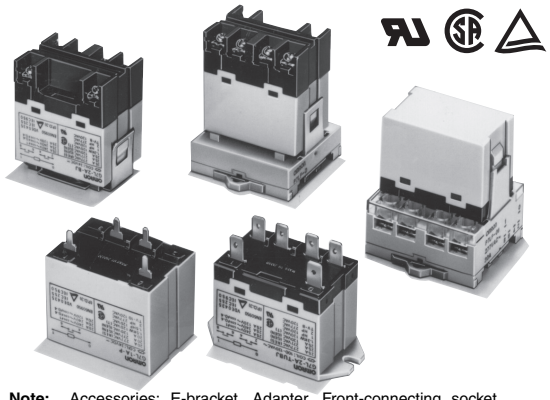
General Purpose Relay
G7L

- Ideally suited for high-inrush fluid pump controls: pool/spa, water processing, emergency, chemical industry, etc.
- High-capacity, high-withstand voltage relay with no contact chattering for momentary voltage drops up to 50% of rated voltage.
- UL Class B construction standard.
- Wide-range AC-activated coil that handles 100 to 120 VAC or 200 to 240 VAC at either 50 or 60 Hz.
- Miniature size for maximum switching capacity, particularly for inductive loads.
- Flame resistant materials (UL94V-0-qualifying) used for all insulation material.
- Quick-connect, screw, PCB terminals and DIN track mounting available.
- Conforms to UL, CSA, TUV and meets IEC 950.
- Safety design with contact gap of 3 mm.
- RoHS Compliant.



Note: Accessories: E-bracket, Adapter, Front-connecting socket and Cover are sold separately.

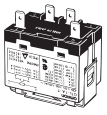
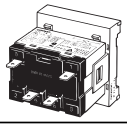
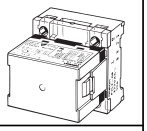
Ordering Information

To Order: Select the part number and add the desired coil voltage rating (e.g., G7L-1A-T-CB-*AC100/120*).

Type	Contact form	Model		
		Quick-connect terminal	Screw terminal	PCB terminal
E bracket (see note 1)	SPST-NO	**G7L-1A-T-CB**	**G7L-1A-B-CB**	**—**
	DPST-NO	**G7L-2A-T-CB**	**G7L-2A-B-CB**	**—**
E bracket (see note 1) (with test button)	SPST-NO	**G7L-1A-TJ-CB**	**G7L-1A-BJ-CB**	**—**
	DPST-NO	**G7L-2A-TJ-CB**	**G7L-2A-BJ-CB**	**—**
Upper bracket	SPST-NO	**G7L-1A-TUB-CB**	**G7L-1A-BUB-CB**	**—**
	DPST-NO	**G7L-2A-TUB-CB**	**G7L-2A-BUB-CB**	**—**
Upper bracket (with test button)	SPST-NO	**G7L-1A-TUBJ-CB**	**G7L-1A-BUBJ-CB**	**—**
	DPST-NO	**G7L-2A-TUBJ-CB**	**G7L-2A-BUBJ-CB**	**—**
PCB mounting	SPST-NO	**—**	**—**	**G7L-1A-P-CB**
	DPST-NO	**—**	**—**	**G7L-2A-P-CB**

Note: 1. E bracket or socket must be used for mounting (part number R99-07G7L). Refer to "Accessories" section for options and part numbers.
2. For VDE approved versions, please consult OMRON.

■ List of E-Bracket Mounting Models

Terminal	Contact form	Model	Mounting: Test button	E-brackets 	DIN Track Mounting Adapter 	Front-connecting Socket 
Quick-connect terminals	SPST-NO	G7L-1A-T	-	○	○	○
		G7L-1A-TJ	With test button	○	○	○
	DPST-NO	G7L-2A-T	-	○	○	○
		G7L-2A-TJ	With test button	○	○	○
Screw terminals	SPST-NO	G7L-1A-B	-	○	○	–
		G7L-1A-BJ	With test button	○	○	–
	DPST-NO	G7L-2A-B	-	○	○	–
		G7L-2A-BJ	With test button	○	○	–

Note: Accessories: E-bracket (R99-07), Adapter (P7LF-D), Front-connecting socket (P7LF-06) and Cover (P7LF-C) are sold separately.

■ Model Number Legend

G7L-❑ - ❑ ❑ ❑ - ❑ - ❑ - ❑
1 2 3 4 5 6 7

1. Contact form
1A:SPST-NO
2A:DPST-NO

2. Terminal shape
T:Quick-connect terminals (#250)
P:PCB terminals
B:Screw terminals

3. Mounting construction
No symbol:E bracket type
UB:Upper bracket type

4. Special functions
No symbol:Without test button
J:With test button

5. 80: VDE approved version
(includes UL, CSA and TÜV)

6. CB: Class B insulation

7. Rated coil voltage

■ Accessories (Sold Separately)

Quick-connect Terminals

Description	Model				Model
	Contact form				
	SPST-NO		DPST-NO		
E-brackets	G7L-1A-T	G7L-1A-TJ	G7L-2A-T	G7L-2A-TJ	**R99-07G7L**
Track mounting adapter					**P7LF-D**
Front connecting socket					**P7LF-06**

Note: A socket terminal cover is supplied with the P7LF-06 socket and does not attach directly to the G7L relays. It cannot be purchased separately.

Screw Terminals

Description	Model				Model
	Contact form				
	SPST-NO		DPST-NO		
E-brackets	G7L-1A-B	G7L-1A-BJ	G7L-2A-B	G7L-2A-BJ	**R99-07G7L**
Track mounting adapter					**P7LF-D**
Terminal Cover					**P7LF-C**

Note: The P7LF-C terminal cover attaches directly to the G7L-B style relays. It is sold separately.

Specifications

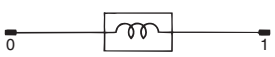
■ Contact Data

Load	G7L-1A-T□, G7L-1A-B□		G7L-2A-T□, G7L-2A-B□		G7L-1A-P, G7L-2A-P	
	Resistive load (cosϕ = 1)	Inductive load (cosϕ = 0.4)	Resistive load (cosϕ = 1)	Inductive load (cosϕ = 0.4)	Resistive load (cosϕ = 1)	Inductive load (cosϕ = 0.4)
Rated load	30 A, 220 VAC	25 A, 220 VAC			20 A, 220 VAC	
Contact Type	Double break					
Contact material	Ag alloy					
Carry current	30 A		25 A		20 A	
Max. operating voltage	250 VAC					
Max. operating current	30 A		25 A		20 A	
Max. switching capacity	6,600 VA	5,500 VA			4,400 VA	
Min. permissible load	100 mA, 5 VDC (@ 60 operations / minute). Note: Do not use for switching microloads, such as signals.					

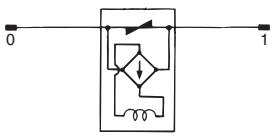
Note: **1.** P level: $\lambda_{60} = 0.1 \times 10^{-6}$ operation.
2. When using B-series (screw) products, since the screw diameter of the contact terminal is M4, be careful that the contact current should be 20 A or less according to JET standard (electrical appliance and material control law of Japan).

■ Coil Internal Circuit

DC operating coil



AC operating coil



Note: **1.** The ratio of rated voltage between 100 to 120 VAC are values measured on the basis of 100 VAC
2. When driving a transistor, check the leakage current and connect a bleeder resistor if necessary.
3. The AC coil is provided with a built-in full-wave rectifier. If a triac, such as an SSR, drives the G7L, the G7L may not release. Be sure to perform a trial operation with the G7L and the triac before applying them to actual use.

■ Coil Data

AC

Rated voltage (V)	Rated current (mA)	Resistance (Ω)	Must operate	Must release	Max. voltage	Power consumption
			% of rated voltage			
12	142	75	75% max.	15% min.	110% max.	Approx.1.70 to 2.50 VA
24	71	303				
50	34	1,310				
100 to 120	17.00 to 20.40	5,260	75 volts max.	18 volts min.	132 volts	
200 to 240	8.50 to 10.20	21,000	150 volts max.	36 volts min.	264 volts	

DC

Rated voltage (V)	Rated current (mA)	Resistance (Ω)	Coil inductance (H)		Must operate	Must release	Max. voltage	Power consumption
			Armature ON	Armature OFF	% of rated voltage			
6	317	18.90	0.9	0.21	75% max.	15% min.	110% max.	Approx.1.90 W
12	158	75	0.37	0.88				
24	79	303	1.42	3.54				
48	40	1,220	6.1	15.3				
100	19	5,260	21.3	60.0				

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. The inductances shown above are reference values.

3. Performance characteristic data are measured at a coil temperature of 23°C.

4. The maximum allowable coil voltage refers to the maximum value in a varying range of operating power voltage, measured at ambient temperature 23°C.

5. The "to" (for example "100 to 120") represents a range of rated voltages.

■ Characteristics

Contact resistance (note 1)		50 mΩ max.
Operate time (note 2)		30 ms max.
Release time (note 3)		30 ms max.
Max. operating frequency	**Mechanical**	1,800 operations/hour
	Electrical	1,800 operations/hour (under rated load)
Insulation resistance (note 3)		1,000 MΩ min. (at 500 VDC)
Dielectric strength		4,000 VAC, min., 50/60 Hz for 1 minute between coil and contacts
		2,000 VAC, 50/60 Hz for 1 minute between contacts of same polarity
		2,000 VAC, 50/60 Hz for 1 minute between contacts of different polarity (DPST-NO type)
Impulse withstand voltage		Between coil and contact: 10,000 V - JEC212 (1981) Standard Impulse Wave Type (1.20 x 50 μs)
Vibration	**Mechanical durability**	10 to 55 Hz; 1.50 mm double amplitude
	Malfunction durability	10 to 55 Hz; 1.50 mm double amplitude
Shock	**Mechanical durability**	1,000 m/s^2 (approx. 100 G)
	Malfunction durability	100 m/s^2 (approx.10 G)
Life expectancy	**Mechanical**	1,000,000 operations min. (at 1,800 operations/hour)
	Electrical @ 23°C	100,000 operations min. (at 1,800 operations/hour under rated load)
Ambient operating temperature		-25° to 60°C (with no icing or condensation)
Ambient operating humidity		5% to 85% RH
Weight		Quick-connect terminal type: approx. 90 g
		PCB terminal type: approx. 100 g
		Screw terminal type: approx. 120 g

Note: Data shown are of initial value.

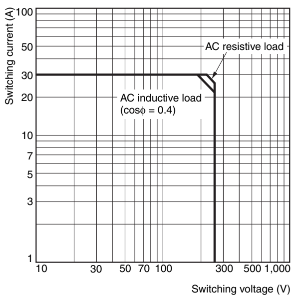
Note: 1. Measurement conditions: 5 VDC, 1 A, voltage drop method.

2. Measurement conditions: Rated operating voltage applied, not including contact bounce, @ 23°C.

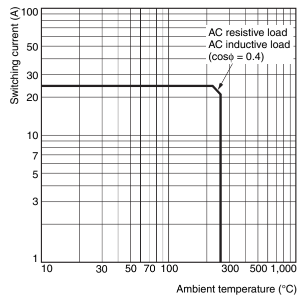
3. Measurement conditions: The insulation resistance was measured with a 500-VDC megohmeter at the same locations as the dielectric strength was measured.

■ Engineering Data

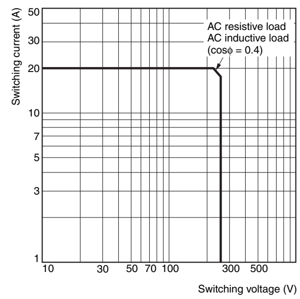
G7L-1A-T (TJ) (TUB) (TUBJ)
G7L-1A-B (BJ) (BUB) (BUBJ)
Maximum Switching Power



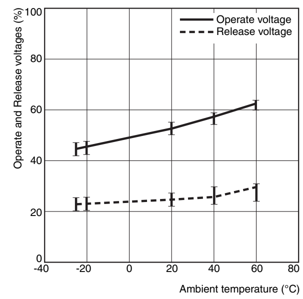
G7L-2A-T (TJ) (TUB) (TUBJ)
G7L-2A-B (BJ) (BUB) (BUBJ)
Maximum Switching Power



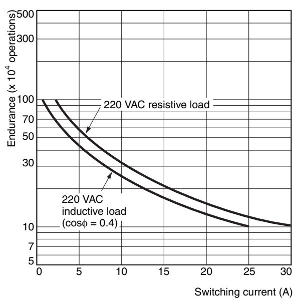
G7L-1A-P
G7L-2A-P
Maximum Switching Power



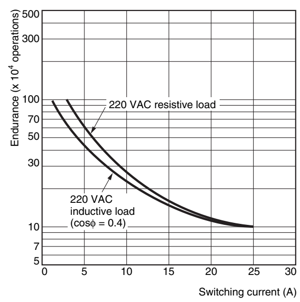
Ambient Temperature vs. Operate and Release Voltage
G7L-1A VAC (60 Hz)



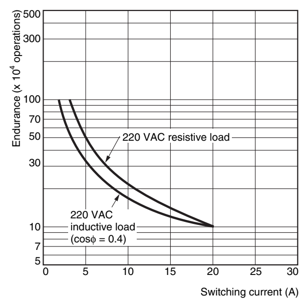
Endurance



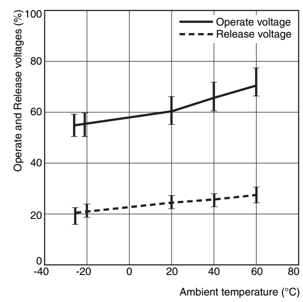
Endurance



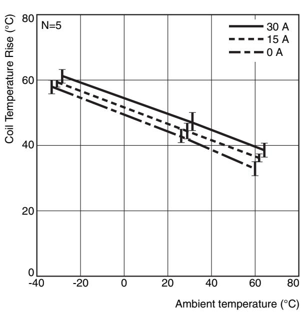
Endurance



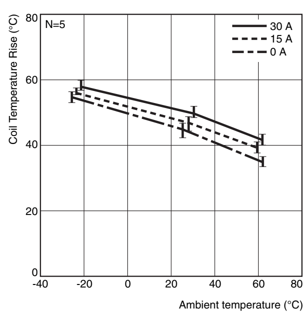
G7L-1A VDC



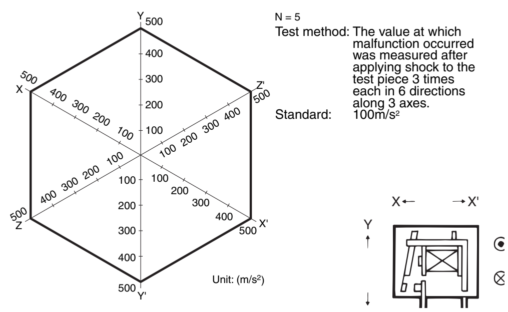
Ambient Temperature vs. Coil Temperature Rise
G7L-1A 120 VAC (50 Hz)



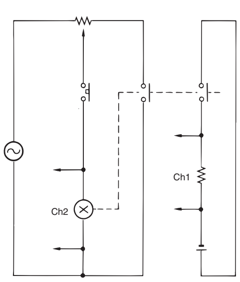
G7L-1A VDC



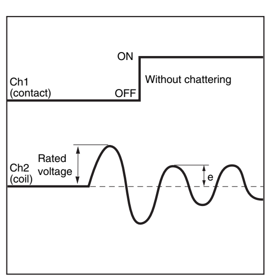
Shock Malfunction
G7L-2A-T (TUB) 100 to 120 VAC



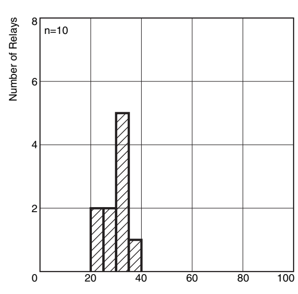
Momentary Voltage Drop Test
G7L-2A-T (TUB) 100 to 120 VAC
Test Circuit



Wave resulted from test



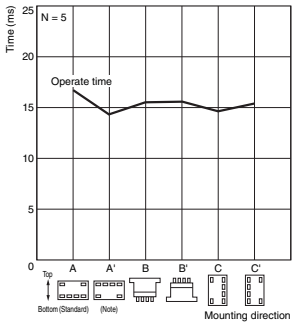
Voltage distribution of wave e which chattering does not occur.



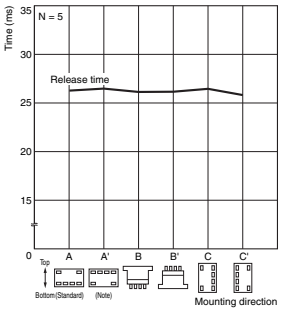
Characteristic variation resulted from different mounting directions

G7L-2A-T (TUB) 100 to 120 VAC

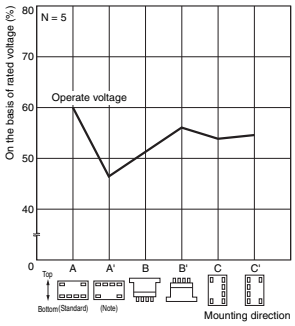
Operate time



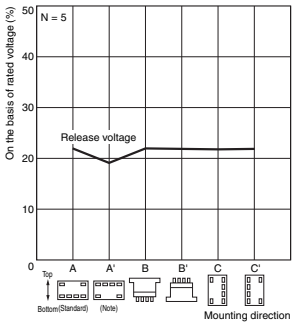
Release time



Operate voltage



Release voltage



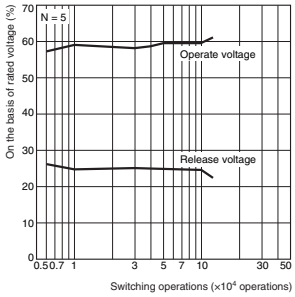
Note: The mounting direction A' deteriorates switching performance.

Actual Load Endurance Test

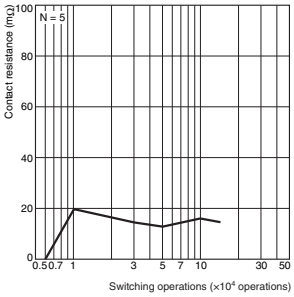
G7L-2A 100 to 200 VAC

Operate and Release voltages

N = 5

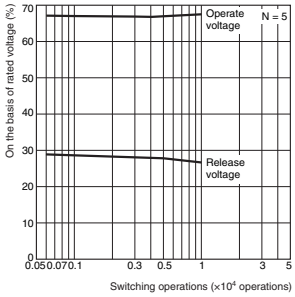


Contact resistance

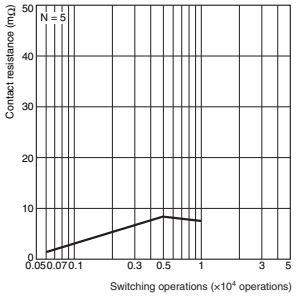


Operate and Release voltages

N = 5

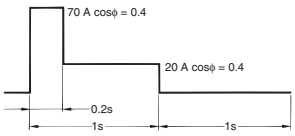


Contact resistance



Load conditions

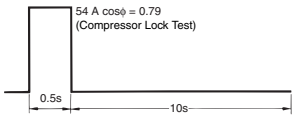
• 1 ϕ 220 VAC



• Applied coil voltage: 100% of rated voltage

Load conditions

• 1 ϕ 220 VAC

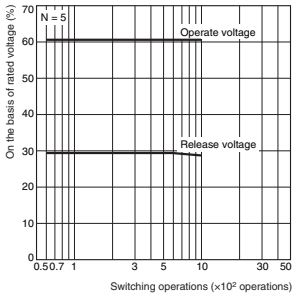


• Applied coil voltage: 100% of rated voltage

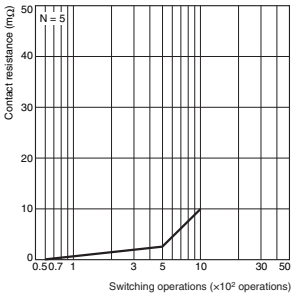
G7L-2A 100 to 200 VAC

Operate and Release voltages

N = 5

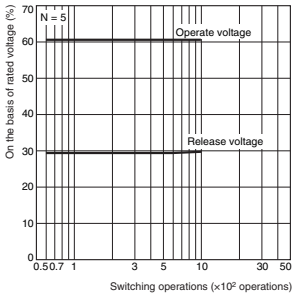


Contact resistance

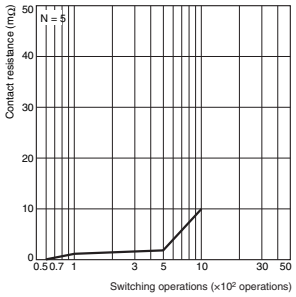


Operate and Release voltages

N = 5

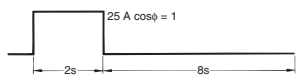


Contact resistance



Load conditions

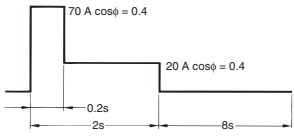
• 1 ϕ 220 VAC



• Applied coil voltage: 75% of rated voltage

Load conditions

• 1 ϕ 220 VAC



• Applied coil voltage: 75% of rated voltage

Applications

- Compressors for package air conditioners and heater switching controllers
- Switching controllers for power tools or motors
- Power controllers for water heaters
- Power controllers for dryers
- Lamp control, motor drivers, and power supply switching in copy machines, facsimiles, and other office equipment
- Lighting controllers
- Power controllers for packers or food processing equipment
- Magnetron control in microwaves
- Power controllers for Uninterruptible Power Supplies (UPS)

Dimensions

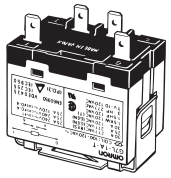
Unit: mm (inch)

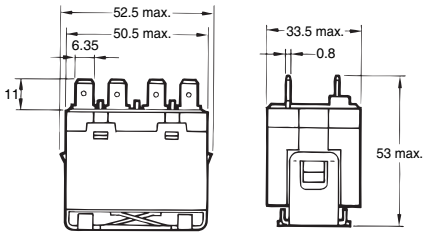
■ Relays

Quick-Connect Terminal Models

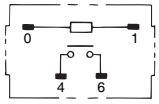
E-bracket Mounting*

G7L-1A-T





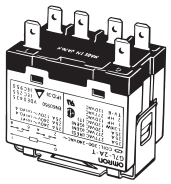
Terminal arrangement/ Internal connections
(Top view)

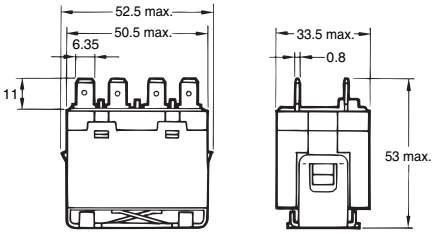


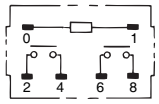
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-T



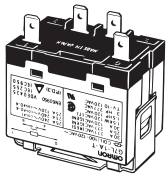


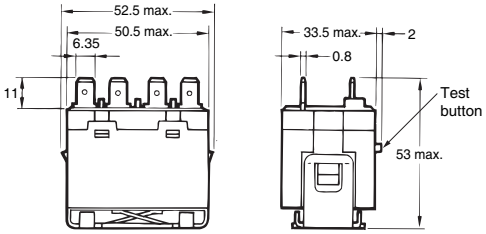


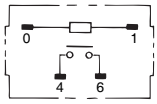
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-1A-TJ (with Test Button)



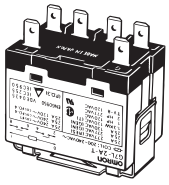


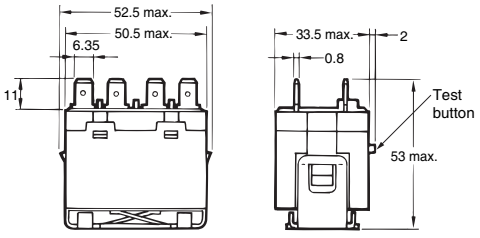


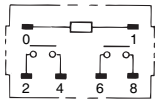
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-TJ (with Test Button)





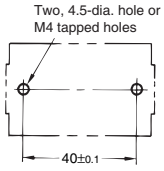


(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

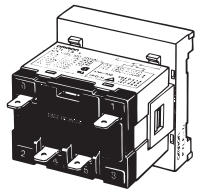
* E brackets are sold separately

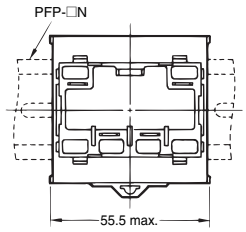
Mounting holes

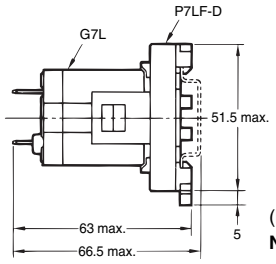


Adapter Mounting*

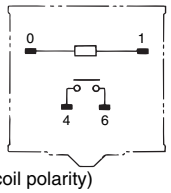
G7L-1A-T







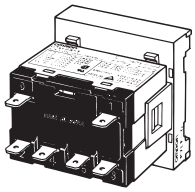
Terminal arrangement/ Internal connections
(Top view)

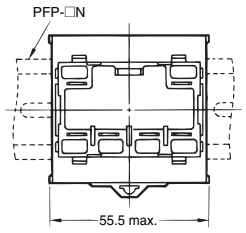


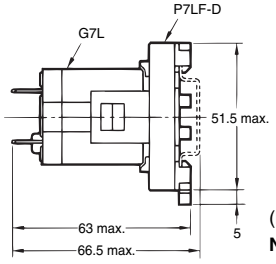
(No coil polarity)

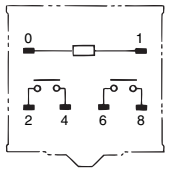
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-T





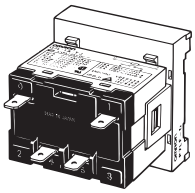


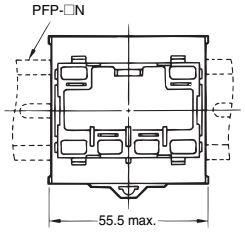


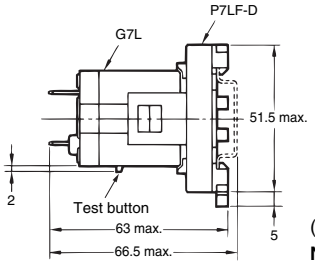
(No coil polarity)

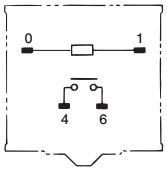
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-1A-TJ (with Test Button)





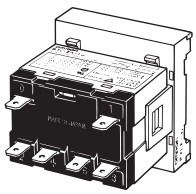


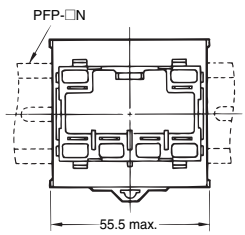


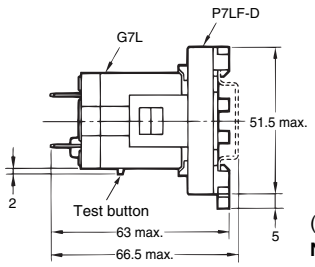
(No coil polarity)

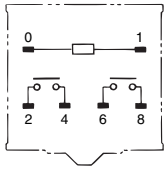
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-TJ (with Test Button)





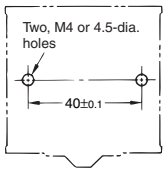




(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

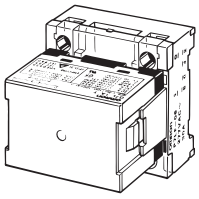
Mounting holes

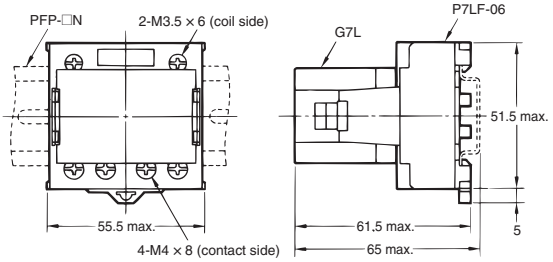


* The DIN Track Mounting Adapter and DIN tracks are sold separately. The adapter can be track-mounted or screw-mounted.

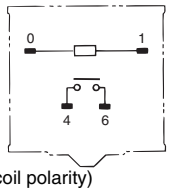
Front-connecting Socket Mounting*

G7L-1A-T





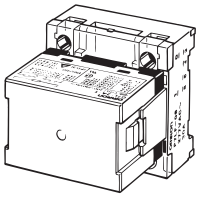
Terminal arrangement/ Internal connections
(Top view)

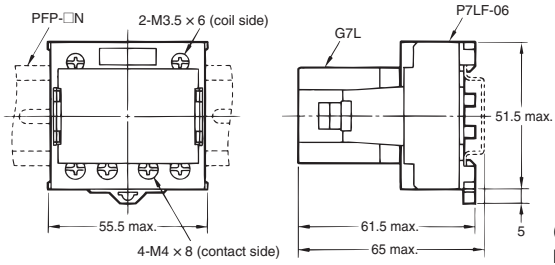


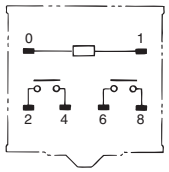
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-T



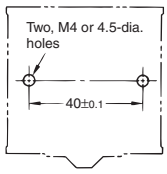




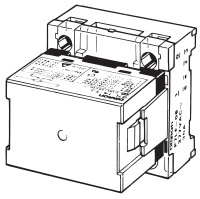
(No coil polarity)

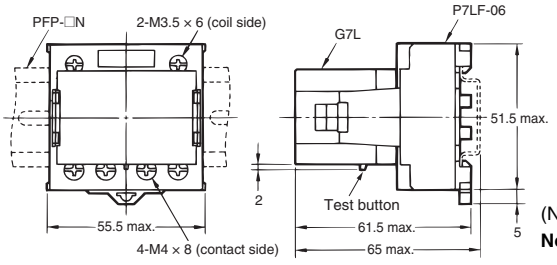
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

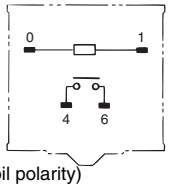
Mounting holes



G7L-1A-TJ (with Test Button)



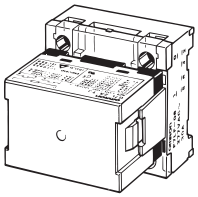


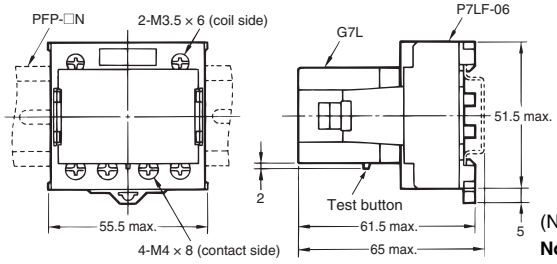


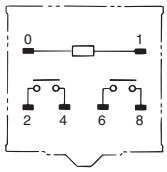
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-TJ (with Test Button)







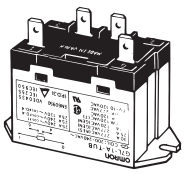
(No coil polarity)

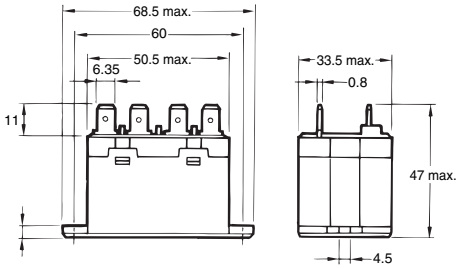
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

* The Front-connecting Socket and DIN tracks are sold separately. The socket can be track-mounted or screw-mounted.

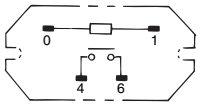
Upper Bracket Mounting

G7L-1A-TUB





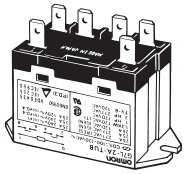
Terminal arrangement/ Internal connections
(Top view)

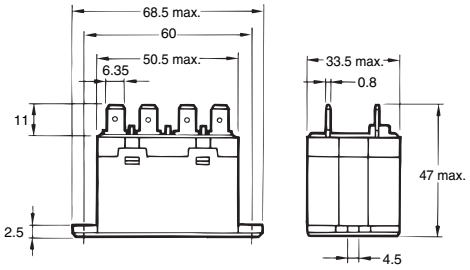


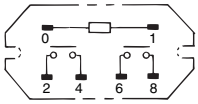
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-TUB



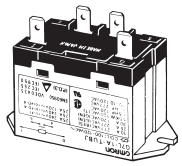


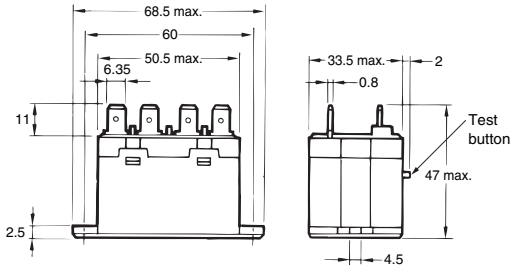


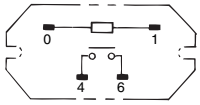
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-1A-TUBJ (with Test Button)



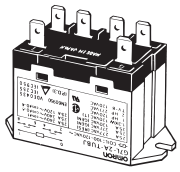


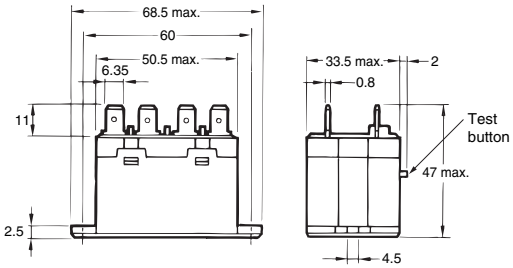


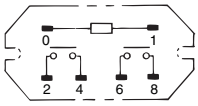
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-TUBJ (with Test Button)



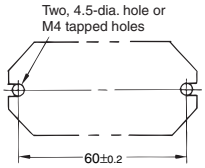




(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

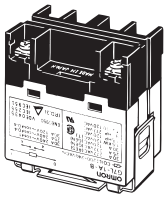
Mounting holes

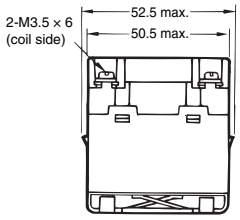


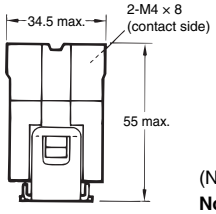
Screw Terminal Models

E-bracket Mounting*

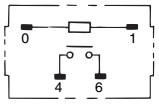
G7L-1A-B







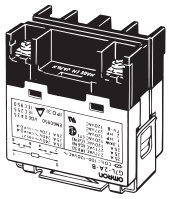
Terminal arrangement/ Internal connections
(Top view)

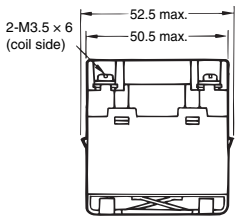


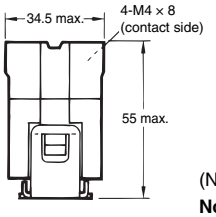
(No coil polarity)

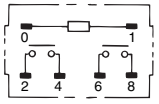
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-B





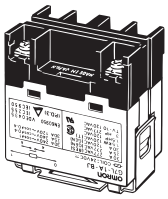


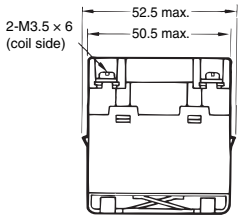


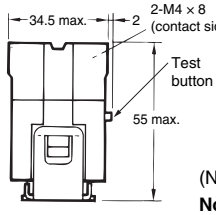
(No coil polarity)

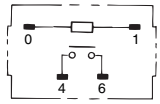
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-1A-BJ (with Test Button)





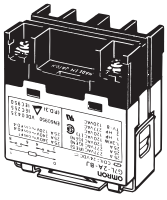


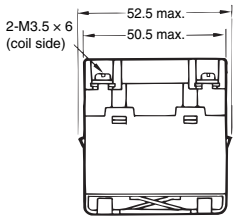


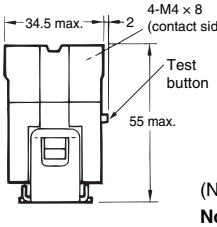
(No coil polarity)

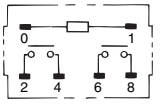
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-BJ (with Test Button)







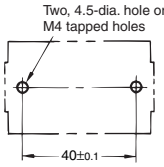


(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

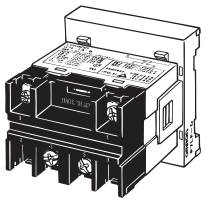
* E brackets are sold separately

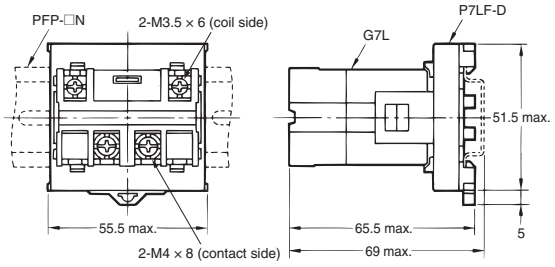
Mounting holes



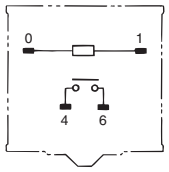
Adapter Mounting*

G7L-1A-B





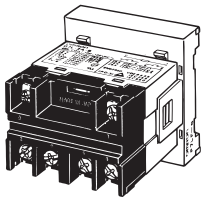
Terminal arrangement/ Internal connections
(Top view)

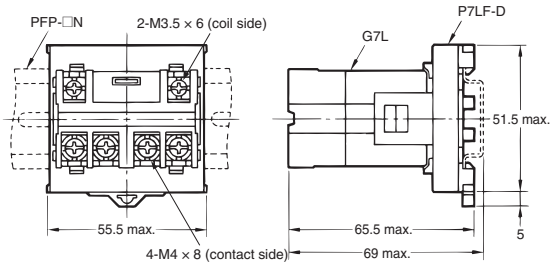


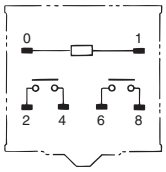
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-B



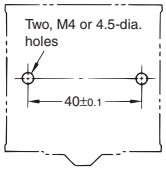




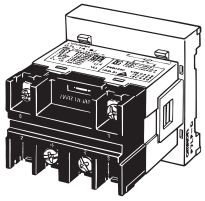
(No coil polarity)

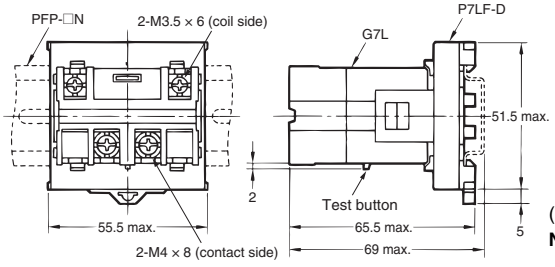
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

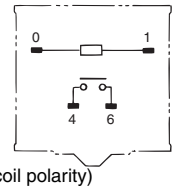
Mounting holes



G7L-1A-BJ (with Test Button)



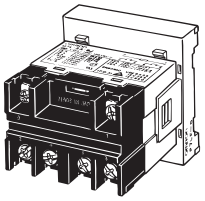


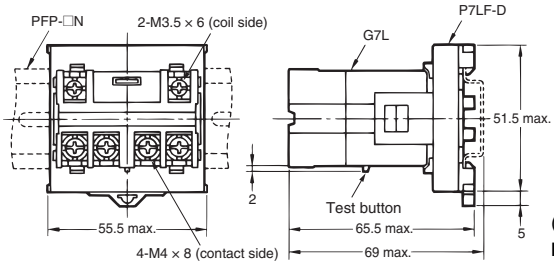


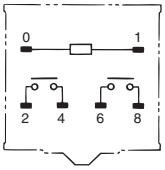
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-BJ (with Test Button)







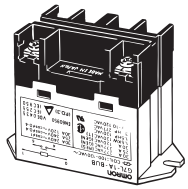
(No coil polarity)

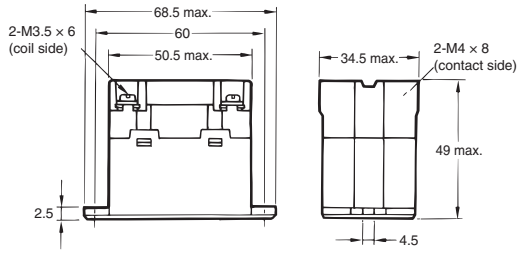
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

* The DIN Track Mounting Adapter and DIN tracks are sold separately. The adapter can be track-mounted or screw-mounted.

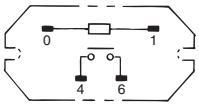
Upper Bracket Mounting

G7L-1A-BUB





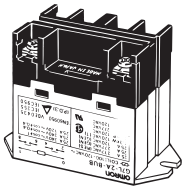
Terminal arrangement/ Internal connections
(Top view)

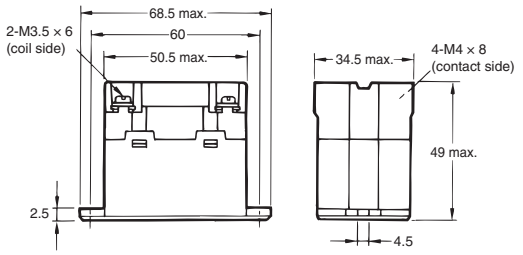


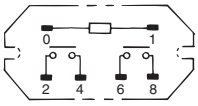
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-BUB



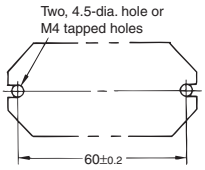




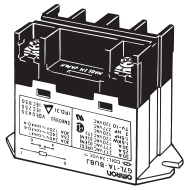
(No coil polarity)

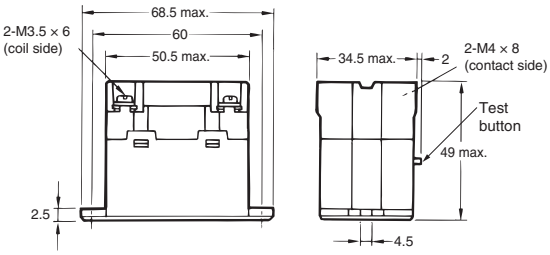
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

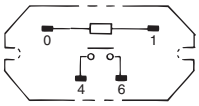
Mounting holes



G7L-1A-BUBJ (with Test Button)



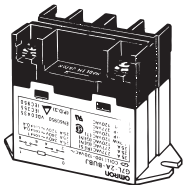


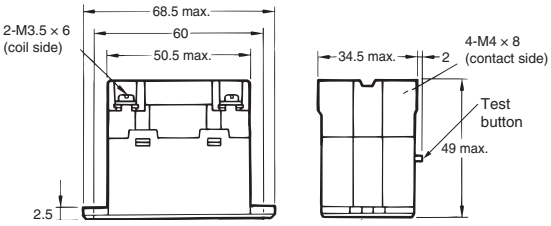


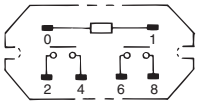
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

G7L-2A-BUBJ (with Test Button)





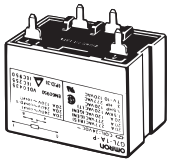


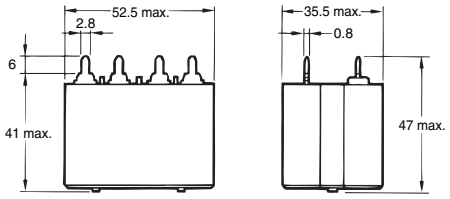
(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

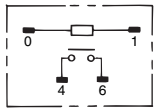
PCB Terminal Models

G7L-1A-P





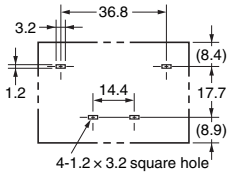
Terminal arrangement/ Internal connections
(Top view)



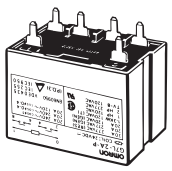
(No coil polarity)

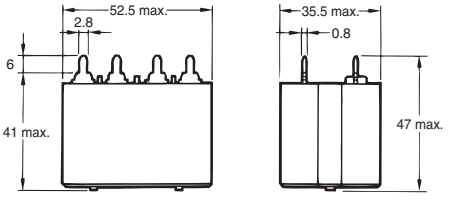
Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

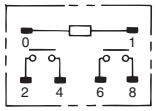
PCB Mounting holes
(Bottom view)
Tolerance ±0.1 mm



G7L-2A-P







(No coil polarity)

Note: Refer to "Coil Internal Circuit" for the coil internal connection diagram.

PCB Mounting holes
(Bottom view)
Tolerance ±0.1 mm