

# Solid State Relays

# G3NE

CSM\_G3NE\_DS\_E\_4\_1

## Compact, Low-cost, SSR Switching 5 to 20 A

- Wide load voltage range: 75 to 264 VAC. Both 100-V and 200-V loads can be handled with the same model.
- Dedicated, compact aluminum PCB and power elements used.
- Built-in varistor effectively absorbs external surges.
- Quick-connect #110 input terminals and #250 output connections. (#187 input terminals and #250 output connections are available.)
- “-US” models certified by UL, CSA, and IEC/EN (TÜV).



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



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

G3NE-□□□□-□-□  
1 2 3 4 5 6 7

#### 1. Basic Model Name

G3NE: Solid State Relay

#### 2. Rated Load Power Supply Voltage

2: 200 VAC

#### 3. Rated Load Current

05: 5 A

10: 10 A

20: 20 A

#### 4. Terminal Type

T: Quick-connect terminals

#### 5. Zero Cross Function

Blank: Equipped with zero cross function

L: Not equipped with zero cross function

#### 6. Special Specifications

Blank: Standard models

2: #187 input terminals

#### 7. Certification

US: Certified by UL, CSA, and TÜV

# Ordering Information

## ■ List of Models

| Isolation  | Zero cross function | Indicator | Rated output load      | Rated input voltage<br>(See note 1, 2.) | Model                                      |
|------------|---------------------|-----------|------------------------|-----------------------------------------|--------------------------------------------|
| Phototriac | Yes                 | No        | 5 A at 100 to 240 VAC  | 5VDC                                    | G3NE-205T-US DC5<br>G3NE-205T-2-US DC5     |
|            |                     |           |                        | 12VDC                                   | G3NE-205T-US DC12<br>G3NE-205T-2-US DC12   |
|            |                     |           |                        | 24VDC                                   | G3NE-205T-US DC24<br>G3NE-205T-2-US DC24   |
|            |                     |           | 10 A at 100 to 240 VAC | 5VDC                                    | G3NE-210T-US DC5<br>G3NE-210T-2-US DC5     |
|            |                     |           |                        | 12VDC                                   | G3NE-210T-US DC12<br>G3NE-210T-2-US DC12   |
|            |                     |           |                        | 24VDC                                   | G3NE-210T-US DC24<br>G3NE-210T-2-US DC24   |
|            |                     |           | 20 A at 100 to 240 VAC | 5VDC                                    | G3NE-220T-US DC5<br>G3NE-220T-2-US DC5     |
|            |                     |           |                        | 12VDC                                   | G3NE-220T-US DC12<br>G3NE-220T-2-US DC12   |
|            |                     |           |                        | 24VDC                                   | G3NE-220T-US DC24<br>G3NE-220T-2-US DC24   |
|            | No                  |           | 5 A at 100 to 240 VAC  | 5VDC                                    | G3NE-205TL-US DC5<br>G3NE-205TL-2-US DC5   |
|            |                     |           |                        | 12VDC                                   | G3NE-205TL-US DC12<br>G3NE-205TL-2-US DC12 |
|            |                     |           |                        | 24VDC                                   | G3NE-205TL-US DC24<br>G3NE-205TL-2-US DC24 |
|            |                     |           | 10 A at 100 to 240 VAC | 5VDC                                    | G3NE-210TL-US DC5<br>G3NE-210TL-2-US DC5   |
|            |                     |           |                        | 12VDC                                   | G3NE-210TL-US DC12<br>G3NE-210TL-2-US DC12 |
|            |                     |           |                        | 24VDC                                   | G3NE-210TL-US DC24<br>G3NE-210TL-2-US DC24 |
|            |                     |           | 20 A at 100 to 240 VAC | 5VDC                                    | G3NE-220TL-US DC5<br>G3NE-220TL-2-US DC5   |
|            |                     |           |                        | 12VDC                                   | G3NE-220TL-US DC12<br>G3NE-220TL-2-US DC12 |
|            |                     |           |                        | 24VDC                                   | G3NE-220TL-US DC24<br>G3NE-220TL-2-US DC24 |

- Note:** 1. The rated input voltage depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in *Engineering Data* on page 4.  
 2. When ordering, specify the input voltage.  
 3. Refer to *List of Certified Models* for a list of products that comply with safety standards. When ordering a UL, CSA, and EN(TÜV) certified model, add "-US" to the model number.

## ■ Accessories (Order Separately)

### One-touch Mounting Plates

| Model              | Applicable SSR |
|--------------------|----------------|
| R99-12<br>FOR G3NA | G3NE           |

### Heat Sinks

The following heat sinks are thin and can be DIN-track mounted.  
 See *Dimensions* for details.

| Model     | Applicable SSR                      |
|-----------|-------------------------------------|
| Y92B-N50  | G3NE-205T(L)(-2)-US/-210T(L)(-2)-US |
| Y92B-N100 | G3NE-220T(L)(-2)-US                 |

# Specifications

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

### Input

| Rated voltage | Operating voltage | Voltage level |              | Input impedance          |                             |
|---------------|-------------------|---------------|--------------|--------------------------|-----------------------------|
|               |                   | Must operate  | Must release | With zero cross function | Without zero cross function |
| 5 VDC         | 4 to 6 VDC        | 4 VDC max.    | 1 VDC min.   | 250 $\Omega \pm 20\%$    | 300 $\Omega \pm 20\%$       |
| 12 VDC        | 9.6 to 14.4 VDC   | 9.6 VDC max.  |              | 600 $\Omega \pm 20\%$    | 800 $\Omega \pm 20\%$       |
| 24 VDC        | 19.2 to 28.8 VDC  | 19.2 VDC max. |              | 1.6 k $\Omega \pm 20\%$  |                             |

**Note:** Each model has 5-VDC, 12-VDC, and 24-VDC input versions.

### Output

| Model               | Applicable load    |                    |                                      |                    |                        |
|---------------------|--------------------|--------------------|--------------------------------------|--------------------|------------------------|
|                     | Rated load voltage | Load voltage range | Load current<br>(See note 1.)        |                    | Inrush current         |
|                     |                    |                    | With heat sink                       | Without heat sink  |                        |
| G3NE-205T(L)(-2)-US | 100 to 240 VAC     | 75 to 264 VAC      | 0.1 to 5 A at 40°C                   | 0.1 to 5 A at 40°C | 60 A (60 Hz, 1 cycle)  |
| G3NE-210T(L)(-2)-US |                    |                    | 0.1 to 10 A at 40°C<br>(See note 2.) | 0.1 to 5 A at 40°C | 150 A (60 Hz, 1 cycle) |
| G3NE-220T(L)(-2)-US |                    |                    | 0.1 to 20 A at 40°C<br>(See note 2.) | 0.1 to 5 A at 40°C | 220 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* for details on page 4.

2. These values apply when using a dedicated heat sink or a radiation plate of specified size.

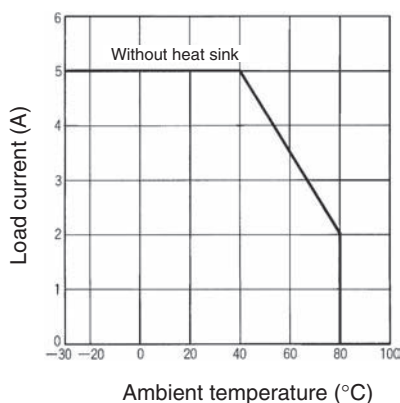
## ■ Characteristics

| Item                   | G3NE-2□□T(-2)-US                                                                                                    | G3NE-2□□TL(-2)-US |
|------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------|
| Operate time           | 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.                                                                          |                   |
| Output ON voltage drop | 1.6 V (RMS) max.                                                                                                    |                   |
| Leakage current        | 2 mA max. (at 100 VAC)<br>5 mA max. (at 200 VAC)                                                                    |                   |
| Insulation resistance  | 100 M $\Omega$ min. (at 500 VDC)                                                                                    |                   |
| Dielectric strength    | 2,000 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 <sup>2</sup>                                                                                 |                   |
| Ambient temperature    | Operating: -30°C to 80°C (with no icing or condensation)<br>Storage: -30°C to 100°C (with no icing or condensation) |                   |
| Ambient humidity       | Operating: 45% to 85%                                                                                               |                   |
| Certified standards    | UL508 File No. E64562/CSA C22.2 (No.0, No.14) File No. LR35535<br>TÜV R9051064 (VDE0435) (EN60950)                  |                   |
| EMC                    | Emission: EN55011 Group 1 Class B<br>Immunity: EN61000-6-2                                                          |                   |
| Weight                 | Approx. 37 g                                                                                                        |                   |

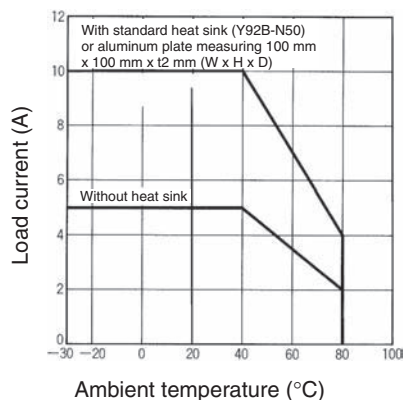
# Engineering Data

## Load Current vs. Ambient Temperature

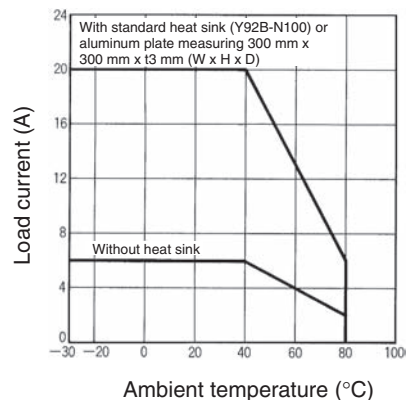
G3NE-205T(L)(-2)-US



G3NE-210T(L)(-2)-US



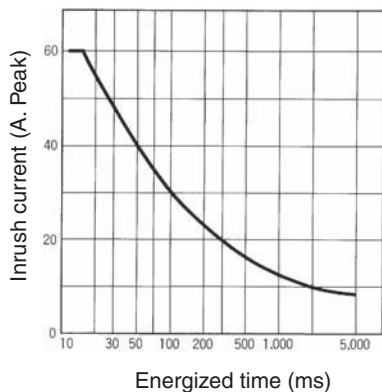
G3NE-220T(L)(-2)-US



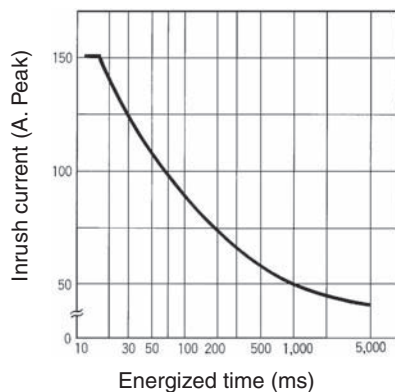
## One Cycle Surge Current: Non-repetitive

**Note:** Keep the inrush current to half the rated value if it occurs repetitively.

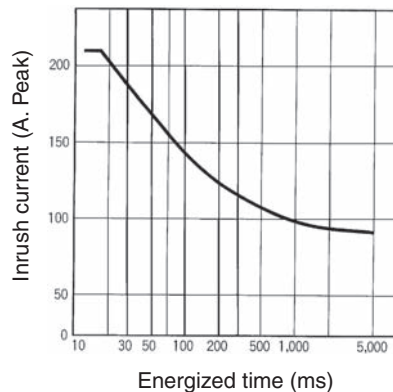
G3NE-205T(L)(-2)-US



G3NE-210T(L)(-2)-US



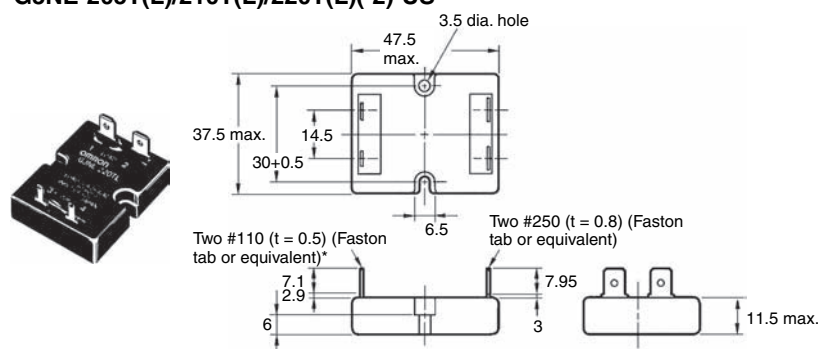
G3NE-220T(L)(-2)-US



## Dimensions

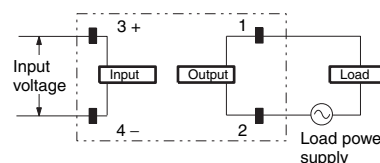
**Note:** All units are in millimeters unless otherwise indicated.

### G3NE-205T(L)/210T(L)/220T(L)(-2)-US

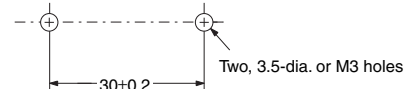


\* G3NE-2□□T(L)-2-US: Two, #187 (t=0.5) (Faston tab or equivalent)

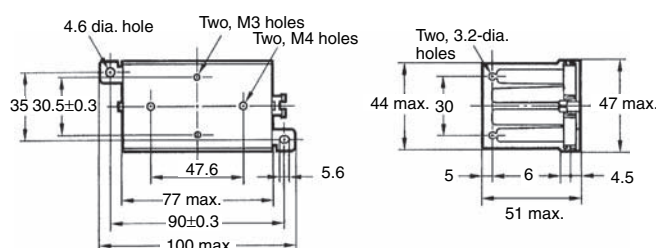
### Terminal Arrangement/ Internal Connections (Top View)



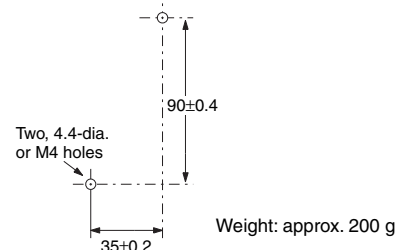
### Mounting Holes



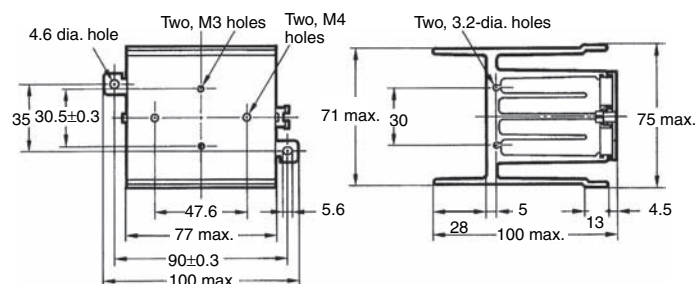
### Heat Sink Y92B-N50



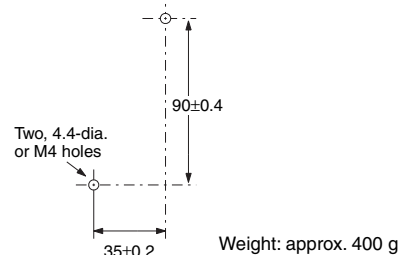
### Mounting Holes



### Y92B-N100



### Mounting Holes



## Safety Precautions

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

### ■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

Do not apply excessive force to the terminals. Be careful when pulling or inserting the terminal clips for the Quick Connector (QC).

When attaching a heat sink to the G3NE, in order to facilitate heat dissipation, apply heat-conductive grease on the heat sink.

For DIN Track mounting, use a separately sold Heat Sink. Refer to information on the G3NA.

G3NE-210T(L): Y92B-N50

G3NE-220T(L): Y92B-N100

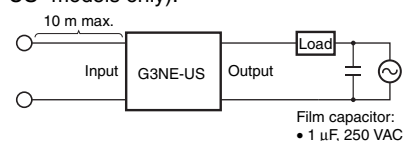
Tighten the mounting screws of the heat sink with a torque of 0.59 to 0.98 N·m.

### ■ Thermal Resistance Rth (Back of Junction SSR)

| Model         | Thermal resistance (°C/W) |
|---------------|---------------------------|
| G3NE-205T (L) | 2.72                      |
| G3NE-210T (L) | 2.12                      |
| G3NE-220T (L) | 2.22                      |

### ■ EMC Directive Compliance

The G3NE complies with EMC Directives under the following conditions ("US" models only).



- Connect a film capacitor to the load power supply.
- 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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