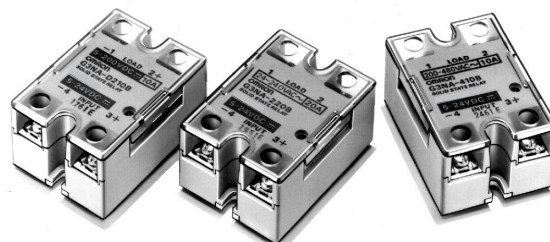


Solid State Relay G3NA

A Wide Range of Models with 5- to 40-A Output Currents and Up to 480-VAC/ 200-VDC Output Voltages

- All models feature the same compact dimensions to provide a uniform mounting pitch. For a lower profile option, see G5NE.
- Built-in varistor effectively absorbs external surges.
- Operation indicator (red LED) enables monitoring operation.
- Protective cover for greater safety.
- Ideal for commercial cooking, industrial/commercial heating, etc.
- Standard models certified by UL/CSA and -UTU models by VDE (TÜV).



Ordering Information

Isolation	Zero cross function	Indicator	Rated output load (applicable output load)	Rated input voltage	Model		
Phototriac	Yes	Yes	5 A at 24 to 240 VAC* (19 to 264 VAC)	5 to 24 VDC	G3NA-205B		
Photocoupler				100 to 120 VAC			
				200 to 240 VAC			
Phototriac			10 A at 24 to 240 VAC* (19 to 264 VAC)	5 to 24 VDC	G3NA-210B		
Photocoupler				100 to 120 VAC			
				200 to 240 VAC			
	—		10 A at 200 to 480 VAC* (180 to 528 VAC)	5 to 24 VDC	G3NA-410B		
			100 to 240 VAC				
			10 A at 5 to 200 VDC* (4 to 220 VDC)	5 to 24 VDC	G3NA-D210B		
	Yes		20 A at 24 to 240 VAC* (19 to 264 VAC)	5 to 24 VDC	G3NA-220B		
Phototriac				100 to 120 VAC			
Photocoupler				200 to 240 VAC			
			20 A at 200 to 480 VAC* (180 to 528 VAC)	5 to 24 VDC	G3NA-420B		
				100 to 240 VAC			
				40 A at 24 to 240 VAC* (19 to 264 VAC)		5 to 24 VDC	G3NA-240B
Phototriac	100 to 120 VAC	200 to 240 VAC	5 to 24 VDC	G3NA-440B			
Photocoupler					100 to 240 VAC	5 to 24 VDC	G3NA-450B
	50 A at 200 to 480 VAC* (180 to 528 VAC)	5 to 24 VDC					

*Loss time increases under 75 VAC.

Note: When ordering a TÜV-approved model, add "-UTU" to the model number as shown below:
Example: G3NA-210B-UTU.

■ Accessories (Order Separately)

Heat Sink

The following heat sinks are thin and can be DIN-track mounted (except Y92B-P250). See *Dimensions* for details.

Model	Applicable SSR
Y92B-N50	G3NA-205B, G3NA-210B, G3NA-D210B, G3NA-410B, G3NE-205T(L), G3NE-210T(L)
Y92B-N100	G3NA-220B, G3NA-420B, G3NE-220T(L)
Y92B-N150	G3NA-240B, G3NA-440B
Y92B-P250	G3NA-450B

Low-cost Models

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

Mounting Bracket

Used to mount the G3NA with a mounting dimension of 56 mm.

Model	Applicable SSR
R99-11	G3NA-420B, G3NA-440B

See *Dimensions* for details.

Specifications

■ Input Ratings

(Ambient temperature: 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.

- 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-□□□B-UTU is 15 mA max.
 3. Refer to the "Engineering Data" for further details.

■ Output Ratings

Model	Applicable load				
	Rated load voltage	Load voltage range	Load current		Inrush current
			With heat sink*	Without heat sink	
G3NA-205B	24 to 240 VAC	19 to 264 VAC	0.1 to 5 A	0.1 to 3 A	60 A (60 Hz, 1 cycle)
G3NA-210B			0.1 to 10 A	0.1 to 4 A	150 A (60 Hz, 1 cycle)
G3NA-410B	200 to 480 VAC	180 to 528 VAC	0.2 to 10 A	0.2 to 4 A	220 A (60 Hz, 1 cycle)
G3NA-220B	24 to 240 VAC	19 to 264 VAC	0.1 to 20 A	0.1 to 4 A	
G3NA-420B	200 to 480 VAC	180 to 528 VAC	0.2 to 20 A	0.2 to 4 A	440 A (60 Hz, 1 cycle)
G3NA-240B	24 to 240 VAC	19 to 264 VAC	0.1 to 40 A	0.1 to 6 A	
G3NA-440B	200 to 480 VAC	180 to 528 VAC	0.2 to 40 A	0.2 to 6 A	
G3NA-450B	200 to 480 VAC	180 to 528 VAC	0.2 to 50 A	0.2 to 6 A	
G3NA-D210B	5 to 200 VDC	4 to 220 VDC	0.1 to 10 A	0.1 to 4 A	20 A (10 ms)

*When the appropriate size OMRON heat sink is used.

■ Characteristics

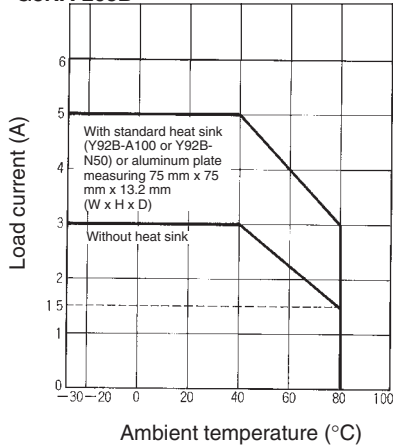
Item		G3NA-205B, -210B, -220B	G3NA-240B	G3NA-410B, -420B, -440B, -450B	G3NA-D210B
Operate time	DC input	1/2 of load power source cycle + 1 ms max.			1 ms max.
	AC input	1 1/2 of load power source cycle + 1 ms max.			30 ms max.
Release time	DC input	1/2 of load power source cycle + 1 ms max.			5 ms max.
	AC input	1 1/2 of load power source cycle + 1 ms max.			30 ms max.
Output ON voltage drop		1.6 V (RMS) max.	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	5 mA max. at 200 VDC
		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 minute			
Vibration resistance	Malfunction	10 to 55 Hz, 1.5 mm double amplitude			
Shock resistance	Malfunction	1,000 m/s ²			
Ambient temperature	Operating	-30° to 80°C (with no icing or condensation)			
	Storage	-30° to 100°C (with no icing or condensation)			
Approved standards		UL508 File No. E64562/CSA C22.2 (No.0, No.14) File No. LR35535 (except for G3NA-450B) TÜV R9151660 (EN60950) (except for G3NA-4□0B)			
Ambient humidity	Operating	45% to 85%			
Weight		Approx. 60 g (2.1 oz.)	Approx. 70 g (2.5 oz.)	Approx. 80 g (2.8 oz.)	Approx. 70 g (2.5 oz.)

Note: Data shown are of initial value.

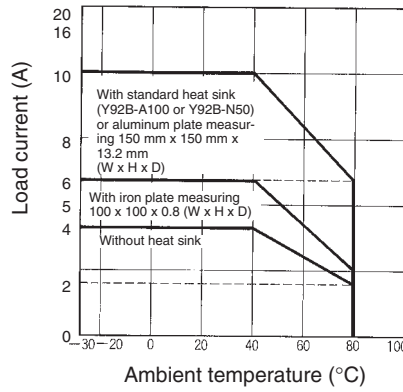
Engineering Data

Load Current vs. Ambient Temperature Characteristics

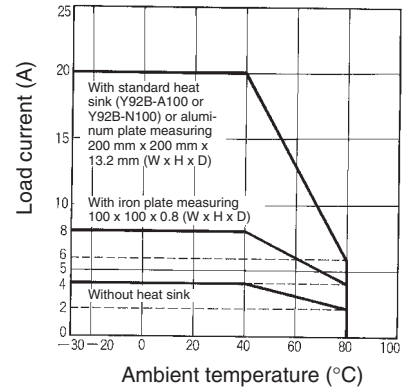
G3NA-205B



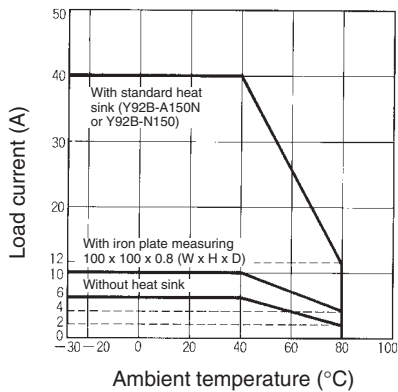
G3NA-210B/410B



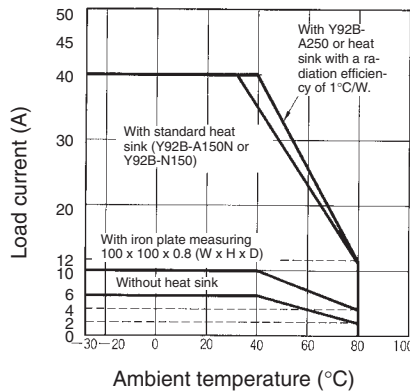
G3NA-220B/420B



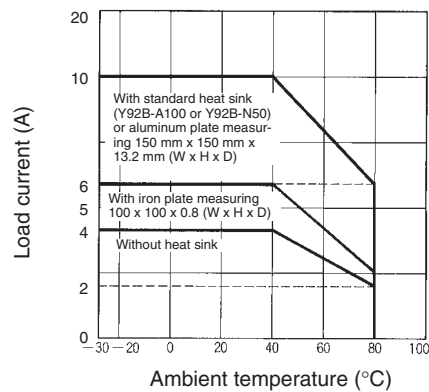
G3NA-240B



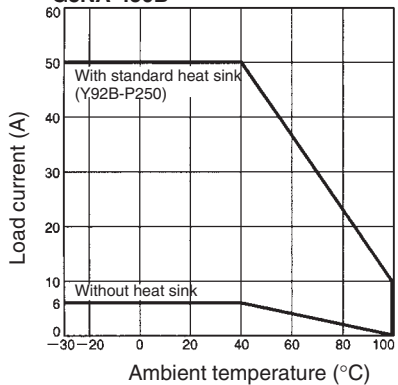
G3NA-440B



G3NA-D210B



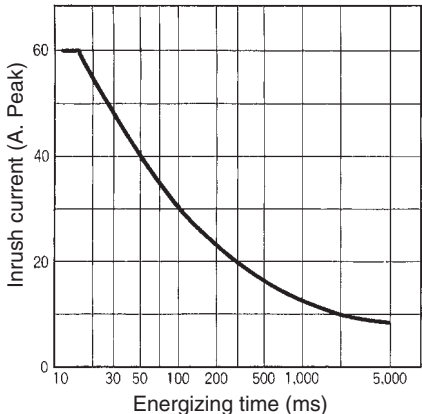
G3NA-450B



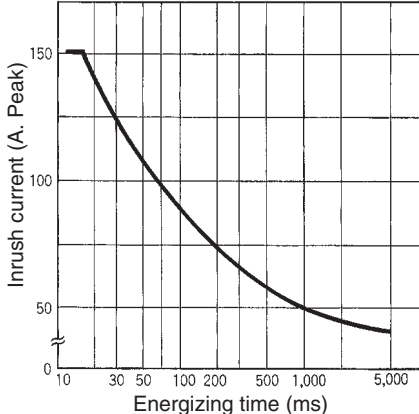
Inrush Current Resistivity

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

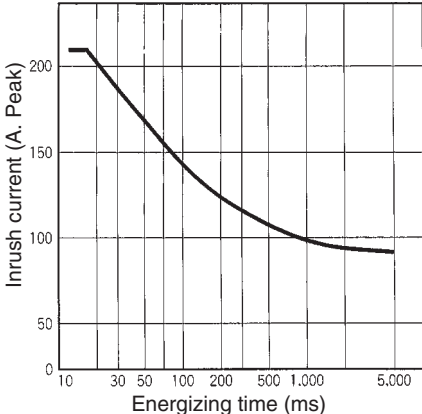
G3NA-205B



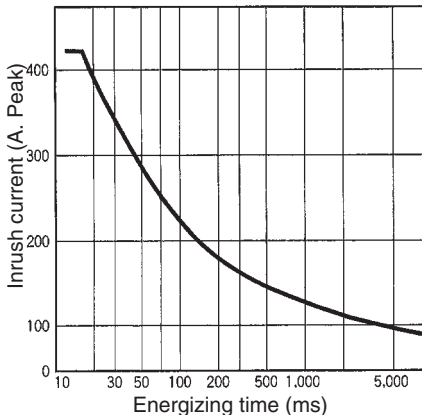
G3NA-210B/410B



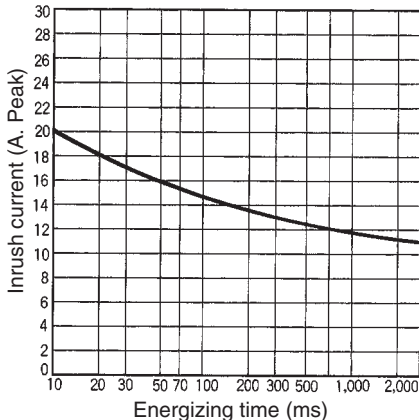
G3NA-220B/420B



G3NA-240B/440B/450B

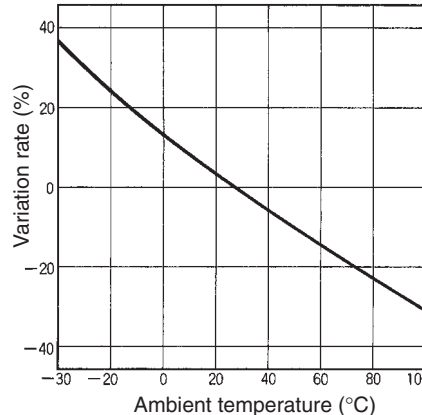


G3NA-D210B



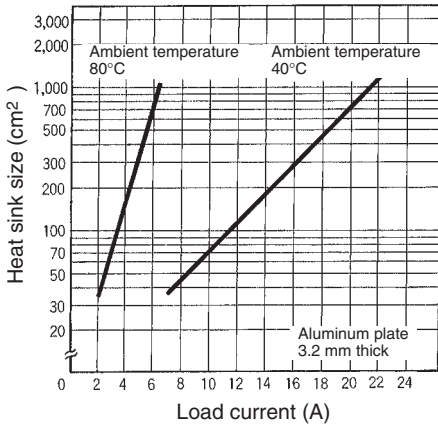
Temperature Characteristics (with Must Operate Voltage and Must Release Voltage)

G3NA-2□□B AC Input



Heat Sink Size vs. Load Current

G3NA-220B



Note: The heat sink size 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 size is about 450 cm². Therefore, if the heat sink is square, one side of the heat sink must be 15 cm (15² x 2 = 450) or longer.

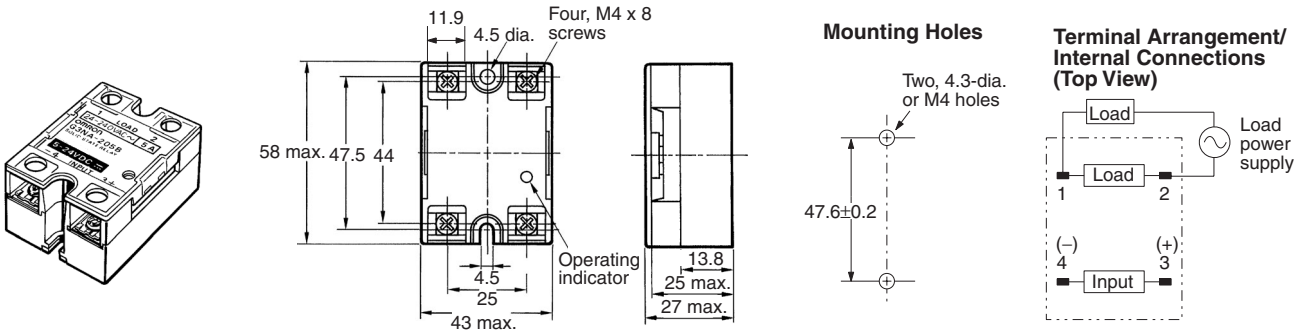
Dimensions

Note: All units are in millimeters unless otherwise indicated.

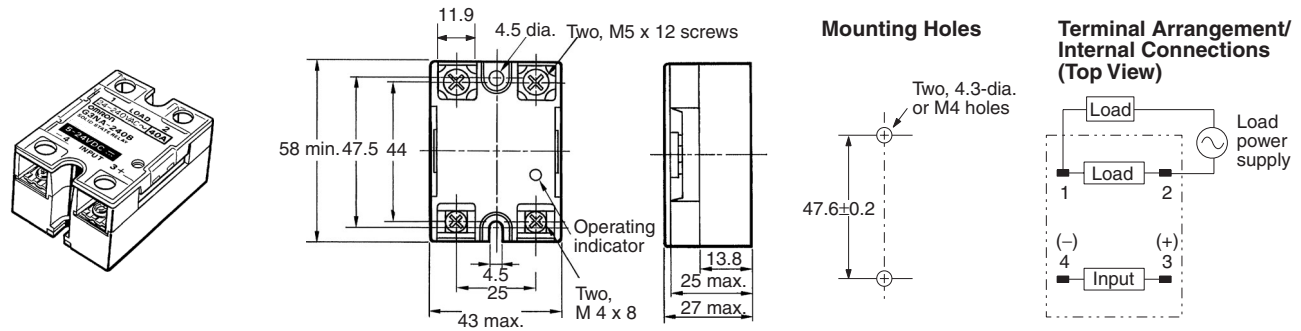
In the case of surface mounting, a 30% derating of the load current is required.

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

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

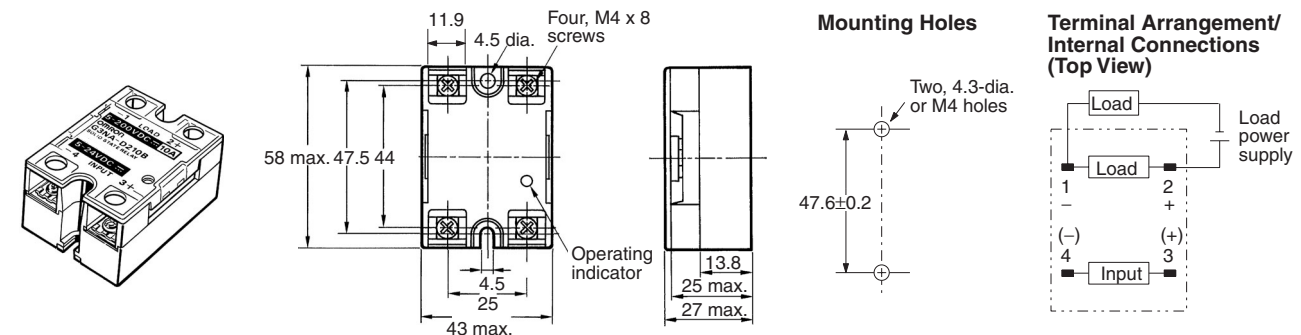


G3NA-240B, G3NA-440B, G3NA-450B



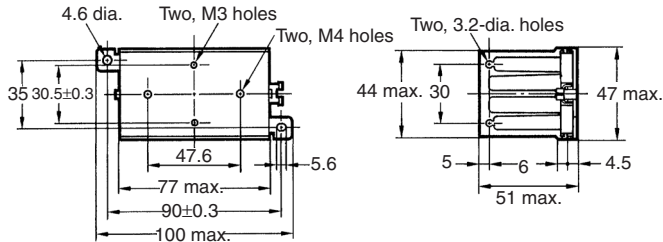
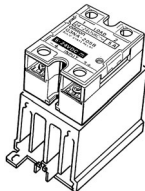
G3NA-D210B

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

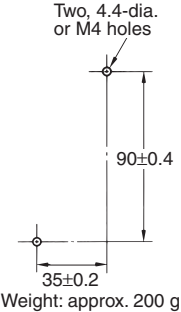


Heat Sink

Y92B-N50

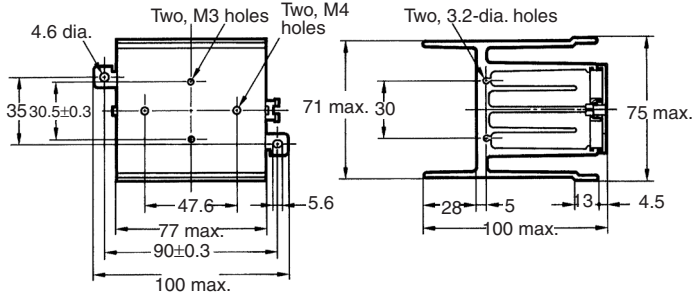
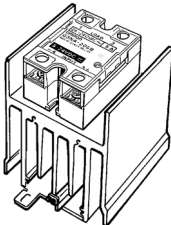


Mounting Holes

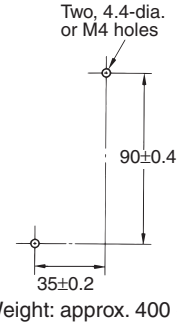


Weight: approx. 200 g

Y92B-N100

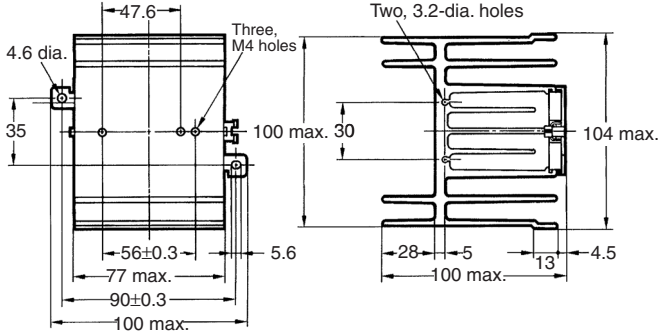
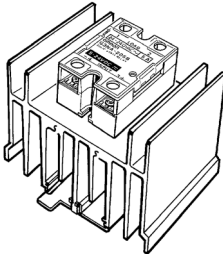


Mounting Holes

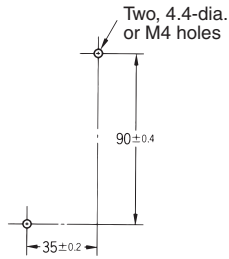


Weight: approx. 400 g

Y92B-N150

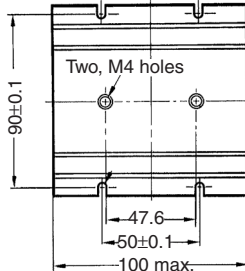


Mounting Holes

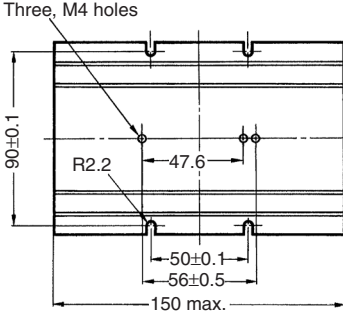


Weight: approx. 560 g

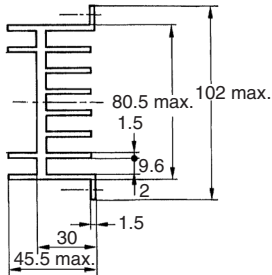
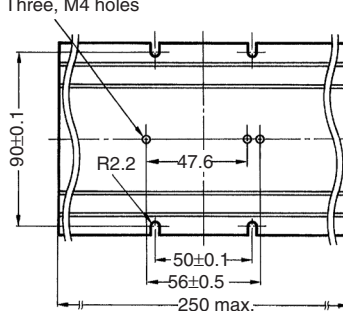
Y92B-A100



Y92B-A150N

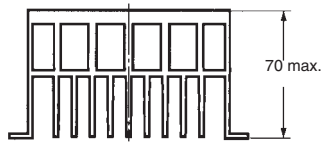
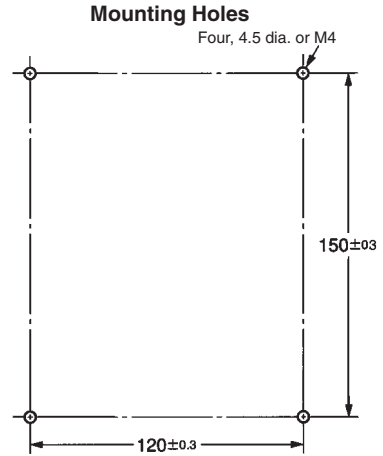
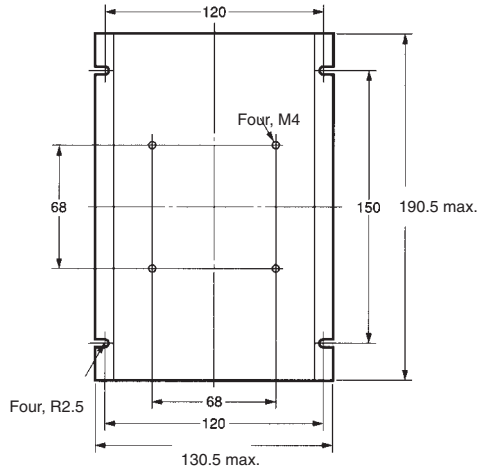
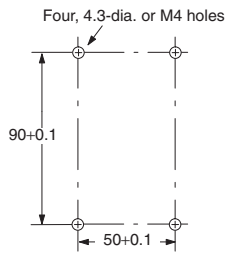


Y92B-A250

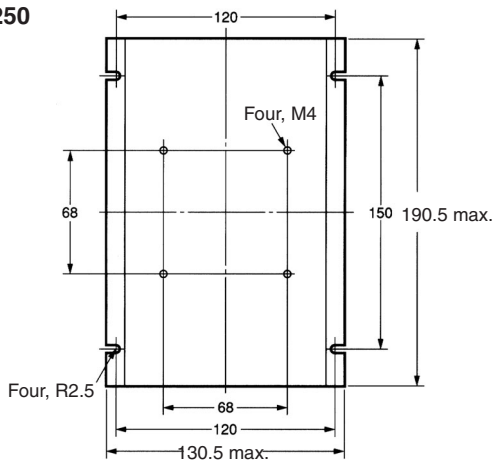


Mounting Holes

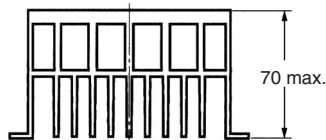
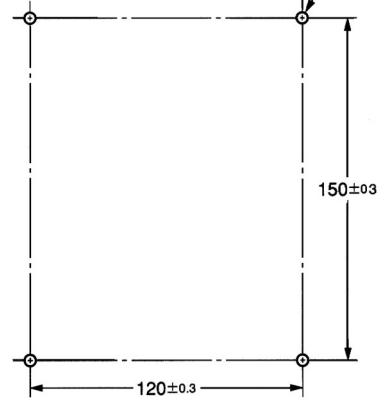
Y92B-A100
Y92B-A150
Y92B-A250



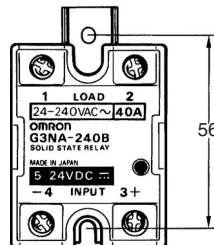
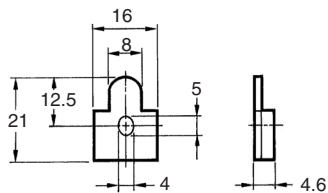
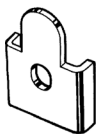
Y92B-P250



Mounting Holes
Four, 4.5 dia. or M4



R99-11



Use Mounting Bracket R99-11 so that the G3NA-240B can be mounted with the same pitch as that of the G3N-240B.

Precautions

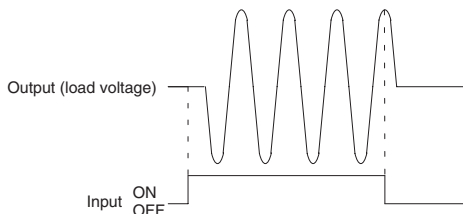
Refer to pages 11 to 19 for general precautions.

Load Connection

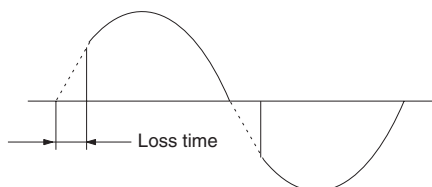
For an AC load, use a power supply rated at 50 or 60 Hz. The maximum operating frequency is 10 Hz. The G3NA has a built-in varistor for overvoltage protection.

Zero Cross Function

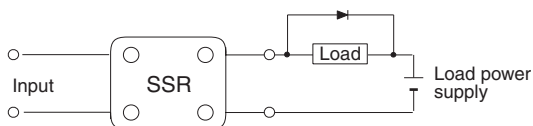
An SSR with a zero cross function operates when an AC load voltage reaches the zero point or its vicinity. This reduces clicking noises when the load is input, and minimizes the influence of an inductive load, such as a lamp, heater, or motor, on the power supply because the inrush current of the load is reduced. This can also minimize the scale of the inrush current protection circuit.



At a low applied voltage, such as 24 VAC, the load current is not fully supplied. When the Unit is switched ON, the voltage required to power the Unit deprives the output signal of the necessary voltage level and thus creates loss time. The lower the load voltage is, the greater the loss time is. This condition, however, will not create any serious problems.



For a DC or L load, a diode should be connected in parallel the load to absorb the counter electromotive force of the load.

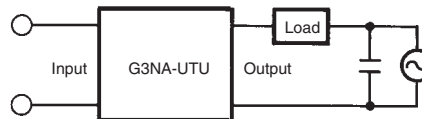


When attaching a heat sink to the G3NA, apply Silicone Grease or equivalent heat conductive grease on the heat sink. (Toshiba Silicon, Shinetsu Silicon, etc.)

Tighten the mounting screws of the heat sink with a torque of 0.78 to 0.98 N•m.

EN55011 Measurement of Mains Terminal Disturbance Voltage

The G3NA-UTU conforms to EN55011 standards when a capacitor is connected to the load power supply as shown in the following circuit diagram.



Recommended Capacitor:
Nissei Denki's MKT-series R40 (1 μF)

The output terminal side of the G3NA-D210B is connected to a built-in diode for protecting the SSR from damage that may result from reverse connection. The SSR, however, cannot withstand one minute or more if the wires are connected in reverse order. Therefore, pay the utmost attention not to make polarity mistakes on the load side.

Omron Electronic Components, LLC

Terms and Conditions of Sales

I. GENERAL

- Definitions:** The words used herein are defined as follows.
 - Terms:** These terms and conditions
 - Seller:** Omron Electronic Components LLC and its subsidiaries
 - Buyer:** The buyer of Products, including any end user in section III through VI
 - Products:** Products and/or services of Seller
 - Including:** Including without limitation
- Offer/Acceptance:** These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Distributor:** Any distributor shall inform its customer of the contents after and including section III of these Terms.

II. SALES

- Prices/Payment:** All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at time of shipment. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
- Discounts:** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- Interest:** Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders:** Seller will accept no order less than 200 U.S. dollars net billing.
- Currencies:** If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals:** Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- Taxes:** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
- Financial:** If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation/Etc:** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
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 - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
 - Delivery and shipping dates are estimates only; and
 - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier must be presented in detail in writing to Seller within 30 days of receipt of shipment.

III. PRECAUTIONS

- Suitability:** IT IS THE BUYER'S SOLE RESPONSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in all cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.
- Use with Attention:** The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:
 - Outdoor use, use involving potential chemical contamination or electrical interference.
 - Use in consumer Products or any use in significant quantities.

- Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
 - Systems, machines, and equipment that could present a risk to life or property.
- Prohibited Use:** NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
 - Motorized Vehicle Application:** USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
 - Programmable Products:** Seller shall not be responsible for the Buyer's programming of a programmable Product.

IV. WARRANTY AND LIMITATION

- Warranty:** Seller's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT ALL OTHER WARRANTIES, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS.
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 - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
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