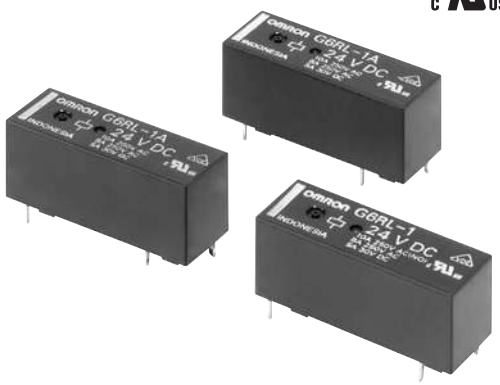
G6RL
PCB Power Relay

Low-profile 12.3 mm height power relay with maximum switching of 10A



- Low profile: 12.3 mm in height
- Max. switching capacity: 2,500 VA (NO)
- Dielectric strength: 5 kV
- Clearance and creepage distance: 10 mm.
- Models with high shock resistance (250 m/s²) are available.
- Models for P1 load (2 x 200 W lamps parallel to ignition transformer) are available.

RoHS Compliant

■Model Number Legend

G6RL-□ □ □ - □ - □ - □
1 2 3 4 5 6

1. Number of Poles
1: 1-pole

2. Contact Form
None: SPDT (1c)
A: SPST-NO (1a)

3. Enclosure rating
None: Flux protection
4: Fully sealed

4. Special Function
SR: Shock resistance of 25G

5. Contact material
None: Standard (Ag-alloy, Cd free)
ASI: AgSnIn

6. Special Functions
PL: P1 load

■Application Examples

- Boilers
- PLCs
- I/O ports
- Timers
- Temperature controllers

■Ordering Information

Classification	Terminal Shape	Contact form	Enclosure rating	Model	Rated coil voltage	Minimum packing unit
Standard	PCB terminals	SPST-NO (1a)	Flux protection	**G6RL-1A** **G6RL-1A-ASI**	3 VDC 5 VDC 6 VDC 12 VDC 24 VDC (48 VDC) ( ): Except -SR	100 pcs/tray
P1 Load				**G6RL-1A-ASI-PL**		
Standard			Fully sealed	**G6RL-1A4-ASI**		
		SPDT (1c)	Flux protection	**G6RL-1** **G6RL-1-ASI**		
P1 Load				**G6RL-1-ASI-PL**		
Shock resistance				**G6RL-1-SR-ASI**		
Standard			Fully sealed	**G6RL-14-ASI**		
Shock resistance				**G6RL-14-SR-ASI**		

Note. When ordering, add the rated coil voltage to the model number.
Example: G6RL-1A 3 VDC
Rated coil voltage

■Ratings

● Coil
Standard, P1 Load (-PL type)

Rated Voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
3	73.3	40	70% max.	10% min.	150% (at 23°C)	Approx. 220
5	44	113				
6	36.7	163				
12	18.3	654				
24	9.2	2618				
48	5	9600				Approx. 240

Rated Voltage (VDC)	Rated current (mA)	Coil resistance (Ω)	Must operate voltage (V)	Must release voltage (V)	Max. voltage (V)	Power consumption (mW)
			% of rated voltage			
3	101	30	80% max.	10% min.	150% (at 23°C)	Approx. 300
5	60.2	83				
6	50.1	120				
12	25.2	476				
24	12.6	1912				

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

Load	Resistive load
Contacts type	Single
Contacts material	Ag-alloy (Cd free)
Rated load *	10 A at 250 VAC, (NO) resistive load 8 A at 250 VAC, resistive load 5 A at 30 VDC, resistive load
Rated carry current	10 A
Max. switching current	NO: 10 A, NC: 8 A

* G6RL-1(A), G6RL-1(A)4-ASI: 8 A 250 VAC, resistive load; 5 A 24 VDC resistive load.

■Characteristics

Contact resistance *1		100 mΩ max.
Operate time		10 ms max. (SR Models: 15 ms max.)
Release time		5 ms max.
Insulation resistance *2		1,000 Ω min. (at 500 VDC)
Dielectric strength	Between coil and contacts	5,000 VAC, 50/60 Hz for 1 min
	Between contacts of the same polarity	1,000 VAC, 50/60 Hz for 1 min
Impulse withstand voltage	Between coil and contacts	10kV (1.2×50μs)
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, 0.825 mm single amplitude (1.65 mm double amplitude) when energized 10 to 55 to 10 Hz, 0.4 mm single amplitude (0.8 mm double amplitude) when de-energized.
Shock resistance	Destruction	1,000 m/s²
	Malfunction	NO: 200 m/s², NC: 50 m/s²
Endurance	Mechanical	10,000,000 operations min. (at 18,000 operations/h)
	Electrical	G6RL-1(A) 50,000 operations min. (NO) at 250 VAC, 8A (resistive load) 50,000 operations min. (NC) at 250 VAC, 8A (resistive load) 50,000 operations min. at 24 VDC, 5A (resistive load) (at 600 operations/h) G6RL-1(A)-(SR)-ASI-(PL) 100,000 operations min. (NO) at 250 VAC, 10A (resistive load) 100,000 operations min. at 250 VAC, 8A (resistive load) 50,000 operations min. at 30 VDC, 5A (resistive load) (at 1,800 operations/h) G6RL-1(A)4-ASI 50,000 operations min. (NO) at 250 VAC, 8A (resistive load) 50,000 operations min. (NC) at 250 VAC, 8A (resistive load) 50,000 operations min. at 24 VDC, 5A (resistive load) (at 1,800 operations/h) G6RL-14-SR-ASI 50,000 operations min. (NO) at 250 VAC, 8A (resistive load) 100,000 operations min. (NC) at 250 VAC, 3A (resistive load) 50,000 operations min. (NO) at 24 VDC, 5A (resistive load) 30,000 operations min. (NC) at 24 VDC, 5A (resistive load) (at 1,800 operations/h)
Failure rate (P level) (reference value) *3		10 mA at 5 VDC
Ambient operating temperature		-40°C to 85°C (with no icing or condensation)
Ambient operating humidity		5% to 85%
Weight		Approx. 7.8 g

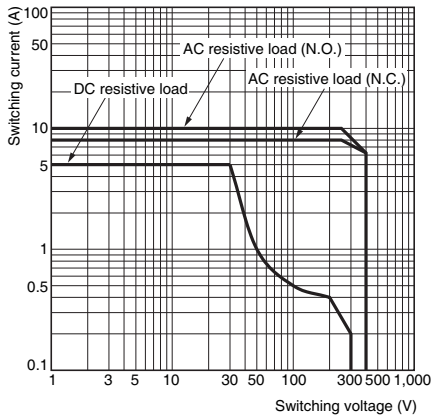
Note. The given values are initial values.
*1. Measurement conditions: 5 VDC, 1 A, voltage drop method.
*2. Measurement conditions: The insulation resistance was measured with a 500 VDC megohmmeter at the same locations as the dielectric strength was measured.
*3. This value was measured at a switching frequency of 120 operations/min.

■Other data

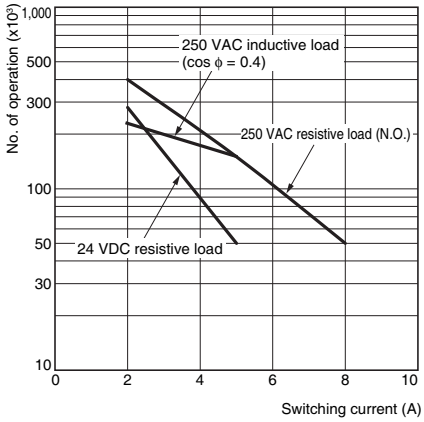
Enclosure rating		Flux protection	Fully sealed
Insulation material group		IIIa	
Rated Insulation Voltage		250 V	
Pollution degree		3	2
Rated voltage system		250 V	400 V
Overvoltage category		III	
Creepage distance		10 mm	
Clearance distance		10 mm	
RoHS		Compliant	
Tracking Index of relay base		PTI 250	
Flammability class according to UL94		V-0	
Flammability-flame	GWFI (IEC 60695-2-12)	850°C	
	GWIT (IEC 60695-2-13)	750°C	
Ball pressure test (IEC 60695-10-2)		170°C	

■Engineering Data

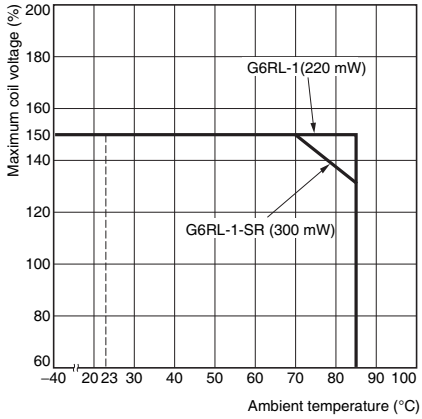
G6RL-1(A)(4)-(SR)-(ASI)-(PL)
● Maximum Switching Capacity



G6RL-1(A)
● Durability

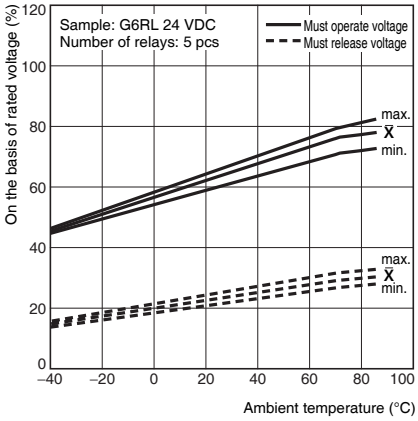


G6RL-1(A)(4)-(SR)-(ASI)-(PL)
● Ambient Temperature vs. Maximum Coil Voltage

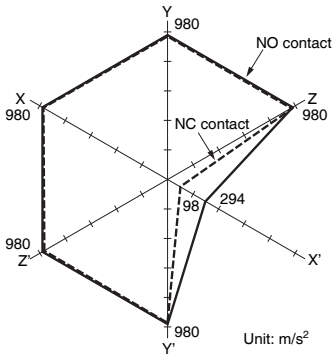


Note The "maximum coil voltage" is the maximum voltage that can be applied to the Relay coil.

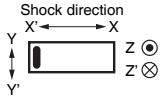
G6RL-1(A)(4)
● Ambient Temperature vs. Must Operate or Must Release Voltage



G6RL-1(A)(4)-(SR)-(ASI)-(PL)
● Shock Malfunction



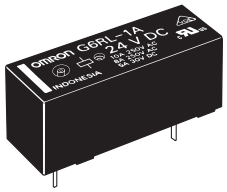
Sample: G6RL-1 24 VDC
Number of Relays: 5 pcs
Test Conditions: The value at which malfunction occurred was measured after applying shock to the test piece 3 times each in 6 directions along 3 axes.
Standard value: 200m/s² (NO)
50m/s² (NC)

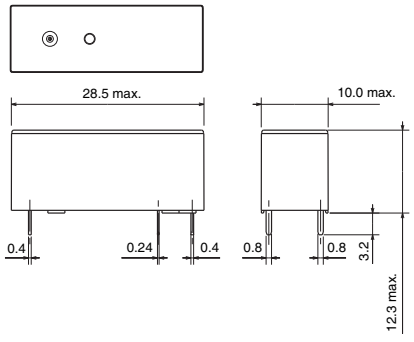


■Dimensions

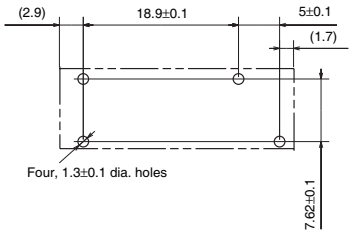
(Unit: mm)

G6RL-1A
G6RL-1A-ASI
G6RL-1A4-ASI





PCB Mounting Holes
(Bottom View)

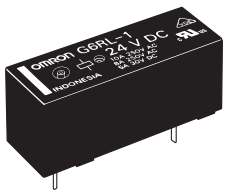


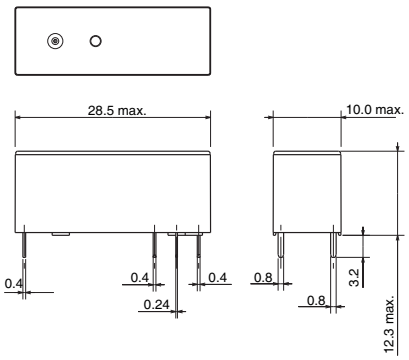
Terminal Arrangement/Internal Connections
(Bottom View)



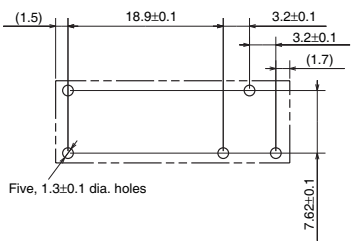
(Indicates average dimensions.)

G6RL-1
G6RL-1-ASI
G6RL-14-ASI





PCB Mounting Holes
(Bottom View)



Terminal Arrangement/ Internal Connections
(Bottom View)



(Indicates average dimensions.)

■Approved Standards

The approval ratings for overseas models are different from the performance values determined individually. Confirm the values before use.

●UL Recognized: (File No. E41643)

Models	Contact from	Coil ratings	Contact ratings	Number of test operations
G6RL-1A	SPST-NO (1a)	3 to 48 VAC	10 A, 250 VAC (NO) (Resistive) 85°C 8 A, 250 VAC (Resistive) 85°C 5 A, 30 VDC (Resistive) 85°C	6,000
G6RL-1	SPDT (1c)			
G6RL-1A(4)-ASI	SPST-NO (1a)			
G6RL-1(4)-ASI	SPDT (1c)			
G6RL-1(4)-SR-ASI	SPDT (1c)	3 to 24 VAC		

●EN/IEC, VDE Certified: (EN61810-1) (Certificate No. C266)

Models	Contact from	Coil ratings	Contact ratings	Number of test operations
G6RL-1A-(ASI)	SPST-NO (1a)	3, 5, 6, 12, 24, 48 VDC	10 A, 250 VAC (NO) 85°C	10,000
G6RL-1-(ASI)	SPDT (1c)		8 A, 250 VAC 85°C	30,000
			5 A , 30 VDC 85°C	50,000
G6RL-1A4-ASI	SPST-NO (1a)	3, 5, 6, 12, 24, 48 VDC	10 A, 250 VAC (NO) 85°C	10,000
G6RL-14-ASI	SPDT (1c)		8 A, 250 VAC 85°C	
			5 A, 30 VDC 85°C	
G6RL-1(4)-SR-ASI	SPDT (1c)	3, 5, 6, 12, 24 VDC	10 A, 250 VAC (NO) 85°C	
			8 A, 250 VAC 85°C	
			5 A, 30 VDC 85°C	

●EN/IEC, VDE Certified: (EN 60947-5-1) (Certificate No. C266)

Models	Contact ratings		Number of test operations
G6RL-1(A)(4)	AC15 (NO)	AC240, 3 A, cos φ 0.3, Room temperaure	6,000
	DC13	DC125, 0.22A, 165ms, Room temperaure	
	DC13	DC250, 0.1A, 150ms, Room temperaure	
G6RL-1(A)-ASI	AC15	AC240, 3 A, cos φ 0.3, Room temperaure	
	DC13	DC125, 0.22A, 165ms, Room temperaure	
	DC13	DC250, 0.1A, 150ms, Room temperaure	
G6RL-1(A)4-ASI G6RL-1(A)(4)-SR-ASI	AC15	AC240, 3 A, cos φ 0.3, Room temperaure	
	DC13	DC125, 0.22A, 165ms, Room temperaure	

●EN/IEC, VDE (60947-4-1) (Certificate No. C266)

Models	Contact ratings		Number of test operations
G6RL-1(A) G6RL-1(A)-ASI	AC1	AC250V 8 A 85°C	6,000
	AC3	AC250V 2 A 85°C	
	DC1	DC24V 5 A 85°C	
	DC3	DC24V 2 A 85°C	

●EN/IEC, VDE (EN60730-1) (Certificate No. 40021033)

Models	Coil ratings	Contact ratings		Number of test operations
G6RL-1(A)	3, 5, 6, 12, 24, 48 VDC	2 (2) A AC250V	65°C	100,000
		6 (4) A (NC) AC250V	65°C	
		8 (4) A (NO) AC250V	85°C	
G6RL-1(A)-ASI		2 (2) A AC250V	65°C	
		6 (4) A (NC) AC250V	65°C	
		8 (4) A (NO) AC250V	85°C	

●EN/IEC

Models	CE Marking	Applicable Safety Category	Basic Requirements of Machinery Directive/Low-voltage Directive	
			Applicable Standard No.	Application Standard No.
G6RL	–	1	EN61810-1	–

Note. Basic requirements of EMC directives (EMI standard No., EMS standard No., Certification Body, File No., Applicable time) … not applicable.

■Precautions

●Please refer to "PCB Relays Common Precautions" for correct use.

Correct Use

- The G6RL are net intended to be used in automotive applications (including two wheel vehicles).
- If the product is used in the following applications, consult your OMRON sales representative to check the necessary items according to the specification sheets. Also make sure the product is used within the specified ratings and performance ranges with an ample margin and implement safety measures, such as designing a safety circuit, to minimize danger should the product fail.
  a. Outdoor use, uses involving potential chemical contamination or electrical interference.
  b. Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, safety equipment, and equipment that could present a risk to human life or body.
  c. Equipment requiring a high level of reliability, such as gas, water, or electrical supply systems.

- 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
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