■ Glossary

Terms		Meaning
Circuit functions	**Photocoupler Photoctriac coupler**	Transfers the input signal and insulates inputs and outputs as well.
	Zero cross circuit	A circuit which starts operation with the AC load voltage at close to zero-phase.
	Trigger circuit	A circuit for controlling the triac trigger signal, which turns the load current ON and OFF.
	Snubber circuit	A circuit consisting of a resistor R and capacitor C, which prevents faulty ignition from occurring in the SSR triac by suppressing a sudden rise in the voltage applied to the triac.
Input	**Input impedance**	The impedance of the input circuit and the resistance of current-limiting resistors used. Impedance varies with the input signal voltage in case of the constant current input method.
	Operating voltage	Minimum input voltage when the output status changes from OFF to ON.
	Reset voltage	Maximum input voltage when the output status changes from ON to OFF.
	Operating voltage	The permissible voltage range within which the voltage of an input signal voltage may fluctuate.
	Rated voltage	The voltage that serves as the standard value of an input signal voltage.
	Input current	The current value when the rated voltage is applied.
Output	**Leakage current**	The effective value of the current that can flow into the output terminals when a specified load voltage is applied to the SSR with the output turned OFF.
	Load voltage	The effective supply voltage at which the SSR can be continuously energized with the output terminals connected to a load and power supply in series.
	Maximum load current	The effective value of the maximum current that can continuously flow into the output terminals under specified cooling conditions (i.e., the size, materials, thickness of the heat sink, and an ambient temperature radiating condition).
	Minimum load current	The minimum load current at which the SSR can operate normally.
	Output ON voltage drop	The effective value of the AC voltage that appears across the output terminals when the maximum load current flows through the SSR under specified cooling conditions (such as the size, material, and thickness of heat sink, ambient temperature radiation conditions, etc.)
Characteristics	**Dielectric strength**	The effective AC voltage that the SSR can withstand when it is applied between the input terminals and output terminals or I/O terminals and metal housing (heat sink) for more than 1 minute.
	Insulation resistance	The resistance between the input and output terminals or I/O terminals and metal housing (heat sink) when DC voltage is imposed.
	Operating time	A time lag between the moment a specified signal voltage is imposed to the input terminals and the output is turned ON
	Release time	A time lag between the moment the imposed signal input is turned OFF and the output is turned OFF.
	Ambient temperature and humidity (operating)	The ranges of temperature and humidity in which the SSR can operate normally under specified cooling, input/output voltage, and current conditions.
	Storage temperature	The temperature range in which the SSR can be stored without voltage imposition.
Others	**Inrush current resistance**	A current which can be applied for short periods of time to the electrical element.
	Counter-electromotive force	Extremely steep voltage rise which occurs when the load is turned ON or OFF.
	Recommended applicable load	The recommended load capacity which takes into account the safety factors of ambient temperature and inrush current.
	Bleeder resistance	The resistance connected in parallel to the load in order to increase apparently small load currents, so that the ON/OFF of minute currents functions normally.

LIFE EXPECTANCY (MTTF)

The mean time to failure (MTTF) of SSRs is 100,000 hours, which varies with the operating conditions. To ensure long life and stable operation, take proper countermeasures against extremely high or low operating temperature, heavy fluctuations of ambient temperature, and/or long-time, continuous energization.

Precautions

WARNING

Do not touch the SSR terminal section (charged section) when the power supply is ON. Touching the charged section may cause electric shock.

Do not touch the SSR LOAD terminal immediately after the power is turned OFF.

- Do not apply excessive voltage or current to the SSR input or output circuits. Otherwise SSR malfunction or fire damage may result.
- Do not obstruct the air flow to the SSR. Otherwise, heat generated from an SSR error may cause the output element to short, or cause fire damage.
- Be sure to conduct wiring with the power supply turned OFF. Otherwise electric shock may result.
- Follow the Correct Use section when conducting wiring and soldering. If the product is used before wiring or soldering are complete, heat generated from a power supply error may cause fire damage.

■ Correct Use

Before Using the SSR

1. Unexpected events may occur before the SSR is used. For this reason it is important to test the SSR in all possible environments. For example, the features of the SSR will vary according to the product being used.
2. All rated performance values listed in this catalog, unless otherwise stated, are all under the JIS C5442 standard test environment (15° to 30°C, 25% to 85% relative humidity, and 86 to 106 kPa atmosphere). When checking these values on the actual devices, it is important to ensure that not only the load conditions, but also the operating environmental conditions are adhered to.

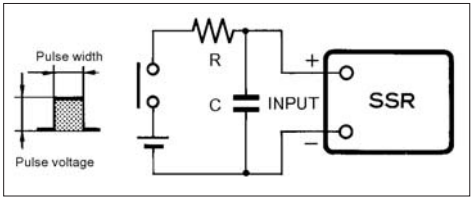
INPUT CIRCUIT

Input Noise

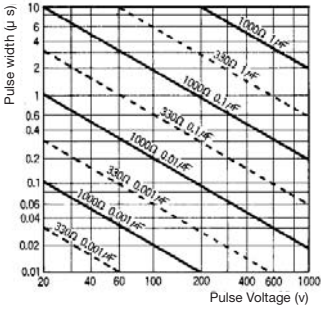
SSRs need only a small amount of power to operate. This is why the input terminals must shut out electrical noise as much as possible. Noise applied to the input terminals may result in malfunction. The following describe measures to be taken against pulse noise and inductive noise.

1. Pulse Noise

A combination of capacitor and resistor can absorb pulse noise effectively. The following is an example of a noise absorption circuit with capacitor C and resistor R connected to an SSR incorporating a photocoupler.



The value of R and C must be decided carefully. The value of R must not be too large or the supply voltage (E) will not be able to satisfy the required input voltage value. The larger the value of C is, the longer the release time will be, due to the time required for C to discharge electricity.



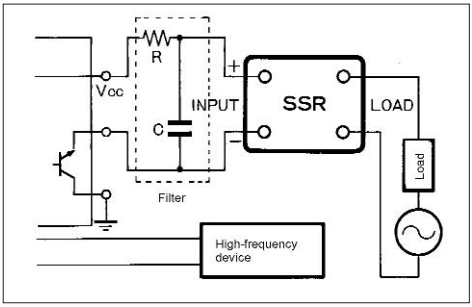
Note: For low-voltage models, sufficient voltage may not be applied to the SSR because of the relationship between C, R, and the internal impedance. When deciding on a value for R, check the input impedance for the SSR.

2. Inductive Noise

Do not wire power lines alongside the input lines. Inductive noise may cause the SSR to malfunction. If inductive noise is imposed on the input terminals of the SSR, use the following cables according to the type of inductive noise, and reduce the noise level to less than the reset voltage of the SSR.

Twisted-pair wire: For electromagnetic noise
Shielded cable: For static noise

A filter consisting of a combination of capacitor and resistor will effectively reduce noise generated from high-frequency equipment.

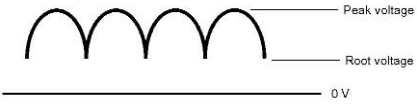


Note: R: 20 to 100 Ω
C: 0.01 to 1 μF

INPUT CONDITIONS

1. Input Voltage Ripples

When there is a ripple in the input voltage, set so that the peak voltage is lower than the maximum operating voltage and the root voltage is above the minimum operating voltage.



OPERATION AND STORAGE ENVIRONMENT PRECAUTIONS

Operation and Storage Locations

Do not operate or store the Relay in locations subject to direct sunlight or ultraviolet rays. Otherwise the resin to deteriorate, thereby causing cracks and other damage to the case. Do not operate or store the Relay in locations subject to exposure to water or chemicals. Otherwise rust, corrosion, and deterioration of the resin will occur.

Extended Storage of the SSR

If the SSR is stored for an extended period of time, the terminal will be exposed to the air, reducing its solderability due to such effects as oxidation. Therefore, when installing a Relay onto a board after a long time in storage, check the state of the solder before use. Also, take preventive measures so that the terminals will not be exposed to water, oil, or solvents while they are stored.

Vibration and Shock

Do not subject the SSR to excessive vibration or shock. Otherwise the SSR will malfunction and may cause damage to the internal components. To prevent the SSR from abnormal vibration, do not install the Unit in locations or by means that will subject it to the vibrations from other devices, such as motors.

Solvents

Do not allow the SSR to come in contact with solvents such as thinners or gasoline. Doing so will dissolve the markings on the SSR.

Oil

Do not allow the SSR terminal cover to come in contact with oil. Doing so will cause the cover to crack and become cloudy.

PCB SSR Soldering

1. SSRs must be soldered at 260°C within five seconds. For models, however, that conform to separate conditions, perform soldering according to the specified requirements.
2. Use a rosin-based non-corrosive flux that is compatible with the material of the SSR.

Ultrasonic Cleaning

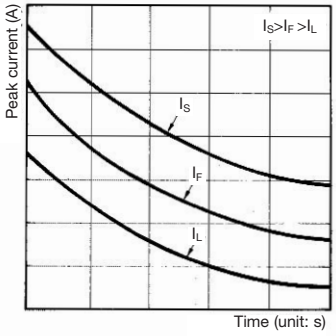
Do not perform ultrasonic cleaning. Performing ultrasonic cleaning after the SSR base has been installed will cause ultrasonic waves to resonate throughout the SSR internal structure, thereby damaging the internal components.

FAIL-SAFE CONCEPT

Overcurrent Protection

A short-circuit current or an overcurrent flowing through the load of the SSR will damage the output element of the SSR. Connect a quick-break fuse in series with the load as an overcurrent protection measure.

Design a circuit so that the protection coordination conditions for the quick-break fuse satisfy the relationship between the SSR surge resistance (I_S), quick-break fuse current-limiting feature (I_F), and the load inrush current (I_L), shown in the following chart.



SSR Life Expectancy

The SSR is not subject to mechanical wear. Therefore, the life expectancy of the SSR depends on the rate of internal component malfunction. See Omron for further details.

The effects of heat on the solder also need to be considered in estimating the total life expectancy of the SSR. The solder deteriorates due to heat-stress from a number of causes. OMRON estimates that the SSR begins to malfunction due to solder deterioration approximately 10 years after it is first installed.

HANDLING THE SSR

Do Not Drop

The SSR is a high-precision component. Do not drop the SSR or subject it to excessive vibration or shock regardless of whether the SSR is mounted or not.

The maximum vibration and shock that an SSR can withstand varies with the model. Refer to the relevant datasheet.

The SSR cannot maintain its full performance capability if the SSR is dropped or subjected to excessive vibration or shock resulting in possible damage to its internal components.

The impact of shock given to the SSR that is dropped varies upon the case, and depends on the floor material, the angle of collision with the floor, and the dropping height. For example, if a single SSR is dropped on a plastic tile from a height of 10 cm, the SSR may receive a shock of 1,000 m/s^2 or more.

Handle the SSR models in in-line packages with the same care and keep them free from excessive vibration or shock.

PCB-MOUNTING SSR

Suitable PCB

1. PCB Material

   PCBs are classified into epoxy PCBs and phenol PCBs. The following table lists the characteristics of these PCBs. Select one taking into account the application and cost. Epoxy PCBs are recommended for SSR mounting in order to prevent the solder from cracking.

Item	Epoxy		Phenol
	Glass epoxy	Paper epoxy	Paper phenol
Electrical characteristics	High insulation resistance. Highly resistive to moisture absorption.	Inferior to glass epoxy but superior to paper phenol PCBs.	New PCBs are highly insulation-resistive but easily affected by moisture absorption and cannot maintain good insulation performance over a long time.
Mechanical characteristics	The dimensions are not easily affected by temperature or humidity. Ideal for through-hole or multi-layer PCBs.	Inferior to glass epoxy but superior to paper phenol PCBs.	The dimensions are easily affected by temperature or humidity. Not suitable for through-hole PCBs.
Economical efficiency	Expensive	Rather expensive	Inexpensive
Application	Applications that require high reliability.	Applications that may require less reliability than those for glass epoxy PCBs but require more reliability than those of paper phenol PCBs.	Applications in comparatively good environments with long-density wiring.

2. PCB Thickness

The PCB may warp due to the size, mounting method, or ambient operating temperature of the PCB or the weight of parts mounted to the PCB. Should warping occur, the internal mechanism of the SSR on the PCB will be deformed and the SSR may not provide its full capability. Determine the thickness of the PCB by taking the material of the PCB into consideration.

3. Terminal Hole and Land Diameters

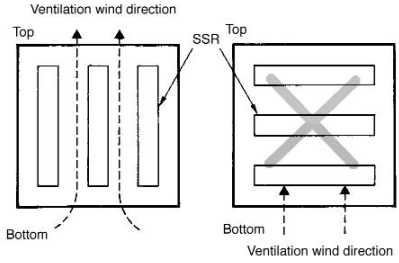
Refer to the following table to select the terminal hole and land diameters based on the SSR mounting dimensions. The land diameter may be smaller if the land is processed with through-hole plating.

Hole Dia. (mm)		Minimum land dia. (mm)
Nominal value	Tolerance	
0.6	±0.1	1.5
0.8		1.8
1.0		2.0
1.2		2.5
1.3		2.5
1.5		3.0
1.6		3.0
2.0		3.0

MOUNTING SPACE

The ambient temperature around the sections where the SSR is mounted must be within the permissible ambient operating temperature. If two or more SSRs are mounted closely together, the SSRs may radiate excessive heat. Therefore, make sure that the SSRs are separated from one another at the specified distance provided in the datasheet. If there is no such provision, maintain a space that is as wide as a single SSR.

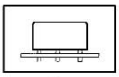
Provide adequate ventilation to the SSRs as shown in the following



Mounting SSR to PCB

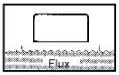
Read the precautions for each model and fully familiarize yourself with the following when mounting the SSR to the PCB.

Step 1 SSR mounting



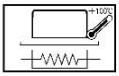
1. Do not bend the terminals to make the SSR self-standing, otherwise the full performance of the SSR may not be possible.
2. Process the PCB properly in accordance with the mounting dimensions.

Step 2 Flux coating



1. The flux applied must be non-corrosive rosin flux, which is suitable to the materialof the SSR. Apply alcohol solvent to dissolve the flux.
2. Make sure that all parts of the SSR other than the terminals are free of the flux. The insulation resistance of the SSR may be degraded if the flux is on the bottom of the SSR.

Step 3 Preheating

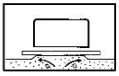


1. Be sure to preheat the SSR to allow better soldering.
2. Preheat the SSR under the following conditions.

Temperature	150° C max.
Time	60-90 secs.

3. Do not use the SSR if it is left at high temperature over a long time. This may change the characteristics of the SSR.

Step 4 Soldering



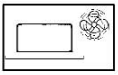
Automatic Soldering

1. Reflow soldering is recommended for maintaining a uniform soldering quality.
   - Solder: JIS Z3282 or H63A
   - Soldering lead temperature: Approx. 210°C max 10 secs
   - Soldering time: Approx. 5 s max. (Approx. 2 s for first time and approx. 3 s for second time for DWS)
   - Perform solder level adjustments so that the solder will not overflow on the PCB.

Manual Soldering – see recommended Temperature Profile

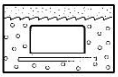
1. After smoothing the tip of the soldering iron, solder the SSR under the following conditions.
   - Solder: JIS Z3282, 1160A, or H63A with rosin-flux-cored solder
   - Soldering iron: 30 to 60 W
   - Soldering temperature: 260°C max.
   - Soldering time: Approx. 5 s max.

Step 5 Cooling



1. After soldering the SSR, be sure to cool down the SSR so that the soldering heat will not deteriorate the SSR or any other component.
2. Do not dip the SSR into cold liquid, such as a detergent, immediately after soldering the SSR.

Step 6 Cleaning



1. Refer to the following table for the selection of the cleaning method and detergent.

Detergent

Boiling cleaning or dip cleaning is available to the SSR. Do not cut the terminals, otherwise the internal parts of the SSR may be damaged. Make sure that the temperature of the detergent is within the permissible ambient operating temperature of the SSR.

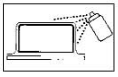
2. Availability of Detergents

Detergent		Availability
Chlorine detergent	Perochine Chlorosolder Trichloroethylene	OK
Aqueous detergent	Indusco Holys Pure water (pure hot water)	OK
Alcohol	IPA Ethanol	OK
Others	Paint thinner Gasoline	NG

Note: 1. Contact your OMRON representatives before using any other detergent. Do not apply Freon TMC, paint thinner, or gasoline to any SSR.

2. The space between the SSR and PCB may be not be adequately cleaned with a hydrocarbon or alcohol detergent.

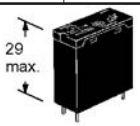
Step 7 Coating



Actions are being taken worldwide to stop the use of CFC-113 (chlorofluorocarbon) and 1.1.1 trichloroethane. Your understanding and cooperation are highly appreciated.

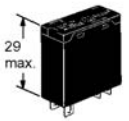
1. Do not fix the whole SSR with resin, otherwise the characteristics of the SSR may change.
2. The temperature of the coating material must be within the permissible ambient operating temperature range.

Detergent	Availability
Epoxy	OK
Urethane	OK
Silicone	OK

Classification		**PCB Mounting Type**					
Model		G3R/G3RD					
		G3R-102PN	G3R-102PLN	G3R-202PN	G3R-202PLN	G3RD-101PN	G3RDX02PN
Appearance & Dimensions (W x H x D) (mm)		 29 x 13 max.					
Features		• Compatible with OMRON's G2R					
Output	**Insulation**	Phototriac				Photocoupler	
	Load voltage	75 to 132 VAC		75 to 264 VAC		3 to 125 VDC	3 to 52.8 VDC
	Maximum switching current	2 A				1.5 A	2 A
	Leakage current	2 mA max. at 100 VAC		2 mA max. at 100 VAC 5 mA max. at 200 VAC		0.1 mA max. at 125 VDC	0.1 mA max. at 50 VDC
	V_{DRM}, V_{CEO} (V)	400		600		180	80
	di/dt (A/µs)	30				–	
	dv/dt (V/µs)	300				–	
	I^2t (A^2s)	10.4				–	
	Tj (°C) max.	125				150	
Rated input voltage		5, 12, 24 VDC					
Dielectric strength (between input and output terminals)		2,500 VAC, 50/60 Hz for 1 min					
Ambient temperature (operating)		-30° to 80°C (with no icing or condensation)					
Function	**Zero cross**	Yes	No	Yes	No		
	Operation indicator	Yes					
	Built-in varistor	No					
Terminal type	**Plug-in**	No					
	Screw	No					
	Tab	No					
	PCB	Yes					
	Mounting method	PCB mounting					
Magnet relay with compatible terminals		G2R 					
Approved standards		UL, CSA					
Socket		–					
Weight Approx.		Approx.18 g					
Page		293					

Note: 1. V_{CEO}: Collector-emitter voltage

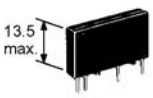
2. The above values are engineering data (reference values) for each output semiconductor incorporated by the respective SSRs.

Classification		Socket Mounting Type						
Model		G3R I/O						
		G3R-IAZR1SN	G3R-IDZR1SN	G3R-IDZR1SN-1	G3R-OA202SZN	G3R-OA202SLN	G3R-ODX02SN	G3R-OD201SN
Appearance & Dimensions (W x H x D) (mm)		I/O SSR Input Module			I/O SSR Output Module			
		 29 x 13 max.						
Features		• Compatible with OMRON's G2R • For mounting G70A-AOC16 Relay Terminal Socket. • For mounting G730-R or G730-Z Remote I/O Terminal.						
Output	Insulation	Photocoupler			Phototriac		Photocoupler	
	Load voltage	4 to 32 VDC			75 to 264 VAC		4 to 60 VDC	40 to 200 VDC
	Maximum switching current	100 mA			2 A		2 A	1 A
	Leakage current	5 μA max. at 32 VDC			1.5 mA max. at 200 VAC		1 mA max. at 50 VDC	1 mA max. at 200 VAC
	V_{DRM}, V_{CEO} (V)	80 V (reference value)			600 V (reference value)		80 V (reference value)	400 V (reference value)
	di/dt (A/μs)	–			30		–	
	dv/dt (V/μs)	–			300		–	
	I^2t (A^2s)	–			10.4		–	
	Tj (°C) max.	150			125		150	
Rated input voltage		100 to 240 VAC	5, 12, 24 VDC		5 to 24 VDC			
Dielectric strength (between input and output terminals)		4,000 VAC, 50/60 Hz for 1 min						
Ambient temperature (operating)		-30° to 80°C (with no icing or condensation)						
Function	Zero cross	No			Yes	No		
	Operation indicator	Yes			Yes	Yes		
	Built-in varistor	No						
Terminal type	Plug-in	Yes			Yes	Yes		
	Screw	No						
	Tab	No						
	PCB	No						
	Mounting method	Socket mounting						
Magnet relay with compatible terminals		G2R-1-S 						
Approved standards		UL, CSA, TÜV (with -UTU version)						
Socket		P2RF-05, P2RF-05-E, P2R-05P, P2R-05A, P2R-057P			P2RF-05, P2R-05P, P2R-05A, P2R-057P, P2RF-05-E			
Weight Approx.		Approx.18 g						
Page		293						

Note: 1. V_{CEO}: Collector-emitter voltage

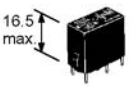
2. The above values are engineering data (reference values) for each output semiconductor incorporated by the respective SSRs.

Classification		PCB Mounting Type							PCB Mounting Type		
Model		G3M							G3MB		
		G3M-102PL	G3M-202PL	G3M-202P	G3M-203P	G3M-203PL	G3M-205P	G3M-205PL	G3MB-102PL	G3MB-202PL	G3MB-202P
Appearance & Dimensions (W x H x D) (mm)		 40 x 9 max.					 40 x 7.6		 24.5 x 5.5 max.		
Features		• Miniature, low-cost SSR							• Miniature, low-cost SSR		
Output	Insulation	Phototriac							Phototriac		
	Load voltage	75 to 132 VAC	75 to 264 VAC						75 to 132 VAC	75 to 264 VAC	
	Maximum switching current	2 A			3 A		5 A		2 A (at 25°C)		
	Leakage current	2 mA max. at 100 VAC	2 mA max. at 100 VAC 5 mAmax. at 200 VAC		1.5 mA at 200 VAC				1 mA max. at 100 VAC	1.5 mA max. at 200 VAC	
	V_{DRM}, V_{CEO} (V)	400	600						400	600	
	di/dt (A/µs)	30					–		40		
	dv/dt (V/µs)	300					–		100		
	I^2t (A^2s)	10.4					–		4		
	Tj (°C) max.	125					–		125		
Rated input voltage		5, 12, 24 VDC							5, 12, 24 VDC		
Dielectric strength (between input and output terminals)		2,000 VAC, 50/60 Hz for 1 min			2,500 VAC, 50/60 Hz for 1 min				2,500 VAC, 50/60 Hz for 1 min		
Ambient temperature (operating)		-30° to 80°C (with no icing or condensation)							-30° to 80°C (with no icing or condensation)		
Function	Zero cross	No	Yes		No		Yes	No	No		Yes
	Operation indicator	No					No		No		
	Built-in varistor	No					No		No		
Terminal type	Plug-in	No					No		No		
	Screw	No					No		No		
	Tab	No					No		No		
	PCB	Yes							Yes		
	Mounting method	PCB mounting							PCB mounting		
Magnet relay with compatible terminals		–							–		
Approved standards		UL, CSA, TÜV					UL, CSA EN, IEC, VDE: approval pending for UTU models		UL, CSA, TÜV		
Socket		–							–		
Weight Approx.		Approx. 15 g					Approx. 25 g		Approx. 5 g		
Page		297							301		

Classification		PCB Mounting Type					
Model		G3MC					
		G3MC-101P	G3MC-101PL	G3MC-201P	G3MC-201PL	G3MC-202P	G3MC-202PL
Appearance & Dimensions (W x H x D) (mm)		 24.5 x 4.5 max.				 24.5 x 4.5 max.	
Features		• Miniature, low-cost SSR					
Output	Insulation	Phototriac					
	Load voltage	75 to 132 VAC		75 to 264 VAC		75 to 264 VAC	
	Maximum switching current	1 A				2 A	
	Leakage current	1 mA max. at 100 VAC		1.5 mA max. at 200 VAC		1.5 mA max. at 200 VAC	
	V_{DRM}, V_{CEO} (V)	400		600		600	
	di/dt (A/µs)	50				40	
	dv/dt (V/µs)	300				100	
	I^2t (A^2s)	4				4	
	Tj (°C) max.	125					
Rated input voltage		5, 12, 24 VDC					
Dielectric strength (between input and output terminals)		2,500 VAC, 50/60 Hz for 1 min					
Ambient temperature (operating)		-30° to 80°C (with no icing or condensation)					
Function	Zero cross	Yes	No	Yes	No	Yes	No
	Operation indicator	No					
	Built-in varistor	No					
Terminal type	Plug-in	No					
	Screw	No					
	Tab	No					
	PCB	Yes					
	Mounting method	PCB mounting					
Magnet relay with compatible terminals		–					
Approved standards		UL, CSA, TÜV					
Socket		–					
Weight Approx.		Approx. 2.5 g				Approx. 5 g	
Page		304					

Note: 1. V_{CEO}: Collector-emitter voltage

2. The above values are engineering data (reference values) for each output semiconductor incorporated by the respective SSRs.

Classification		PCB Mounting Type				
Model		G3S/G3SD				G3DZ
		G3S-201PL	G3S-201PL-PD	G3SD-Z01P	G3SD-Z01P-PD	G3DZ-2R6PL
Appearance & Dimensions (W x H x D) (mm)		 16.5 max. 20 x 10 max. PD types each separated by heat sink 				
Features		• Compatible with OMRON's G6B				• AC/DC SSR • 10-μA leakage current max. • Same shape as G6D • Input resistor and varistor incorporated
Output	Insulation	Phototriac		Photocoupler		Photodiode array
	Load voltage	75 to 264 VAC		3 to 26 VDC		3 to 264 VAC, 3 to 125 VDC
	Maximum switching current	1 A	1.2 A	1 A	1.1 A	0.6 A
	Leakage current	2 mA max. at 200 VAC		0.1 mA max. at 26 VDC		10 μA max. at 125 VDC
	V_{DRM}, V_{CEO} (V)	600		32		VDSS 600
	di/dt (A/μs)	30		–		
	dv/dt (V/μs)	300		–		
	I^2t (A^2s)	10.4		–		
	Tj (°C) max.	125		150		
Rated input voltage		5, 12, 24 VDC				
Dielectric strength (between input and output terminals)		2,500 VAC, 50/60 Hz for 1 min				
Ambient temperature (operating)		-30° to 80°C (with no icing or condensation)				-30° to 80°C (with no icing or condensation)
Function	Zero cross	No				
	Operation indicator	No				
	Built-in varistor	Yes				
Terminal type	Plug-in	No				
	Screw	No				
	Tab	No				
	PCB	Yes				
	Mounting method	Socket mounting				Socket mounting /PCB mounting
Magnet relay with compatible terminals		G6B 				G6D 
Approved standards		UL, CSA				–
Socket		P6BF-4BND (with operating indicator, with counterelectromotive voltage absorption diode), P6B-04P				P6D-04P
Weight Approx.		Approx. 13 g				Approx. 3.1 g
Page		309				313

Note: 1. V_{CEO}: Collector-emitter voltage

2. The above values are engineering data (reference values) for each output semiconductor incorporated by the respective SSRs.

Compact SSRs Ideal for Built-in Applications

- Vertical, compact SSRs with an operation indicator offered in versatile variations.
- High dielectric strength of 2,500 VAC for 2-A models.
- High-voltage DC version also available.
- Approved by UL and CSA.

Ordering Information

Terminals	Isolation	Zero cross function	Indicator	Rated output load (Applicable output load)	Rated input voltage	Model
PCB	Phototriac	Yes		2 A at 100 to 120 VDC (2 A at 75 to 132 VDC) (see note 1)		G3R-102PN-US
		No				G3R-102PLN-US
		Yes		2 A at 100 to 240 VAC (2 A at 75 to 264 VAC) (see note 2)		G3R-202PN-US
		No				G3R-202PLN-US
	Photocoupler	---	Yes	1.5 A at 5 to 110 VDC (1.5 A at 3 to 125 VDC)		G3RD-101PN-US
				2 A at 4 to 48 VDC (2 A at 3 to 52.8 VDC) (see note 3)		G3RD-X02PN-US

Note: 1. Product is labelled "125 VAC".
2. Product is labelled "250 VAC".
3. Product is labelled "50 VDC".

Specifications

■ Ratings

Input (AC Output With Zero Cross Function)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-102PN	5 VDC	4 to 6 VDC	250 Ω±20%	3.5 VDC max.	0.375 VDC min.
G3R-202PN	12 VDC	9.6 to 14.4 VDC	600 Ω±20%	8.4 VDC max.	0.9 VDC min.
	24 VDC	19.2 to 28.8 VDC	1.5 kΩ±20%	16.8 VDC max.	1.8 VDC min.

Input (AC Output Without Zero Cross Function, DC Output)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-102PLN	5 VDC	4 to 6 VDC	300 Ω±20%	3.5 VDC max.	0.375 VDC min.
G3R-202PLN	12 VDC	9.6 to 14.4 VDC	750 Ω±20%	8.4 VDC max.	0.9 VDC min.
G3RD-X02PN G3RD-101PN	24 VDC	19.2 to 28.8 VDC	1.5 kΩ±20%	16.8 VDC max.	1.8 VDC min.

Output

Model	Rated load voltage	Applicable load		
		Load voltage range	Load current	Inrush current
G3R-102PN G3R-102PLN	100 to 120 VAC	75 to 132 VAC	0.1 to 2 A	30 A (60 Hz, 1 cycle)
G3R-202PN G3R-202PLN	100 to 240 VAC	75 to 264 VAC	0.1 to 2 A	
G3RD-X02PN	4 to 48 VDC	3 to 52.8 VDC	0.01 to 2 A	8 A (10 ms)
G3RD-101PN	5 to 110 VDC	3 to 125 VDC	0.01 to 1.5 A	2.5 A (10 ms)

■ Characteristics

Item	G3R-102PLN	G3R-102PN	G3R-202PLN	G3R-202PN	G3RD-X02PN/-101PN
Operate time	1 ms max.	1/2 of load power source cycle + 1 ms max.	1 ms max.	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.				1 ms max.
Output ON voltage drop	1.6 V (RMS) max.				1.5 V max.
Leakage current	2 mA max. (at 100 VAC)		2 mA max. (at 100 VAC) 5 mA max. (at 200 VAC)		0.1 mA max. (at 125 VDC) 0.1 mA max. (at 50 VDC)
Insulation resistance	100 MΩ min. (at 500 VDC)				
Dielectric strength	2,500 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^2				
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	UL508 File No. E64562, CSA C22.2 (No. 14) File No. 35535				
Ambient humidity	Operating: 45% to 85%				
Weight	Approx. 18 g				

■ Approved Standards

UL508 File No.E64562/CSA C22.2 (No.0, No.14) File No. LR35535

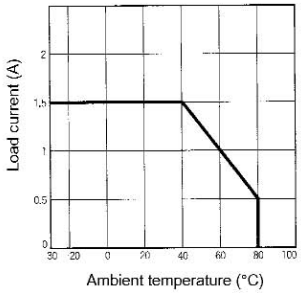
Model	Ratings
G3R-102P(L)(N)-US	2 A at 125 VAC
G3R-202P(L)(N)-US	2 A at 250 VAC
G3RD-X02P(N)-US	2 A at 50 VDC

Engineering Data

Load Current vs. Ambient Temperature Characteristics

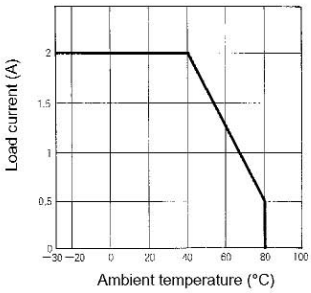
1-A Load Model

G3RD-101PN



2-A Load Model

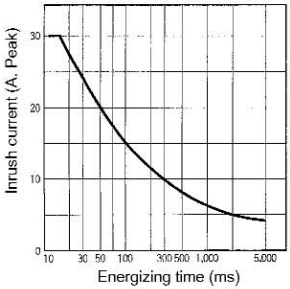
G3R-102□, G3RD-X02□, G3R-202□



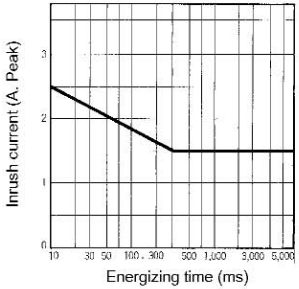
Inrush Current Resistivity

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

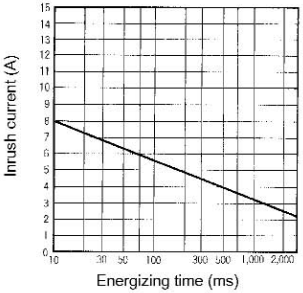
G3R-102□/-202□



G3RD-101PN



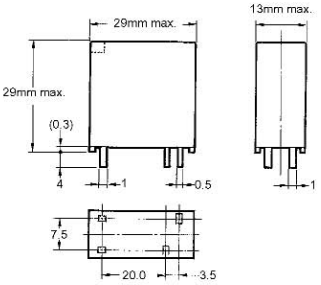
G3RD-X02□



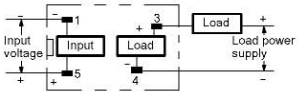
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3R-102P□/-202P□
G3RD-101PN/-X02PN

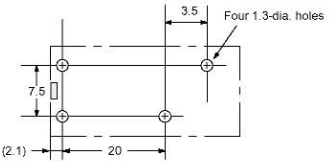


Terminal Arrangement/ Internal Connections (Bottom View)



Note: The plus and minus symbols shown in the parentheses are for DC loads.

Mounting Holes



Precautions

Connection

The SSR for DC switching a surge can connect to a load regardless of the polarity of the positive and negative output terminals.

Protective Terminal

For AC inductive loads, connect the load terminals of the SSR to a surge absorber (varistor).

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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

- This design for high-density PCB applications.
- DC input-AC output for up to 5-A load.
- Approved by UL and CSA.

Ordering Information

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	
		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 (New)
					12 VDC	
					24 VDC	

Note: 1. TÜV marking is available with "-UTU" in place of "-US" on the part number.

2. UL, CSA and VDE approval of G3M-205PL is pending.

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 132 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	
		No		2 A at 100 to 120 VAC (3 A at 75 to 264 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
					24 VDC	
				5 A at 100 to 240 VAC (5 A at 75 to 264 VAC)	5 VDC	G3M-205PL-4 (New)
					12 VDC	
					24 VDC	

Note: TÜV marking is available with "-UTU" in place of "-US" on the part number.

Specifications

■ Ratings

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	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

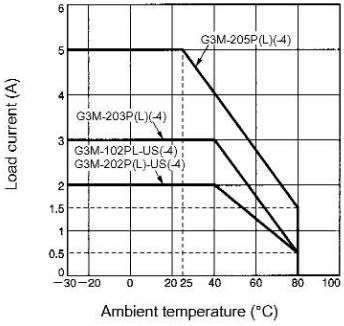
Item	G3M-102PL-US (-4)	G3M-202P(L)-US (-4)	G3M-203P (L) (-4)	G3M-205P (L) (-4)
Operate time	1 ms max. (1/2 of load power source cycle + 1 ms max. for G3M-202P, G3M-203P, G3M-205P)			
Release time	1/2 of load power source cycle + 1 ms max.			
Output ON voltage drop	1.6 V (RMS) max.			
Leakage current	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^2			
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

■ Approved Standards

Approved by UL (Report No. E64562)	Approved by CSA (Report No. LR35535)	Approved by TÜV
G3M-202P(L)-US(-4) G3M-203P(L)(-4)	G3M-202P(L)-US(-4) G3M-203P(L)(-4)	G3M-202P(L)-UTU(-4) G3M-203P(L)-UTU(-4)

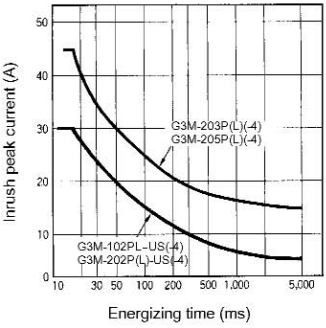
Engineering Data

Load Current vs. Ambient Temperature



Inrush Current Immunity

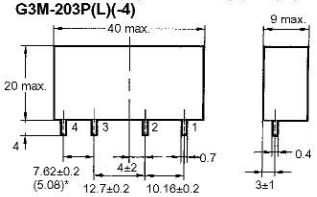
Non-repetitive
Reduce the current to 1/2 or less if the G3M is in repetitive operation.



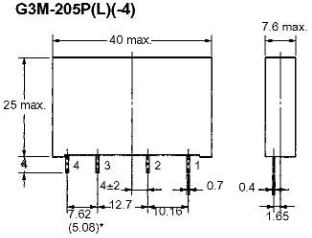
Dimensions

Note: All units are in millimeters unless otherwise indicated.

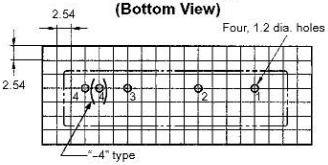
G3M-102P-US(-4), G3M-202P(L)-US(-4)
G3M-203P(L)(-4)



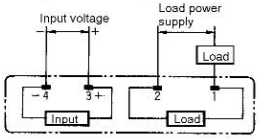
G3M-205P(L)(-4)



PCB Dimensions (Bottom View)



Terminal Arrangement (Bottom View)



*Input terminal pitch of 5.08 mm is also available.

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.

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Low-cost, Subminiature PCB-mounting SSR Switching 2 A

- Bottom is approximately three times as small as that of the G3M and ideal for high-density PCB applications.
- DC input-AC output for 2-A load at 25°C.
- Mono-block lead frame incorporating terminals, heat sink, and a PCB directly mounted with bare chips made it possible to miniaturize the relay.
- Standard models approved by UL, CSA and -UTU models by VDE (TÜV).

Ordering Information

Isolation	Zero cross function	Indicator	Input resister	Snubber circuit	Applicable output load	Rated input voltage	Model
Phototriac	No	No	Yes	Yes	2 A at 100 to 120 VAC (rated load voltage)	5 VDC	G3MB-102PL (-UTU)
						12 VDC	
						24 VDC	
	Yes				2 A at 100 to 240 VAC (rated load voltage)	5 VDC	G3MB-202P (-UTU) G3MB-202P-4 (-UTU)
						12 VDC	
						24 VDC	
	No					5 VDC	G3MB-202PL (-UTU) G3MB-202PL-4 (-UTU)
						12 VDC	
						24 VDC	
	Yes		No	No		*1	G3MB-202PEG-4 (-UTU)
	No						G3MB-202PLEG-4(-UTU)

Note: When ordering models conforming to VDE (TÜV), add "-UTU" to the model number.

* Recommended Operating Conditions

Item	Min.	Standard	Max.
Forward current	5 mA	10 mA	20 mA
Must release voltage	0	---	1 V

Specifications

■ Ratings

Input Resistor Contact

Rated voltage	Operating voltage	Impedance	Voltage levels	
			Must operate voltage	Must release voltage
5 VDC	4 to 6 VDC	440 Ω ±20%	4 VDC max.	1 VDC min.
12 VDC	9.6 to 14.4 VDC	1 kΩ ±20%	9.6 VDC max.	
24 VDC	19.2 to 28.8 VDC	2.2 kΩ ±20%	19.2 VDC max.	

Note: Each model has 5-VDC, 12-VDC, and 24-VDC input versions.

No Input Resistor

Item	Max.
LED forward current	50 mA
Repetitive peak LED forward current	1 A
LED reverse voltage	5 V

Output

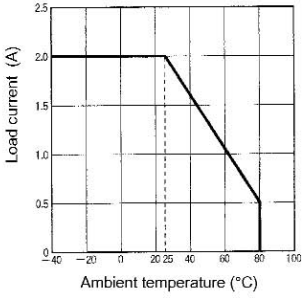
Model	Applicable load			
	Rated load voltage	Load voltage range	Load current	Inrush curret
G3MB-102PL	100 to 120 VAC, 50/60 Hz	75 to 132 VAC, 50/60 Hz	0.1 to 2 A	30 A (60 Hz, 1 cycle)
G3MB-202P G3MB-202PL	100 to 240 VAC, 50/60 Hz	75 to 264 VAC, 50/60 Hz		
G3MB-202PEG-4 G3MB-202PLEG-4				

■ Characteristics

Item	G3MB-102PL	G3MB-202P, -202P-4, -202PEG-4	G3MB-202PL, -202PL-4, -202PLEG-4
Operate time	1 ms max.	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	1.6 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		
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%		
Approved standards	UL508 File No. E64562 CSA C22.2 (No.14) File No. LR35535 TÜV R9351062 (EN60950) ("-UTU" type)		
Weight	Approx. 5 g		

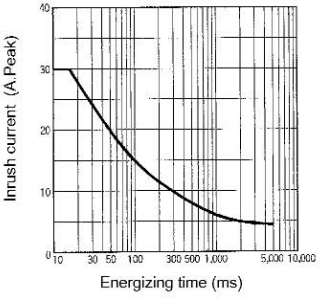
Engineering Data

Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity

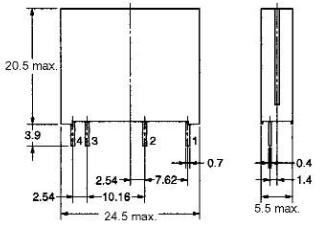
Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)



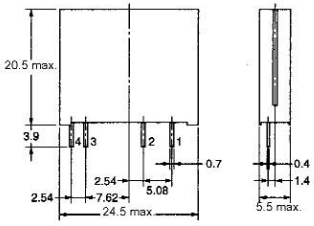
Dimensions

Note: All units are in millimeters unless otherwise indicated.

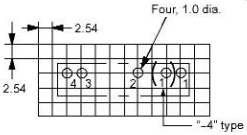
G3MB-□02P□



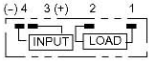
G3MB-202P□□□-4



PCB Dimensions (Bottom View)



Terminal Arrangement/ Internal Connections (Bottom View)



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.

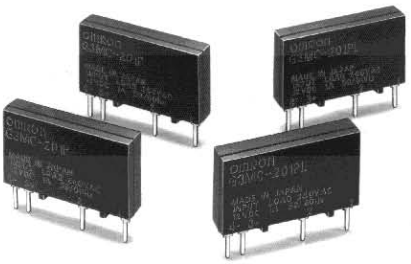
Protective Component

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

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.
- Approved by UL and CSA.
- Conforms to VDE.



Ordering Information

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(-VD)
					12 VDC	
					24 VDC	
	No				5 VDC	G3MC-101PL(-VD)
					12 VDC	
					24 VDC	
	Yes			1 A at 100 to 240 VAC	5 VDC	G3MC-201P(-VD)
					12 VDC	
					24 VDC	
	No				5 VDC	G3MC-201PL(-VD)
					12 VDC	
					24 VDC	
	Yes			2 A at 100 to 240 VAC	5 VDC	G3MC-202P(-VD)
					12 VDC	
					24 VDC	
	No				5 VDC	G3MC-202PL(-VD)
					12 VDC	
					24 VDC	

Note: When ordering models conforming to VDE(basic insulation), add "-VD" to the model number. Reinforced insulation models are also available. For details, contact your OMRON representative.

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: Each model has 5-VDC, 12-VDC, and 24-VDC input versions.

Output

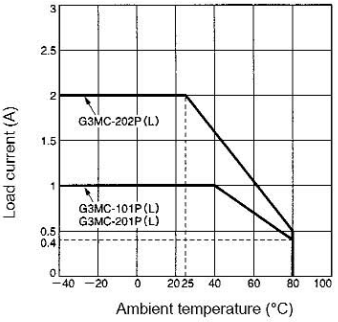
Model	Applicable load			
	Rated load voltage	Load voltage	Load current	Inrush current
G3MC-101P G3MC-101PL	100 to 120 VAC 50/60 Hz	75 to 132 VAC 50/60 Hz	0.1 to 1 A	8 A (60 Hz, 1 cycle)
G3MC-201P G3MC-201PL	100 to 240 VAC 50/60 Hz	75 to 264 VAC 50/60 Hz		
G3MC-202P(-VD) G3MC-202PL(-VD)	100 to 240 VAC 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-201P (-VD)	G3MC-201PL (-VD)	G3MC-202P (-VD)	G3MC-202PL (-VD)
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.	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					
Vibration resistance	Malfunction: 10 to 55 Hz, 0.75-mm double amplitude					
Shock resistance	Malfunction: 1,000 m/s^2				---	
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	UL508 File No. E64562, CSA C22.2 (No. 14, No. 950) File No. LR35535, EN60950 File No. 5925UG ("-VD" type)				---	
Ambient humidity	Operating: 45% to 85%					
Weight	Approx. 2.5 g				Approx. 5 g	

Engineering Data

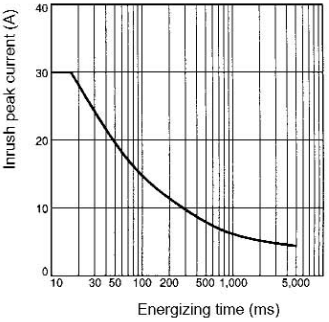
Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity

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

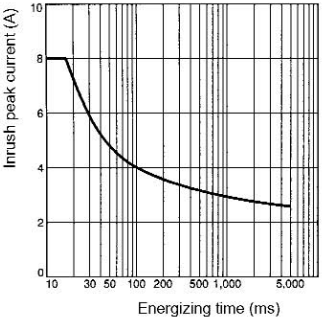
G3MC-202P(L)



Inrush Current Resistivity

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

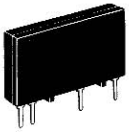
G3MC-101P(L), G3MC-201P(L)

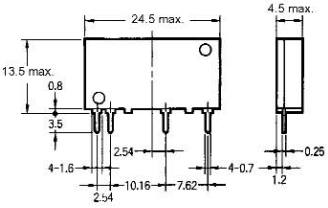


Dimensions

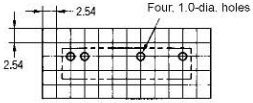
Note: All units are in millimeters unless otherwise indicated.

G3MC-101P(L)(-VD),
G3MC-201P(L)(-VD)

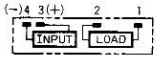




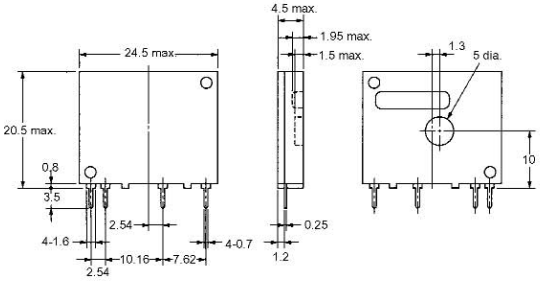
PCB Dimensions
(Bottom View)



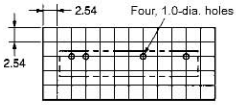
Terminal Arrangement
(Bottom View)



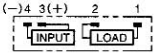
G3MC-202P(L)(-VD)



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.

Fusing characteristics

The G3MC has a function that forces an open mode failure when an overcurrent exceeds the rated value. The fusing characteristics of the G3MC, however, are not the same as those of a general-use glass fuse. Machines that use the G3MC must be provided with a safety device, such as a fuse or breaker, and ON-OFF tests or short-circuit tests must be implemented to confirm the following items and detailed influences. Users must determine test conditions and implement tests on reliability as required by the machine.

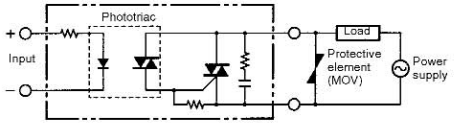
1. Life test under continuous electric current
2. On-off cycle test
3. Influence by ambient temperature
4. Influence by power source frequency
5. Influence by power source voltage fluctuation

Note: Contact your local OMRON sales office for more detailed information.

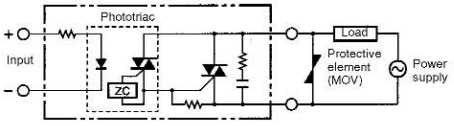
Protective Element

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)



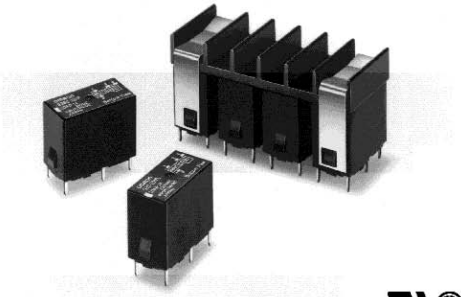
G3MC-□□□P (with Zero cross function)



ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Ultra-small Relay Breaks up to 1 A

- Ultra-small, dual in-line package (DIP) SSR.
- Terminals compatible with G6B Electromagnetic Relay's. Mix with G6Bs as the application requires.
- Close side-by-side mounting possible. In addition, heat sink dedicated to this mounting style also available.
- Both AC- and DC-load versions available.
- High isolation of 2,500 VAC between input and output freeing inputs from noise surge generated in the load.
- Built-in varistor effectively absorbs external surges. (In case of SSR for AC switching.)
- Approved by UL and CSA.



Ordering Information

Isolation	Zero cross function	Indicator	Rated output load (applicable output load)	Rated input voltage	Model
Phototriac	No	No	1 A at 100 to 240 VAC (1 A at 75 to 264 VAC) (see note 1)	5 VDC	G3S-201PL-US
				12 VDC	
				24 VDC	
			1.2 A at 100 to 240 VAC (1.2 A at 75 to 264 VAC) (see note 1)	5 VDC	G3S-201PL-PD-US
				12 VDC	
				24 VDC	
Photocoupler			1 A at 4 to 24 VDC (1 A at 3 to 26 VDC) (see note 2)	5 VDC	G3SD-Z01P-US
				12 VDC	
				24 VDC	
			1.1 A at 4 to 24 VDC (1.1 A at 3 to 26 VDC) (see note 2)	5 VDC	G3SD-Z01P-PD-US
				12 VDC	
				24 VDC	

Note: 1. Product is labelled "250 VAC".
2. Product is labelled "24 VDC".

■ Accessories (Order Separately)

Heat Sink

Heat Sink	Y92B-S08N

See *Dimensions* for details.

Connecting Socket

Connecting Socket	P6B-04P

See *Dimensions* for details.

■ Ratings

Input

Rated voltage	Operating voltage	Impedance		Voltage level	
		G3S-201PL/201PL-PD	G3S-Z01P/Z01P-PD	Must operate voltage	Must release voltage
5 VDC	4 to 6 VDC	450 Ω±20%	630 Ω±20%	4 VDC max.	1 VDC min.
12 VDC	9.6 to 14.4 VDC	1.1 kΩ±20%	1.5 kΩ±20%	9.6 VDC max.	
24 VDC	19.2 to 28.8 VDC	2.2 kΩ±20%	2.8 kΩ±20%	19.2 VDC max.	

Note: Each models has 5-VDC, 12-VDC, and 24-VDC input versions.

Output

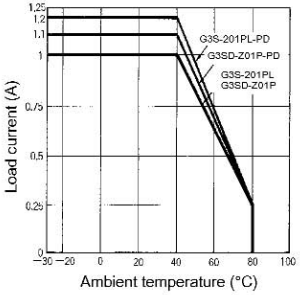
Model	Applicable load			
	Rated load voltage	Rated load voltage range	Load current	Inrush current
G3S-201PL	100 to 240 VAC	75 to 264 VAC	0.1 to 1 A	15 A (60 Hz, 1 cycle)
G3S-201PL-PD			0.1 to 1.2 A	
G3SD-Z01P	4 to 24 VDC	3 to 26 VDC	0.01 to 1 A	3 A (10 ms)
G3SD-Z01P-PD			0.01 to 1.1 A	

■ Characteristics

Item	G3S-201PL/201PL-PD	G3SD-Z01P/Z01P-PD
Operate time	1 ms max.	
Release time	1/2 of load power source cycle + 1 ms max.	1 ms max.
Output ON voltage drop	1.6 V (RMS) max.	1.5 V max.
Leakage current	2 mA max.	0.1 mA max. (at 26 VDC)
Insulation resistance	100 MΩ min. (at 500 VDC)	
Dielectric strength	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^2	
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%	
Approved standards	UL508 File No. E64562/CSA C22.2 (No.0, No.14) File No. LR35535	
Weight	Approx. 13 g	

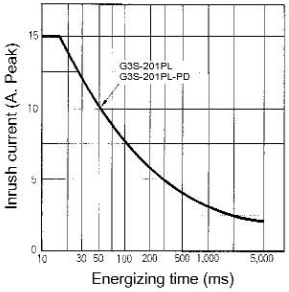
Engineering Data

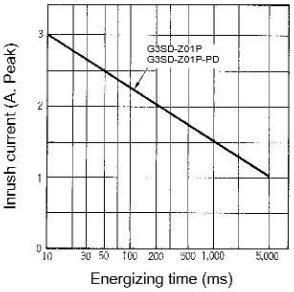
Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity

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

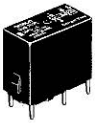


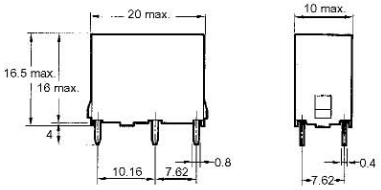


Dimensions

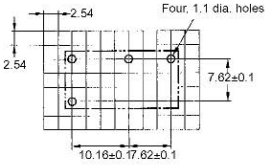
Note: All units are in millimeters unless otherwise indicated.

G3S/G3SD

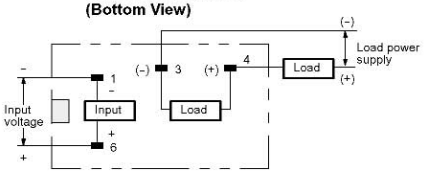




PCB Dimensions (Bottom View)

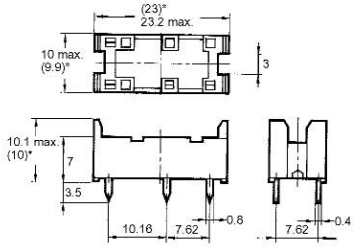


Terminal Arrangement/ Internal Connections (Bottom View)



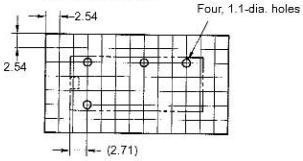
Note: Values in parentheses apply to the DC-load versions.

Connecting Socket P6B-04P

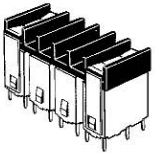


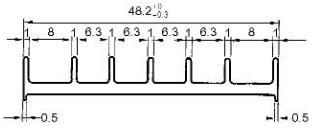
*Average value

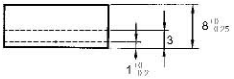
PCB Dimensions (Bottom View)



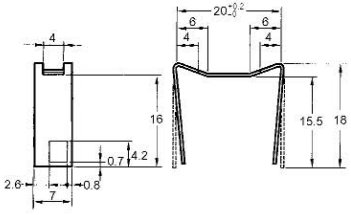
Heat Sink Y92B-S08N



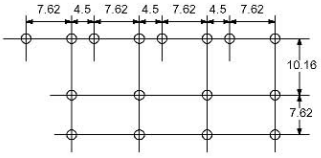




Mounting Bracket



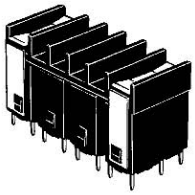
PCB Dimensions (Bottom View)



Precautions

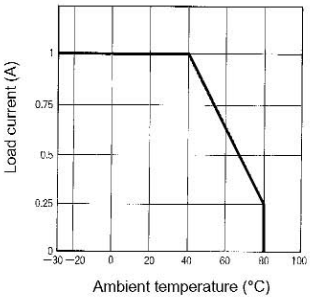
Close Mounting

G3S-201PL-PD and G3SD-Z01-PD SSRs can be closely mounted side by side. Attach the Y92B-S08N Heat Sink to the SSRs mounted closely side by side. When these SSRs are mounted side by side, the load current vs. ambient temperature characteristic declines as shown on the right.



Load Current vs. Ambient Temperature Characteristics

(When four SSRs are mounted side by side and each of them is switched to the same load current.)



Connection

With the SSR for DC switching, the load can be connected to either positive or negative output terminal of the SSR.

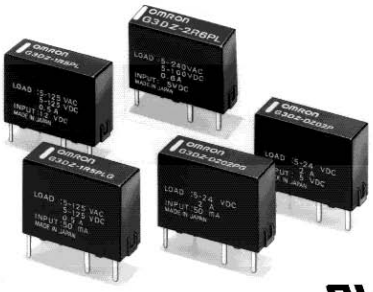
Protective Component

Since the SSR does not incorporate an overvoltage absorption component, be sure to connect an overvoltage absorption component when using the SSR under an inductive load.

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.
To convert millimetres into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SSR Identical to the G6D in Size with a Maximum AC/DC Switching Current of 0.6 A

- Switching 0.6 A at 240 VAC or 100 VDC.
- 10-μA current leakage max. between open output terminals.
- 2,500-VAC dielectric strength ensured between input and output terminals.
- Input resistor and varistor incorporated models available.
- Switching full- and half-wave rectified alternating currents.
- Approved by UL and CSA.



Ordering Information

Contact form	Insulation	Zero cross function	Indicator	Applicable output load	Rated input voltage	Model
SPST-NO	Photo-voltage coupler	No	No	0.6 A at	5 VDC	G3DZ-2R6PL
				3 to 264 VAC	12 VDC	
				3 to 125 VDC	24 VDC	

Accessories (Order Separately)

See *Dimensions* for details.

Connecting socket	P6D-04P

Specifications

■ Ratings

Input

Rated voltage	Operating voltage	Input impedance	Voltage level	
			Must operate	Must release
5 VDC	4 to 6 VDC	830 Ω±20%	4 VDC max.	1 VDC min.
12 VDC	9.6 to 14.4 VDC	2 kΩ±20%	9.6 VDC max.	
24 VDC	19.2 to 28.8 VDC	4 kΩ±20%	19.2 VDC max.	

Output

Rated voltage	Load voltage	Load current	Inrush current
5 to 240 VAC, 5 to 100 VDC	3 to 264 VAC, 3 to 125 VDC	100 μA to 0.6 A	6 A (10 ms)

■ Characteristics

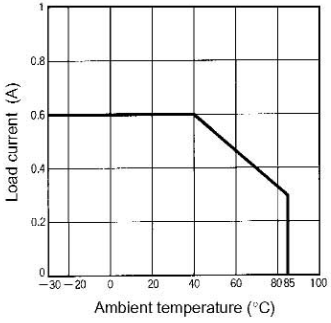
Operate time (see note)	6 ms max.
Release time (see note)	10 ms max.
Output ON-resistance (see note)	2.4 Ω max.
Leakage current	10 μA max. (at 125 VDC)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min between input and output
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Malfunction: 1,000 m/s^2
Ambient temperature	Operating: –30°C to 85°C (with no icing or condensation) Storage: –30°C to 100°C (with no icing or condensation)
Approved standards	UL508 File No. E64562 CSA C22.2 (No.14) File No. LR35535
Ambient humidity	Operating: 45% to 85%
Weight	Approx. 3.1 g

Note: These values are under the measurement conditions whereby rated voltages are applied to the input.

Engineering Data

Load Current vs. Ambient Temperature Characteristics

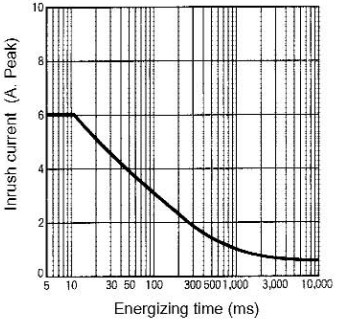
G3DZ-2R6PL



Inrush Current Resistivity

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

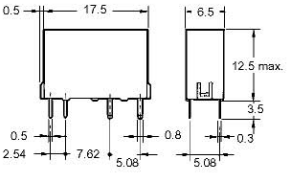
G3DZ-2R6PL



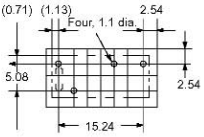
Dimensions

Note: 1. All units are in millimeters unless otherwise indicated.
2. Orientation marks are indicated as follows:

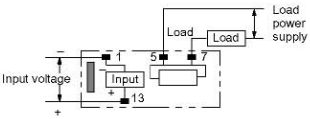
G3DZ-2R6PL



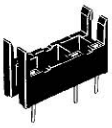
Mounting Holes (Bottom View)

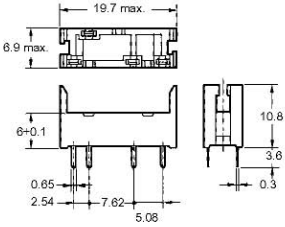


Terminal Arrangement/ Internal Connections (Bottom View)

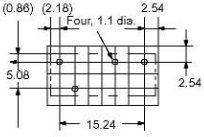


P6D-04P Connecting Socket

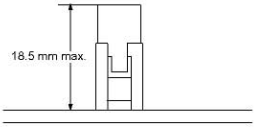




Mounting Holes (Bottom View)

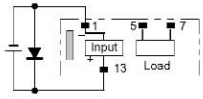


Socket Mounting Height



Precautions

If any reversed surge voltage is imposed on the input terminals, insert a diode in parallel to the input terminals as shown in the following circuit diagram and do not impose a reversed voltage value of 3 V or more.



Terminals

Since terminals are made of materials with high heat conduction, complete soldering (automatic or manual) within 10 seconds at a temperature of 260°C.

When fitting with a Socket, match properly and push straight down vertically.

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