

Solid State Relays

G3R/G3RD

Refer to *Warranty and Application Considerations* (page 1), *Safety Precautions* (page 4), and *Technical and Safety Information* (page 6).

Compact SSRs Ideal for Built-in Applications

- Vertical, compact SSRs with an operation indicator offered in versatile variations.
- High dielectric strength of 2,500 VAC for 2-A models.
- High-voltage DC version also available.
- Certified by UL and CSA.



Model Number Structure

Model Number Legend

G3R-□□□□-□
1 2 3 4 5 6 7

1. Basic Model Name

G3R: Solid State Relay

2. Rated Load Power Supply Voltage

1: 100 VAC

2: 200 VAC

3. Rated Load Current

02: 2 A

4. Terminal Type

P: PCB terminals

5. Isolation Method

Blank: Phototriac/photocoupler isolation with zero cross function

L: Phototriac/photocoupler isolation without zero cross function

6. Operation Indicator

N: Equipped with operation indicator

7. Certification

US: Certified by UL and CSA

□□□□-□
1 2 3 4 5 6

1. Basic Model Name

G3R: Solid State Relay

2. Rated Output Load

D: Switches DC loads

3. Rated Load Power Supply Voltage

1: 100 VDC

X: 50 VDC

4. Rated Load Current

01: 1.5 A

02: 2 A

5. Terminal Type

P: PCB terminals

6. Operation Indicator

N: Equipped with operation indicator

7. Certification

US: Certified by UL and CSA

Ordering Information

■ List of Models

Terminals	Isolation	Zero cross function	Indicator	Rated output load	Rated input voltage	Model
PCB	Phototriac	Yes	Yes	2 A at 100 to 120 VDC (See note 1.)	5, 12, 24 VDC	G3R-102PN-US
		No		G3R-102PLN-US		
		Yes		2 A at 100 to 240 VAC (See note 2.)		G3R-202PN-US
		No				G3R-202PLN-US
	Photocoupler	---	Yes	1.5 A at 5 to 110 VDC		G3RD-101PN-US
				2 A at 4 to 48 VDC (See note 3.)		G3RD-X02PN-US

Note: 1. Product is labelled "125 VAC".
 2. Product is labelled "250 VAC".
 3. Product is labelled "50 VDC".
 4. When ordering, specify the rated input voltage.

Specifications

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

Input (AC Output With Zero Cross Function)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-102PN-US	5 VDC	4 to 6 VDC	250 $\Omega \pm 20\%$	3.5 VDC max.	0.375 VDC min.
G3R-202PN-US	12 VDC	9.6 to 14.4 VDC	600 $\Omega \pm 20\%$	8.4 VDC max.	0.9 VDC min.
	24 VDC	19.2 to 28.8 VDC	1.5 k $\Omega \pm 20\%$	16.8 VDC max.	1.8 VDC min.

Input (AC Output Without Zero Cross Function, DC Output)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-102PLN-US	5 VDC	4 to 6 VDC	300 $\Omega \pm 20\%$	3.5 VDC max.	0.375 VDC min.
G3R-202PLN-US	12 VDC	9.6 to 14.4 VDC	750 $\Omega \pm 20\%$	8.4 VDC max.	0.9 VDC min.
G3RD-X02PN-US	24 VDC	19.2 to 28.8 VDC	1.5 k $\Omega \pm 20\%$	16.8 VDC max.	1.8 VDC min.
G3RD-101PN-US					

Output

Model	Rated load voltage	Applicable load		
		Load voltage range	Load current	Inrush current
G3R-102PN-US	100 to 120 VAC	75 to 132 VAC	0.1 to 2 A	30 A (60 Hz, 1 cycle)
G3R-102PLN-US				
G3R-202PN-US	100 to 240 VAC	75 to 264 VAC	0.1 to 2 A	
G3R-202PLN-US				
G3RD-X02PN-US	4 to 48 VDC	3 to 52.8 VDC	0.01 to 2 A	8 A (10 ms)
G3RD-101PN-US	5 to 110 VDC	3 to 125 VDC	0.01 to 1.5 A	2.5 A (10 ms)

■ Characteristics

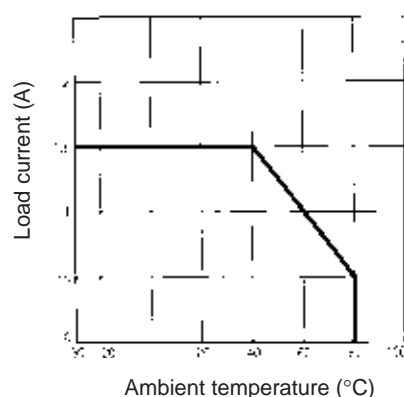
Item	G3R-102PLN-US	G3R-102PN-US	G3R-202PLN-US	G3R-202PN-US	G3RD-X02PN/-101PN-US
Operate time	1 ms max.	1/2 of load power source cycle + 1 ms max.	1 ms max.	1/2 of load power source cycle + 1 ms max.	1 ms max.
Release time	1/2 of load power source cycle + 1 ms max.				1 ms max.
Output ON voltage drop	1.6 V (RMS) max.				1.5 V max.
Leakage current	2 mA max. (at 100 VAC)		2 mA max. (at 100 VAC) 5 mA max. (at 200 VAC)		0.1 mA max. (at 50 VDC) 0.1 mA max. (at 125 VDC)
Insulation resistance	100 MΩ min. (at 500 VDC)				
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min				2,500 VAC, 50/60 Hz for 1 min
Vibration resistance	Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude				
Shock resistance	Malfunction: 1,000 m/s ²				
Ambient temperature	Operating: -30°C to 80°C (with no icing or condensation) Storage: -30°C to 100°C (with no icing or condensation)				
Certified standards	UL508 File No. E64562, CSA C22.2 (No. 14) File No. 35535				
Ambient humidity	Operating: 45% to 85%				
Weight	Approx. 18 g				

Engineering Data

Load Current vs. Ambient Temperature Characteristics

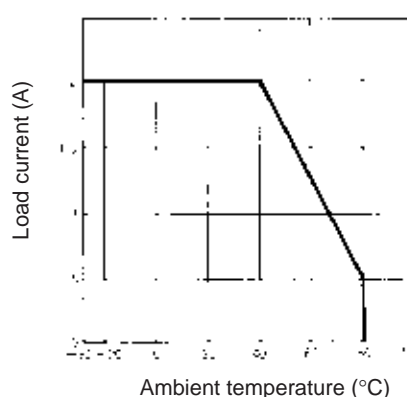
1-A Load Model

G3RD-101PN-US



2-A Load Model

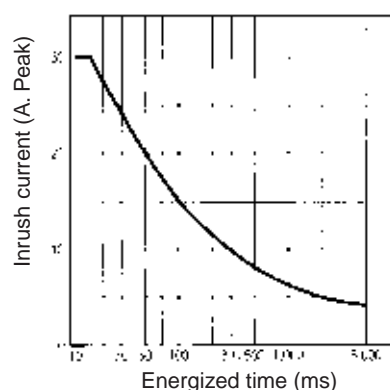
G3R-102□-US, G3RD-X02□-US, G3R-202□-US



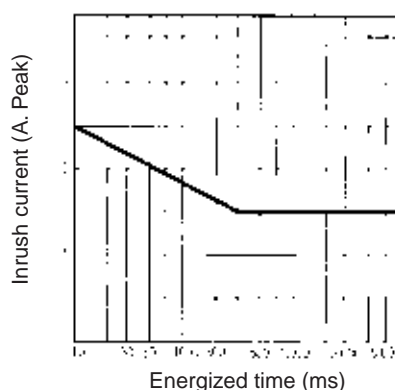
One Cycle Surge Current: Non-repetitive

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

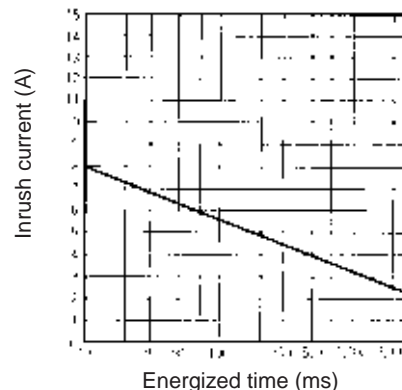
G3R-102□-US/-202□-US



G3RD-101PN-US



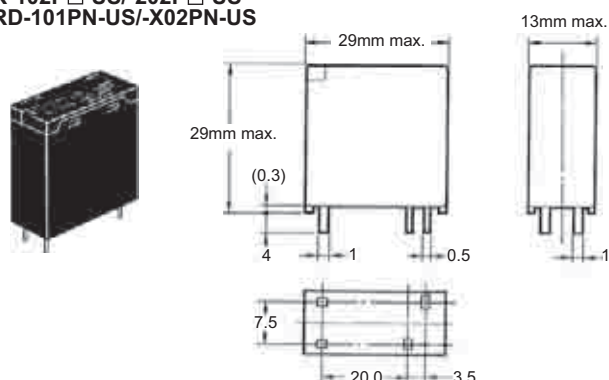
G3RD-X02□-US



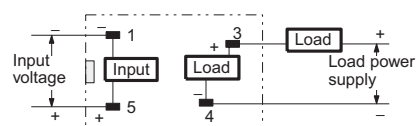
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3R-102P□-US/-202P□-US
G3RD-101PN-US/-X02PN-US

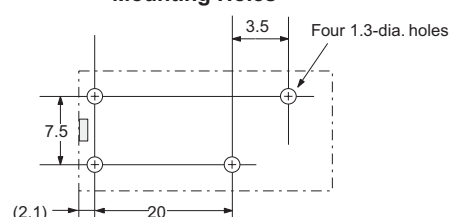


**Terminal Arrangement/
Internal Connections
(Bottom View)**



Note: The plus and minus symbols shown in the parentheses are for DC loads.

Mounting Holes



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 a surge can connect to a load regardless of the polarity of the positive and negative output terminals.

Protective Terminal

For AC inductive loads, connect the load terminals of the SSR to a surge absorber (varistor).

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

Cat. No. K059-E1-05

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



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