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Solid State Relays G3□-VD
G3H/G3HD

CSM_G3H_G3HD_DS_E_7_8

Solid State Relays Featuring the Same Profile as LY1 and LY2 Bi-power Relays

- Reduces wiring work by 60% when combined with the PTF-08-PU Push-In Plus Terminal blocks (according to actual OMRON measurements).
- 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

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

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Ordering Information

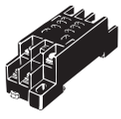
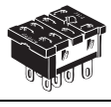
■List of Models

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 DC5-24
Phototriac coupler	No			5 VDC	G3H-203SLN-VD DC5
				12 VDC	G3H-203SLN-VD DC12
				24 VDC	G3H-203SLN-VD DC24
Photocoupler	---		3 A at 4 to 48 VDC ✻2	5 to 24 VDC	G3HD-X03SN-VD DC5-24
Photocoupler	Yes	No	3 A at 100 to 240 VAC ✻1	4 to 24 VDC	G3H-203S-VD DC4-24
Phototriac coupler	No			5 VDC	G3H-203SL-VD DC5
				12 VDC	G3H-203SL-VD DC12
				24 VDC	G3H-203SL-VD DC24
Photocoupler	---		3 A at 4 to 48 VDC ✻2	4 to 24 VDC	G3HD-X03S-VD DC4-24
Photovoltaic coupler	---	Yes	2.5 A at 24 to 240 VDC ✻3 ✻4	12 to 24 VDC	G3HD-202SN-VD DC12-24V

✻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)

Connection Sockets

Classification	Terminal Type	Appearance	Model
Front-mounting	Push-In Plus Terminal blocks		PTF-08-PU
	Screw terminals		PTF08A
	Screw terminals (finger protection structure)		PTFZ-08-E
Back-mounting	Solder terminals		PT-08
	Relays with PCB Terminals		PT08-0
	Wrapping terminals		PT08QN

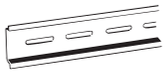
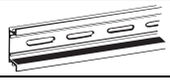
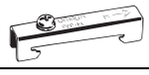
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Hold-down Clip

Applicable Socket			Hold-down Clip
Classification	**Terminal Type**	**Model**	**Model**
Front-mounting	Screw terminals (finger protection structure)	PTFZ-08-E	PYC-A1 ✻
	Screw terminals	PTF08A	
Back-mounting	Solder terminals	PT-08	PYC-P
			PYC-S
	Relays with PCB Terminals	PT08-0	PYC-P
	Wrapping terminals	PT08QN	PYC-P
			PYC-S

✻ One Set (2 Clips)

DIN Track Mounting Parts

Type		Appearance	Model
DIN Tracks	Shallow type, total length: 1 m		PFP-100N
	Shallow type, total length: 0.5 m		PFP-50N
	Deep type, total length: 1 m		PFP-100N2
End Plate			PFP-M
Spacer			PFP-S

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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

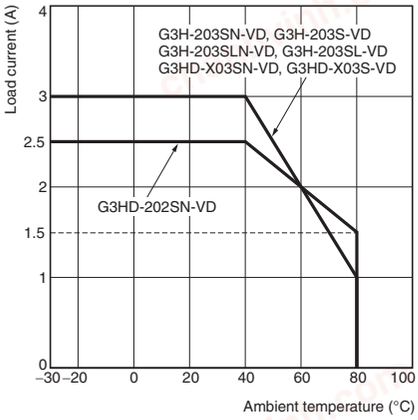
Model	G3H-203SN-VD/203S-VD	G3H-203SLN-VD/203SL-VD	G3HD-X03SN-VD/X03S-VD	G3HD-202SN-VD
Operate time	1/2 cycle of load power source + 1 ms max.	1 ms max.	0.5 ms max.	5 ms max.
Release time	1/2 cycle of load power source + 1 ms max.		2 ms max.	10 ms max.
Output ON voltage drop	1.6 V (RMS) max.			3 V max. (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	UL (File No.E64562), CSA (File No.LR35535) VDE (Certificate No.40000159, EN60947-4-3 (G3H-VD) No.40046471, EN62314 (G3HD-VD (except for G3HD-202SN-VD)) No.40012875, EN62314 (G3HD-202SN-VD))			
EMC	Emission: EN55011 Group 1 Class B Immunity: EN61000-6-2			
Weight	Approx. 50 g			

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Engineering Data

Load Current vs. Ambient Temperature Characteristics

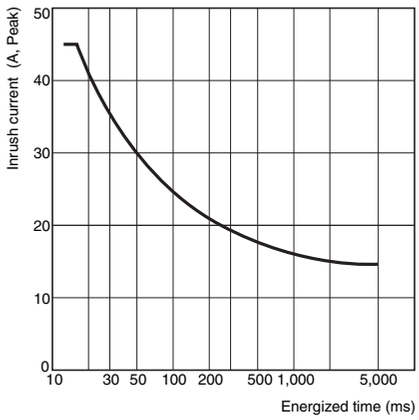
G3H-203SN-VD/203S-VD/ 203SLN-VD/203SL-VD G3HD-X03SN-VD/X03S-VD G3HD-202SN-VD



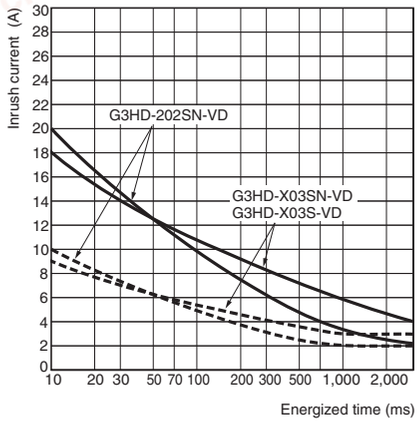
One Cycle Surge Current: Non-repetitive

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

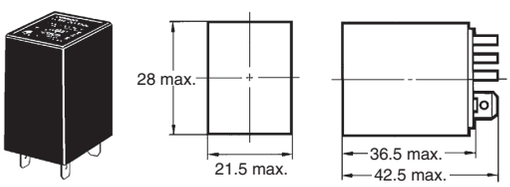


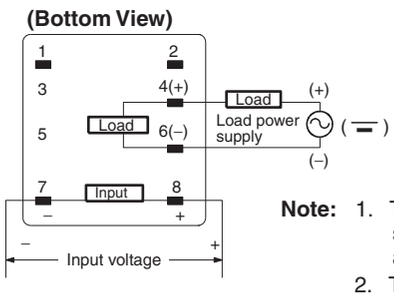
G3HD-X03SN-VD/X03S-VD G3HD-202SN-VD



Dimensions

Note: All units are in millimeters unless otherwise indicated.





Note:
1. The plus and minus symbols shown in the parentheses are for DC loads.
2. The coil has no polarity.
3. The load is possible to connect either + side or - side.

■Accessories (Order Separately)

Socket Characteristics

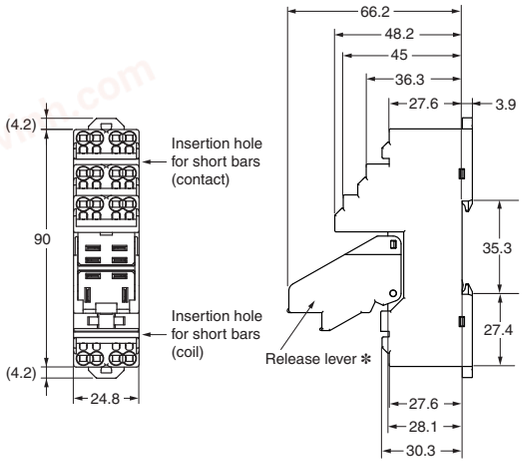
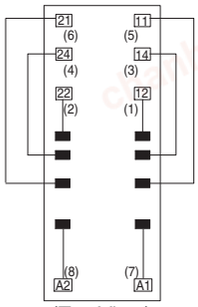
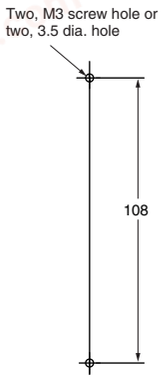
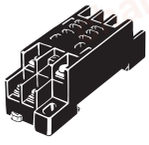
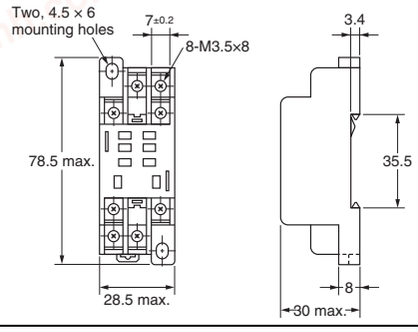
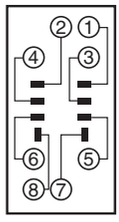
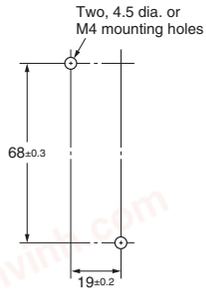
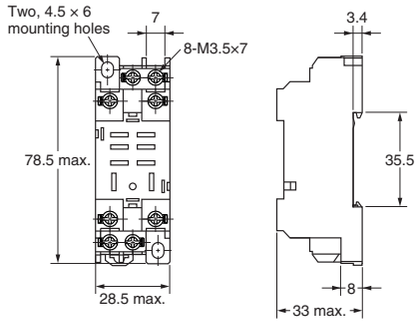
Model	Rated carry current	Dielectric strength	Insulation resistance ✻1	Remarks
PTF-08-PU	10 A	Between contact terminals of different polarity: 2,000 VAC, 1 min	1,000 MΩ min.	
		Between contact terminals of same polarity: 2,000 VAC, 1 min		
		Between coil and contact terminals: 2,000 VAC, 1 min		
PTFZ-08-E	12 A (@70°C) ✻2	Between contact terminals of different polarity: 2,500 VAC, 1 min	1,000 MΩ min.	
		Between contact terminals of same polarity: 2,500 VAC, 1 min		
		Between ground terminals: 2,500 VAC, 1 min		
		Between coil and contact terminals: 2,500 VAC, 1 min		
PTF08A	10 A	Between terminals: 2,000 VAC for 1 min	100 MΩ min.	
PT-08	10 A	Between terminals: 2,000 VAC for 1 min	100 MΩ min.	
PT08-0	10 A	Between terminals: 2,000 VAC for 1 min	100 MΩ min.	
PT08QN	10 A	Between terminals: 2,000 VAC for 1 min	100 MΩ min.	

✻1 The insulation resistance was measured with a 500-VDC insulation resistance meter at the same places as those used for measuring the dielectric strength.

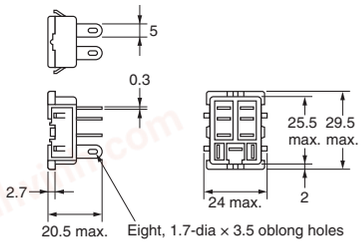
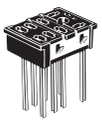
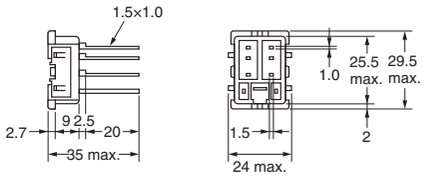
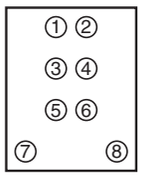
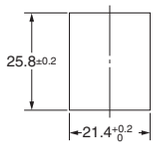
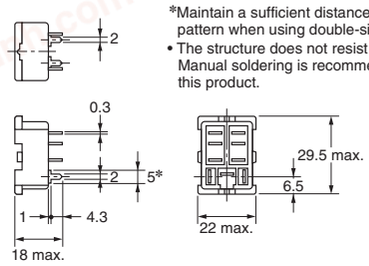
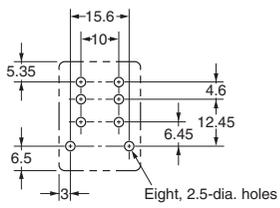
✻2 However, do not exceed the continuous carry current of the socket to be mounted.

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Connection Sockets

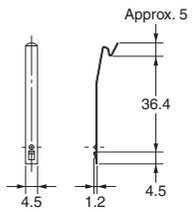
Dimensions	Terminal Arrangement/ Internal Connections	Mounting Hole Dimensions
PTF-08-PU  	 (Top View) **Note:** The numbers in parentheses are traditionally used terminal numbers.	 (Top View) **Note:** Pull out the hooks to mount the Relay with screws.
PTF08A  	 (Top View)	 (Top View) **Note:** Track mounting is also possible.
PTFZ-08-E (Finger Protection Structure)  		

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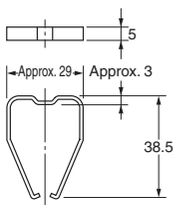
Dimensions	Terminal Arrangement/ Internal Connections	Mounting Hole Dimensions
PT08   **PT08QN**  	 (Bottom View)	
PT08-0   *Maintain a sufficient distance from the pattern when using double-sided PCBs. • The structure does not resist flux. Manual soldering is recommended for this product.		 (±0.1 tolerance)

Hold-down Clips

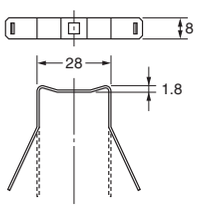
PYC-A1
Approx. 0.54 g (per clip)
One Set (2 Clips)



PYC-P
Approx. 1.4 g

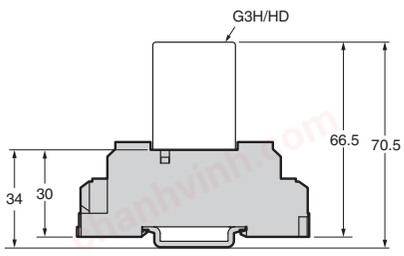


PYC-S
Approx. 1.8 g



Mounting Height with Sockets

PTFZ-08-E



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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.

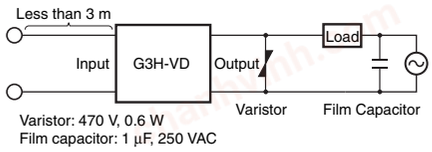
The SSR casing serves to dissipate heat. Install the Relays so that they are adequately ventilated. If poor ventilation is unavoidable, reduce the load current by half.

Protective Terminal

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

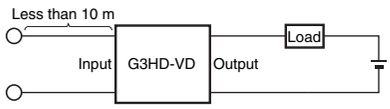
EMC Directive Compliance

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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Terms and Conditions Agreement

Read and understand this catalog.
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