

New Models with 75-A and 90-A Output Currents Join the Previous Models with 5- to 40-A Output Currents.

- AC Output Relays with 75-A and 90-A output currents have been added to the G3NA Series. The standard versions of these models provide certification for international standards (-UTU).
- All models feature the same compact dimensions to provide a uniform mounting pitch.
- Built-in varistor effectively absorbs external surges.
- Operation indicator enables monitoring operation.
- Protective cover for greater safety.
- Standard models certified by UL and CSA and -UTU models by TÜV.



Model Number Structure

■ Model Number Legend

G3NA-□□□□□-□
 1 2 3 4 5 6 7

1. Basic Model Name

G3NA: Solid State Relay

2. Load Power Supply

Blank: AC output

D: DC output

3. Rated Load Power Supply Voltage

2: 200 VAC or 200 VDC

4: 400 VAC

4. Rated Load Current

05: 5 A

10: 10 A

20: 20 A

40: 40 A

50: 50 A

75: 75 A

90: 90 A

5. Terminal Type

B: Screw terminals

6. Zero Cross Function

Blank: Equipped with zero cross function (AC-output models only)

7. Certification

Blank: Standard models (certified by UL and CSA)

UTU: Certified by UL, CSA, and TÜV

Ordering Information

List of Models

Isolation	Zero cross function	Indicator	Applicable output load (See note 1.)	Rated input voltage	Model
Phototriac	Yes	Yes	5 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-205B DC5-24
Photocoupler				100 to 120 VAC	G3NA-205B AC100-120
				200 to 240 VAC	G3NA-205B AC200-240
Phototriac			10 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-210B DC5-24
Photocoupler				100 to 120 VAC	G3NA-210B AC100-120
				200 to 240 VAC	G3NA-210B AC200-240
Phototriac			20 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-220B DC5-24
Photocoupler				100 to 120 VAC	G3NA-220B AC100-120
				200 to 240 VAC	G3NA-220B AC200-240
Phototriac			40 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-240B DC5-24
Photocoupler				100 to 120 VAC	G3NA-240B AC100-120
				200 to 240 VAC	G3NA-240B AC200-240
Phototriac	75 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-275B-UTU DC5-24		
Photocoupler		100 to 240 VAC	G3NA-275B-UTU AC100-240		
Phototriac	90 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-290B-UTU DC5-24		
Photocoupler		100 to 240 VAC	G3NA-290B-UTU AC100-240		
Photocoupler	---	10 A at 5 to 200 VDC	5 to 24 VDC	G3NA-D210B DC5-24	
			100 to 240 VAC	G3NA-D210B AC100-240	
	Yes	10 A at 200 to 480 VAC	5 to 24 VDC	G3NA-410B DC5-24	
			100 to 240 VAC	G3NA-410B AC100-240	
		20 A at 200 to 480 VAC	5 to 24 VDC	G3NA-420B DC5-24	
			100 to 240 VAC	G3NA-420B AC100-240	
		40 A at 200 to 480 VAC	5 to 24 VDC	G3NA-440B DC5-24	
			100 to 240 VAC	G3NA-440B AC100-240	
		50 A at 200 to 480 VAC (See note 2.)	5 to 24 VDC	G3NA-450B DC5-24	
		75 A at 200 to 480 VAC (See note 2.)	5 to 24 VDC	G3NA-475B-UTU DC5-24	
			100 to 240 VAC	G3NA-475B-UTU AC100-240	
		90 A at 200 to 480 VAC (See note 2.)	5 to 24 VDC	G3NA-490B-UTU DC5-24	
100 to 240 VAC	G3NA-490B-UTU AC100-240				

*The standard models are certified by UL and CSA. To order a TÜV-certified model, add “-UTU” to the model number.

Note: 1. The applicable output load depends on the ambient temperature. Refer to *Load Current vs. Ambient Temperature* in *Engineering Data*.
2. Loss time increases under 75 VAC. (Refer to page 14.) Confirm operation with the actual load.

Accessories (Order Separately)

One-touch Mounting Plates

Model
R99-12 FOR G3NA

Mounting Bracket

Model	Applicable SSR
R99-11	G3NA-240B, G3NA-440B

Heat Sinks

Slim Models Enabling DIN-track Mounting

Model	Applicable SSR
Y92B-N50	G3NA-205B, G3NA-210B, G3NA-D210B, G3NA-410B, G3NA-210T(L)
Y92B-N100	G3NA-220B, G3NA-420B, G3NA-220T(L)
Y92B-N150	G3NA-240B, G3NA-440B
Y92B-P250	G3NA-450B
Y92B-P250NF (See note.)	G3NA-275B-UTU, G3NA-290B-UTU, G3NA-475B-UTU, G3NA-490B-UTU

Note: The Y92B-P250NF is scheduled for release on May 1, 2004.

Low-cost Models

Model	Applicable SSR
Y92B-A100	G3NA-205B, G3NA-210B, G3NA-D210B, G3NA-220B, G3NA-410B, G3NA-420B
Y92B-A150N	G3NA-240B, G3NA-440B
Y92B-A250	G3NA-440B

Specifications

■ Ratings

Input (at an Ambient Temperature of 25°C)

Model	Rated voltage	Operating voltage	Impedance (See note 1.)	Voltage level	
				Must operate voltage	Must release voltage
G3NA-2□□B	5 to 24 VDC	4 to 32 VDC	7 mA max. (See note 2.)	4 VDC max.	1 VDC min.
	100 to 120 VAC	75 to 132 VAC	36 kΩ±20%	75 VAC max. (See note 3.)	20 VAC min. (See note 3.)
	200 to 240 VAC	150 to 264 VAC	72 kΩ±20%	150 VAC max. (See note 3.)	40 VAC min. (See note 3.)
G3NA-4□□B	5 to 24 VDC	4 to 32 VDC	5 mA max. (See note 2.)	4 VDC max.	1 VDC min.
G3NA-D210B	100 to 240 VAC	75 to 264 VAC	72 kΩ±20%	75 VAC max.	20 VAC min.
G3NA-275B-UTU	5 to 24 VDC	4 to 32 VDC	15 mA max.	4 VDC max.	1 VDC min.
G3NA-290B-UTU	100 to 240 VAC	75 to 264 VAC	72 kΩ±20%	75 VAC max.	20 VAC min.
G3NA-475B-UTU	5 to 24 VDC	4 to 32 VDC	7 mA max.	4 VDC max.	1 VDC min.
G3NA-490B-UTU	100 to 240 VAC	75 to 264 VAC	72 kΩ±20%	75 VAC max.	20 VAC min.

Note: 1. The input impedance is measured at the maximum value of the rated supply voltage (for example, with the model rated at 100 to 120 VAC, the input impedance is measured at 120 VAC).

2. With constant current input circuit system. The impedance for the G3NA-2□□B-UTU is 15 mA max.

3. Refer to *Temperature Characteristics (for Must Operate Voltage and Must Release Voltage)* in *Engineering Data* for further details.

Output

Model	Applicable load				
	Rated load voltage	Load voltage range	Load current (See note 1.)		Inrush current
			With heat sink (See note 2.)	Without heat sink	
G3NA-205B	24 to 240 VAC	19 to 264 VAC	0.1 to 5 A (at 40°C)	0.1 to 3 A (at 40°C)	60 A (60 Hz, 1 cycle)
G3NA-210B			0.1 to 10 A (at 40°C)	0.1 to 4 A (at 40°C)	150 A (60 Hz, 1 cycle)
G3NA-410B	200 to 480 VAC	180 to 528 VAC	0.2 to 10 A (at 40°C)	0.2 to 4 A (at 40°C)	440 A (60 Hz, 1 cycle)
G3NA-220B	24 to 240 VAC	19 to 264 VAC	0.1 to 20 A (at 40°C)	0.1 to 4 A (at 40°C)	
G3NA-420B	200 to 480 VAC	180 to 528 VAC	0.2 to 20 A (at 40°C)	0.2 to 4 A (at 40°C)	
G3NA-240B	24 to 240 VAC	19 to 264 VAC	0.1 to 40 A (at 40°C)	0.1 to 6 A (at 40°C)	
G3NA-440B	200 to 480 VAC	180 to 528 VAC	0.2 to 40 A (at 40°C)	0.2 to 6 A (at 40°C)	
G3NA-450B	200 to 480 VAC	180 to 528 VAC	0.2 to 50 A (at 40°C)	0.2 to 6 A (at 40°C)	
G3NA-D210B	5 to 200 VDC	4 to 220 VDC	0.1 to 10 A (at 40°C)	0.1 to 4 A (at 40°C)	
G3NA-275B-UTU	24 to 240 VAC	19 to 264 VAC	1 to 75 A (at 40°C)	1 to 7 A (at 40°C)	800 A (60 Hz, 1 cycle)
G3NA-475B-UTU	200 to 480 VAC	180 to 528 VAC	1 to 75 A (at 40°C)	1 to 7 A (at 40°C)	800 A (60 Hz, 1 cycle)
G3NA-290B-UTU	24 to 240 VAC	19 to 264 VAC	1 to 90 A (at 40°C)	1 to 7 A (at 40°C)	1,000 A (60 Hz, 1 cycle)
G3NA-490B-UTU	200 to 480 VAC	180 to 528 VAC	1 to 90 A (at 40°C)	1 to 7 A (at 40°C)	1,000 A (60 Hz, 1 cycle)

Note: 1. The load current varies depending on the ambient temperature. Refer to *Load Current vs. Ambient Temperature* under *Engineering Data*.

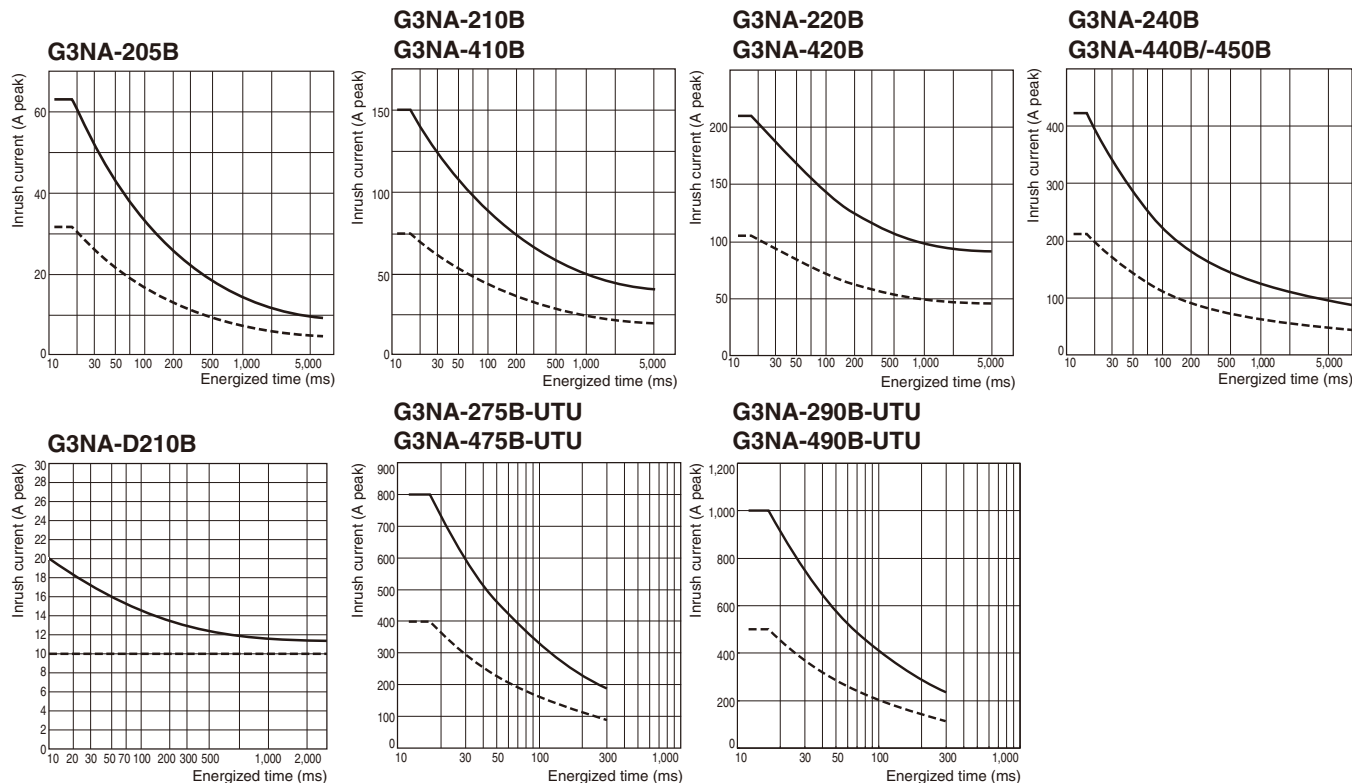
2. When an OMRON Heat Sink (refer to *Options*) or a heat sink of the specified size is used.

■ Characteristics

Item	G3NA-205B	G3NA-210B	G3NA-220B	G3NA-240B	G3NA-410B	G3NA-420B	G3NA-440B	G3NA-450B	G3NA-D210B	G3NA-275B-UTU	G3NA-290B-UTU	G3NA-475B-UTU	G3NA-490B-UTU
Operate time	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)								1 ms max. (DC input) 30 ms max. (AC input)	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)			
Release time	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)								5 ms max. (DC input) 30 ms max. (AC input)	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)			
Output ON voltage drop	1.6 V (RMS) max.				1.8 V (RMS) max.				1.5 V max.	1.6 V (RMS) max.		1.8 V (RMS) max.	
Leakage current	5 mA max. (at 100 VAC) 10 mA max. (at 200 VAC)				10 mA max. (at 200 VAC) 20 mA max. (at 400 VAC)				5 mA max. (at 200 VDC)	5 mA max. (at 100 VAC) 10 mA max. (at 200 VAC)		10 mA max. (at 200 VAC) 20 mA max. (at 400 VAC)	
Insulation resistance	100 MΩ min. (at 500 VDC)												
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min									4,000 VAC, 50/60 Hz for 1 min			
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)												
Shock resistance	Destruction: 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)												
Ambient humidity	Operating: 45% to 85%												
Weight	Approx. 60 g			Approx. 70 g	Approx. 80 g				Approx. 70 g	Approx. 120 g			

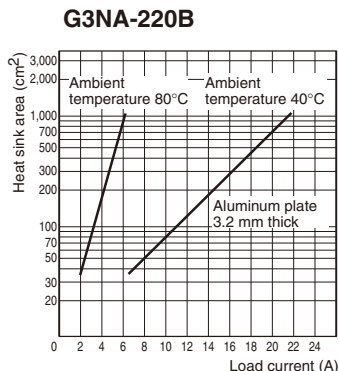
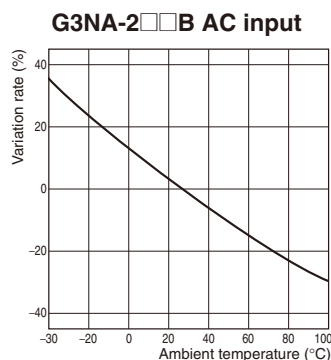
One Cycle Surge Current

The values shown by the solid line are for non-repetitive inrush currents. Keep the inrush current below the values shown by the dotted line if it occurs repetitively.



Temperature Characteristics (for Must Operate Voltage and Must Release Voltage)

Heat Sink Area vs. Load Current



Note: The heat sink area refers to the combined area of the sides of the heat sink that radiate heat. For example, when a current of 18 A is allowed to flow through the SSR at 40°C, the graph shows that the heat sink area is about 450 cm². Therefore, if the heat sink is square, one side of the heat sink must be 15 cm ($\sqrt{450 \text{ (cm}^2\text{)}/2}$) or longer.

Thermal Resistance Rth (Back of Junction SSR) (Examples)

Model	Rth (°C/W)
G3NA-205B	3.22
G3NA-210B	2.62
G3NA-220B	1.99
G3NA-240B	0.45
G3NA-275B-UTU G3NA-475B-UTU G3NA-290B-UTU G3NA-490B-UTU	0.45
G3NA-D210B	2.62

Thermal Resistance Rth of Heat Sinks (Examples)

Model	Rth (°C/W)
Y92B-N50	2.8
Y92B-N100	1.63
Y92B-N150	1.38
Y92B-A100	1.63
Y92B-A150N	1.37
Y92B-A250	1.00
Y92B-P250NF	0.46

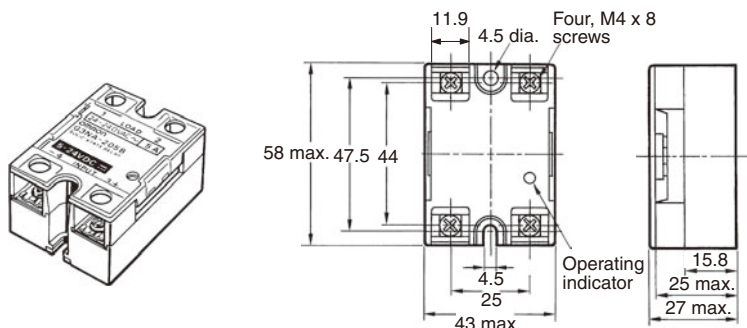
Note: When using a commercially available heat sink, use one with a thermal resistance equal to or less than the OMRON Heat Sink.

Dimensions

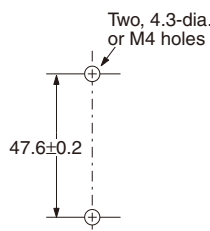
Relays

Note: All units are in millimeters unless otherwise indicated.

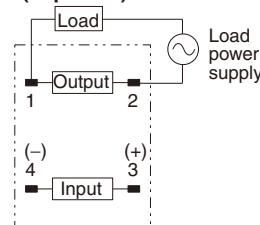
G3NA-205B, G3NA-210B, G3NA-220B, G3NA-410B, G3NA-420B



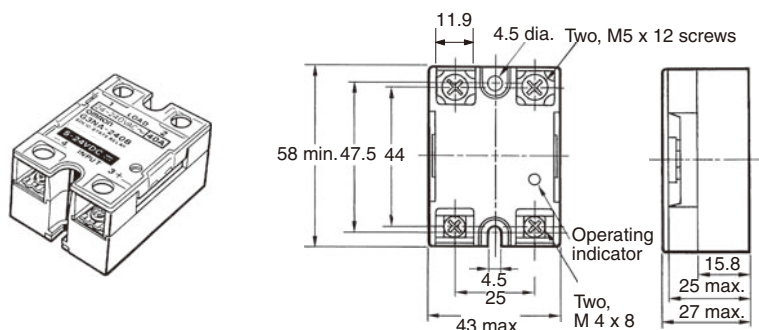
Mounting Holes



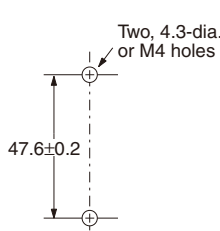
Terminal Arrangement/ Internal Connections (Top View)



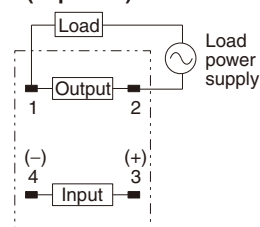
G3NA-240B, G3NA-440B



Mounting Holes

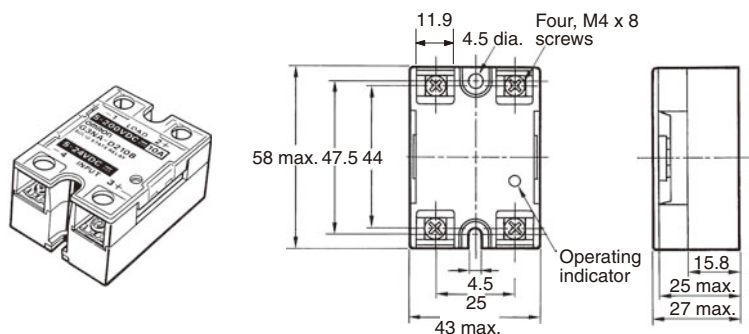


Terminal Arrangement/ Internal Connections (Top View)

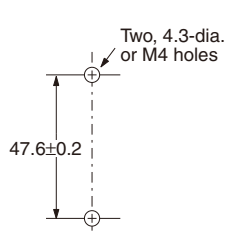


G3NA-D210B

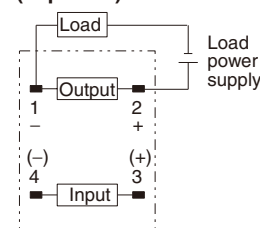
Note: The load can be connected to either the positive or negative side.



Mounting Holes

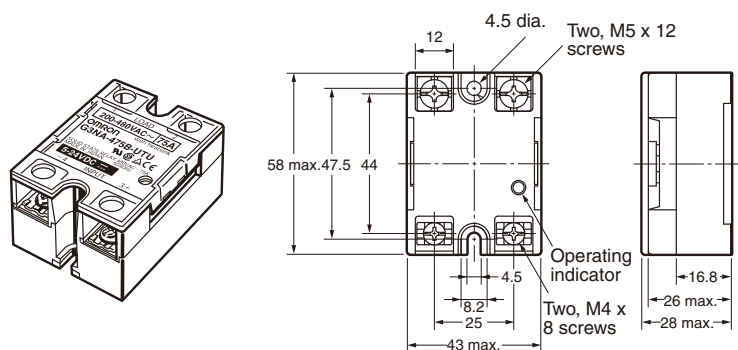


Terminal Arrangement/ Internal Connections (Top View)

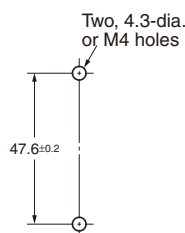


Note: When connecting the load, either the positive or negative side of the load terminals can be connected.

G3NA-275B-UTU, G3NA-475B-UTU, G3NA-290B-UTU, G3NA-490B-UTU



Mounting Holes



Terminal Arrangement/ Internal Connections (Top View)

