

# Solid State Relays G3□-VD

## G3H/G3HD

CSM\_G3H\_G3HD\_DS\_E\_6\_4

### New Models with International Standards Added to G3H Series (-VD in model number). Same Profile as LY1 and LY2 Bi-power Relays

- Certified by UL, CSA, and VDE (models numbers with a suffix of “-VD”).
- Socket type, same size as LY Power Relays.
- Operation indicator provided to confirm input (models numbers with “N” before the suffix).



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



**Note:** The socket is optional.

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

## Model Number Structure

### ■ Model Number Legend

G3H-□□□□□□-□  
1 2 3 4 5 6 7 8

- |   |  |
|---|--|
| <p>1. <b>Basic Model Name</b><br/>G3H: Solid State Relay</p> <p>2. <b>Rated Load Power Supply Voltage</b><br/>2: 200 VAC</p> <p>3, 4. <b>Rated Load Current</b><br/>03: 3 A</p> <p>5. <b>Terminal Type</b><br/>S: Plug-in terminals</p> | <p>6. <b>Zero Cross Function</b><br/>Blank: Equipped with zero cross function<br/>L: Not equipped with zero cross function</p> <p>7. <b>Operation Indicator</b><br/>Blank: Not equipped with operation indicator<br/>N: Equipped with operation indicator</p> <p>8. <b>Certification</b><br/>VD: Certified by UL, CSA, and VDE standards</p> |
|---|--|

G3HD-□□□□□-□  
1 2 3 4 5 6 7

- |   |   |
|---|---|
| <p>1. <b>Basic Model Name</b><br/>G3H: Solid State Relay</p> <p>2. <b>Load Power Supply Type</b><br/>D: DC</p> <p>3. <b>Rated Load Power Supply Voltage</b><br/>X: 50 VDC</p> <p>4. <b>Rated Load Current</b><br/>03: 3 A</p> | <p>5. <b>Terminal Type</b><br/>S: Plug-in terminals</p> <p>6. <b>Operation Indicator</b><br/>Blank: Not equipped with operation indicator<br/>N: Equipped with operation indicator</p> <p>7. <b>Certification</b><br/>VD: Certified by UL, CSA, VDE</p> |
|---|---|

# Ordering Information

## List of Models

| Isolation            | Zero cross function | Indicator | Rated output load               | Rated input voltage | Model         |
|----------------------|---------------------|-----------|---------------------------------|---------------------|---------------|
| Photocoupler         | Yes                 | Yes       | 3 A at 100 to 240 VAC *1        | 5 to 24 VDC         | G3H-203SN-VD  |
| Phototriac coupler   | No                  |           |                                 | 5 VDC               | G3H-203SLN-VD |
|                      |                     |           |                                 | 12 VDC              |               |
|                      |                     |           |                                 | 24 VDC              |               |
| Photocoupler         | ---                 |           | 3 A at 4 to 48 VDC *2           | 5 to 24 VDC         | G3HD-X03SN-VD |
| Photocoupler         | Yes                 | No        | 3 A at 100 to 240 VAC *1        | 4 to 24 VDC         | G3H-203S-VD   |
| Phototriac coupler   | No                  |           |                                 | 5 VDC               | G3H-203SL-VD  |
|                      |                     |           |                                 | 12 VDC              |               |
|                      |                     |           |                                 | 24 VDC              |               |
| Photocoupler         | ---                 |           | 3 A at 4 to 48 VDC *2           | 4 to 24 VDC         | G3HD-X03S-VD  |
| Photovoltaic coupler | ---                 | Yes       | 2.5 A at 24 to 240 VDC *3<br>*4 | 12 to 24 VDC        | G3HD-202SN-VD |

\*1 Product is labelled "240 VAC".

\*2 Product is labelled "48 VDC".

\*3 Product is labelled "240 VDC".

\*4 Application is possible for a half-wave rectification load between 19.2 and 264 VAC.

## Accessories (Order Separately)

### Connecting Sockets/Hold-Down Clips

|                | Front-mounting Sockets |           | Back-mounting Sockets |        |                |
|----------------|------------------------|-----------|-----------------------|--------|----------------|
| Socket         | PTF08A(-E)             | PTF-08-PU | PT08                  | PT08-0 | PT08QN         |
| Hold-down Clip | PYC-A1                 | ---       | PYC-P<br>PYC-S        | PYC-P  | PYC-P<br>PYC-S |

## Specifications

### Ratings (at an Ambient Temperature of 25°C)

#### Input

| Model         | Rated voltage | Operating voltage | Impedance                                  | Voltage level        |                      |
|---------------|---------------|-------------------|--|----------------------|----------------------|
|               |               |                   |  | Must operate voltage | Must release voltage |
| G3H-203SN-VD  | 5 to 24 VDC   | 4 to 28 VDC       | 15 mA max. (See note 2.)                   | 4 VDC max.           | 1 VDC min.           |
| G3H-203SLN-VD | 5 VDC         | 4 to 6 VDC        | 390 $\Omega \pm 20\%$                      | 4 VDC max.           | 1 VDC min.           |
|               | 12 VDC        | 9.6 to 14.4 VDC   | 900 $\Omega \pm 20\%$                      | 9.6 VDC max.         |                      |
|               | 24 VDC        | 19.2 to 28.8 VDC  | 2 k $\Omega \pm 20\%$                      | 19.2 VDC max.        |                      |
| G3HD-X03SN-VD | 5 to 24 VDC   | 4 to 28 VDC       | 1.5 k $\Omega$ $+20\%/-10\%$ (See note 1.) | 4 VDC max.           | 1 VDC min.           |
| G3H-203S-VD   | 4 to 24 VDC   | 3 to 28 VDC       | 15 mA max. (See note 2.)                   | 3 VDC max.           | 1 VDC min.           |
| G3H-203SL-VD  | 5 VDC         | 4 to 6 VDC        | 390 $\Omega \pm 20\%$                      | 4 VDC max.           | 1 VDC min.           |
|               | 12 VDC        | 9.6 to 14.4 VDC   | 900 $\Omega \pm 20\%$                      | 9.6 VDC max.         |                      |
|               | 24 VDC        | 19.2 to 28.8 VDC  | 2 k $\Omega \pm 20\%$                      | 19.2 VDC max.        |                      |
| G3HD-X03S-VD  | 4 to 24 VDC   | 3 to 28 VDC       | 1.5 k $\Omega$ $+20\%/-10\%$ (See note 1.) | 3 VDC max.           | 1 VDC min.           |
| G3HD-202SN-VD | 12 to 24 VDC  | 9.6 to 28.8 VDC   | 25 mA max. (at 24 VDC)<br>(See note 2.)    | 9.6 VDC max.         | 1 VDC min.           |

**Note:** 1. The input impedance is given for the maximum operating voltage. For details, refer to the *Technical Guide for Solid State Relays*.

2. With constant current input system.

## Output

| Model  | Applicable load    |                    |                        |                     |
|--|--------------------|--------------------|------------------------|---------------------|
|  | Rated load voltage | Load voltage range | Load current           | Inrush current      |
| G3H-203SN-VD<br>G3H-203S-VD<br>G3H-203SLN-VD<br>G3H-203SL-VD | 100 to 240 VAC     | 75 to 264 VAC      | 0.1 to 3 A at 40°C     | 45 A 60 Hz, 1 cycle |
| G3HD-X03SN-VD<br>G3HD-X03S-VD                                | 4 to 48 VDC        | 3 to 52.8 VDC      | 0.1 to 3 A at 40°C     | 18 A (10 ms)        |
| G3HD-202SN-VD  | 24 to 240 VDC      | 19.2 to 264 VDC    | 0.001 to 2.5 A at 40°C | 20 A (10 ms)        |

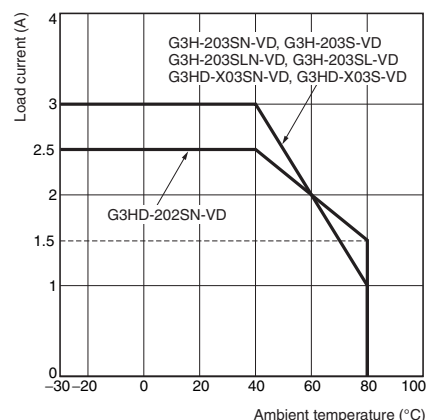
## Characteristics

| Model                  | G3H-203SN-VD/203S-VD  | G3H-203SLN-VD/203SL-VD                              | G3HD-X03SN-VD/X03S-VD         | G3HD-202SN-VD                                |
|------------------------|---|---|-------------------------------|--|
| Operate time           | 1/2 cycle of load power source + 1 ms max.  | 1 ms max.   | 0.5 ms max.                   | 5 ms max.                                    |
| Release time           | 1/2 cycle of load power source + 1 ms max.  |   | 2 ms max.                     | 10 ms max.                                   |
| Output ON voltage drop | 1.6 V (RMS) max.  |   |                               | 3 V max. (output ON-resistance: 1.25 Ω max.) |
| Leakage current        | 5 mA max. (at 100 VAC);<br>10 mA max. (at 200 VAC)                                    | 2.5 mA max. (at 100 VAC);<br>5 mA max. (at 200 VAC) | 5 mA max. (at 50 VDC)         | 0.1 mA max. (at 200 VDC)                     |
| Insulation resistance  | 100 MΩ min. (at 500 VDC)  |   |                               |  |
| Dielectric strength    | 2,000 VAC, 50/60 Hz for 1 min   |   | 1,500 VAC, 50/60 Hz for 1 min |  |
| Vibration resistance   | Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude                              |   |                               |  |
| Shock resistance       | Destruction: 1,000 m/s <sup>2</sup>   |   |                               |  |
| Ambient temperature    | Operating: −30°C to 80°C (with no icing)<br>Storage: −30°C to 100°C (with no icing)   |   |                               |  |
| Ambient humidity       | 45% to 85%  |   |                               |  |
| Certified standards    | G3H: UL508, CSA C22.2 No. 14, EN60947-4-3<br>G3HD: UL508, CSA C22.2 No. 14, EN60950-1 |   |                               |  |
| EMC                    | Emission: EN55011 Group 1 Class B<br>Immunity: EN61000-6-2                            |   |                               |  |
| Weight                 | Approx. 50 g  |   |                               |  |

## Engineering Data

### Load Current vs. Ambient Temperature Characteristics

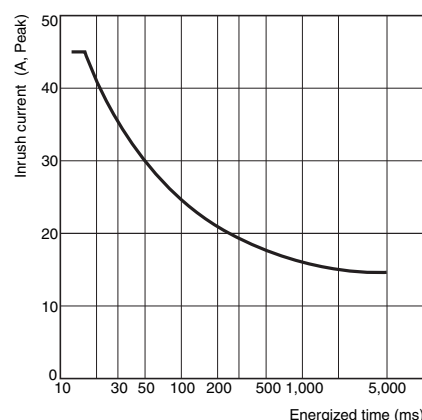
G3H-203SN-VD/203S-VD/203SLN-VD/  
203SL-VD  
G3HD-X03SN-VD/X03S-VD  
G3HD-202SN-VD



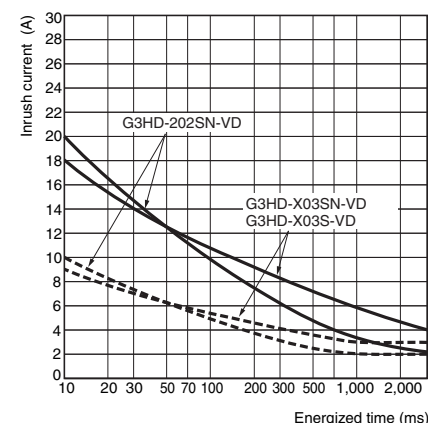
### One Cycle Surge Current: Non-repetitive

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

G3H-203SN-VD/203S-VD/203SLN-VD/  
G3H-203SL-VD

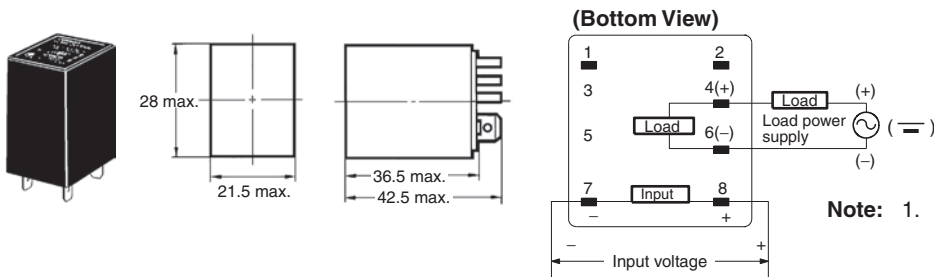


G3HD-X03SN-VD/X03S-VD  
G3HD-202SN-VD



## Dimensions

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



## Safety Precautions

### ■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

#### Connection

The SSR for DC switching use can connect to a load regardless of the polarity of the positive and negative output terminals.

#### Close Mounting of Multiple Relays

If multiple Relays are mounted side by side, be aware that the outer wall of each SSR works as a heat sink.

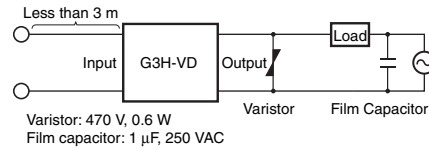
The SSR casing serves to dissipate heat. Install the Relays so that they are adequately ventilated. If poor ventilation is unavoidable, reduce the load current by half.

#### Protective Terminal

No overvoltage absorption element is built in. (The G3HD-202SN has a built-in varistor.) Be sure to connect an overvoltage absorption element when using the G3H or G3HD with an inductive load.

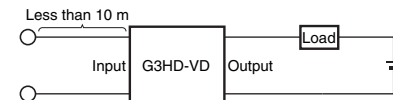
### EMC Directive Compliance

1. AC-switching models comply with EMC Directives under the following conditions ("-VD" models only).



- Connect a varistor between the output terminals.
- Connect a film capacitor to the load power supply.
- The input cable must be less than 3 m.

2. DC-switching models comply with EMC Directives under the following conditions ("-VD" models only).



- The input cable must be less than 10 m.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

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