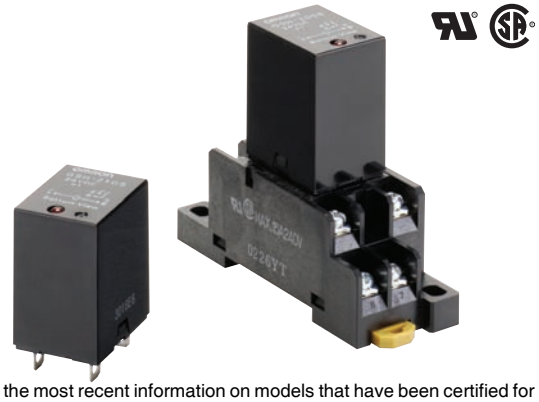
# Hybrid Power Relay
# G9H

CSM_G9H_DS_E_6_1

## Hybridization of a Magnetic Relay and an SSR Achieves 10-A Switching for 10 Million Operations.

- UL/CSA certified (-US models).
- Using a triac to open and close the circuit reduces chattering and arching, thereby increasing the electrical durability to 10 million operations.
- Relays contacts for power ON and 10-A switching with high-capacity are provided in a compact body without the need of radiators. Plus, there is almost no effect on heat generation or ambient temperature.
- Operation indicators to easily check operation.
- Built-in temperature fuse prevents internal burning due to triac or relay malfunctions.
- Socket-type Relays the same size as the 1-pole and 2-pole LY Relays.

⚠ Refer to *Safety Precautions for All Solid State Relays.*



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

# Ordering Information

## ■ List of Model

| Isolation method | Zero cross function | Operation indicator | Applicable output load (See note.) | Rated input voltage | Model |
|---|---|---|---|---|---|
| Relay | No | Yes | 5 A<br>100 to 240 VAC | 5 VDC | G9H-205S DC5 |
| | | | | | G9H-205S-US DC5 |
| | | | | 12 VDC | G9H-205S DC12 |
| | | | | | G9H-205S-US DC12 |
| | | | | 24 VDC | G9H-205S DC24 |
| | | | | | G9H-205S-US DC24 |
| | | | 10 A<br>100 to 240 VAC | 5 VDC | G9H-210S DC5 |
| | | | | | G9H-210S-US DC5 |
| | | | | 12 VDC | G9H-210S DC12 |
| | | | | | G9H-210S-US DC12 |
| | | | | 24 VDC | G9H-210S DC24 |
| | | | | | G9H-210S-US DC24 |

**Note: 1.** The actual product is labeled "250 VAC."

**2.** For information on products that are certified for international standards, consult your OMRON sales representatives

## ■ Accessories (Order Separately)

### Connecting Socket Mounting Plate

| Model | Minimum quantity packaged (units) |
|---|---|
| PYP-1 | 10 |
| PYP-18 | 1 |

**Note:** Order the models above in increments of the minimum quantity packaged.

# Specifications

## ■ Ratings

### Input

| Rated voltage | Item | Operating voltage | Coil resistance | Must operate voltage | Must release voltage | Power consumption |
|---|---|---|---|---|---|---|
| **DC** | **5 V** | 4 to 6 VDC | 104 Ω | 4 VDC max. | 0.5 VDC min. | Approx. 240 mW |
| | **12 V** | 9.6 to 14.4 VDC | 600 Ω | 9.6 VDC max. | 1.2 VDC min. | |
| | **24 V** | 19.2 to 28. 8 VDC | 2,400 Ω | 19.2 VDC max. | 2.4 VDC min. | |

**Note: 1.** The coil resistance is measured at a coil temperature of 23°C with a tolerance of ±10%.
**2.** Performance characteristic data are measured at a coil temperature of 23°C.

### Output

| Item / Model | Applicable load | | | |
|---|---|---|---|---|
| | Rated load voltage | Load voltage range | Load current (See note.) | Inrush current resistance |
| **G9H-205S** | 100 to 240 VAC | 75 to 264 VAC | 50 mA to 5 A (at 55°C) | 80 A (60 Hz, 1 cycle) |
| **G9H-210S** | | | 50 mA to 10 A (at 55°C) | 170 A (60 Hz, 1 cycle) |

**Note:** The load current depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in Engineering Data.

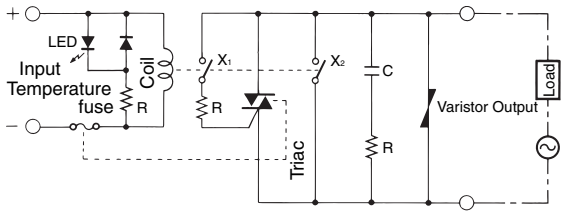
## ■ Characteristics

| Item | Model | G9H-205S | G9H-210S |
|---|---|---|---|
| Operate time | | 10 ms max. | |
| Release time | | 1/2 cycle max. + 10 ms | |
| Output ON voltage drop | | 1.6 V max. (RMS) (at 5 A) | 1.6 V max. (RMS) (at 10 A) |
| Leakage current | | 5 mA max. at 250 VAC | |
| Inrush current resistance | | 80 A | 170 A |
| Temperature rise | | 50°C max. (rated voltage applied using resistance method) | |
| Insulation resistance | | 100 MΩ min. (at 500 VDC) | |
| Dielectric strength | | 2,000 VAC 50/60 Hz 1 min | |
| Vibration resistance | Destruction | 10 to 55 to 10 Hz, 1-mm single amplitude (2-mm double amplitude) | |
| | Malfunction | 10 to 45 to 10 Hz, 1-mm single amplitude (2-mm double amplitude) | |
| Shock resistance (See note.) | Destruction | 1,000 $m/s^2$ | |
| | Malfunction | 100 $m/s^2$ | |
| Life expectancy | Mechanical | 10 million operations min. (switching frequency: 18,000 operations/hour) | |
| | Electrical | 10 million operations min. (resistive load and switching frequency: 18,000 operations/hour) | |
| Storage temperature | | –25 to 70°C (with no icing or condensation) | |
| Ambient operating temperature | | –25 to 60°C (with no icing or condensation) | |
| Ambient operating humidity | | 35% to 85% | |
| Weight | | Approx. 25 g | |

**Note:** Value when excited.

# Connection

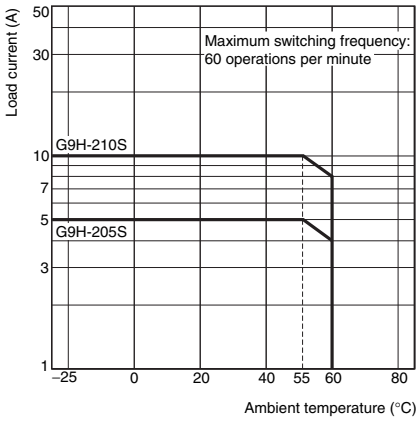
## ■ Layout



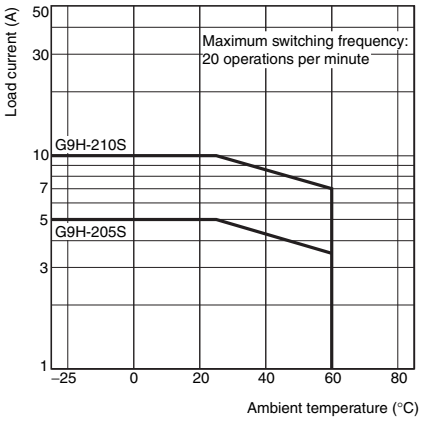
# Engineering Data

## Load Current vs. Ambient Temperature

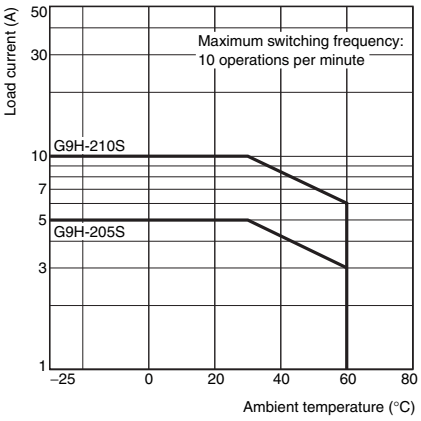
### Resistive load




### Lamp load (Inrush current: 6 times the rated current, Inrush current time: 2 cycles)

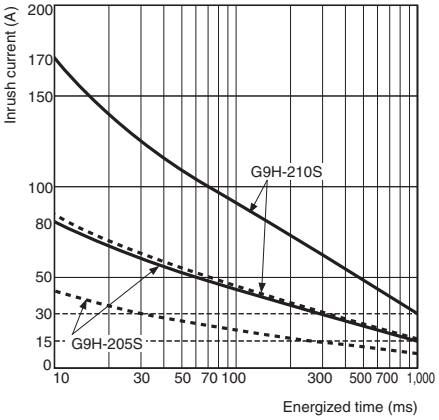



### Motor load (Inrush current: 4 times the rated current, Inrush current time: 12 cycles)




### Inrush Current Resistance vs. ON Time

Non-repetitive (Keep the inrush current below the dotted line if it occurs repetitively.)

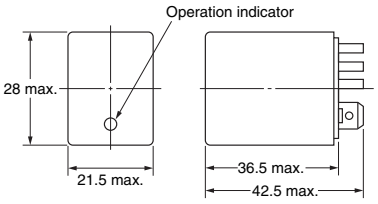



# Dimensions

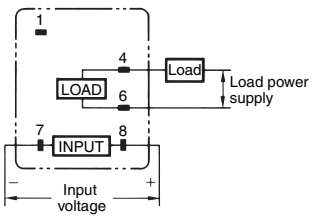
**Note:** All units are in millimeters unless otherwise indicated.

## ■ Hybrid Power Relays

**G9H-205S**
**G9H-210S**




**Terminal Arrangement/Internal Connections (Bottom View)**



# ■ Accessories (Order Separately)

## Connecting Socket/Hold-Down Clips

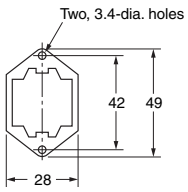
| | Front-mounting Sockets | Back-mounting Sockets | | |
|---|---|---|---|---|
| **Socket** | PTF08A(-E) | PT08 | PT08-0 | PT08QN |
| **Hold-down Clip** | PYC-A1 | PYC-P<br>PYC-S | PYC-P | PYC-P<br>PYC-S |

## Connecting Socket Mounting Plate (t = 1.6)

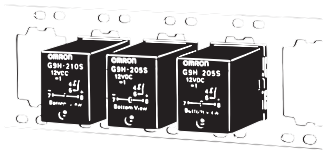
Use a Mounting Plate when two or more Connecting Sockets are mounted side by side.

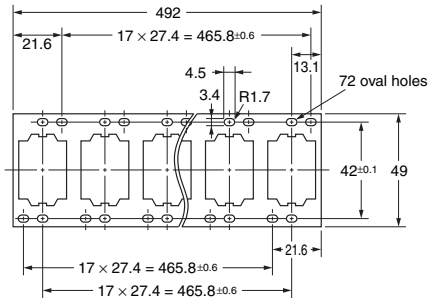
Types of Mounting Plates are available: the PYP-1 (for mounting one Unit) and the PYP-18 (for mounting up to 18 Units). The Mounting Plate for 18 Units can be cut to the desired length before use.

**PYP-1**




**PYP-18**






# Safety Precautions

Refer to *Safety Precautions for All Solid State Relays*.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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