

Solid-state Relay

G3MC

Compact, Thin-profile, Low-cost SSR Switching 1 A (PCB-mounting)

- Small bottom surface area (approx. 80% of the conventional G3MB's) and ideal for close PCB mounting.
- DC input and AC output for an applicable load of 1 A at 40°C.
- Compact, thin-profile SSR of monoblock construction with an all-in-one frame incorporates a PCB, terminals, and heat sink.
- UL and CSA approvals under application.



Note: Refer to *Precautions* on page 4.

Ordering Information

Model Number Legend:

G3MC-

1 2 3 4

- | | |
|---|--|
| <p>1. Load supply voltage</p> <p>1: Max. operating voltage of 100 V min. and 200 V max.</p> <p>2: Max. operating voltage of 200 V min. and 300 V max.</p> <p>2. Load current</p> <p>01: 1 A</p> | <p>3. Terminal</p> <p>P: PCB terminal</p> <p>4. Zero-cross function</p> <p>---: Yes</p> <p>L: No</p> |
|---|--|

Isolation	Zero-cross function	Indicator	Snubber circuit	Applicable output load	Rated input voltage	Model
Phototriac	Yes	No	Yes	1 A at 100 to 120 VAC	5 VDC	G3MC-101P
					12 VDC	
					24 VDC	
	No				5 VDC	G3MC-101PL
					12 VDC	
					24 VDC	
	Yes			1 A at 100 to 240 VAC	5 VDC	G3MC-201P
					12 VDC	
No		5 VDC	G3MC-201PL			
		12 VDC				
				24 VDC		

Note: UL and CSA approvals for standard SSR models are under application.

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	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: All SSR models operate with inputs of 5, 12, or 24 VDC.

Output

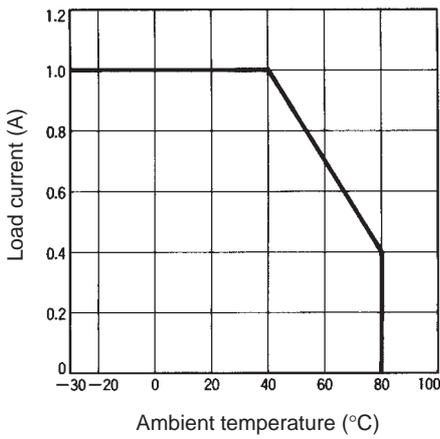
Model	Applicable load			
	Rated load voltage	Load voltage	Load current	Inrush current
G3MC-101P G3MC-101PL	100 to 120 VAC 50/60 Hz	75 to 132 VAC 50/60 Hz	0.1 to 1 A	8 A (60 Hz, 1 cycle)
G3MC-201P G3MC-201PL	100 to 240 VAC 50/60 Hz	75 to 264 VAC 50/60 Hz		

■ Characteristics

Item	G3MC-101P	G3MC-101PL	G3MC-201P	G3MC-201PL
Operate time	1 ms + half cycle of load power supply	1 ms max.	1 ms + half cycle of load power supply	1 ms max.
Release time	1 ms + half cycle of load power supply			
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 ² (approx. 100G)			
Ambient temperature	Operating: -30°C to 80°C (with no icing) Storage: -30°C to 100°C (with no icing)			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 2.5 g			

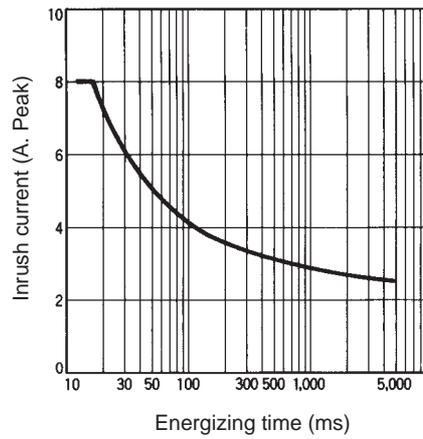
Engineering Data

Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity

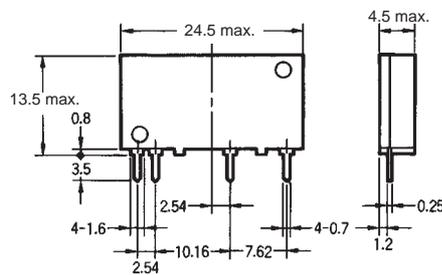
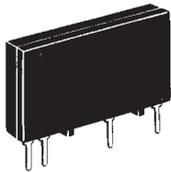
Non-repetitive (Keep the inrush current to half the rated value if it occurs repeatedly.)



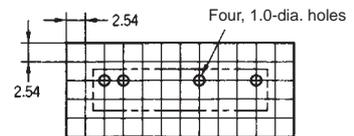
Engineering Data

Note: All units are in millimeters unless otherwise indicated.

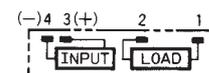
- G3MC-101P
- G3MC-101PL
- G3MC-201P
- G3MC-201PL



PCB Dimensions (Bottom View)



Terminal Arrangement (Bottom View)



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 a 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.

The load terminals are internally connected to a snubber circuit that absorbs noise. However, if wiring from these terminals is laid with or placed in the same duct as high-voltage or power lines, noise may be induced, causing the SSR to operate irregularly or malfunction.

The SSR does not incorporate a circuit protecting the input circuit from damage resulting from the wrong input polarity. Make sure that the polarity of the input is correct.

If a surge voltage peaking at more than 250 V is imposed on the G3MC-102PL or that peaking at more than 450 V is imposed on the G3MC-202P(L), connect a varistor as a surge absorber in parallel to the terminals of the load as shown in the following illustration.

