

# Solid State Relays G3M

## Zero Cross Models Added to Compact, Low-cost G3M Series

- 2, 3 and 5A single in-line package SSR
- Thin design for high-density PCB applications.
- DC input-AC output for up to a 5-A load.
- Certified by UL, CSA, and VDE.



## Ordering Information

To order: Select the part number and add the desired input voltage rating. (e.g., G3M-202P-US DC5)

Isolation	Input terminal pitch	Zero cross function	Indicator	Rated output load (Applicable output load)	Rated input voltage	Model
Phototriac	7.62 mm	Yes	No	2 A at 100 to 240 VAC (2 A at 75 to 264 VAC)	5 VDC	G3M-202P-US
					12 VDC	
					24 VDC	
				3 A at 100 to 240 VAC (3 A at 75 to 264 VAC)	5 VDC	G3M-203P
					12 VDC	
					24 VDC	
		5 A at 100 to 240 VAC (5 A at 75 to 264 VAC)		5 VDC	G3M-205P	
				12 VDC		
				24 VDC		
		No		2 A at 100 to 120 VAC (2 A at 75 to 132 VAC)	5 VDC	G3M-102PL-US
					12 VDC	
					24 VDC	
2 A at 100 to 240 VAC (2 A at 75 to 264 VAC)	5 VDC		G3M-202PL-US			
	12 VDC					
	24 VDC					
3 A at 100 to 240 VAC (3 A at 75 to 264 VAC)	5 VDC	G3M-203PL				
	12 VDC					
	24 VDC					
5 A at 100 to 240 VAC (5 A at 75 to 264 VAC)	5 VDC	G3M-205PL				
	12 VDC					
	24 VDC					

(This table continues on the next page)

- Note:**
1. All models have UL and CSA approvals.
  2. TÜV Marking is available with “-UTU” in place of “-US” on the part number
  3. G3M-205P(L)-VD is approved by UL, CSA and VDE

Ordering information continued

Isolation	Input terminal pitch	Zero cross function	Indicator	Rated output load (Applicable output load)	Rated input voltage	Model	
Phototriac	5.08 mm	Yes	No	2 A at 100 to 240 VAC (2 A at 75 to 264 VAC)	5 VDC	G3M-202P-US-4	
					12 VDC		
					24 VDC		
				3 A at 100 to 240 VAC (3 A at 75 to 264 VAC)	5 VDC		G3M-203P-4
					12 VDC		
					24 VDC		
		5 A at 100 to 240 VAC (5 A at 75 to 264 VAC)		5 VDC	G3M-205P-4		
				12 VDC			
				24 VDC			
		No		2 A at 100 to 120 VAC (2 A at 75 to 132 VAC)	5 VDC	G3M-102PL-US-4	
					12 VDC		
					24 VDC		
2 A at 100 to 240 VAC (2 A at 75 to 264 VAC)	5 VDC		G3M-202PL-US-4				
	12 VDC						
	24 VDC						
3 A at 100 to 240 VAC (3 A at 75 to 264 VAC)	5 VDC	G3M-203PL-4					
	12 VDC						
	24 VDC						
5 A at 100 to 240 VAC (5 A at 75 to 264 VAC)	5 VDC	G3M-205PL-4					
	12 VDC						
	24 VDC						

- Note:**
1. All models have UL and CSA approvals.
  2. TÜV Marking is available with "-UTU" in place of "-US" on the part number
  3. G3M-205P(L)-VD is approved by UL, CSA and VDE

## Specifications

### ■ Ratings (at an Ambient Temperature of 25°C)

#### Input

Rated voltage	Operating voltage	Impedance	Voltage levels	
			Must operate voltage	Must release 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:** Each model has 5-VDC, 12-VDC, and 24-VDC input versions.

#### Output

Model	Rated voltage	Applicable load		
		Load voltage range	Load current	Inrush current
G3M-102PL-US(-4)	100 to 120 VAC	75 to 132 VAC	0.1 to 2 A	30 A (60 Hz, 1 cycle)
G3M-202P(L)-US(-4)	100 to 240 VAC	75 to 264 VAC		
G3M-203P(L)(-4)			0.1 to 3 A	45 A (60 Hz, 1 cycle)
G3M-205P(L)(-4)			0.1 to 5 A	

## ■ Characteristics

Item	G3M-102PL-US(-4)	G3M-202P(L)-US(-4)	G3M-203P(L)(-4)	G3M-205P(L)(-4)
Operate time	1 ms max. (1/2 of load power source cycle + 1 ms max. for G3M-202P, G3M-203P, G3M-205P)			
Release time	1/2 of load power source cycle + 1 ms max.			
Output ON voltage drop	1.6 V (RMS) max.			
Leakage current	2 mA max. (at 100 VAC)	2 mA max. (at 100 VAC) 5 mA max. (at 200 VAC)	1.5 mA (at 200 VAC)	
Insulation resistance	1,000 MΩ min. (at 500 VDC)			
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min		2,500 VAC, 50/60 Hz for 1 min	
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-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) Storage: -30°C to 100°C (with no icing or condensation)			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 15 g			Approx. 25 g

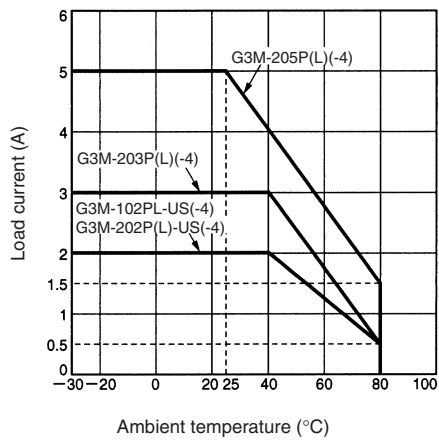
## ■ Approvals

UL Recognized (File No. E64562) / CSA Certified (File No. LR35535) - - Ambient Temp. = 40°C

Input Voltage	SSR Type	Load Rating
5, 12, 24 VDC	With Suffixes 102 and US or UTU	2 A, 125 VAC, Resistive 250 W, 125 VAC Tungsten 2 A FLA / 12 A LRA, 125 VAC
	With Suffixes 202 and US	2 A, 250 VAC, Resistive 500 W, 250 VAC Tungsten 2 A FLA / 12 A LRA, 250 VAC
	With Suffixes 202 and UTU	2 A, 250 VAC, Resistive 250 W, 250 VAC Tungsten 1 A FLA / 6 A LRA, 250 VAC
	With Suffixes 203 and US or UTU	3 A, 250 VAC, Resistive 750 W, 250 VAC Tungsten 1.5 A FLA / 9 A LRA, 250 VAC
	With Suffix 205	5 A, 250 VAC, Resistive 1,250 W, 250 VAC Tungsten 2.5 A FLA / 15 A LRA, 250 VAC

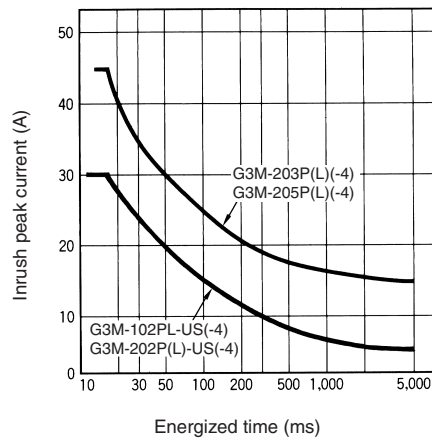
# Engineering Data

## Load Current vs. Ambient Temperature



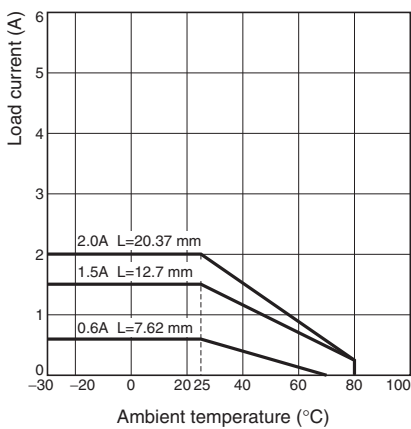
## Inrush Current Immunity

Non-repetitive  
Reduce the current to 1/2 or less if the G3M is in repetitive operation.

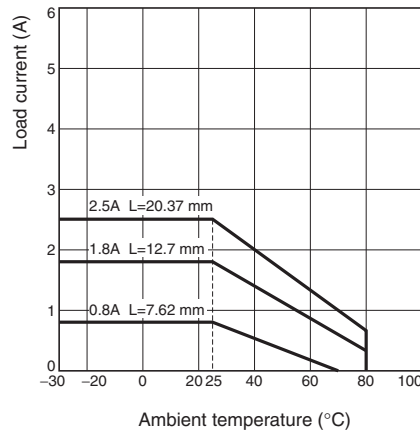


## Load Current vs. Ambient Temperature (Close Mounting) G3M-205 Series (5-A Load)

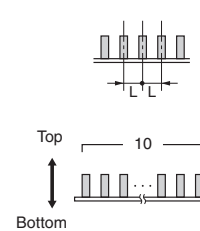
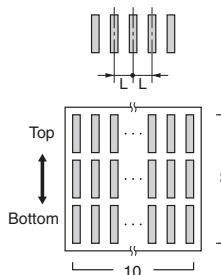
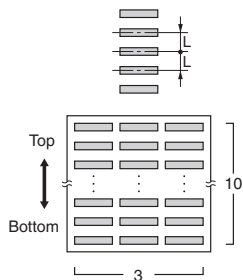
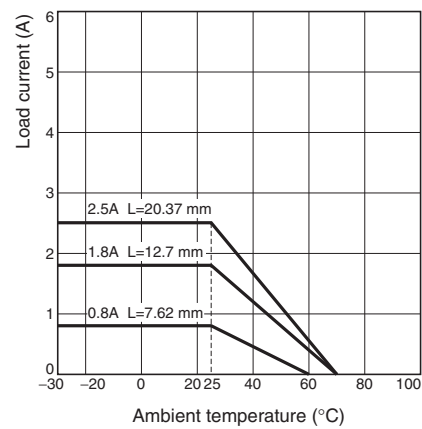
X direction



Y direction



Z direction

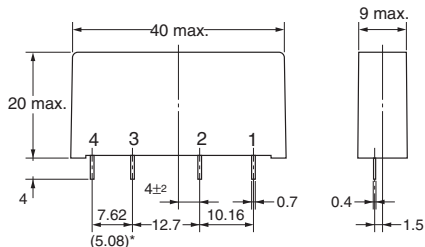
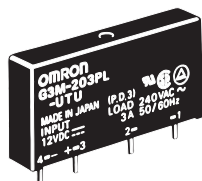


- Thirty Relays are soldered to the PCB at each given spacing.
- Continuous power.

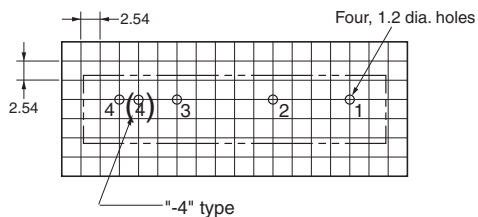
# Dimensions

Note: All units are in millimeters unless otherwise indicated.

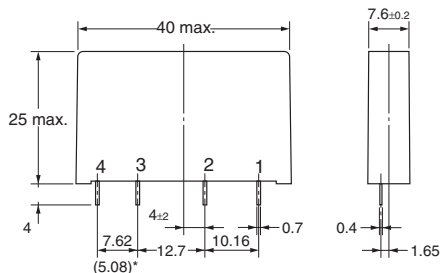
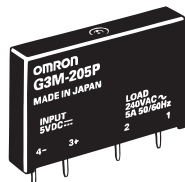
G3M-102PL-US(-4), G3M-202P(L)-4  
G3M-203P(L)-4



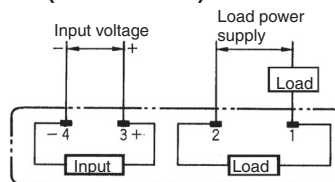
PCB Dimensions  
(Bottom View)



G3M-205P(L)-4



Terminal Arrangement  
(Bottom View)



\*Input terminal pitch for models ending in "-4" is 5.08 mm.

# Precautions

## Protective Element

No overvoltage absorption element is built in. Therefore, if the G3M is connected to an inductive load, be sure to connect the overvoltage absorption element.

MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows of small squares.

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  - Delivery and shipping dates are estimates only; and
  - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
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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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