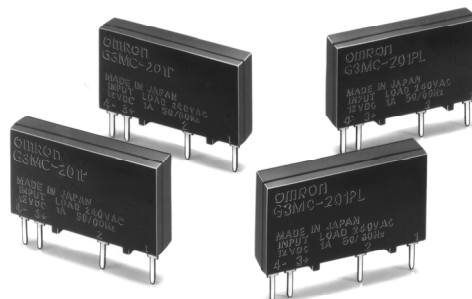


# Solid State Relay G3MC

## Compact, Low-cost SSR with Reinforced Insulation

- Small bottom surface area (approx. 80% of the conventional G3MB's) and ideal for close PCB mounting.
- DC input; AC output for an applicable load of 1A at 40°C.
- Compact, thin-profile SSR of monoblock construction with an all-in-one frame incorporates a PCB, terminals, and a heatsink.
- VDE certified models available.



## Ordering Information

To Order: Select the part number and add the desired coil voltage rating, (e.g., G3MC-101P-DC12).

| Isolation  | Zero-cross function                      | Built-in snubber circuit | Rated output load                        | Rated input voltage | Part number       |
|------------|--|--------------------------|--|---------------------|-------------------|
| Phototriac | Yes                                      | Yes                      | 1 A at 100 to 120 VAC<br>(75 to 132 VAC) | 5 VDC               | <b>G3MC-101P</b>  |
|            |  |                          |  | 12 VDC              |                   |
|            |  |                          |  | 24 VDC              |                   |
|            | No                                       |                          |  | 5 VDC               | <b>G3MC-101PL</b> |
|            |  |                          |  | 12 VDC              |                   |
|            |  |                          |  | 24 VDC              |                   |
|            | Yes                                      |                          | 2 A at 100 to 120 VAC<br>(75 to 132 VAC) | 5 VDC               | <b>G3MC-102P</b>  |
|            |  |                          |  | 12 VDC              |                   |
|            |  |                          |  | 24 VDC              |                   |
|            |  |                          | No                                       | 5 VDC               | <b>G3MC-102PL</b> |
|            |  |                          |  | 12 VDC              |                   |
|            |  |                          |  | 24 VDC              |                   |
| Yes        | 1 A at 100 to 240 VAC<br>(75 to 264 VAC) | 5 VDC                    | <b>G3MC-201P</b>                         |                     |                   |
|            |  | 12 VDC                   |  |                     |                   |
|            |  | 24 VDC                   |  |                     |                   |
|            | No                                       | 5 VDC                    | <b>G3MC-201PL</b>                        |                     |                   |
|            |  | 12 VDC                   |  |                     |                   |
|            |  | 24 VDC                   |  |                     |                   |
| Yes        | 2 A at 100 to 240 VAC<br>(75 to 264 VAC) | 5 VDC                    | <b>G3MC-202P</b>                         |                     |                   |
|            |  | 12 VDC                   |  |                     |                   |
|            |  | 24 VDC                   |  |                     |                   |
|            | No                                       | 5 VDC                    | <b>G3MC-202PL</b>                        |                     |                   |
|            |  | 12 VDC                   |  |                     |                   |
|            |  | 24 VDC                   |  |                     |                   |

# Specifications

## ■ RATINGS (AMBIENT TEMPERATURE 25°C)

### Input

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

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

### Output

| Part number  | Applicable load    |                    |              |                       |
|--------------|--------------------|--------------------|--------------|-----------------------|
|              | Rated load voltage | Load voltage range | Load current | Surge current         |
| G3MC-101P(L) | 100 to 120 VAC     | 75 to 132 VAC      | 0.1 to 1 A   | 8 A (60 Hz, 1 cycle)  |
| G3MC-201P(L) | 100 to 240 VAC     | 75 to 264 VAC      |              |                       |
| G3MC-102P(L) | 100 to 120 VAC     | 75 to 132 VAC      | 0.1 to 2 A   | 30 A (60 Hz, 1 cycle) |
| G3MC-202P(L) | 100 to 240 VAC     | 75 to 264 VAC      |              |                       |

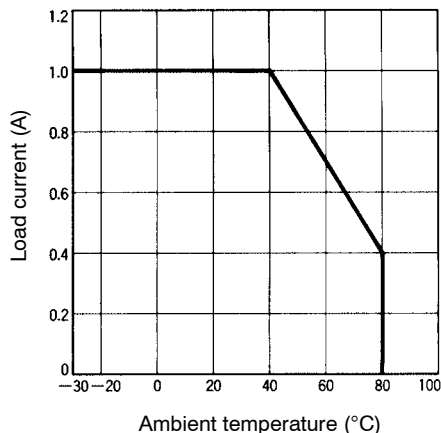
## ■ CHARACTERISTICS

| Item                   | G3MC-101P /<br>G3MC-102P  | G3MC-101PL /<br>G3MC-102PL | G3MC-201P /<br>G3MC-202P              | G3MC-201PL /<br>G3MC-202PL |
|------------------------|---|----------------------------|---------------------------------------|----------------------------|
| Operate time           | 1/2 of load power source cycle + 1 ms   | 1 ms max.                  | 1/2 of load power source cycle + 1 ms | 1 ms max.                  |
| Release time           | 1/2 of load power source cycle + 1 ms)  |                            |                                       |                            |
| Output ON voltage drop | 1.6 V (RMS) max.  |                            |                                       |                            |
| Leakage current        | 1 mA max. (at 100 VAC)  |                            | 1.5 mA max. (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, 0.75-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) |                            |                                       |                            |
| Approved standards     | UL508 File No. E64562, CSA C22.2 (No. 14, No. 950) File No. LR35535, EN60950 File No. 5925UG                        |                            |                                       |                            |
| Ambient humidity       | Operating: 45% to 85%   |                            |                                       |                            |
| Weight                 | Approx. 2.5 g   |                            |                                       |                            |

# Engineering Data

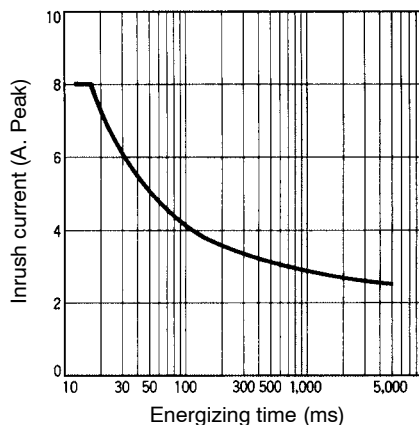
## ■ G3MC-101P(L), G3MC-201P(L)

**Load Current vs. Ambient Temperature Characteristics**



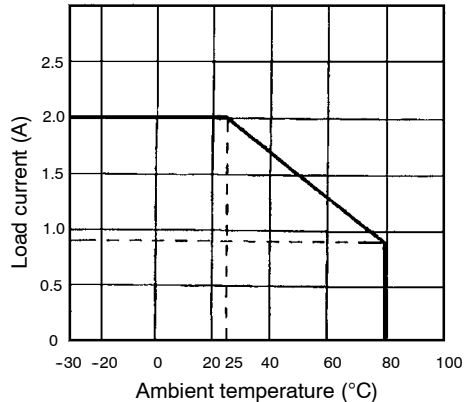
**Inrush Current Resistivity**

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



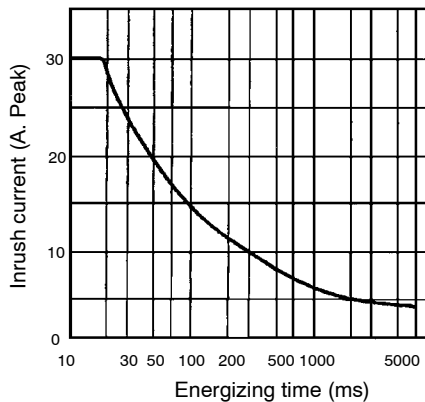
## ■ G3MC-102P(L), G3MC-202P(L)

**Load Current vs. Ambient Temperature Characteristics**



**Inrush Current Resistivity**

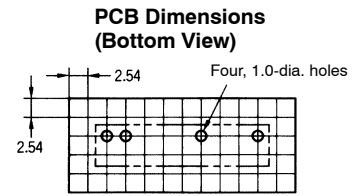
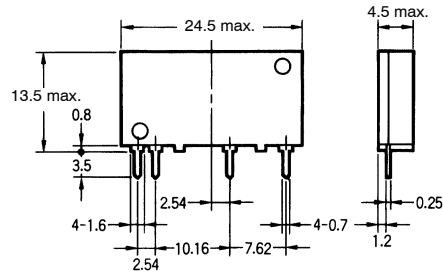
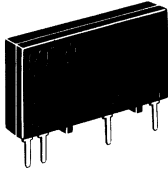
Non-repetitive (Keep the inrush current to half the rated value if it occurs repeatedly.)



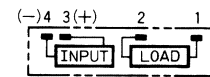
# Dimensions

Unit: mm (inch)

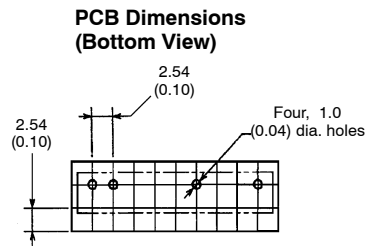
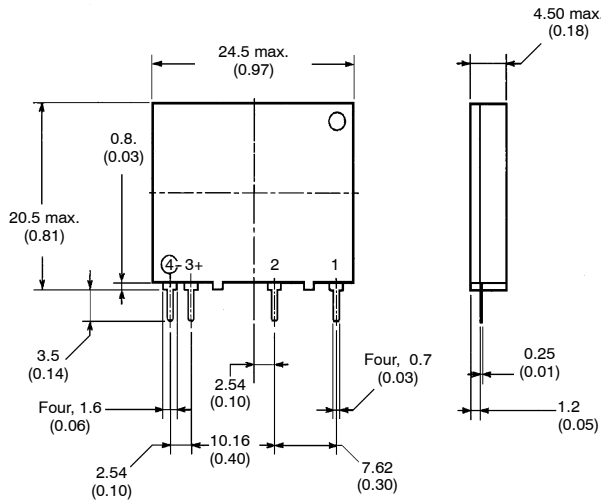
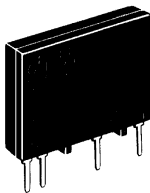
**G3MC-101P  
G3MC-101PL  
G3MC-201P  
G3MC-201PL**



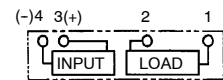
**Terminal Arrangement (Bottom View)**



**G3MC-102P  
G3MC-102PL  
G3MC-202P  
G3MC-202PL**



**Terminal Arrangement (Bottom View)**



## ■ APPROVALS

UL (File No. E64562)/CSA (File No. LR35535)

| Model        | Input voltage | Output ratings                                     |
|--------------|---------------|--|
| G3MC-101P(L) | 5, 12, 24 VDC | 120 VAC, 1 A general, 0.6 A FLA/3.6 A RLA, 120 VAC |
| G3MC-201P(L) |               | 240 VAC, 1 A general, 0.6 A FLA/3.6 A RLA, 240 VAC |
| G3MC-102P(L) |               | 120 VAC, 2 A general, 1.2 A FLA/7.2 A RLA, 120 VAC |
| G3MC-202P(L) |               | 240 VAC, 2 A general, 1.2 A FLA/7.2 A RLA, 240 VAC |

## Precautions

### General Precautions

Be sure to turn off power to the SSR before wiring the SSR, otherwise an electric shock may be received.

Do not touch the terminals of the SSR while power is being supplied to the SSR. The terminals are charged with the power, and an electric shock may be received by touching the terminals.

The built-in capacitor may have residual voltage after the SSR is turned off. Be sure to discharge the residual voltage before touching the terminals of the SSR, otherwise an electric shock may be received.

### Mounting

1. Make sure that no excessive voltage or current is imposed on or flows to the input or output circuit of the SSR, otherwise the SSR may malfunction or burn.
2. Solder the terminals of the SSR properly under the required soldering conditions. The SSR may be abnormally heated and burn if power is supplied to the terminals soldered incorrectly.
3. Do not short-circuit the load of the SSR while power is supplied to the SSR. Do not short-circuit the power supply through the SSR. The SSR may be damaged, malfunction, or burn if the load or power supply is short-circuited.

### Correct Use

The terminals of the SSR are highly heat-conductive. Each terminal must be soldered within 10 s at 260°C or within 5 s at 350°C.

The SSR is of a thin-profile construction. To maintain the vibration resistance of the SSR, make sure that the space between the SSR and PCB is 0.1 mm maximum. Lifting of the PCB can be prevented by setting the hole diameter of the PCBs on both sides slightly smaller than the actual terminal dimension.

Select the model without the zero-cross function when using the Unit for phase control output.

The casing works as a heat sink. When mounting two or more Units closely, make sure that the Units are properly ventilated by taking ambient temperature rises into consideration. If Units are closely mounted and used in places with no ventilation, the load current of each Unit must be 1/2 of the rated load current.

### Fusing Characteristics

The G3MC has a function that forces an open mode failure when an overcurrent exceeds the rated value. The fusing characteristics of

the G3MC, however, are not the same as those of a general-use glass fuse. Machines that use the G3MC must be provided with a safety device, such as a fuse or breaker, and ON-OFF tests or short-circuit tests must be implemented to confirm the following items and detailed influences. Users must determine test conditions and implement tests on reliability as required by the machine.

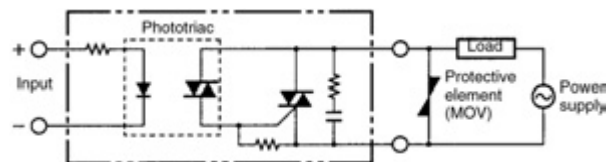
1. Life test under continuous electric current
2. On-off cycle test
3. Influence by ambient temperature
4. Influence by power source frequency
5. Influence by power source voltage fluctuation

**Note:** Contact your local OMRON sales office for more detailed information.

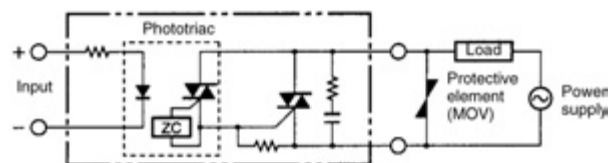
### Protective Element

No overvoltage absorption element is built in. Therefore, if the G3MC is connected to an inductive load, be sure to connect the overvoltage absorption element.

#### G3MC-□□□PL (without Zero cross function)



#### G3MC-□□□P (with Zero cross function)



**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4



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