

Solid State Relays

G3NA

The reliable choice for Hockey-puck-style Solid State Relays.

Available in a Wide Range of Currents.

- All models feature the same compact dimensions to provide a uniform mounting pitch.
- Built-in varistor effectively absorbs external surges. (except G3NA-D210B-UTU)
- Operation indicator enables monitoring operation.
- Protective cover for greater safety.
- Certified by UL, CSA, and TÜV.



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



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

The following models are scheduled to close the order at the end of March 2020.

- Models without "-UTU" (Not certified by TÜV)
- Models with rated input voltage "AC 100-120" and "AC 200-240".

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

Note: Not all combinations of current and voltage are available.

05: 5 A

10: 10 A

20: 20 A

25: 25 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

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-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-205B-UTU AC100-240			
Phototriac			10 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-210B-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-210B-UTU AC100-240			
Phototriac			20 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-220B-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-220B-UTU AC100-240			
Phototriac			25 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-225B-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-225B-UTU AC100-240			
Phototriac			40 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-240B-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-240B-UTU AC100-240			
Phototriac			50 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-250B-UTU DC5-24		
Photocoupler			100 to 240 VAC	G3NA-250B-UTU AC100-240			
Phototriac			75 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-275B-UTU-2 DC5-24		
Photocoupler			100 to 240 VAC	G3NA-275B-UTU-2 AC100-240			
Phototriac			90 A at 24 to 240 VAC (See note 2.)	5 to 24 VDC	G3NA-290B-UTU-2 DC5-24		
Photocoupler			100 to 240 VAC	G3NA-290B-UTU-2 AC100-240			
					10 A at 200 to 480 VAC	5 to 24 VDC	G3NA-410B-UTU DC5-24
					100 to 240 VAC	G3NA-410B-UTU AC100-240	
					20 A at 200 to 480 VAC	5 to 24 VDC	G3NA-420B-UTU DC5-24
					100 to 240 VAC	G3NA-420B-UTU AC100-240	
					25 A at 200 to 480 VAC	5 to 24 VDC	G3NA-425B-UTU-2 DC5-24
					100 to 240 VAC	G3NA-425B-UTU-2 AC100-240	
					40 A at 200 to 480 VAC	5 to 24 VDC	G3NA-440B-UTU-2 DC5-24
					100 to 240 VAC	G3NA-440B-UTU-2 AC100-240	
					50 A at 200 to 480 VAC	5 to 24 VDC	G3NA-450B-UTU-2 DC5-24
					100 to 240 VAC	G3NA-450B-UTU-2 AC100-240	
					75 A at 200 to 480 VAC	5 to 24 VDC	G3NA-475B-UTU-2 DC5-24
					100 to 240 VAC	G3NA-475B-UTU-2 AC100-240	
					90 A at 200 to 480 VAC	5 to 24 VDC	G3NA-490B-UTU-2 DC5-24
					100 to 240 VAC	G3NA-490B-UTU-2 AC100-240	
---			10 A at 5 to 200 VDC	5 to 24 VDC	G3NA-D210B-UTU DC5-24		
			100 to 240 VAC	G3NA-D210B-UTU AC100-240			

*All models are certified by UL, CSA, and TÜV.

Note: 1. The applicable load is the value for when the SSR is used with silicon grease applied to the specified heat sink. The applicable load depends on the ambient temperature. Refer to *Load Current vs. Ambient Temperature* in *Engineering Data* on page 6.

2. Loss time increases under 75 VAC. (Refer to page 16.) Confirm operation with the actual load.

■ Accessories (Order Separately)

One-touch Mounting Plates

Model
R99-12 FOR G3NA

Heat Sinks

DIN-track Mounting

Model	Applicable SSR
Y92B-N50	G3NA-205B-UTU, G3NA-210B-UTU, G3NA-D210B-UTU, G3NA-410B-UTU, G3NE-210T(L)-US
Y92B-N100	G3NA-220B-UTU, G3NA-420B-UTU, G3NE-220T(L)-US
Y92B-N150	G3NA-225B-UTU, G3NA-240B-UTU, G3NA-425B-UTU-2, G3NA-440B-UTU-2
Y92B-P250	G3NA-250B-UTU, G3NA-450B-UTU-2
Y92B-P250NF	G3NA-275B-UTU-2, G3NA-290B-UTU-2, G3NA-475B-UTU-2, G3NA-490B-UTU-2

Screw Mounting

Model	Applicable SSR
Y92B-A100	G3NA-205B-UTU, G3NA-210B-UTU, G3NA-D210B-UTU, G3NA-220B-UTU, G3NA-410B-UTU, G3NA-420B-UTU
Y92B-A150N	G3NA-225B-UTU, G3NA-240B-UTU, G3NA-425B-UTU-2, G3NA-440B-UTU-2
Y92B-A250	G3NA-440B-UTU-2

G3NA

Specifications

■ Ratings

Input (at an Ambient Temperature of 25°C)

Model	Rated voltage	Operating voltage	Impedance (See note 1.) Input current	Voltage level	
				Must operate voltage	Must release voltage
G3NA-2□□B-UTU(-2)	5 to 24 VDC	4 to 32 VDC	7 mA max. (See note 2.)	4 VDC max.	1 VDC min.
G3NA-475B-UTU-2	100 to 240 VAC	75 to 264 VAC	72 kΩ±20% (See note 1.)	75 VAC max.	20 VAC min.
G3NA-490B-UTU-2					
G3NA-410B-UTU	5 to 24 VDC	4 to 32 VDC	5 mA max. (See note 2.)	4 VDC max.	1 VDC min.
G3NA-420B-UTU	100 to 240 VAC	75 to 264 VAC	72 kΩ±20% (See note 1.)	75 VAC max.	20 VAC min.
G3NA-425B-UTU-2					
G3NA-440B-UTU-2					
G3NA-450B-UTU-2					
G3NA-D210B-UTU					

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 240 VAC, the input impedance is measured at 240 VAC).
2. With constant current input circuit system.

Output

Model	Applicable load					
	Rated load voltage	Load voltage range	Load current (See note 1.)		Inrush current	V _{DRM} V _{CEO} (Reference value)
			With heat sink (See note 2.)	Without heat sink		
G3NA-205B-UTU	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)	600 V (V _{DRM})
G3NA-210B-UTU			0.1 to 10 A (at 40°C)	0.1 to 4 A (at 40°C)	150 A (60 Hz, 1 cycle)	
G3NA-220B-UTU			0.1 to 20 A (at 40°C)	0.1 to 4 A (at 40°C)	220 A (60 Hz, 1 cycle)	
G3NA-225B-UTU			0.1 to 25 A (at 40°C)	0.1 to 4 A (at 40°C)	220 A (60 Hz, 1 cycle)	
G3NA-240B-UTU			0.1 to 40 A (at 40°C)	0.1 to 6 A (at 40°C)	440 A (60 Hz, 1 cycle)	
G3NA-250B-UTU			0.1 to 50 A (at 40°C)	0.1 to 6 A (at 40°C)	440 A (60 Hz, 1 cycle)	
G3NA-275B-UTU-2			1 to 75 A (at 40°C)	1 to 7 A (at 40°C)	800 A (60 Hz, 1 cycle)	
G3NA-290B-UTU-2			1 to 90 A (at 40°C)	1 to 7 A (at 40°C)	1,000 A (60 Hz, 1 cycle)	
G3NA-410B-UTU	200 to 480 VAC	180 to 528 VAC	0.2 to 10 A (at 40°C)	0.2 to 4 A (at 40°C)	150 A (60 Hz, 1 cycle)	1,200 V (V _{DRM})
G3NA-420B-UTU			0.2 to 20 A (at 40°C)	0.2 to 4 A (at 40°C)	220 A (60 Hz, 1 cycle)	
G3NA-425B-UTU-2			0.2 to 25 A (at 40°C)	0.2 to 4 A (at 40°C)	220 A (60 Hz, 1 cycle)	
G3NA-440B-UTU-2			0.2 to 40 A (at 40°C)	0.2 to 6 A (at 40°C)	440 A (60 Hz, 1 cycle)	
G3NA-450B-UTU-2			0.2 to 50 A (at 40°C)	0.2 to 6 A (at 40°C)	440 A (60 Hz, 1 cycle)	
G3NA-475B-UTU-2			1 to 75 A (at 40°C)	1 to 7 A (at 40°C)	800 A (60 Hz, 1 cycle)	
G3NA-490B-UTU-2			1 to 90 A (at 40°C)	1 to 7 A (at 40°C)	1,000 A (60 Hz, 1 cycle)	
G3NA-D210B-UTU	5 to 200 VDC	4 to 220 VDC	0.1 to 10 A (at 40°C)	0.1 to 4 A (at 40°C)	20 A (10 ms)	400 V (V _{CEO})

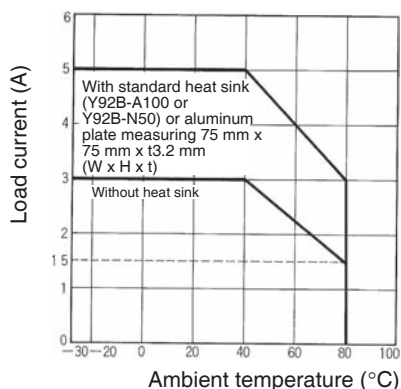
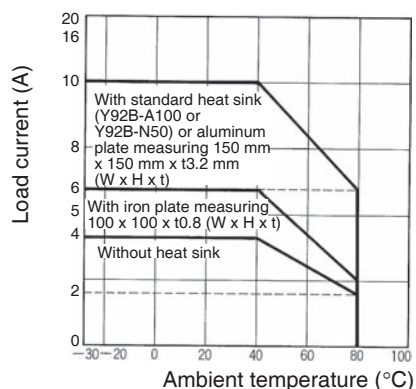
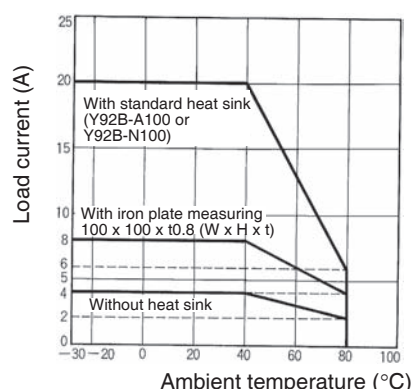
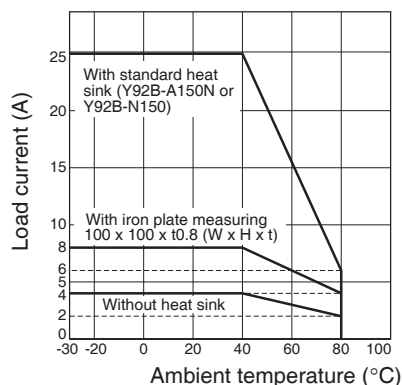
Note: 1. The load current varies depending on the ambient temperature. Refer to *Load Current vs. Ambient Temperature* under *Engineering Data* on page 6.
2. When an OMRON Heat Sink (refer to *Options (Order Separately)*) or a heat sink of the specified size is used.

■ Characteristics

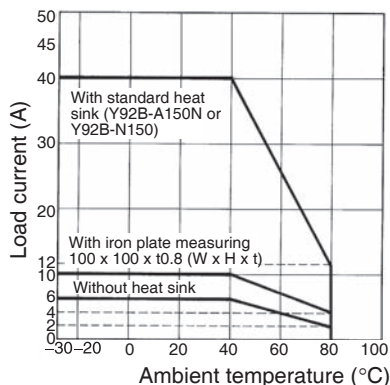
Item	G3NA-205B-UTU	G3NA-210B-UTU	G3NA-220B-UTU	G3NA-225B-UTU	G3NA-240B-UTU	G3NA-250B-UTU	G3NA-275B-UTU-2	G3NA-290B-UTU-2	G3NA-410B-UTU	G3NA-420B-UTU	G3NA-425B-UTU-2	G3NA-440B-UTU-2	G3NA-450B-UTU-2	G3NA-475B-UTU-2	G3NA-490B-UTU-2	G3NA-D210B-UTU
Operate time	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)															1 ms max. (DC input) 30 ms max. (AC input)
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)
Output ON voltage drop	1.6 V (RMS) max.									1.8 V (RMS) max.						1.5 V 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)
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						2,500 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				300m/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. 120 g		Approx. 80 g				Approx. 120 g		Approx. 70 g	
MTTFd (Reference value)	1,000 years min.															

Load Current vs. Ambient Temperature

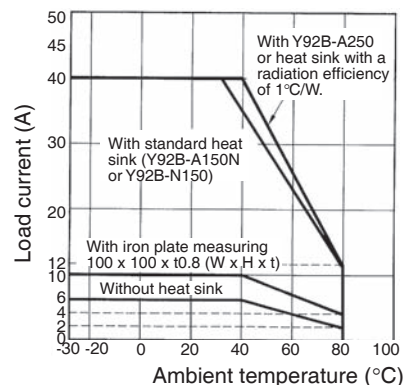
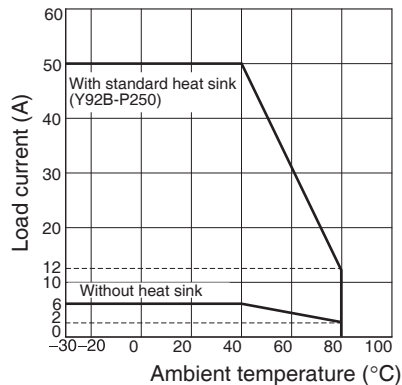
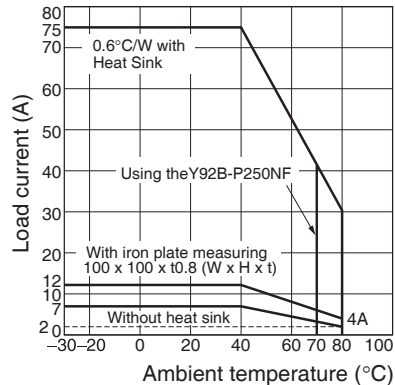
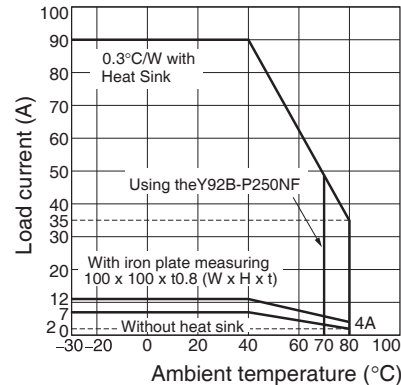
G3NA-205B-UTU

G3NA-210B-UTU
G3NA-410B-UTUG3NA-220B-UTU
G3NA-420B-UTUG3NA-225B-UTU
G3NA-425B-UTU-2

G3NA-240B-UTU

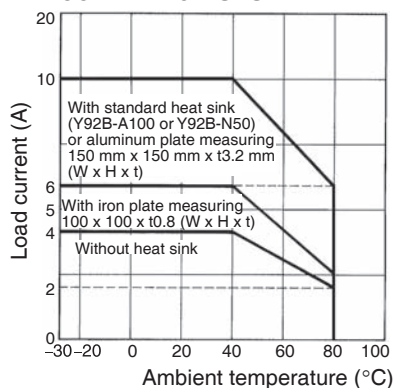


G3NA-440B-UTU-2

G3NA-250B-UTU
G3NA-450B-UTU-2G3NA-275B-UTU-2
G3NA-475B-UTU-2G3NA-290B-UTU-2
G3NA-490B-UTU-2

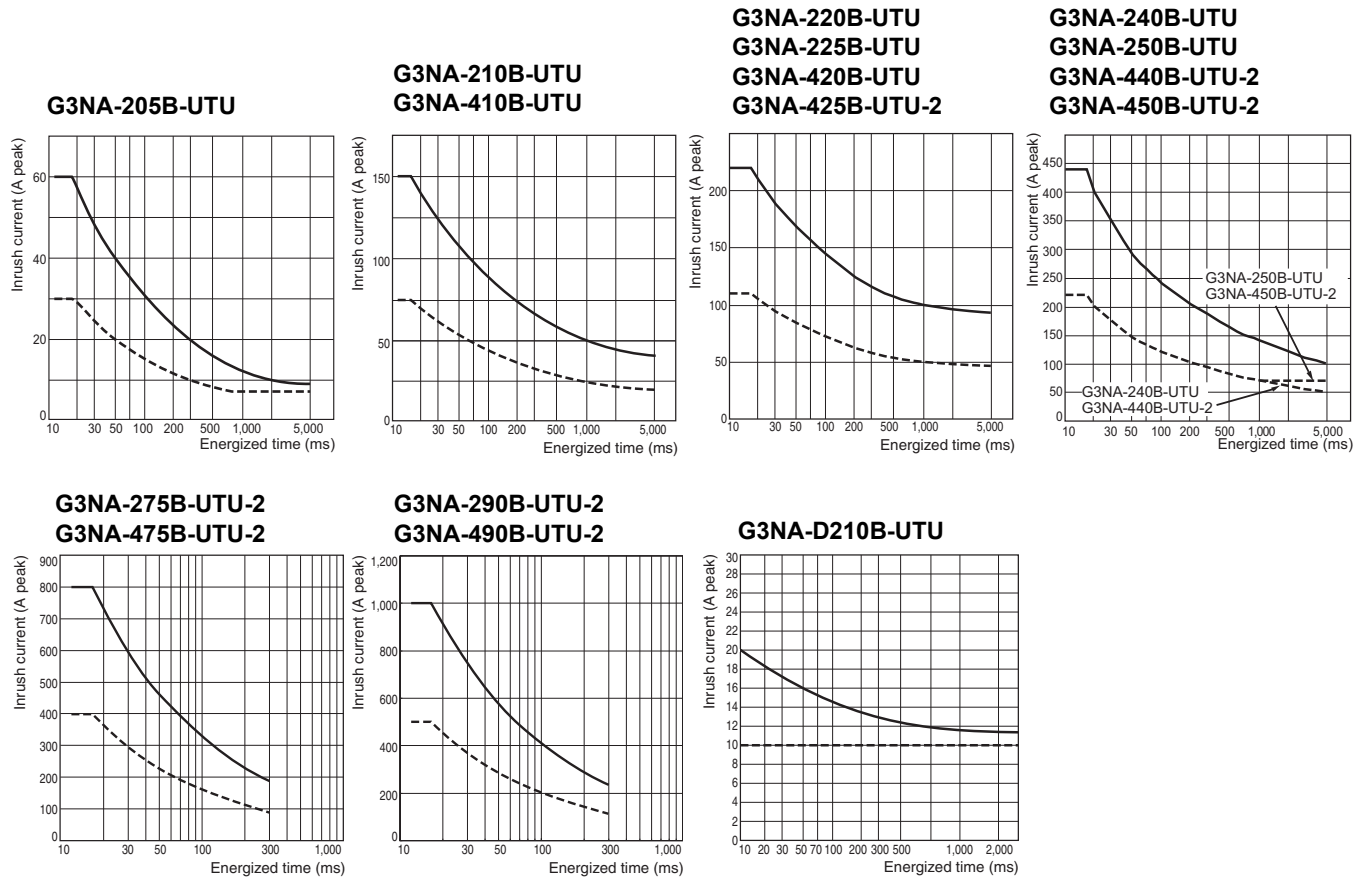
Note: The ambient operating temperature of the Y92B-P250NF is -30 to 70°C.
Be sure the operating temperature is within this range.

G3NA-D210B-UTU



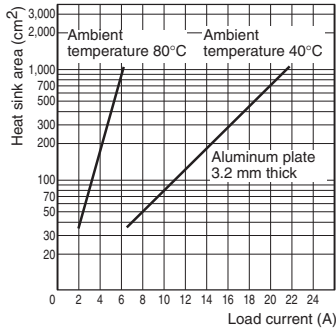
One Cycle Surge Current

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.



Heat Sink Area vs. Load Current

G3NA-220B-UTU



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.

G3NA

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

Model	Rth (°C/W)
G3NA-205B-UTU	3.22
G3NA-210B-UTU	2.62
G3NA-220B-UTU	1.99
G3NA-225B-UTU	
G3NA-240B-UTU	0.45
G3NA-250B-UTU	
G3NA-275B-UTU	
G3NA-290B-UTU	
G3NA-410B-UTU	
G3NA-420B-UTU	
G3NA-425B-UTU-2	
G3NA-440B-UTU-2	
G3NA-450B-UTU-2	
G3NA-475B-UTU	
G3NA-490B-UTU	
G3NA-D210B-UTU	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-P250	0.70
Y92B-P250NF	0.46

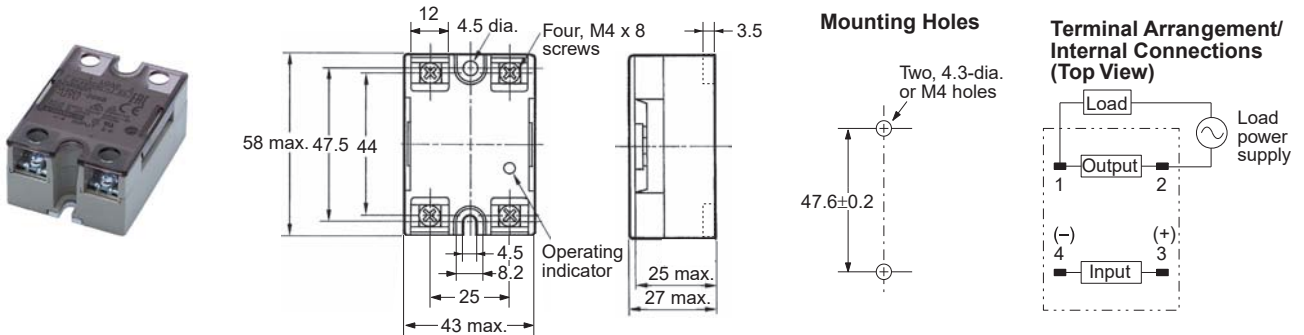
Note: When using a commercially available heat sink, use one with a thermal resistance equal to or less than that of the OMRON Heat Sink.

Dimensions

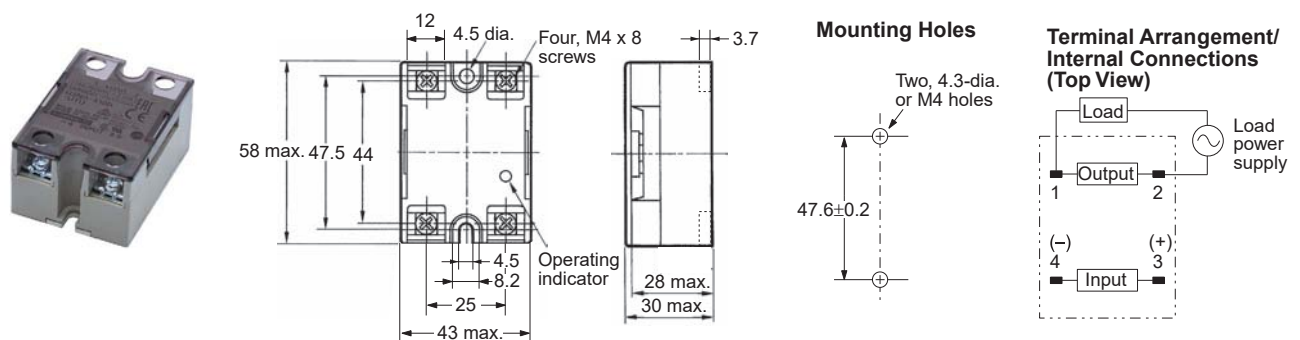
Relays

Note: All units are in millimeters unless otherwise indicated.

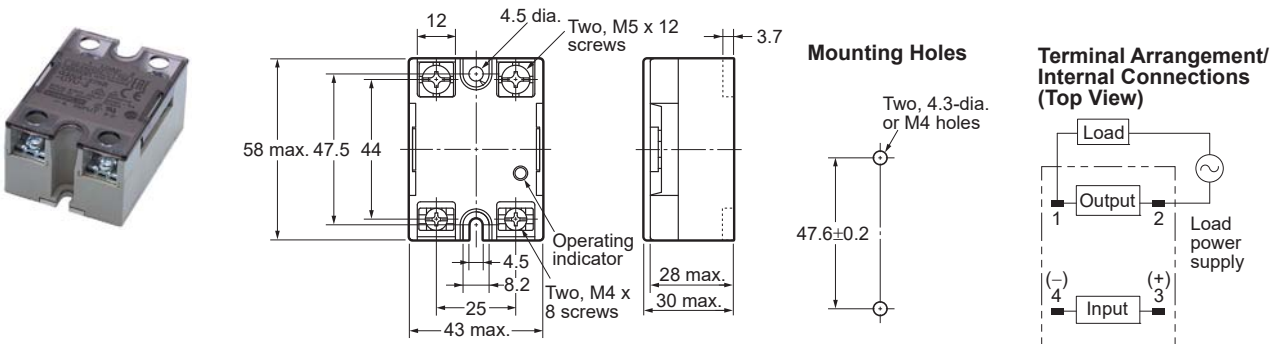
G3NA-205B-UTU, G3NA-210B-UTU, G3NA-220B-UTU, G3NA-225B-UTU



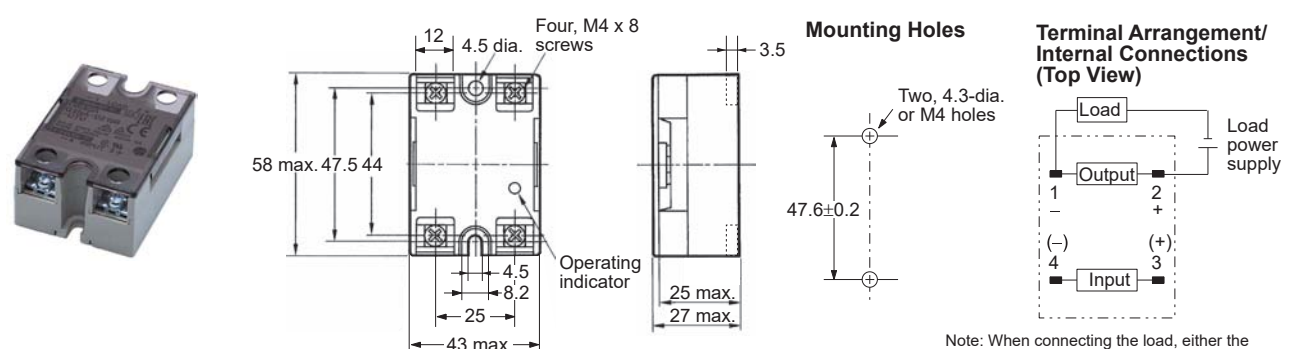
G3NA-410B-UTU, G3NA-420B-UTU, G3NA-425B-UTU-2



G3NA-240B-UTU, G3NA-250B-UTU, G3NA-440B-UTU-2, G3NA-450B-UTU-2 G3NA-275B-UTU-2, G3NA-475B-UTU-2, G3NA-290B-UTU-2, G3NA-490B-UTU-2



G3NA-D210B-UTU



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

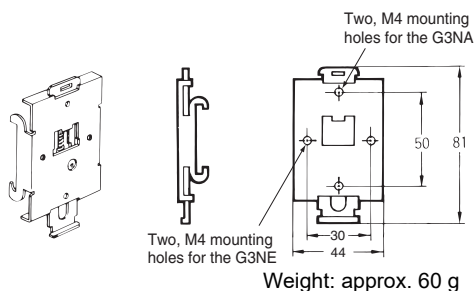
G3NA

Options (Order Separately)

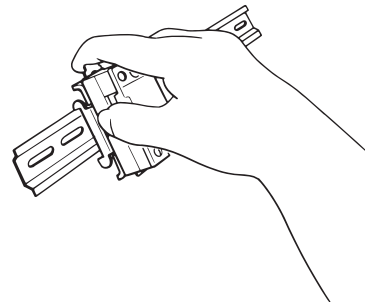
One-touch Mounting Plate

The One-touch Mounting Plate is used to mount the GN3A to a DIN Track.

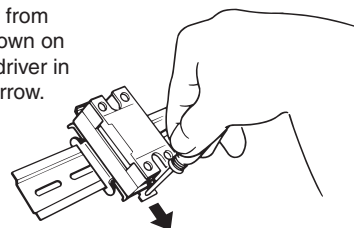
R99-12 FOR G3NA (for the G3NA and G3NE)



To mount the Relay to DIN Track, first mount it to the One-touch Mounting Plate and then attach it to the DIN Track as shown in the diagram.



To remove the Relay from the DIN Track, pull down on the tab with a screwdriver in the direction of the arrow.



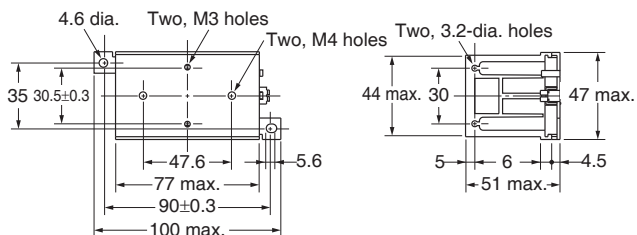
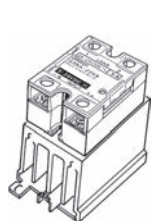
- When a Relay is mounted to DIN Track, use it within the rating for a Relay without a heat sink.
- Use the following DIN Tracks: PFP-100N or PFP-100N2.

Heat Sinks

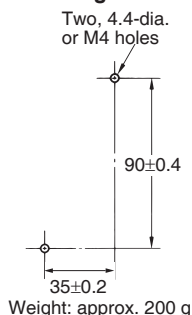
Y92B-N50 Heat Sink (for the G3NA-205B-UTU, G3NA-210B-UTU, G3NA-410B-UTU, G3NA-D210B-UTU, G3NE-210T(L)-US)

For surface mounting, a 30% derating of the load current is required (from the *Load Current vs. Ambient Temperature* graphs).

The orientation indicated by the external dimensions is not the correct mounting orientation. When opening mounting holes, refer to the mounting hole dimensions.



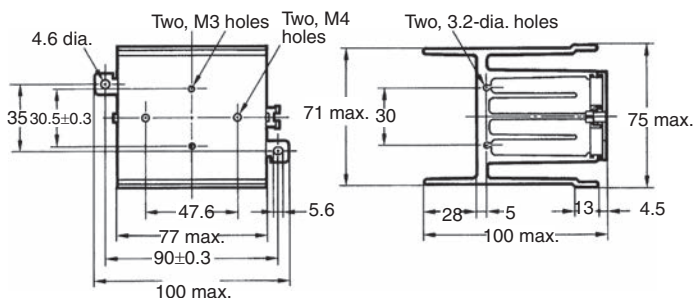
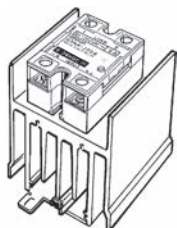
Mounting Holes



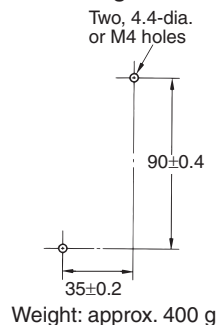
Y92B-N100 Heat Sink (for the G3NA-220B-UTU, G3NA-420B-UTU, G3NE-220T(L)-US)

For surface mounting, a 30% derating of the load current is required (from the *Load Current vs. Ambient Temperature* graphs).

The orientation indicated by the external dimensions is not the correct mounting orientation. When opening mounting holes, refer to the mounting hole dimensions.

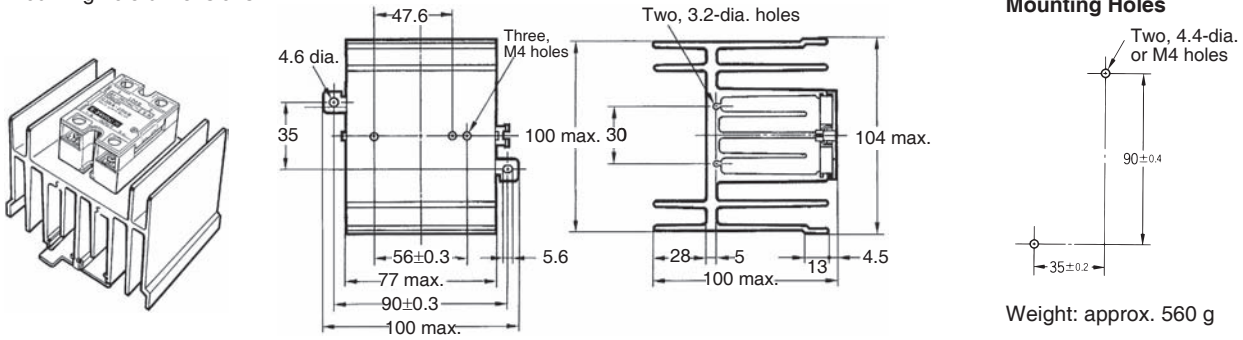


Mounting Holes



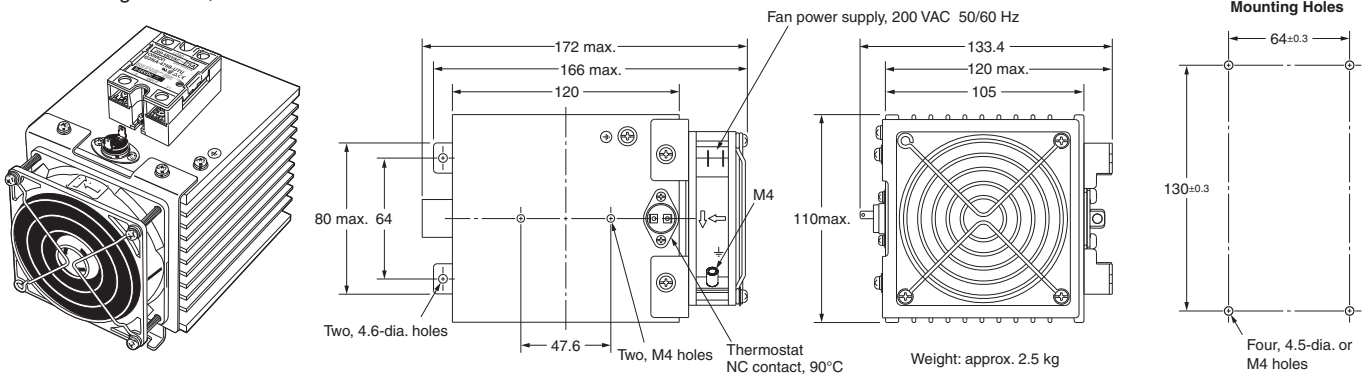
Y92B-N150 Heat Sink (for the G3NA-225B-UTU, G3NA-240B-UTU, G3NA-425B-UTU-2, G3NA-440B-UTU-2)

For surface mounting, a 30% derating of the load current is required (from the *Load Current vs. Ambient Temperature* graphs).
The orientation indicated by the external dimensions is not the correct mounting orientation. When opening mounting holes, refer to the mounting hole dimensions.



Y92B-P250NF Heat Sink (for the G3NA-275B-UTU-2, G3NA-475B-UTU-2, G3NA-290B-UTU-2, G3NA-490B-UTU-2)

For mounting method, refer to "Precautions for Correct Use".



Y92B-P250 (for the G3NA-250B-UTU, G3NA-450B-UTU-2)

