

# Solid State Relays

## G3NE

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

- Wide load voltage range: 75 to 264 VAC.
- 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).



## Ordering Information

To order: Select the part number and add the desired coil voltage rating. (e.g., G3NE-205T-US DC24)

| Isolation  | Zero cross function | Indicator | Rated output load                                 | Rated input voltage | Model         |
|------------|---------------------|-----------|---------------------------------------------------|---------------------|---------------|
| Phototriac | Yes                 | No        | 5 A at 100 to 240 VAC<br>(5 A at 75 to 264 VAC)   | 5, 12, 24 VDC       | G3NE-205T-US  |
|            |                     |           | 10 A at 100 to 240 VAC<br>(10 A at 75 to 264 VAC) |                     | G3NE-210T-US  |
|            |                     |           | 20 A at 100 to 240 VAC<br>(20 A at 75 to 264 VAC) |                     | G3NE-220T-US  |
|            | No                  |           | 5 A at 100 to 240 VAC<br>(5A at 75 to 264 VAC)    |                     | G3NE-205TL-US |
|            |                     |           | 10 A at 100 to 240 VAC<br>(10 A at 75 to 264 VAC) |                     | G3NE-210TL-US |
|            |                     |           | 20 A at 100 to 240 VAC<br>(20 A at 75 to 264 VAC) |                     | G3NE-220TL-US |

**Note:** When ordering #187 input terminal versions, place “-2” before “-US” in the part number. (e.g., G3NE-210TL-2-US DC12)

## Accessories (Order Separately)

### 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 $\Omega$ ±20%        | 300 $\Omega$ ±20%           |
| 12 VDC        | 9.6 to 14.4 VDC   | 9.6 VDC max.  |              | 600 $\Omega$ ±20%        | 800 $\Omega$ ±20%           |
| 24 VDC        | 19.2 to 28.8 VDC  | 19.2 VDC max. |              | 1.6 k $\Omega$ ±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                   | 0.1 to 5 A        | 60 A (60 Hz, 1 cycle)  |
| G3NE-210T(L)(-2)-US |                    |                    | 0.1 to 10 A<br>(See note 2)  | 0.1 to 5 A        | 150 A (60 Hz, 1 cycle) |
| G3NE-220T(L)(-2)-US |                    |                    | 0.1 to 20 A<br>(See note 2)  | 0.1 to 5 A        | 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.

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

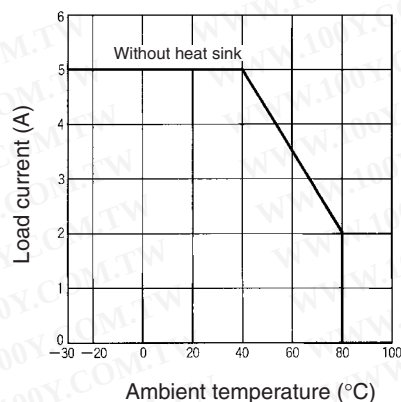
## ■ Characteristics

| 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   | Malfunction: 10 to 55, 1.5-mm double amplitude                                                                      |                   |
| Shock resistance       | Malfunction: 1,000 m/s <sup>2</sup> (approx. 100G)                                                                  |                   |
| 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    | UL File No. E64562/CSA File No. LR35535<br>TÜV R9051064 (VDE0435) (EN60950)                                         |                   |
| Weight                 | Approx. 37 g                                                                                                        |                   |

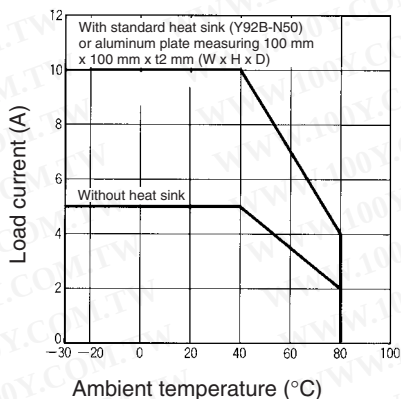
# Engineering Data

## Load Current vs. Ambient Temperature

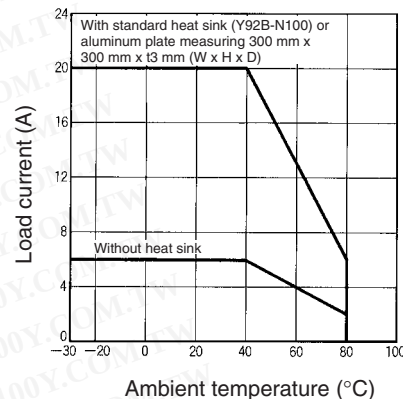
G3NE-205T(L)-(2)-US



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



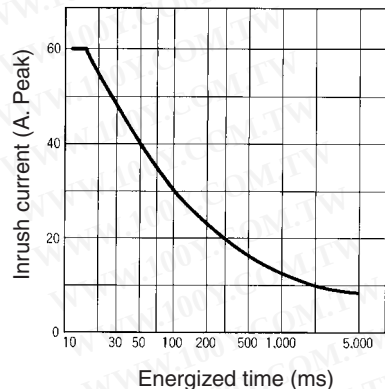
G3NE-220T(L)-(2)-US



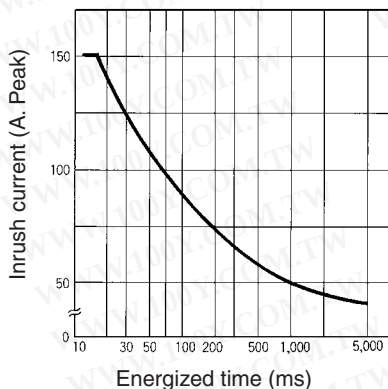
## Inrush Current Resistivity

One cycle, non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

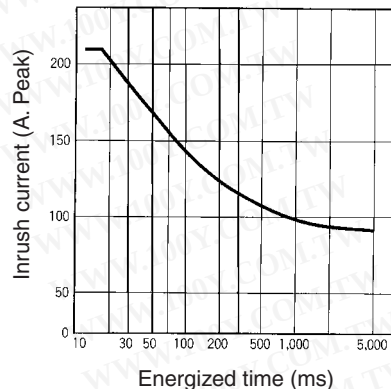
G3NE-205T(L)-(2)-US



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



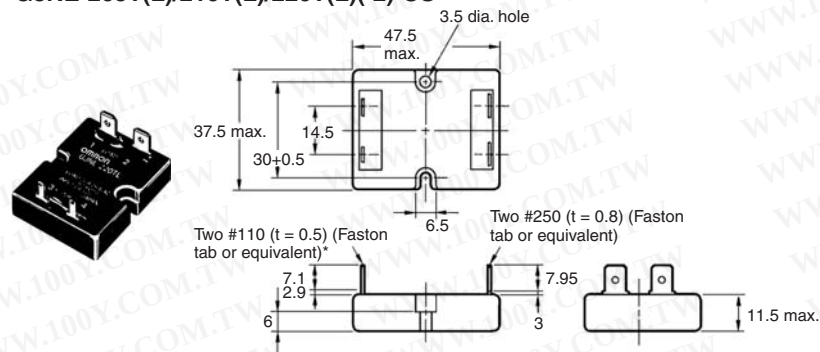
G3NE-220T(L)-(2)-US



# Dimensions

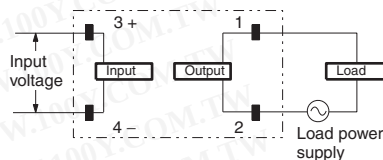
**Note:** All units are in millimeters unless otherwise indicated.

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

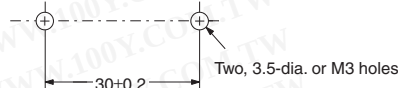


\* G3NE-2□□T(L)-2-US: Two, #187 (t=0.5) (Faston tab or equivalent)

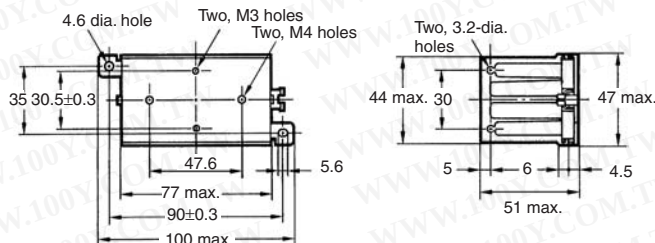
## Terminal Arrangement/ Internal Connections (Top View)



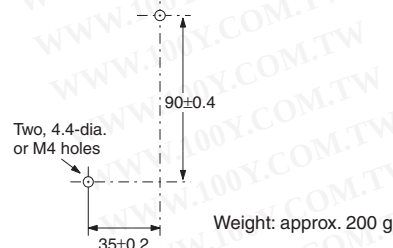
## Mounting Holes



## Heat Sink Y92B-N50

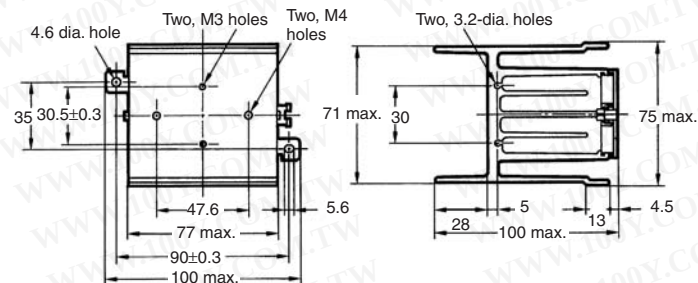


## Mounting Holes

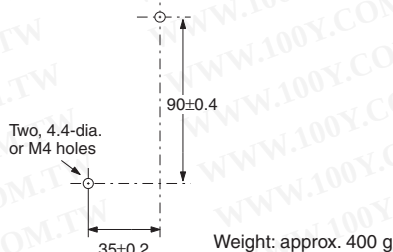


Weight: approx. 200 g

## Y92B-N100



## Mounting Holes



Weight: approx. 400 g

## ■ Approvals

UL Recognized (File No. E64562) / CSA Certified (File No. LR35535) -- Ambient Temp. = 40°C

| Input voltage | SSR type | Output ratings                                                                            |
|---------------|----------|-------------------------------------------------------------------------------------------|
| 5, 12, 24 VDC | G3NE-205 | 5A resistive, 240 VAC<br>3A Tungsten, 240 VAC<br>3.2A FLA/ 19.2A LRA, 240 VAC 50/60 Hz    |
|               | G3NE-210 | 10A resistive, 240 VAC<br>7.5A Tungsten, 240 VAC<br>4.8A FLA/ 28.8A LRA, 240 VAC 50/60 Hz |
|               | G3NE-210 | 5A resistive, 240 VAC<br>5A Tungsten, 240 VAC<br>3A FLA/ 18A LRA, 240 VAC 50/60 Hz        |
|               | G3NE-220 | 20A resistive, 240 VAC<br>11A Tungsten, 240 VAC<br>11.1A FLA/ 66.6A LRA, 240 VAC 50/60 Hz |
|               | G3NE-220 | 6A resistive, 240 VAC<br>6A Tungsten, 240 VAC<br>3.3A FLA/ 19.8A LRA, 240 VAC 50/60 Hz    |

## Precautions

Do not apply excessive force to the terminals. Exercise care when pulling or inserting the terminal clips.

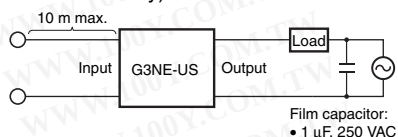
When attaching a heat sink to the G3NE, apply heat-conductive grease on the heat sink. Tighten the mounting screws of the heat sink with a torque of 0.59 to 0.98 N•m

### 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.

MEMO

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

# OMRON

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