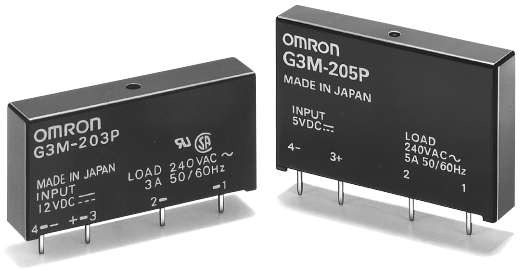
# Solid State Relays
# G3M

## 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 (3 A at 75 to 264 VAC) | 5 VDC | **G3M-203P** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | | | 5 A at 100 to 240 VAC (5 A at 75 to 264 VAC) | 5 VDC | **G3M-205P** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | No | | 3 A at 100 to 240 VAC (3 A at 75 to 264 VAC) | 5 VDC | **G3M-203PL** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | | | 5 A at 100 to 240 VAC (5 A at 75 to 264 VAC) | 5 VDC | **G3M-205PL** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | 5.08 mm | Yes | | 3 A at 100 to 240 VAC (3 A at 75 to 264 VAC) | 5 VDC | **G3M-203P-4** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | | | 5 A at 100 to 240 VAC (5 A at 75 to 264 VAC) | 5 VDC | **G3M-205P-4** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | No | | 3 A at 100 to 240 VAC (3 A at 75 to 264 VAC) | 5 VDC | **G3M-203PL-4** |
| | | | | | 12 VDC | |
| | | | | | 24 VDC | |
| | | | | 5 A at 100 to 240 VAC (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$^2$ (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 |

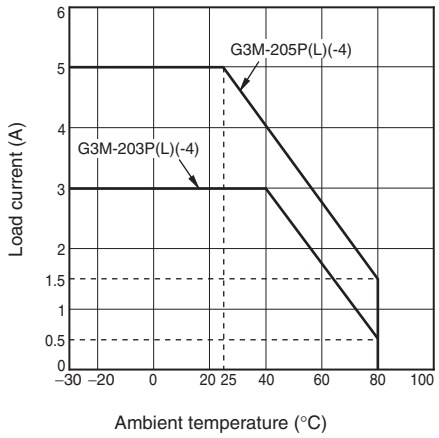
## ■ Approvals

**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 |

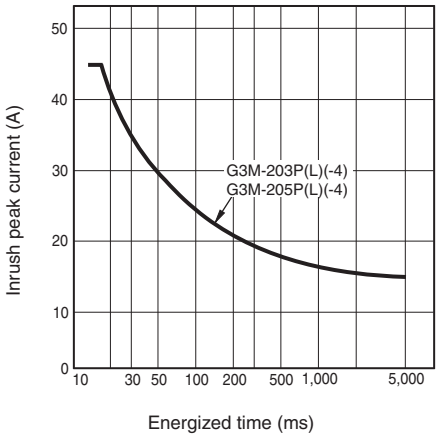
# Engineering Data

## Load Current vs. Ambient Temperature



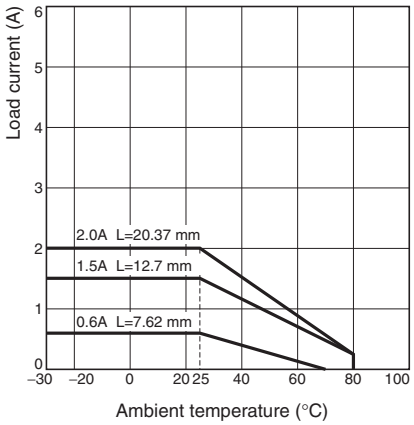

## Inrush Current Immunity

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

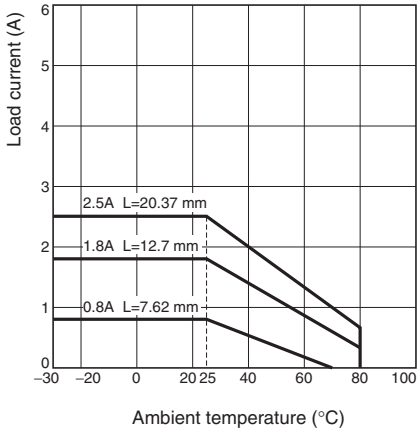



## Load Current vs. Ambient Temperature (Close Mounting) G3M-205 Series (5-A Load)

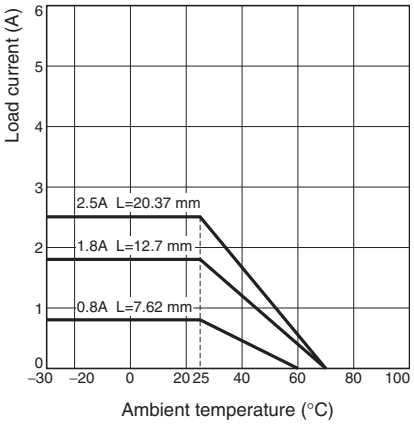
X direction

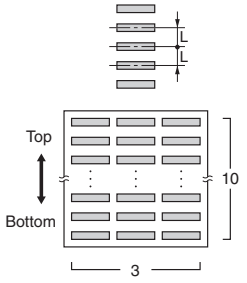


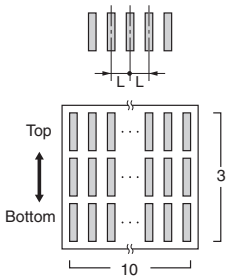

Y direction

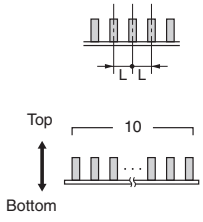



Z direction



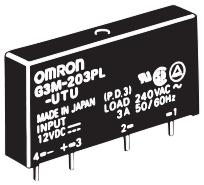



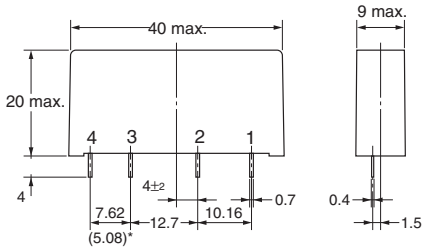

- Thirty Relays are soldered to the PCB at each given spacing.
- Continuous power.

# Dimensions

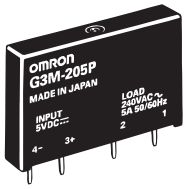
**Note:** All units are in millimeters unless otherwise indicated.

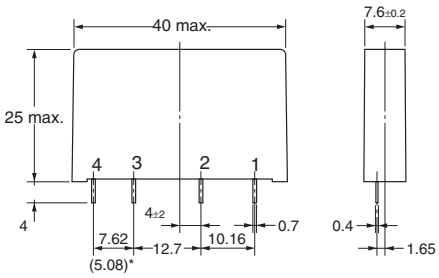
**G3M-203P(L)-4**



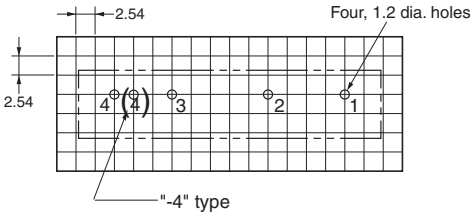

**G3M-205P(L)-4**



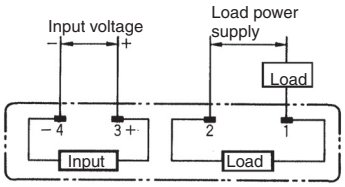




*Input terminal pitch for models ending in "-4" is 5.08 mm.

**PCB Dimensions (Bottom View)**




**Terminal Arrangement (Bottom View)**

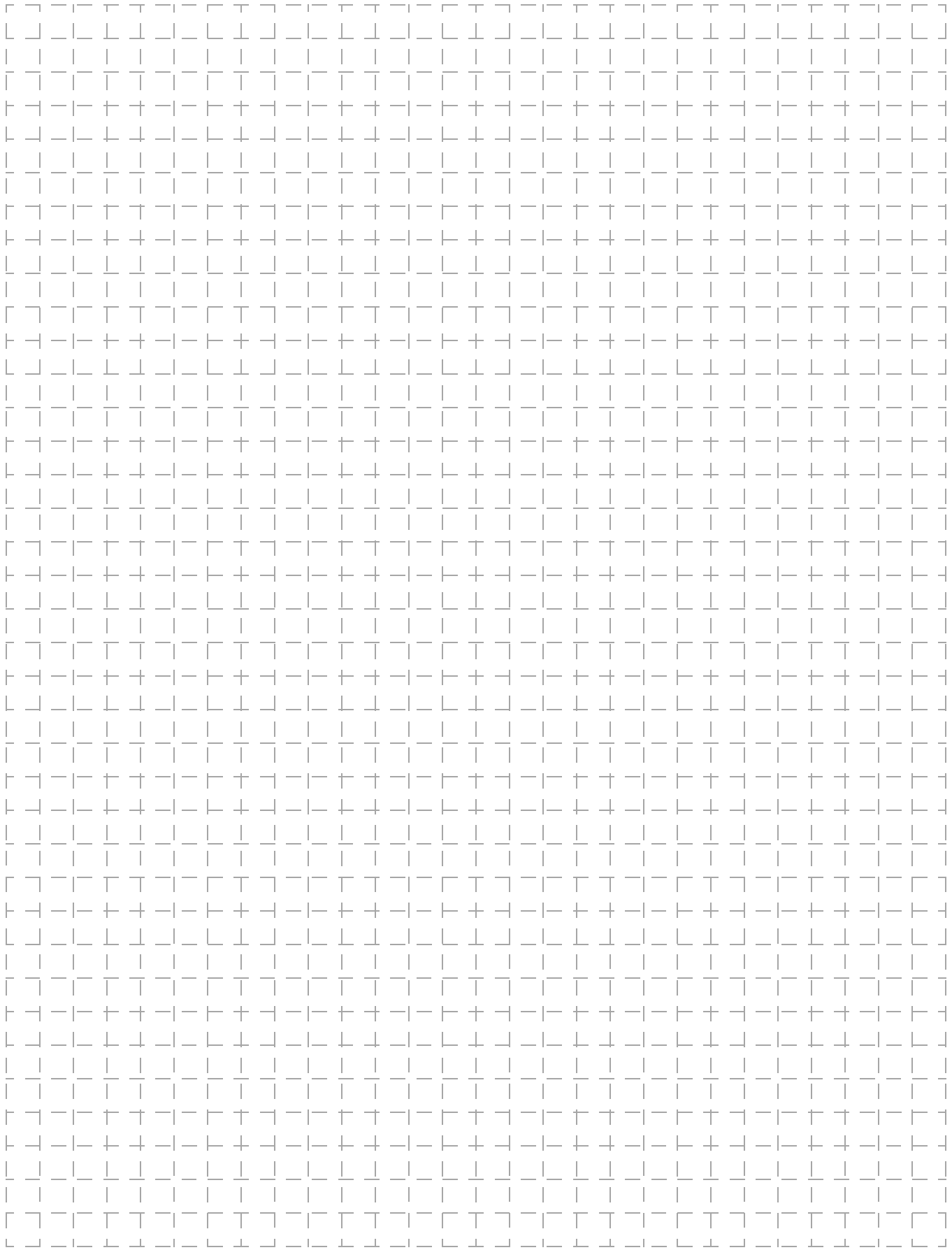



# Precautions

## 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.

## MEMO



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Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А