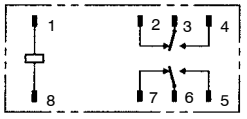
G2RL-2, G2RL-24



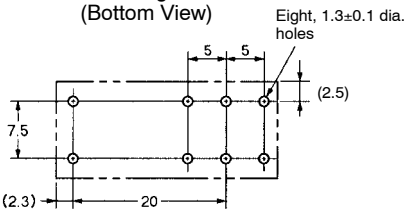




Terminal Arrangement/
Internal Connection
(Bottom View)



Mounting Holes
(Bottom View)



* Indicates average dimensions.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4

OMRON

OMRON ELECTRONICS LLC
One Commerce Drive
Schaumburg, IL 60173
847-882-2288

OMRON CANADA, INC.
885 Milner Avenue
Toronto, Ontario M1B 5V8
416-286-6465

OMRON ON-LINE
Global - http://www.omron.com
USA - http://www.omron.com/oei
Canada - http://www.omron.ca

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