

# Solid State Relay G3MB

## Low cost Subminiature PCB mounting 2 amp Single in-line package (SIP) SSR

- Bottom is approximately 3 times smaller than G3M.
- Low cost “SIP” package switches up to 2A loads.
- Built in Snubber circuit and input resistor as option.
- Two footprints available for design flexibility.
- The G3MB-202PEG-4-DC20MA crosses directly to the Motorola MOC2A-60 series power triac.



## Ordering Information

To Order: Specify input voltage at end of part number. Example: G3MB-202P-DC24

| Isolation  | Output terminal pitch | Zero cross | Input resistor        | Built-in snubber circuit | Rated output load     | Rated input voltage   | Model           |                       |
|------------|-----------------------|------------|-----------------------|--------------------------|-----------------------|-----------------------|-----------------|-----------------------|
| Phototriac | 7.62 mm               | Yes        | Yes                   | Yes                      | 2 A at 100 to 240 VAC | 5 VDC                 | G3MB-202P       |                       |
|            |                       |            |                       |                          |                       | 12 VDC                |                 |                       |
|            |                       | 24 VDC     |                       |                          | 2 A at 100 to 240 VAC | 5 VDC                 | G3MB-202PL      |                       |
|            |                       | 12 VDC     |                       |                          |                       |                       |                 |                       |
|            | 24 VDC                | 5.08 mm    | Yes                   | No                       | No                    | 2 A at 100 to 240 VAC | 5 VDC           | G3MB-202P-4           |
|            | 12 VDC                |            |                       |                          |                       |                       |                 |                       |
|            | 24 VDC                |            | 2 A at 100 to 240 VAC |                          |                       | 5 VDC                 | G3MB-202PL-4    |                       |
|            | 12 VDC                |            |                       |                          |                       |                       |                 |                       |
| 24 VDC     | Yes                   | No         | No                    | 2 A at 100 to 240 VAC    | N/A *(See Note)       | G3MB-202PEG-4-DC20MA  |                 |                       |
| No         |                       |            |                       |                          | 2 A at 100 to 240 VAC |                       | N/A *(See Note) | G3MB-202PLEG-4-DC20MA |

- Note: 1.** For versions without input voltage specified, a current limiting resistor must be placed in series with the input. See LED drive specifications and recommendations below.
- 2.** TUV versions available. Contact your local Omron representative.

# Specifications

## ■ Input Rating

### Models with Input Resistor

| Rated voltage | Operating range    | Input impedance          |
|---------------|--------------------|--------------------------|
| 5 VDC         | 4 to 6 VDC         | 440 $\Omega$ $\pm$ 20%   |
| 12 VDC        | 9.60 to 14.40 VDC  | 1k $\Omega$ $\pm$ 20%    |
| 24 VDC        | 19.20 to 28.80 VDC | 2.20k $\Omega$ $\pm$ 20% |

## ■ Output Rating

| Model    | Rated load voltage | Load voltage range | Load current | Surge current         |
|----------|--------------------|--------------------|--------------|-----------------------|
| G3MB-202 | 100 to 240 VAC     | 75 to 264 VAC      | 0.10 to 2 A  | 30 A (60 Hz, 1 cycle) |

## ■ LED Drive Data

### Models without Input Resistor

|                                     |            |
|-------------------------------------|------------|
| LED forward current                 | 50 mA max. |
| Repetitive peak LED forward current | 1 A max.   |
| LED reverse voltage                 | 5 V max.   |

## ■ Recommended LED Operating Conditions

### Models without Input Resistor

|                     | Min. | Standard | Max.  |
|---------------------|------|----------|-------|
| LED forward current | 5 mA | 10 mA    | 20 mA |
| Must drop voltage   | 0    | —        | 1 V   |

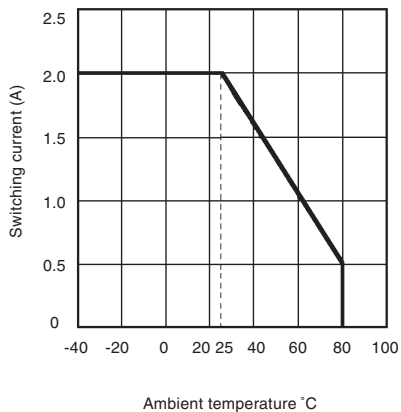
## ■ Characteristics

| Type                                   |                         | G3MB-202P<br>G3MB-202PEG                                     | G3MB-202PL<br>G3MB-202PLEG |
|--|-------------------------|--|----------------------------|
| 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                 |                         | 1.60 V (RMS) max.  |                            |
| Leakage current                        |                         | 1 mA max. at 100 VAC, 1.50 mA at 200 VAC                     |                            |
| Non-repetitive peak surge              |                         | 30 A   |                            |
| Output                                 | PIV (V <sub>DRM</sub> ) | 600 V  |                            |
|  | di/dt                   | 40 A/ $\mu$ s  |                            |
|  | dv/dt                   | 100 V/ $\mu$ s   |                            |
|  | I <sup>2</sup> t        | 4 A <sup>2</sup> s   |                            |
| Junction temperature (T <sub>j</sub> ) |                         | 125°C (257°F) max.   |                            |
| Insulation resistance                  |                         | 1,000 M $\Omega$ min. at 500 VDC                             |                            |
| Dielectric strength                    |                         | 2500 VAC, 50/60 Hz for 1 minute; 3750 VAC max., 1 second     |                            |
| Vibration                              | Malfunction             | 10 to 55 Hz, 0.75 mm (0.03 in) double amplitude, approx. 5 G |                            |
| Shock                                  | Malfunction             | Approx. 100 G  |                            |
| Ambient temperature                    | Operating               | -30° to 80°C (-22° to 176°F) with no icing                   |                            |
|  | Storage                 | -30° to 100°C (-22° to 212°F) with no icing                  |                            |
| Humidity                               | Operating               | 45% to 85% RH  |                            |
| Weight                                 |                         | Approx. 5 g (0.18 oz)  |                            |

Note: Data shown are of initial value.

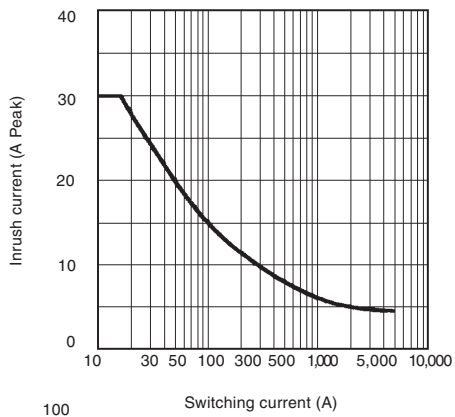
## Characteristic Data

Load current vs. ambient temperature characteristics



Inrush current resistivity

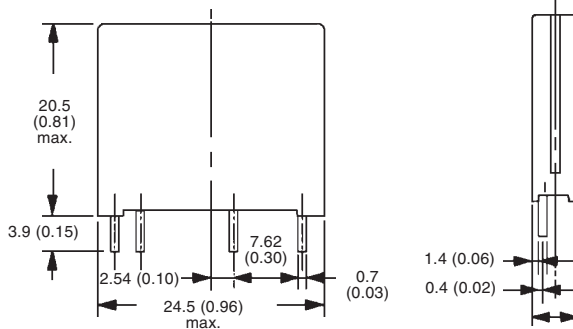
Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)



## Dimensions

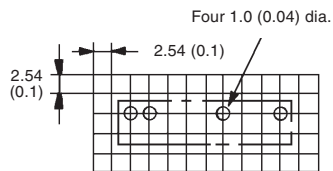
Unit: mm (inch)

### Relays

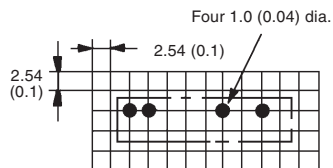


PCB Dimensions (Bottom view)

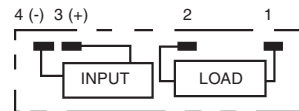
G3MB



G3MB (-4)



Terminal Arrangement/ Internal Connections (Bottom view)



## ■ Approvals

### UL (File No. E64562)

| SSR Type   | Input voltage | Load type       | Load ratings               |
|--|---------------|-----------------|----------------------------|
| G3MB-102P  | 5 to 24 VDC   | General purpose | 2 A, 120 VAC               |
|  |               | Tungsten        | 1 A, 120 VAC               |
|  |               | Motor           | 1.60 FLA/9.60 LRA, 120 VAC |
| G3MB-202P<br>G3MB-202PL<br>G3MB-202PEG<br>G3MB-202PLEG | 5 to 24 VDC   | General purpose | 2 A, 240 VAC               |
|  |               | Tungsten        | 1 A, 240 VAC               |
|  |               | Motor           | 1.60 FLA/9.60 LRA, 240 VAC |

### CSA (File No. LR35535)

| SSR Type                | Input voltage | Load type       | Load ratings               |
|-------------------------|---------------|-----------------|----------------------------|
| G3MB-102P               | 5 to 24 VDC   | General purpose | 2 A, 120 VAC               |
|                         |               | Tungsten        | 1 A, 120 VAC               |
|                         |               | Motor           | 1.60 FLA/8.60 LRA, 120 VAC |
| G3MB-202P<br>G3MB-202PL | 5 to 24 VDC   | General purpose | 2 A, 240 VAC               |
|                         |               | Tungsten        | 1 A, 240 VAC               |
|                         |               | Motor           | 1.60 FLA/8.60 LRA, 240 VAC |

- Note:** 1. The rated values approved by each of the safety standards (e.g., UL and CSA) may be different from the performance characteristics individually defined in this catalog.  
 2. In the interest of product improvement, specifications are subject to change.

## Precautions

See General Information Section near the back of this catalog for Solid State Precautions.

Soldering must be completed within 10 seconds at 260°C or less.

Make sure that the space between the bottom of the relay and the PCB is 0.1 mm or less. When making holes on the PCB for the relay's edge terminals, the hole diameters should be slightly smaller than the actual diameters of the edge terminals. This will reduce unnecessary space between the bottom of the relay and the PCB.

To use the SSR output for phase control, select a model that does not incorporate a zero-cross function.

The SSR case serves to dissipate heat. When mounting more than three SSRs as a group, pay attention to the ambient temperature rise and install the Relays so that they are adequately ventilated. If poor ventilation is unavoidable, reduce the load current by half.

### Protective Component

The input circuitry does not incorporate a circuit protecting the SSR from being damaged due to a reversed connection. Make sure that the polarity is correct when connecting the input lines.

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

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