

# 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

NOT FOR NEW DESIGN. Discontinuation planned for April, 2010.

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	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	2 A at 100 to 240 VAC	N/A *(See Note)	G3MB-202PEG-4-DC20MA			
	N/A *(See Note)		G3MB-202PLEG-4-DC20MA				
5.08 mm	Yes	No		No	2 A at 100 to 240 VAC	2 A at 100 to 240 VAC	N/A *(See Note)
	No						
	Yes						
	No						

**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.

**2.** TUV versions available. When ordering models certified by VDE (TUV), add "-UTU" to the model number given in the above table.

# Specifications

## ■ Input Rating

### Models with Input Resistor

Rated voltage	Operating range	Input impedance (-UTU Models)	Voltage Levels	
			Must operate voltage	Must release voltage
5 VDC	4 to 6 VDC	440 $\Omega$ $\pm$ 20% (300 $\Omega$ $\pm$ 20%)	4 VDC max.	1 VDC min.
12 VDC	9.60 to 14.40 VDC	1k $\Omega$ $\pm$ 20% (750 $\Omega$ $\pm$ 20%)	9.6 VDC max.	
24 VDC	19.20 to 28.80 VDC	2.20k $\Omega$ $\pm$ 20% (1.6 k $\Omega$ $\pm$ 20%)	19.2 VDC max.	

### Models without Input Resistor

Input specifications	Operating characteristics				
	Rated current	Continuous current	Must operate current	Must release current	Operating current
20 mA DC	20 mA DC	7 mA DC max.	1 mA DC min.	7 to 20 mA	

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

## ■ Output Rating

Model	Rated load voltage	Load voltage range	Load current	Surge current
G3MB-202	100 to 240 VAC, 50/60 Hz	75 to 264 VAC	0.10 to 2 A	30 A (60 Hz, 1 cycle)

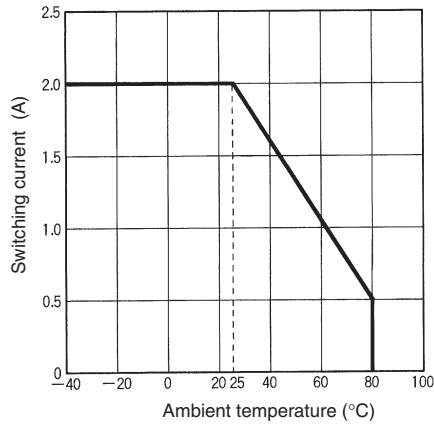
## ■ Characteristics

Type		G3MB-202P G3MB-202PEG	G3MB-202PL 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		1.50 mA at 200 VAC	
Non-repetitive peak surge		30 A	
Output	PIV ( $V_{DRM}$ )	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 (Tj)		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	
Vibration	Malfunction	10 to 55 Hz, 0.75 mm (0.03 in) double amplitude	
Shock	Malfunction	Approx. 1,000 m/s <sup>2</sup> (approx. 100 G)	
Ambient temperature	Operating	-30° to 80°C (-22° to 176°F) with no icing or condensation	
	Storage	-30° to 100°C (-22° to 212°F) with no icing or condensation	
Humidity	Operating	45% to 85% RH	
Weight		Approx. 5 g (0.18 oz)	

Note: Data shown are of initial value.

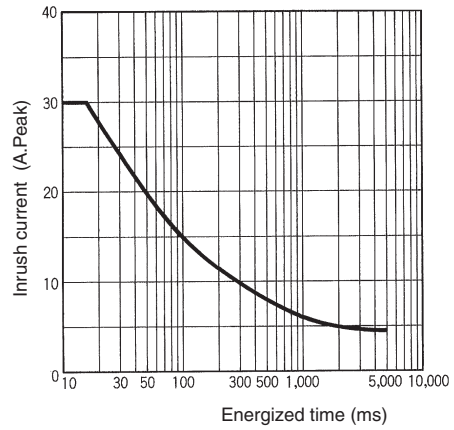
## Characteristic Data

Load current vs. ambient temperature characteristics



Inrush current resistivity

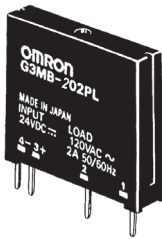
One cycle, non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)



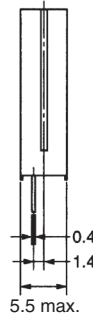
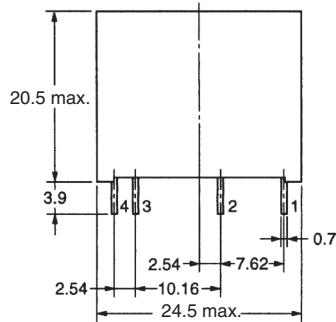
## Dimensions

Unit: mm (inch)

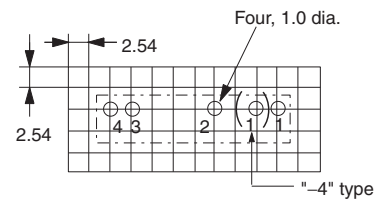
### Relays



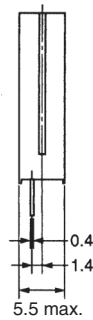
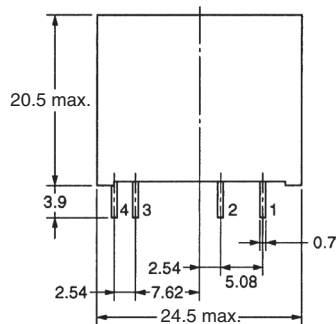
Models without "-4"



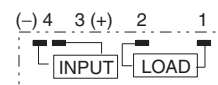
PCB Dimensions (Bottom View)



Models with "-4"



Terminal Arrangement/ Internal Connections (Bottom View)



## ■ Approvals

UL Recognized (File No. E64562) - - Ambient Temp. = 40°C

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 G3MB-202PL G3MB-202PEG 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 Certified (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 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.

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.

### Protective Element

No overvoltage absorption element is built in. Therefore, if the G3MB is connected to an inductive load, be sure to connect the overvoltage absorption element.

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