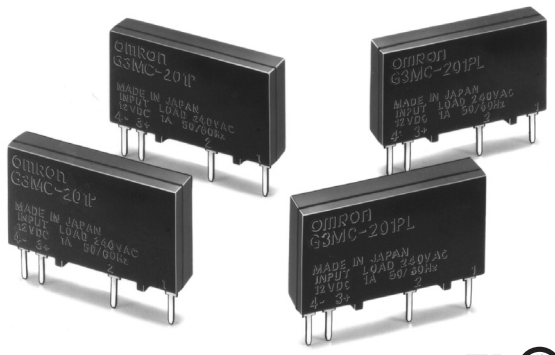
Solid State Relay
G3MC

Compact, Thin-profile, Low-cost SSR with Reinforced Insulation

- Small bottom surface area (approx. 80% of the conventional G3MB's), ideal for close PCB mounting.
- DC input and 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.
- Approved by UL and CSA. VDE certified models available.
- Models with reinforced insulation are 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 (75 to 132 VAC)	5 VDC	**G3MC-101P**
				12 VDC	
				24 VDC	
	No			5 VDC	**G3MC-101PL**
				12 VDC	
				24 VDC	
	Yes		2 A at 100 to 240 VAC (75 to 264 VAC)	5 VDC	**G3MC-202P**
				12 VDC	
				24 VDC	
	No			5 VDC	**G3MC-202PL**
				12 VDC	
				24 VDC	

Note: 1. All models meet UL and CSA standards. In order to obtain VDE approved versions with UL, CSA and VDE Logos, add "-VD" to the part number. Example: G3MC-101P-*VD*-DC12

2. 2A models are available with reinforced insulation. Add "-1" to the part number to obain 2A models with reinfored insulation. Examples: G3MC-202PL-*1*-DC5 G3MC-202P-VD-*1*-DC24

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)(-VD)	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-202P(L)(-VD)(-1)	100 to 240 VAC, 50/60 Hz	75 to 264 VAC, 50/60 Hz	0.1 to 2 A	30 A (60 Hz, 1 cycle)

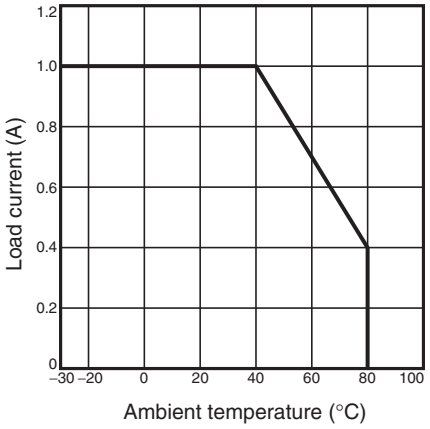
■ Characteristics

Item	G3MC-101P(-VD)	G3MC-101PL(-VD)	G3MC-202P(-VD)(-1)	G3MC-202PL(-VD)(-1)
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 (3,000 VAC, 50/60 Hz for 1 min. for G3MC-□□□-VD-1)			
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 or condensation) Storage:–30°C to 100°C (with no icing or condensation)			
Approved standards	UL File No. E64562, CSA File No. LR35535 EN60950 File No. 5925UG (“-VD(-1)” type)			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 2.5g (Approx. 5g for G3MC-202P(L)-VD-1)			

Engineering Data

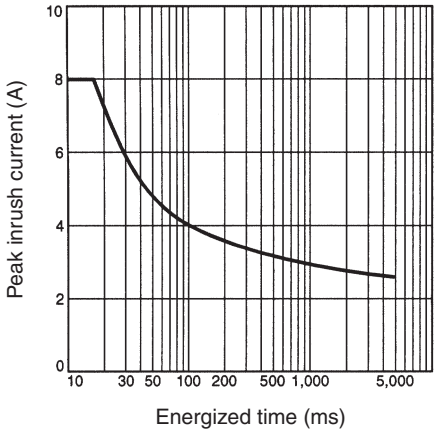
■ G3MC-101P(L)(-VD)

Load Current vs. Ambient Temperature Characteristics



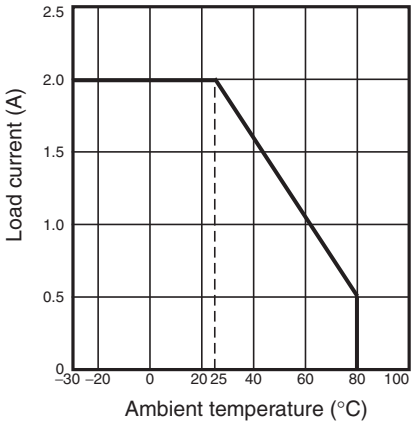
Inrush Current Resistivity

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



■ G3MC-202P(L)(-VD)(-1)

Load Current vs. Ambient Temperature Characteristics



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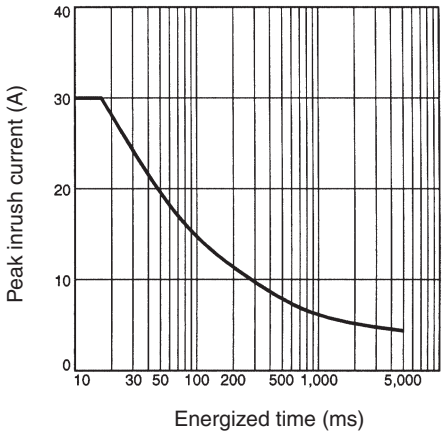
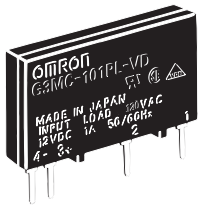
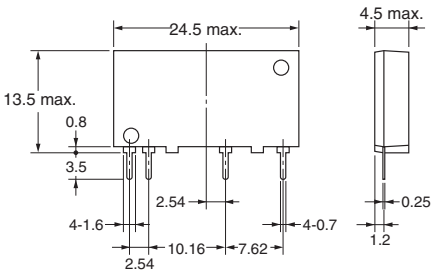


Dimensions

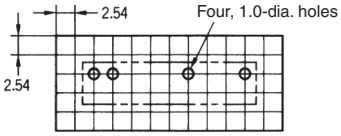
Units: mm (inch)

G3MC-101P(L)(-VD)

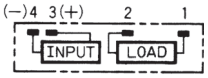




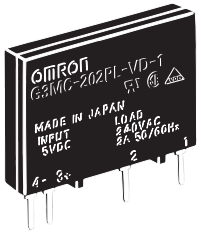
PCB Dimensions (Bottom View)

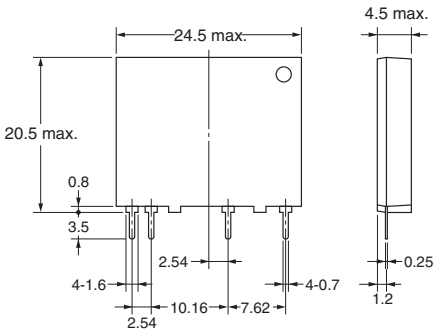


Terminal Arrangement (Bottom View)



G3MC-202P(L)(-VD)(-1)





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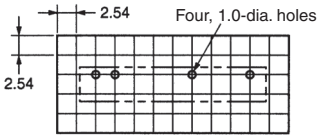

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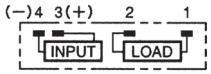


Precautions

■ General Precautions

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.

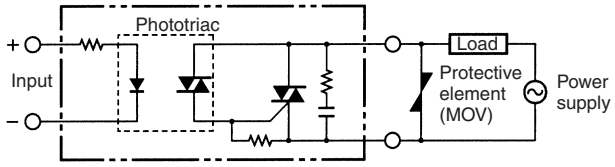
Select the model without the zero-cross function when using the Unit for phase control output.

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.

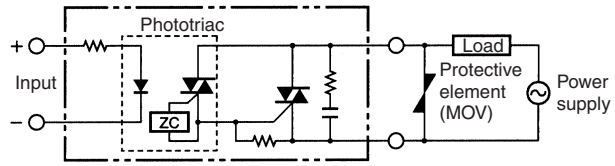
■ Protective element

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)



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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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