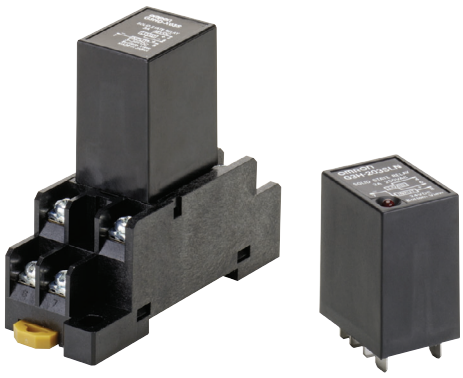
Solid State Relays G3□-VD
G3H/G3HD

CSM_G3H_G3HD_DS_E_3_1

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*.



Model Number Structure

■ Model Number Legend

G3H-□□□□□□-□
1 2 3 4 5 6 7 8

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

G3HD-□□□□-□
1 2 3 4 5 6 7

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

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 (See note 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 (See note 2.)	5 to 24 VDC	G3HD-X03SN-VD
Photocoupler	Yes	No	3 A at 100 to 240 VAC (See note 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 (See note 2.)	4 to 24 VDC	G3HD-X03S-VD
Photodiode array	---	Yes	2.5 A at 24 to 240 VDC (See note 3.)	12 to 24 VDC	G3HD-202SN-VD

Note: 1. Product is labelled “240 VAC”.
2. Product is labelled “48 VDC”.
3. Product is labelled “240 VDC”.
4. When ordering, specify the rated input voltage.

■ Accessories (Order Separately)

Connecting Sockets

Item	PTF08A-E	PT08	PT08-0	PT08QN
Connecting	Front connecting	Back connecting		
Mounting method/ Terminal type	Track mounted screw terminals	Solder terminals	PCB terminals	Wire-wrapping terminals
Hold-down clip	PYC-A1	PYC-P		

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 Ω±20%	4 VDC max.	1 VDC min.
	12 VDC	9.6 to 14.4 VDC	900 Ω±20%	9.6 VDC max.	
	24 VDC	19.2 to 28.8 VDC	2 kΩ±20%	19.2 VDC max.	
G3HD-X03SN-VD	5 to 24 VDC	4 to 28 VDC	1.5 kΩ $^{+20\%}/_{-10\%}$ (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 Ω±20%	4 VDC max.	1 VDC min.
	12 VDC	9.6 to 14.4 VDC	900 Ω±20%	9.6 VDC max.	
	24 VDC	19.2 to 28.8 VDC	2 kΩ±20%	19.2 VDC max.	
G3HD-X03S-VD	4 to 24 VDC	3 to 28 VDC	1.5 kΩ $^{+20\%}/_{-10\%}$ (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) (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 G3H-203S-VD	100 to 240 VAC	75 to 264 VAC	0.1 to 3 A at 40°C	45 A 60 Hz, 1 cycle
G3H-203SLN-VD G3H-203SL-VD				
G3HD-X03SN-VD 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)

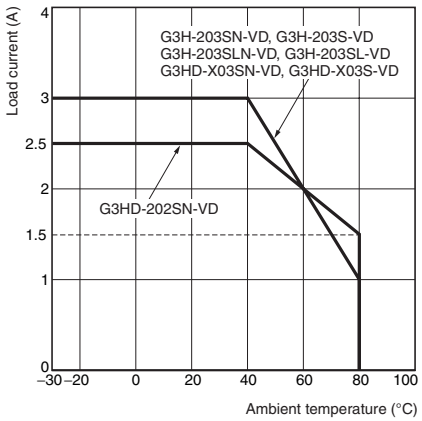
■ Characteristics

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); 10 mA max. (at 200 VAC)	2.5 mA max. (at 100 VAC); 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^2			
Ambient temperature	Operating: –30°C to 80°C (with no icing) 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 G3HD: UL508, CSA C22.2 No. 14, EN60950-1			
EMC	Emission: EN55011 Group 1 Class B Immunity: EN61000-6-2			
Weight	Approx. 50 g			

Engineering Data

Load Current vs. Ambient Temperature Characteristics

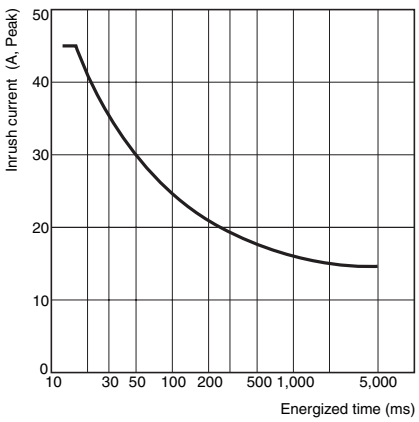
G3H-203SN-VD/203S-VD/203SLN-VD/203SL-VD
G3HD-X03SN-VD/X03S-VD
G3HD-202SN-VD



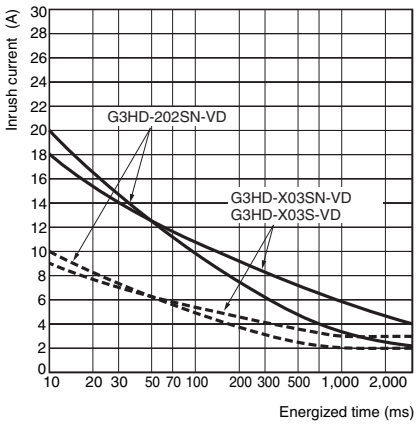
One Cycle Surge Current: Non-repetitive

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

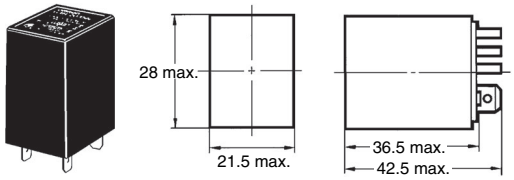


G3HD-X03SN-VD/X03S-VD
G3HD-202SN-VD

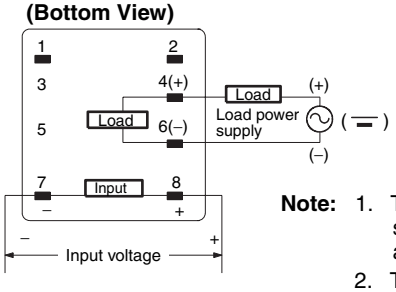


Dimensions

Note: All units are in millimeters unless otherwise indicated.



Terminal Arrangement/ Internal Connections (Bottom View)



Note: 1. The plus and minus symbols shown in the parentheses are for DC loads.
2. The coil has no polarity.

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.

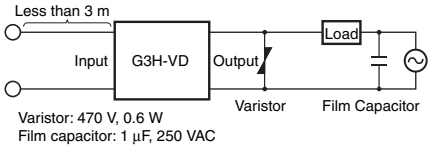
The SSR casing serves to dissipate heat. Install the Relays so that they are adequately ventilated. If poor ventilation is unavoidable, reduce the load current by half.

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.

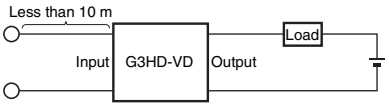
EMC Directive Compliance

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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