

# Solid State Relays G3M

## Zero Cross Models Added to Compact, Low-cost G3M Series

- 3 and 5A single in-line package SSR
- Thin design for high-density PCB applications.
- DC input-AC output for up to a 5-A load.
- Certified by UL, CSA, and VDE.



## Ordering Information

To order: Select the part number and add the desired input voltage rating. (e.g., G3M-203PL DC5)

| Isolation  | Input terminal pitch                            | Zero cross function                             | Indicator                                       | Rated output load (Applicable output load)      | Rated input voltage                             | Model    |           |
|------------|---|---|---|---|---|----------|-----------|
| Phototriac | 7.62 mm   | Yes   | No  | 3 A at 100 to 240 VAC<br>(3 A at 75 to 264 VAC) | 5 VDC   | G3M-203P |           |
|            |   |   |   |   | 12 VDC  |          |           |
|            |   |   |   |   | 24 VDC  |          |           |
|            |   | 5 A at 100 to 240 VAC<br>(5 A at 75 to 264 VAC) |   | 5 VDC   | G3M-205P  |          |           |
|            |   |   |   | 12 VDC  |   |          |           |
|            |   |   |   | 24 VDC  |   |          |           |
|            | 5.08 mm   | Yes   |   | No  | 3 A at 100 to 240 VAC<br>(3 A at 75 to 264 VAC) | 5 VDC    | G3M-203PL |
|            |   |   |   |   |   | 12 VDC   |           |
|            |   |   |   |   |   | 24 VDC   |           |
|            |   | 5 A at 100 to 240 VAC<br>(5 A at 75 to 264 VAC) |   | 5 VDC   | G3M-205PL                                       |          |           |
|            |   |   |   | 12 VDC  |   |          |           |
|            |   |   |   | 24 VDC  |   |          |           |
| 5.08 mm    | Yes   | No  | 3 A at 100 to 240 VAC<br>(3 A at 75 to 264 VAC) | 5 VDC   | G3M-203P-4                                      |          |           |
|            |   |   |   | 12 VDC  |   |          |           |
|            |   |   |   | 24 VDC  |   |          |           |
|            | 5 A at 100 to 240 VAC<br>(5 A at 75 to 264 VAC) | 5 VDC   | G3M-205P-4                                      |   |   |          |           |
|            |   | 12 VDC  |   |   |   |          |           |
|            |   | 24 VDC  |   |   |   |          |           |
| 5.08 mm    | No  | No  | 3 A at 100 to 240 VAC<br>(3 A at 75 to 264 VAC) | 5 VDC   | G3M-203PL-4                                     |          |           |
|            |   |   |   | 12 VDC  |   |          |           |
|            |   |   |   | 24 VDC  |   |          |           |
|            | 5 A at 100 to 240 VAC<br>(5 A at 75 to 264 VAC) | 5 VDC   | G3M-205PL-4                                     |   |   |          |           |
|            |   | 12 VDC  |   |   |   |          |           |
|            |   | 24 VDC  |   |   |   |          |           |

- Note:**
1. All models have UL and CSA approvals.
  2. TÜV Marking is available for 3 amp versions with reinforced insulation by inserting “-UTU” in place of “-US” in the part number  
Example: G3M-203P-UTU-1-4 DC12
  3. G3M-205P(L)-VD-1, with reinforced insulation, is approved by UL, CSA and VDE

# Specifications

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

### Input

| Rated voltage | Operating voltage | Impedance   | Voltage levels       |                      |
|---------------|-------------------|-------------|----------------------|----------------------|
|               |                   |             | Must operate voltage | Must release voltage |
| 5 VDC         | 4 to 6 VDC        | 300 Ω ±20%  | 4 VDC max.           | 1 VDC min.           |
| 12 VDC        | 9.6 to 14.4 VDC   | 800 Ω ±20%  | 9.6 VDC max.         |                      |
| 24 VDC        | 19.2 to 28.8 VDC  | 1.6 kΩ ±20% | 19.2 VDC max.        |                      |

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

### Output

| Model           | Rated voltage  | Applicable load    |              |                       |
|-----------------|----------------|--------------------|--------------|-----------------------|
|                 |                | Load voltage range | Load current | Inrush current        |
| G3M-203P(L)(-4) | 100 to 240 VAC | 75 to 264 VAC      | 0.1 to 3 A   | 45 A (60 Hz, 1 cycle) |
| G3M-205P(L)(-4) |                |                    | 0.1 to 5 A   |                       |

## ■ Characteristics

| Item                   | G3M-203P(L)(-4)   | G3M-205P(L)(-4) |
|------------------------|---|-----------------|
| Operate time           | 1 ms max. (1/2 of load power source cycle + 1 ms max. for G3M-203P, G3M-205P)                                       |                 |
| Release time           | 1/2 of load power source cycle + 1 ms max.  |                 |
| Output ON voltage drop | 1.6 V (RMS) max.  |                 |
| Leakage current        | 1.5 mA (at 200 VAC)   |                 |
| Insulation resistance  | 1,000 MΩ min. (at 500 VDC)  |                 |
| Dielectric strength    | 2,500 VAC, 50/60 Hz for 1 min   |                 |
| Vibration resistance   | Malfunction: 10 to 55 Hz, 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%   |                 |
| Weight                 | Approx. 15 g  | Approx. 25 g    |

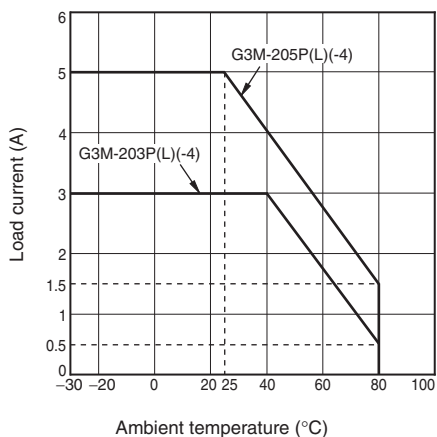
## ■ Approvals

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

| Input Voltage | SSR Type                        | Load Rating   |
|---------------|---------------------------------|---|
| 5, 12, 24 VDC | With Suffixes 203 and US or UTU | 3 A, 250 VAC, Resistive<br>750 W, 250 VAC Tungsten<br>1.5 A FLA / 9 A LRA, 250 VAC    |
|               | With Suffix 205                 | 5 A, 250 VAC, Resistive<br>1,250 W, 250 VAC Tungsten<br>2.5 A FLA / 15 A LRA, 250 VAC |

# Engineering Data

## Load Current vs. Ambient Temperature



## Inrush Current Immunity

Non-repetitive  
Reduce the current to 1/2 or less if the G3M is in repetitive operation.



## Load Current vs. Ambient Temperature (Close Mounting) G3M-205 Series (5-A Load)

X direction



Y direction



Z direction



- Thirty Relays are soldered to the PCB at each given spacing.
- Continuous power.

# Dimensions

Note: All units are in millimeters unless otherwise indicated.

## G3M-203P(L)-4



## G3M-205P(L)-4

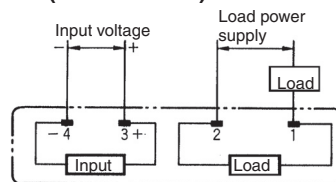


\*Input terminal pitch for models ending in "-4" is 5.08 mm.

## PCB Dimensions (Bottom View)



## Terminal Arrangement (Bottom View)



# Precautions

## Protective Element

No overvoltage absorption element is built in. Therefore, if the G3M is connected to an inductive load, be sure to connect the overvoltage absorption element.



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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

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- Техническая поддержка проекта;
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