

### A High Capacity, High-withstand -voltage Relay Resistant to Momentary Voltage Drops

- No contact chattering for momentary voltage drops up to 50% of rated voltage.
- Wide-range AC-activated coil that handles 100 to 120 and 200 to 240 VAC at either 50 or 60Hz.
- Miniature hinge for maximum switching capacity, particularly for inductive loads.
- Contact gap of 3mm minimum assures stable switching of 20A minimum at 200 VAC.
- Flame resistant materials (UL94V-0) used for all insulation material.
- Quick-connect, screw and PCB terminals available.
- Standard models are UL, CSA, VDE and IEC approved.



### Ordering Information

Mounting type	Contact form	PCB terminals
PCB mounting	SPST-NO	G7L-1A-P
	DPST-NO	G7L-2A-P

**Note:** When ordering, add the rated coil voltage to the model number.

Example: G7L-1A-P-6 VAC  
└───┘ Rated coil voltage

#### Model Number Legend:

G7L -    -              
1    2    3    4    5

##### 1. Contact Form

1A: SPST-NO  
 2A: DPST-NO

##### 2.\* Terminal Shape

P: PCB terminals  
 T: Quick-connect terminals  
 B: Screw terminals

##### 3. Mounting Construction

None: E-bracket  
 UB: Upper bracket  
**4. Special Functions**  
 None: Standard mode  
 J: with test button

##### 5. Rated Coil Voltage

AC: 6, 12, 24, 50, 100 to 120, 200 to 240  
 DC: 6, 12, 24, 48, 100

**\*Note:** Screw and Quick-connect terminals are also available, please contact OMRON.

### Application Examples

- Compressors for air conditioners and heater switching controllers.
- Switching controllers for power tools or motors.
- Power controllers for water heaters.
- Lamp controls, motor drives and power supply switching in copy machines, facsimiles and other office equipment.
- Power controllers for packers or food processing equipment.
- Power controllers for dryers.
- Lighting controllers.
- Magnetron control in microwaves.

# Specifications

## ■ Coil Ratings

Rated voltage		Rated current	Coil resistance	Must operate voltage	Must release voltage	Max. voltage	Power consumption
AC	6 VAC	283 mA	---	75% max. of rated voltage	15% min. of rated voltage	110% of rated voltage	Approx. 1.7 to 2.5VA
	12 VAC	142mA	---				
	24 VAC	71mA	---				
	50 VAC	34mA	---				
	100 to 200 VAC	17.0 to 20.4mA	---	75 V	18 V	132 V	
	200 to 240 VAC	8.5 to 10.2mA	---	150 V	32 V	264 V	
DC	6 VDC	317mA	18.9Ω	75% max. of rated voltage	15% min. of rated voltage	110% of rated voltage	Approx. 1.9 W
	12 VDC	158mA	75Ω				
	24 VDC	79mA	303Ω				
	48 VDC	40mA	1220Ω				
	100 VDC	19mA	5260Ω				

- Note:** 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/–20% for AC rated current and ±15% for DC coil resistance.  
 2. Performance characteristic data is measured at a coil temperature of 23°C.

## ■ Contact Ratings

Model	G7L–1A–P/G7L–2A–P	
	Resistive load (cosφ=1)	Inductive load (cosφ=0.4)
Rated load	20A, 220 VAC	
Rated carry current	20A	
Max. switching voltage	250 VAC	

Max. switching current	20A
Max. switching capacity	4,400 VAC
Min. permissible load *	100 mA, 5 VDC

\*Note: P level:  $\lambda_{60}=0.1 \times 10^{-6}$ /operation

## ■ Characteristics

Contact resistance	50mΩ max.
Operate time	30 ms max.
Release time	30 ms max.
Max. operating frequency	Mechanical: 1,800 operations/hr Electrical: 1,800 operations/hr (under rated load)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric withstand voltage	4,000 VAC min./5,000 VAC typ., 50/60Hz for 1 minute between coil and contacts 2,000 VAC, 50/60Hz for 1 minute between contacts of same polarity 2,000 VAC, 50/60Hz for 1 minute between contacts of different polarity (DPST–NO type)
Impulse withstand voltage	10,000 V* between coil and contact
Vibration resistance	Destruction: 10 to 55Hz, 1.5mm double amplitude Malfunction: 10 to 55Hz, 1.5mm double amplitude
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 10G) Malfunction: 100 m/s <sup>2</sup> (approx. 10G)
Life expectancy	Mechanical: 1,000,000 operations min. (at 1,800 operations/hr) Electrical: 100,000 operations min. (at 1,800 operations/hr under rated load)
Ambient temperature	Operating: –25°C to 60°C (with no icing)
Ambient humidity	Operating: 35% to 85%
Weight	PCB Terminal Type: approx. 100g

- Note:** 1. The values given are initial values.  
 2.\* Impulse wave used: 1.2 x 50μs

## ■ Approved by Standards

UL 508 Recognitions (File No. E41643)/  
CSA22.2 No. 14 Listings (File No. LR35535)

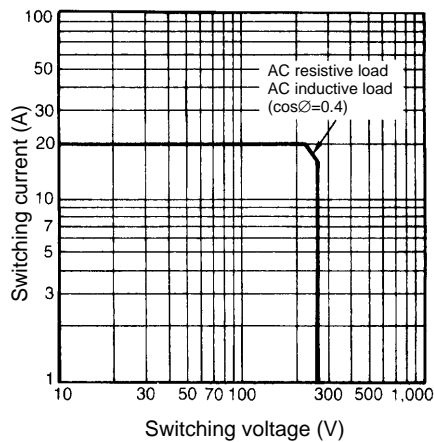
VDE 0435, IEC 255, IEC 950 (TUV: File No.  
R9051158; Pollution Degree 3, Overvoltage  
Category III)

Coil ratings	Contact ratings	
	PCB terminals	
6 to 265 VAC 6 to 220 VDC	20A	277 VAC, Resistive
	20A	277 VAC, General use
	1.5KW	120 VAC, Tungsten
	1.5hp	120 VAC
	3.0hp	240/265/277 VAC
	20 FLA/120 LRA	120 VAC
	17 FLA/102 LRA	277 VAC
TV-10	120 VAC	

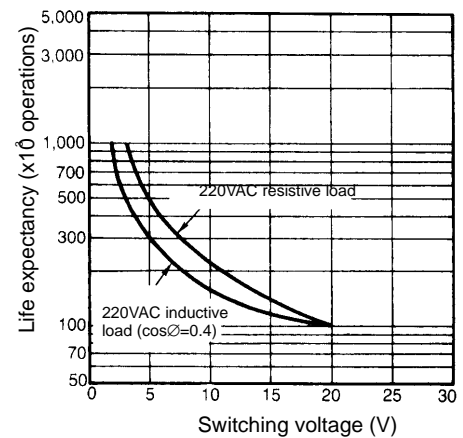
Coil ratings	Contact ratings	
	PCB terminals	
	SPST-NO	DPST-NO
	6, 12, 24, 48, 100, 110, 200, 220 VDC	20A, 240VAC ( $\cos\phi=1$ )
20A, 240VAC ( $\cos\phi=0.4$ )		20A, 240VAC ( $\cos\phi=0.4$ )
6, 12, 24, 50, 100/120, 200/240 VAC		

## Engineering Data

G7L-1A-P/G7L-2A-P  
Maximum Switching  
Capacity

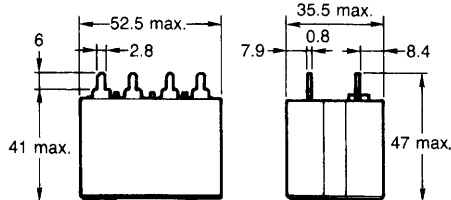
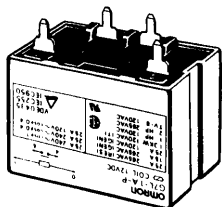


Life Expectancy

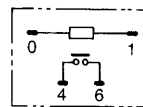


## Dimensions

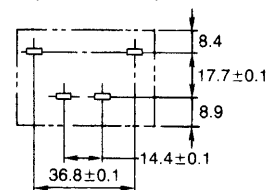
G7L-1A-P



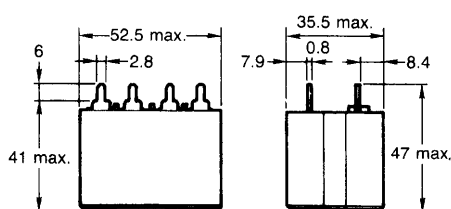
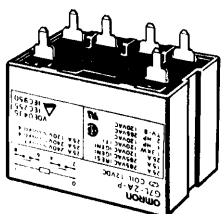
Terminal Arrangement/  
Internal Connections  
(Top view)



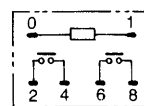
Mounting Holes  
(Bottom view)



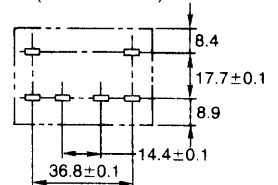
G7L-2A-P



Terminal Arrangement/  
Internal Connections  
(Top view)

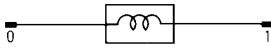


Mounting Holes  
(Bottom view)

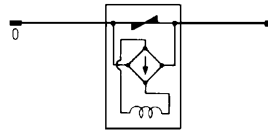


## ■ Internal Coil Circuit

DC Operating Coil



AC Operating Coil



## Precautions

### ■ Handling

- To preserve performance, do not drop or otherwise subject the Power Relay to shock.
- The case is not designed to be removed during normal handling and operation. Doing so may affect performance.
- Use the Power Relay in a dry environment free from excessive dust, SO<sub>2</sub>, H<sub>2</sub>S or organic gas.
- Do not allow a voltage greater than the maximum allowable coil voltage to be applied continuously.
- Do not use the Power Relay outside of specified voltages and currents.
- Do not allow the ambient operating temperature to exceed the specified limit.

### ■ Installation

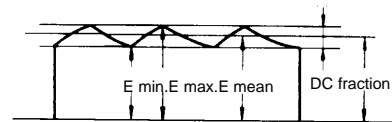
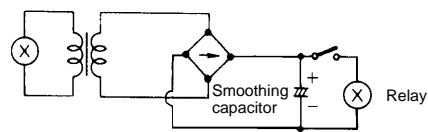
- Although there are not specific limits on the installation site, it should be as dry and dust-free as possible.
- PCB Terminal-equipped Relays weigh approximately 100g. Be sure that the PCB is strong enough to support them. We recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.

### ■ Cleaning PCB Terminals

PCB terminals have flux-tight construction which prevents flux from penetrating into the relay base housing e.g. due to capillary action up the terminals when the relay is soldered onto the PC board. This type of relay cannot be immersed for cleaning.

### ■ Operating Coil

- As a rule, either a DC battery or a DC power supply with a maximum of 5% ripple is used for the operating voltage for DC relays. Before using a rectified AC supply, confirm that the ripple is not greater than 5%. Ripple greater than this can lead to variations in the operating and reset voltages. An excessive ripple can generate pulses, the insertion of a smoothing capacitor is recommended as shown below.



$$\% \text{ of ripple} = \frac{E \text{ max.} - E \text{ min.}}{E \text{ mean}} \times 100$$

E max.: Max. ripple

E min.: Min. ripple

E mean: Mean DC value

- When driving a transistor, check the leakage current and connect a bleeder resistor if necessary.