

## ■ Introduction

New models and a wider range provide an array of solutions, meeting the needs of today's high performance applications.

Our new range of MOSFET relays, Type G3VM, set the benchmark in Solid State Relays (SSRs). Products are manufactured using the latest advances in automated production and include a variety of improved construction technologies within the areas of the input LED, PDA (Photo Diode Array used as a photocoupler) and MOSFET chips used in the load switching circuit. As a result, further reductions in package size and power requirements have been achieved.

Combining the advantages of mechanical and solid state technology, the new G3VM range gives you unprecedented capability to design. All models featured include a double MOSFET load circuit, enabling the designer complete versatility since it makes no difference whether an AC or DC load in either direction is connected (Connection A). Thus, the MOSFET relay is a fully functional alternative to an electromechanical relay with minimal additional drive circuitry.

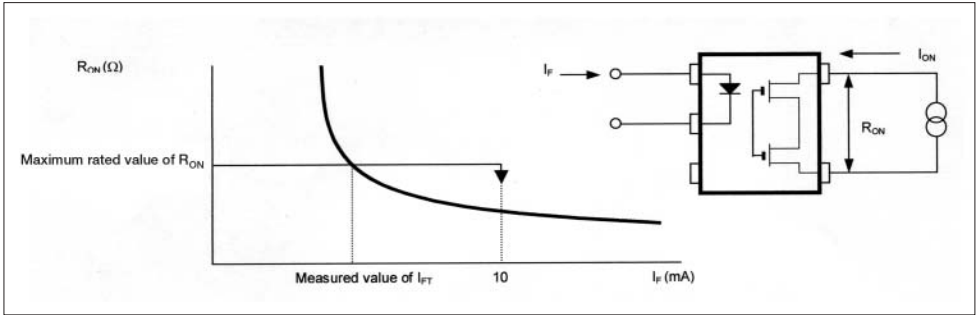
The built-in Current Limit Function (CLR models) has many uses. Traditionally used to clamp excessive over current fault conditions in telecom equipment, this feature can also be used to good effect to resist transient and short circuit conditions.

MOSFET relays are the ideal data and telecommunication solution for line seizing, line switching, hook switching, Data Access Arrangement (DAA) function, line transformer circuit control and other feature phone functions. Central office applications require high reliability and long life. Here G3VM is ideal for use in the areas of Subscriber Line Interfaces (SLICs) Multiplexers and Routers. In addition, Local Area Networks (LANs) and Network Termination Units (NTUs) including Set-Top Boxes (STBs) and Remote Metering Systems (RMS) can take advantage of the G3VMs' small size and low ON resistance.

Advances in performance and cost reduction enable MOSFET relays to be considered as good alternatives to Reed Relays in application areas such as security motion detectors (standard and anti-mask PIRs), other surveillance alarm equipment and associated systems.

## ■ Glossary

Term	Symbol	Description
LED forward current	$I_F$	Rated current that can flow continuously in the forward direction of the LED
Repetitive peak LED forward current	$I_{FP}$	Rated current that can flow momentarily in the forward direction of the LED
LED forward current reduction rate	$<I_{ON}/^{\circ}C$	Rated change of forward current flowing through the LED relative to ambient temperature above 25 °C
LED reverse voltage	$V_R$	Rated reverse voltage that can be applied between the anode and the cathode
Connection temperature	$T_J$	Rated temperature that can be allowed in the junction of the LED, Photodetector or MOSFET(s)
Output dielectric strength	$V_{OFF}$	Rated voltage that can be applied between the MOSFET's output terminals in the OFF state
Continuous load current	$I_O$	Rated current that can flow between the MOSFET's output terminals in the ON state
ON current reduction rate	$<I_{ON}/^{\circ}C$	Rated change of load current flowing between MOSFET(s) output terminals relative to ambient temperature above 25 °C
Dielectric strength between input and output	$V_{I-O}$	Isolation voltage between input and output terminals for a specified time
Operating temperature	$T_a$	Ambient temperature range in which the relay may be operated without impairment
Storage temperature	$T_{stg}$	Ambient temperature range in which the relay may be stored while not operating
LED forward voltage	$V_F$	Voltage drop between the LED's anode and cathode at a certain forward current
LED reverse current	$I_R$	Leakage current flowing in the LED's reverse direction (between cathode and anode)
Capacity between LED terminals	$C_T$	Electrostatic capacitance between the anode and the cathode terminals of the LED
Trigger LED forward current	$I_{FT}$	Minimum value of input current necessary to put the output MOSFET(s) in to the ON state
Maximum resistance with output ON	$R_{ON}$	Resistance between the MOSFET's output terminals specified with reference to ON state current
Current leakage when the relay is open	$I_{LEAK}$	Leakage current flowing between the MOSFET's output terminals in the OFF state
Capacity between I/O terminals	$C_{I-O}$	Electrostatic capacitance between the input and output terminals of the relay
Insulation resistance	$R_{I-O}$	Resistance between the input and output terminals at the specified voltage value
Turn-ON time	tON	Time required for the output waveform to change from 0(100%) to 90(10%) after input goes from OFF to ON state
Turn-OFF time	tOFF	Time required for the output waveform to change from 0(100%) to 90(10%) after input goes from ON to OFF state
Output dielectric strength	$V_{DD}$	Rated load voltage that can be applied between the MOSFET's output terminals



Relationship between  $R_{ON}$  and  $I_{FT}$

**PRECAUTIONS WHEN MOUNTING DEVICES ON PCBs**

**Soldering**

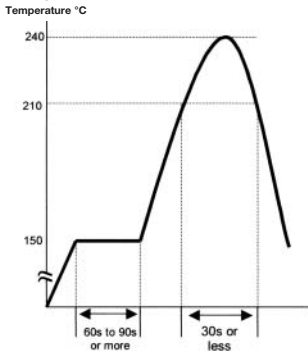
As far as it is possible, avoid raising the temperature of the device by observing the following restrictions.

**Soldering leads directly**

260°C max, 10 seconds max

**Reflow soldering**

- a) Lead temperature: 210°C max, 30 seconds max  
Atmospheric temperature close of mold body surface: 240°C max, 10 seconds max
- b) Recommended temperature profile



c) Precautions when heating

The soldering time (as shown above) must be kept as short as possible.

When using a halogen lamp or infrared heater, please do not irradiate the mold body surface directly.

**Dip soldering (flow soldering)**

Reflow soldering is recommended because the thermal stress involved is much less than that inherent in other soldering methods.

If you plan to use dip soldering, please contact OMRON first.

**Cleaning**

When ions in the flux enter into the product during soldering, fluctuation in device performance or corrosion may occur. Be sure to wash away any flux residue which contains C or Na ions.

**The following types of solvents are recommended for cleaning the flux**

- Asahi Clean AK-225AES
- Kao Cleanthru 750H
- Pine-Alpha ST-100S

**Cleaning Conditions**

Cleaning conditions and precautions may vary according to product specifications.

a) **General precautions for dip cleaning**

Dipping time varies according to the solvent used.

However, as a general guideline, it is recommended that the dip time be limited to three minutes.

b) **General precautions for ultrasonic cleaning**

When ultrasonic cleaning is conducted for an excessively long time, contact between the product resin and the metal leads may lessen. Also, excessive ultrasonic stress may cause cracks in the pellet.

It is recommended that the applied stress be minimized.

**Recommended conditions for standard ultrasonic cleaning**

- Frequency: 27kHz to 29kHz
- Output: 0.25 W/cm<sup>2</sup> or less
- Time: 30 seconds or less
- Temperature: 50°C (may vary according to the type of solvent used)

Cleaning must be conducted with the printed circuit board or device floating on the solvent, so as to avoid direct contact between the PCB or device and the ultrasonic vibrator.

**Handling Precautions**

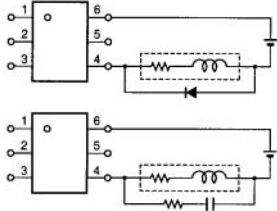
Do not touch the device's mark-bearing surface with your hand or with a brush while cleaning or applying cleaning liquid to the device. This may erase device markings. It is important to confirm that neither the solvent used for cleaning nor the cleaning conditions will damage the device package.



**PROTECTION FROM SPIKE VOLTAGE ON THE OUTPUT TERMINALS**

If a spike voltage exceeding the absolute maximum rated value is generated between the output terminals, insert a C-R snubber or clamping diode in parallel to the load as shown in the following circuit diagram to limit the spike voltage.

**Spike Voltage Protection Circuit Example**



**UNUSED TERMINALS (6-PIN MODELS ONLY)**

Terminal 3 is connected to the internal circuit. Do not connect anything to terminal 3 externally.

**PIN STRENGTH FOR AUTOMATIC MOUNTING**

In order to maintain the characteristics of the relay, the force imposed on any pin of a relay for automatic mounting must not exceed the following.

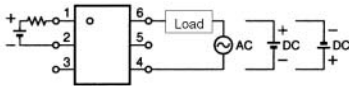


In direction A: 1.96 N  
In direction B: 1.96 N

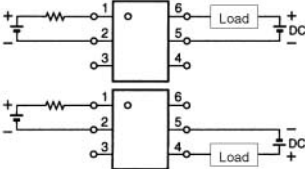
**LOAD CONNECTION**

Do not short-circuit the input and output terminals while the relay is operating or the relay may malfunction.

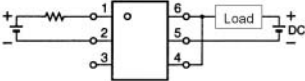
**AC Connection**



**DC Single Connection**



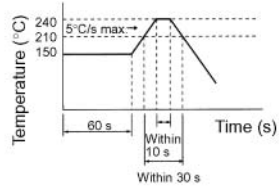
**DC Parallel Connection**





**SOLDER MOUNTING**


Maintain the following conditions during manual or reflow soldering of the relays in order to prevent the temperature of the relays from rising.


1. Pin Soldering  
Solder each pin at a maximum temperature of 260°C within 10 s.
2. Reflow Soldering
  - a. Solder each pin at a maximum temperature of 260°C within 10 s.
  - b. Make sure that the ambient temperature on the surface of the resin casing is 240C max. for 10 s maximum.
  - c. The following temperature changes are recommendable for soldering.




Style		Through-hole Device – 4 pin					
							
Dimensions (L x W x H mm)		4.58 x 6.4 x 3.65					
Type		General Purpose		Telecom	General Purpose		
Part Number (G3VM-)		-61A1	-351A	-2L	-353A	-401A	
Output	Load Voltage	60 V	350 V	350 V	350 V	400 V	
	Function	1a	1a	1a CLF	1b	1a	
	Cont. load current (connection A)	500 mA	120 mA	120 mA	150 mA	120 mA	
	ON resistance	Typical	1 Ω	35 Ω	22 Ω	15 Ω	18 Ω
Max.		2 Ω	50 Ω	35 Ω	25 Ω	35 Ω	
Input	LED forward current (max)	50 mA					
	LED reverse voltage (max)	5 V		6 V	5 V		
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA
		Max.	3 mA	3 mA	3 mA	3 mA	3 mA
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.3 ms	–	1 ms	–
		Max.	2 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	0.1 ms	0.1 ms	–	1 ms	–
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC					
Temperature	Operating	-40°C to 85°C					
	Storage	-55°C to 125°C					
Floating capacity between I/O terminals		0.8 pF					
Insulation resistance		1,000 MΩ					
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Style		Surface Mount Device – 4 pin					
							
Dimensions (L x W x H mm)		4.58 x 6.4 x 3.65					
Type		General Purpose		Telecom	General Purpose		
Part Number (G3VM-)		-61D1	-351D	-2FL	-353D	-401D	
Output	Load Voltage	60 V	350 V	350 V	350 V	400 V	
	Function	1a	1a	1a CLF	1b	1a	
	Cont. load current (connection A)	500 mA	120 mA	120 mA	150 mA	120 mA	
	ON resistance	Typical	1 Ω	35 Ω	22 Ω	15 Ω	18 Ω
Max.		2 Ω	50 Ω	35 Ω	25 Ω	35 Ω	
Input	LED forward current (max)	50 mA					
	LED reverse voltage (max)	5 V		6 V	5 V		
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA
		Max.	3 mA	3 mA	3 mA	3 mA	3 mA
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.3 ms	–	1 ms	–
		Max.	2 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	0.1 ms	0.1 ms	–	1 ms	–
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC					
Temperature	Operating	-40°C to 85°C					
	Storage	-55°C to 125°C					
Floating capacity between I/O terminals		0.8 pF					
Insulation resistance		1,000 MΩ					
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Style		Small Outline Package – 4 pin					
							
Dimensions (L x W x H mm)		3.9 x 4.4 x 2.1					
Type		Special Purpose					
Part Number (G3VM-)		-21GR	21GR1	41GR5	-41GR6	-61GR1	
Output	Load Voltage	20 V	20 V	40 V	40 V	60 V	
	Function	1a	1a	1a	1a	1a	
	Cont. load current (connection A)	420 V	20 V	40 V	40 V	60 V	
	ON resistance	Typical	5 Ω	1 Ω	1 Ω	10 Ω	0.32 Ω
Max.		8 Ω	1.5 Ω	1.5Ω	15 Ω	0.7 Ω	
Input	LED forward current (max)	50 mA	50 mA	50 mA	50 mA	50 mA	
	LED reverse voltage (max)	5 V	5 V	5 V	5 V	5 V	
	Trigger LED current	Typical	–	–	–	–	–
		Max.	4 mA	4 mA	4 mA	4 mA	3 mA
Switching Characteristics	Turn-on Time	Typical	–	–	–	1.4 ms	
		Max.	0.5 ms	0.5 ms	0.5 ms	0.5 ms	3 ms
	Turn-off Time	Typical	–	–	–	–	0.2 ms
		Max.	0.5 ms	0.5 ms	0.5 ms	0.5 ms	1 ms
Dielectric Strength between I/O terminals		1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC	
Temperature	Operating	-20°C to 85°C	-20°C to 85°C	-20°C to 85°C	-20°C to 85°C	-40°C to 85°C	
	Storage	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	
Floating capacity between I/O terminals		0.8 pF	0.8 pF	0.8 pF	0.8 pF	0.8 pF	
Insulation resistance		1,000 MΩ	1,000 MΩ	1,000 MΩ	1,000 MΩ	1,000 MΩ	
Page		388	390	392	394	396	


Style		Small Outline Package – 4 pin						
								
Dimensions (L x W x H mm)		3.9 x 4.4 x 2.1						
Type		General Purpose						
Part Number (G3VM-)		-61G1	-81G1	-201G	-351G	-353G	-401G	
Output	Load Voltage	60 V	80 V	200 V	350 V	350 V	400 V	
	Function	1a	1a	1a	1a	1b	1a	
	Cont. load current (connection A)	400 mA	350 mA	50 mA	110 mA	120 mA	120 mA	
	ON resistance	Typical	1 Ω	1 Ω	40 Ω	35 Ω	15 Ω	17 Ω
Max.		2 Ω	1.2 Ω	50 Ω	50 Ω	25 Ω	35 Ω	
Input	LED forward current (max)	50 mA						
	LED reverse voltage (max)	5 V						
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Max.		3 mA	4 mA	3 mA	3 mA	3 mA	3 mA	
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.3 ms	–	1 ms	–	0.3 ms
		Max.	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	0.1 ms	0.1 ms	–	1 ms	–	0.1 ms
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		1,500 VAC						
Temperature	Operating	-40°C to 85°C						
	Storage	-55°C to 125°C						
Floating capacity between I/O terminals		0.8 pF						
Insulation resistance		1,000 MΩ						
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Style		Super Small Outline Package – 4 pin				
						
Dimensions (L x W x H mm)		1.7 x 4.2 x 1.8				
Type		Special Purpose				
Part Number (G3VM-)		-21LR	21LR1	-41LR5	-41LR6	
Output	Load Voltage	20 V	20 V	40 V	40 V	
	Function	1a	1a	1a	1a	
	Cont. load current (connection A)	160 mA	450 mA	300 mA	120 mA	
	ON resistance	Typical	5 Ω	0.8 Ω	1 Ω	10 Ω
Max.		8 Ω	1.2 Ω	1.5 Ω	15 Ω	
Input	LED forward current (max)	50 mA	50 mA	50 mA	50 mA	
	LED reverse voltage (max)	5 V	5 V	5 V	5 V	
	Trigger LED current	Typical	–	–	–	–
		Max.	4 mA	4 mA	4 mA	4 mA
Switching Characteristics	Turn-on Time	Typical	–	–	–	
		Max.	0.5ms	0.5ms	0.5ms	0.5ms
	Turn-off Time	Typical	–	–	–	–
		Max.	0.5ms	0.5ms	0.5ms	0.5ms
Dielectric Strength between I/O terminals		1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC	
Temperature	Operating	-20°C to 85°C	-20°C to 85°C	-20°C to 85°C		
	Storage	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C		
Floating capacity between I/O terminals		0.8 pF	0.8 pF	0.8 pF	0.8 pF	
Insulation resistance		1,000 MΩ	1,000 MΩ	1,000 MΩ	1,000 MΩ	
Page		410	412	414	416	


Style		Through-hole Device – 6 pin									
											
Dimensions (L x W x H mm)		7.12 x 6.4 x 3.65	8.64 x 6.4 x 3.65	7.12 x 6.4 x 3.65				8.64 x 6.4 x 3.65	7.12 x 6.4 x 3.65		
Type		General Purpose	High Performance	General Purpose	Telecom	General Purpose		High Performance	Telecom		
Part Number (G3VM-)		-61B1	-XN	-351B	-3L	-353B	-401B	-4N	-401BY	-601BY	
Output	Load Voltage	60 V	60 V	350 V	350 V	350 V	400 V	400 V	400 V	400 V	600 V
	Function	1a	1a hiperf	1a	1a CLF	1b	1a	1a hiperf	1a hi isol	1a hi isol	
	Cont. load current (connection A)	500 mA	300 mA	120 mA	120 mA	150 mA	120 mA	150 mA	120 mA	100 mA	
	ON resistance	Typical	1 Ω	1.4 Ω	25 Ω	22 Ω	15 Ω	17 Ω	–	17 Ω	25 Ω
Max.		2 Ω	2 Ω	35 Ω	35 Ω	25 Ω	35 Ω	12 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50 mA	30 mA	50 mA				30 mA	50 mA		
	LED reverse voltage (max)	5 V									
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	–	1 mA	1 mA	1 mA	–	1.6 mA
Max.		3 mA	5 mA	3 mA	3 mA	3 mA	3 mA	5 mA	3 mA	5 mA	
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.2 ms	0.3 ms	–	0.1 ms	0.3 ms	0.3 ms	0.3 ms	0.2 ms
		Max.	2 ms	0.5 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1.5 ms
	Turn-off Time	Typical	0.1 ms	0.2 ms	0.1 ms	–	1 ms	0.1 ms	0.3 ms	0.1 ms	0.2 ms
		Max.	0.5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC							5,000 VAC		
Temperature	Operating	–40°C to 85°C									
	Storage	–55°C to 125°C									
Floating capacity between I/O terminals		0.8 pF									
Insulation resistance		1,000 MΩ									
Page		418	420	423	425	427	429	431	434	436	

Style		Surface Mount Device – 6 pin									
											
Dimensions (L x W x H mm)		7.12 x 6.4 x 3.65	8.64 x 6.4 x 3.65	7.12 x 6.4 x 3.65			8.64 x 6.4 x 3.65		7.12 x 6.4 x 3.65		
Type		General Purpose	High Performance	General Purpose	Telecom	General Purpose		High Performance	Telecom		
Part Number (G3VM-)		-61E1	-XNF	-351E	-3FL	-353E	-401E	-4NF	-401EY	-601EY	
Output	Load Voltage	60 V	60 V	350 V	350 V	350 V	400 V	400 V	400 V	600 V	
	Function	1a	1a hiperf	1a	1a CLF	1b	1a	1a hiperf	1a hi isol	1a hi isol	
	Cont. load current (connection A)	500 mA	300 mA	120 mA	120 mA	150 mA	120 mA	150 mA	120 mA	100 mA	
	ON resistance	Typical	1 Ω	1.4 Ω	25 Ω	22 Ω	15 Ω	17 Ω	8 Ω	17 Ω	22 Ω
Max.		2 Ω	2 Ω	35 Ω	35 Ω	25 Ω	35 Ω	12 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50 mA	30 mA	50 mA			30 mA		50 mA		
	LED reverse voltage (max)	5 V									
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	–	1 mA	1 mA	1 mA	–	1.6 mA
		Max.	3 mA	5 mA	3 mA	3 mA	3 mA	3 mA	5 mA	3 mA	5 mA
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.2 ms	0.3 ms	–	0.1 ms	0.3 ms	0.3 ms	0.3 ms	0.5 ms
		Max.	2 ms	0.5 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1.5 ms
	Turn-off Time	Typical	0.1 ms	0.2 ms	0.1 ms	–	1 ms	0.1 ms	0.3 ms	0.1 ms	0.1 ms
		Max.	0.5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC						5,000 VAC			
Temperature	Operating	–40°C to 85°C									
	Storage	–55°C to 125°C									
Floating capacity between I/O terminals		0.8 pF									
Insulation resistance		1,000 MΩ									
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Style		Small Outline Package – 6 pin						
								
Dimensions (L x W x H mm)		6.3 x 4.4 x 2.1						
Type		General Purpose	Special Purpose	General Purpose				
Part Number (G3VM-)		-61H1	-81HR	-201H1	-351H	-353H	-401H	
Output	Load Voltage	60 V	80 V	200 V	350 V	350 V	400 V	
	Function	1a	1a	1a	1a	1b	1a	
	Cont. load current (connection A)	400 mA	1,250 mA	200 mA	110 mA	120 mA	120 mA	
	ON resistance	Typical	1 Ω	2 Ω	5 Ω	25 Ω	15 Ω	17 Ω
Max.		2 Ω	4 Ω	8 Ω	35 Ω	25 Ω	35 Ω	
Input	LED forward current (max)	50 mA						
	LED reverse voltage (max)	5 V						
	Trigger LED current	Typical	1.6 mA	2 mA	1 mA	1 mA	1 mA	1 mA
Max.		3 mA	5 mA	3 mA	3 mA	3 mA	3 mA	
Switching Characteristics	Turn-on Time	Typical	0.8 ms	2 ms	0.6 ms	0.3 ms	–	0.3 ms
		Max.	2 ms	3 ms	1.5 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	0.1 ms	0.7 ms	0.1 ms	0.1 ms	–	0.1 ms
		Max.	0.5 ms	1 ms	1 ms	1 ms	3 ms	1 ms
Dielectric Strength between I/O terminals		1,500 VAC						
Temperature	Operating	-40°C to 85°C	-20°C to 85°C	-40°C to 85°C				
	Storage	-55°C to 125°C	-40°C to 125°C	-55°C to 125°C				
Floating capacity between I/O terminals		0.8 pF						
Insulation resistance		1,000 MΩ						
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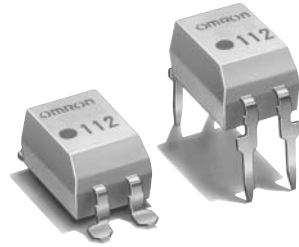
Style		Through-hole Device – 8 pin								
										
Dimensions (L x W x H mm)		9.66 x 6.4 x 3.65								
Type		Special Purpose		General Purpose		Telecom	General Purpose			
Part Number (G3VM-)		-22CO	-61CR	-62C1	-352C	-WL	-354C	-355C	-402C	
Output	Load Voltage	60 V	60 V	60 V	350 V	350 V	350 V	350 V	400 V	
	Function	2a	1a	2a	2a	2a CLF	2b	1c	2a	
	Cont. load current (connection A)	150 mA	500 mA	500 mA	120 mA	120 mA	150 mA	100 mA	120 mA	
	ON resistance	Typical	2 Ω	–	1 Ω	25 Ω	22 Ω	15 Ω	30 Ω	18 Ω
Max.		4 Ω	0.12	2 Ω	50 Ω	35 Ω	25 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50 mA								
	LED reverse voltage (max)	6V		5 V		6 V	5 V			
	Trigger LED current	Typical	1.15 mA	–	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Max.		5 mA	5 mA	3 mA	3 mA	3 mA	3 mA	3 mA	3 mA	
Switching Characteristics	Turn-on Time	Typical	–	–	0.8 ms	0.3 ms	–	0.1 ms	0.3 ms	–
		Max.	1 ms	5 ms	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	–	–	0.1 ms	0.1 ms	–	1 ms	0.15 ms	–
		Max.	1 ms	5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC	1,500 VAC	2,500 VAC						
Temperature	Operating	-40°C to 85°C	-20°C to 85°C	-40°C to 85°C						
	Storage	-55°C to 125°C								
Floating capacity between I/O terminals		0.8 pF								
Insulation resistance		1,000 MΩ								
Page		450	452	454	456	458	460	462	464	

Style		Surface Mount Device – 8 pin								
										
Dimensions (L x W x H mm)		9.66 x 6.4 x 3.65								
Type		Special Purpose		General Purpose		Telecom	General Purpose			
Part Number (G3VM-)		-22FO	-61FR	-62F1	-352F	-WFL	-354F	-355F	-402F	
Output	Load Voltage	20 V	60 V	60 V	350 V	350 V	350 V	350 V	400 V	
	Function	2a	1a	2a	2a	2a CLF	2b	1c	2a	
	Cont. load current (connection A)	150mA	500mA	500mA	120mA	120mA	150mA	100mA	120mA	
	ON resistance	Typical	2 Ω	?	1 Ω	25 Ω	22 Ω	15 Ω	30 Ω	18 Ω
Max.		4 Ω		2 Ω	50 Ω	35 Ω	25 W	35 Ω	35 Ω	
Input	LED forward current (max)	50 mA								
	LED reverse voltage (max)	6 V		5 V		6 V	5 V			
	Trigger LED current	Typical	1.5 mA	–	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Max.		5 mA	5 mA	3 mA	3 mA	3 mA	3 mA	3 mA	3 mA	
Switching Characteristics	Turn-on Time	Typical	–	–	0.8 ms	0.3 ms	–	0.1 ms	0.3 ms	–
		Max.	1 ms	5 ms	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	–	–	0.1 ms	0.1 ms	–	1 ms	0.15 ms	–
		Max.	1 ms	5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		2,500 VAC	1,500 VAC	2,500 VAC						
Temperature	Operating	-40°C to 85°C	-20°C to 85°C	-40°C to 85°C						
	Storage	-55°C to 125°C								
Floating capacity between I/O terminals		0.8 pF								
Insulation resistance		1,000 MΩ								
Page		450	452	454	456	458	460	462	464	

Style		Small Outline Package – 8 pin						
								
Dimensions (L x W x H mm)		9.4 x 4.4 x 2.1						
Type		General Purpose						
Part Number (G3VM-)		-62J1	-202J1	-352J	-354J	-355J	-402J	
Output	Load Voltage	60 V	200 V	350 V	350 V	350 V	400 V	
	Function	2a	2a	2a	2b	1c	2a	
	Cont. load current (connection A)	400mA	200mA	110mA	120mA	90mA	120mA	
	ON resistance	Typical	1 Ω	5 Ω	35 Ω	15 Ω	30 Ω	17 Ω
Max.		2 Ω	8 Ω	50 Ω	25 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50 mA						
	LED reverse voltage (max)	5 V						
	Trigger LED current	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Max.		3 mA	3 mA	3 mA	3 mA	3 mA	3 mA	
Switching Characteristics	Turn-on Time	Typical	0.8 ms	0.6 ms	0.3 ms	–	0.3 ms	0.3 ms
		Max.	2 ms	1.5 ms	1 ms	1 ms	1 ms	1 ms
	Turn-off Time	Typical	0.1 ms	0.1 ms	0.1 ms	–	0.15ms	0.1 ms
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms
Dielectric Strength between I/O terminals		1,500 VAC						
Temperature	Operating	-40°C to 85°C						
	Storage	-55°C to 125°C						
Floating capacity between I/O terminals		0.8 pF						
Insulation resistance		1,000 MΩ						
Page		466	468	470	472	474	476	

**Compact, General-purpose, Analog switching MOSFET Relay, with Dielectric Strength of 2.5 kVAC between I/O Using Optical Isolation**

- Upgraded G3VM-61 A/D Series.
- Switches minute analog signals.
- Leakage current of 1 A max. when output relay is open.



**NEW**

**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

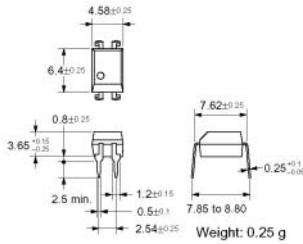
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	60 VAC	G3VM-61A1	100	---
	Surface-mounting terminals		G3VM-61D1		
				G3VM-61D1(TR)	---

**Dimensions**

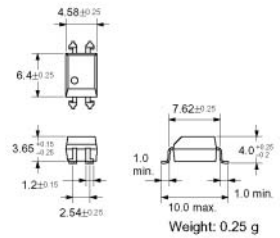
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-61A1



**Note:** The actual product is marked differently from the image shown here.

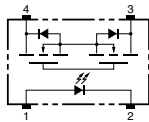
G3VM-61D1



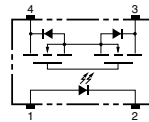
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-61A1

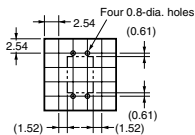


G3VM-61D1



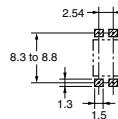
**PCB Dimensions (Bottom View)**

G3VM-61A1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-61D1





**Absolute Maximum Ratings (Ta = 25°C)**

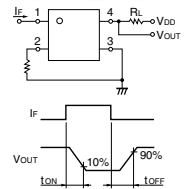
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_{FP}/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	80	V	
	Continuous load current	$I_O$	500	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-5.0	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FF}$	---	1.6	3	mA	$I_O = 500$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	1	2	$\Omega$	$I_F = 5$ mA, $I_O = 500$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 60$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	0.6	2.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

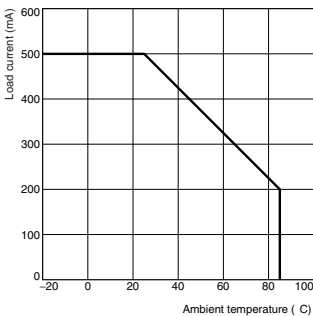
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	46	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	500	mA
Operating temperature	$T_a$	-20	---	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-61A1(D1)



## Analog-switching MOSFET Relays with 350-V Load Voltage and Current Limit.

- A 4-pin Relay available with the same terminal-pin position as 4-pin photocouplers.
- Approved standards: UL1577 (File No. E80555)



**Note:** The actual product is marked differently from the image shown here.

### Application Examples

- Electronic automatic exchange systems
- Cordless telephones
- Multi-functional telephones
- Measurement devices

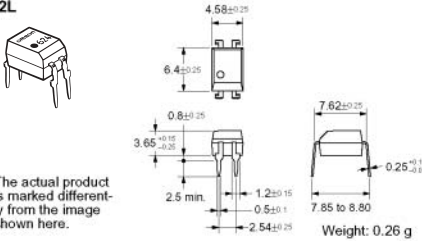
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-2L	Yes	100	---
	Surface-mounting terminals		G3VM-2FL			
			G3VM-2FL(TR)			

### Dimensions

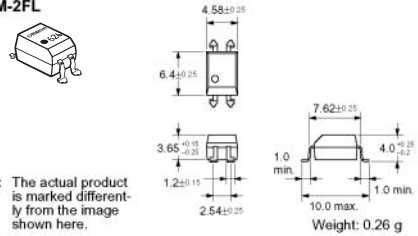
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-2L



**Note:** The actual product is marked differently from the image shown here.

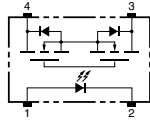
#### G3VM-2FL



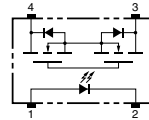
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-2L

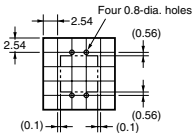


#### G3VM-2FL



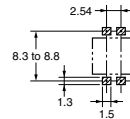
### PCB Dimensions (Bottom View)

#### G3VM-2L



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-2FL



**■ Absolute Maximum Ratings (Ta = 25°C)**

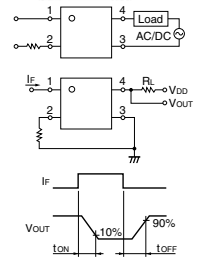
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	6	V	
	Connection temperature	$T_I$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_I$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 6$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	22	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Limit current	$I_{LIM}$	150	---	300	mA	$I_F = 5$ mA, $V_{DD} = 5$ V, $t = 5$ ms	
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

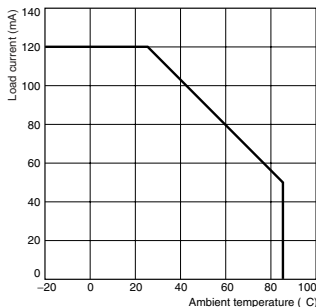
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

**G3VM-2(F)L**



**New Standard Series with 350-V Load**

- Upgraded G3VM-2 Series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.
- Operating time of 0.3 ms (typical)



**NEW**

**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

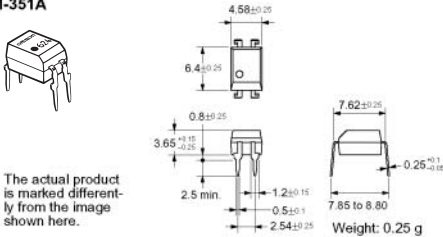
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-351A	100	---
	Surface-mounting terminals		G3VM-351D		
			G3VM-351D(TR)		

**Dimensions**

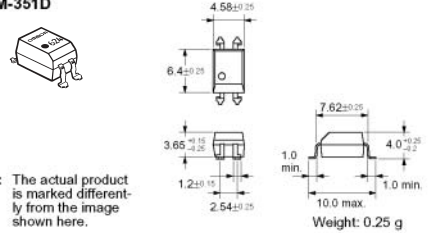
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-351A



**Note:** The actual product is marked differently from the image shown here.

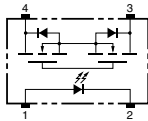
G3VM-351D



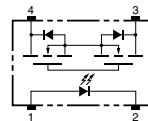
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-351A

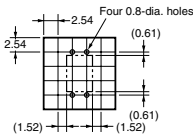


G3VM-351D



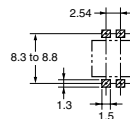
**PCB Dimensions (Bottom View)**

G3VM-351A



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-351D



**Absolute Maximum Ratings (Ta = 25°C)**

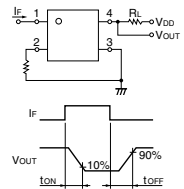
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	25	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA, t < 1 s
			---	35	50	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{iO}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, ROH $\leq$ 60%	
Turn-ON time	tON	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

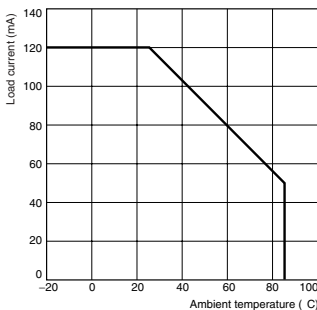
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-351A(D)



**Analog-switching MOSFET Relay with SPST-NC (Single-pole, Single-throw, Normally Closed) Contacts**

- Switches minute analog signals.
- Switching AC and DC.

**Application Examples**

- Electronic automatic exchange systems
- Security systems
- Datacom (modem) systems
- FA systems
- Measurement devices



**Note:** The actual product is marked differently from the image shown here.

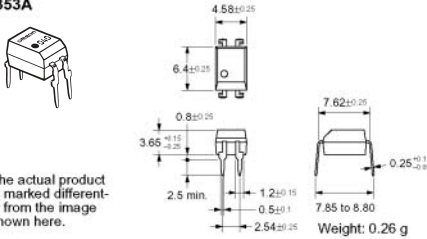
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NC	PCB terminals	350 VAC	G3VM-353A	100	---
	Surface-mounting terminals		G3VM-353D		
			G3VM-353D(TR)	---	

**Dimensions**

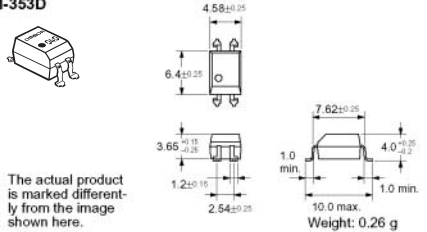
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-353A



**Note:** The actual product is marked differently from the image shown here.

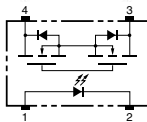
G3VM-353D



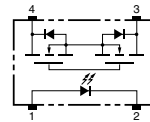
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-353A

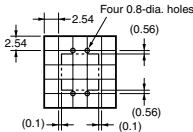


G3VM-353D



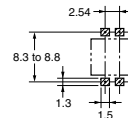
**PCB Dimensions (Bottom View)**

G3VM-353A



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-353D



**■ Absolute Maximum Ratings (Ta = 25°C)**

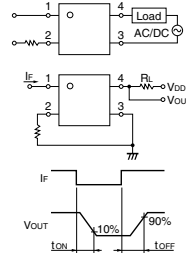
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_{FR}$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	150	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.5	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{IO}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_F$	—	30	—	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	—	1	3	mA	$I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	—	15	25	$\Omega$	$I_O = 150$ mA
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	$\mu$ A	$I_F = 5$ mA, $V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{IO}$	—	0.8	—	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{IO}$	1,000	—	—	M $\Omega$	$V_{IO} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	—	0.1	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	—	1.0	3.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

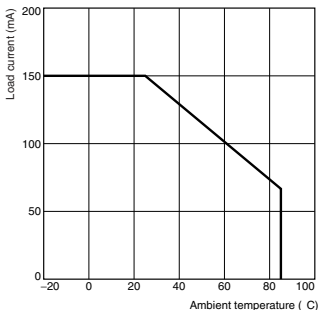
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	280	V
Operating LED forward current	$I_F$	5	—	25	mA
Continuous load current	$I_O$	—	—	150	mA
Operating temperature	$T_a$	-20	—	65	°C

**■ Engineering Data**

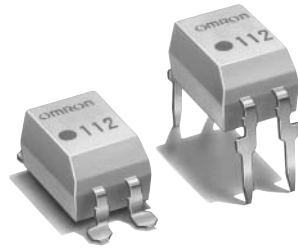
**Load Current vs. Ambient Temperature**

**G3VM-353A(D)**



## Expanded Range of Analog-switching MOSFET Relays with 400-V Load Voltage

- A 4-pin Relay now available in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.



**NEW** Approval pending

### Application Examples

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

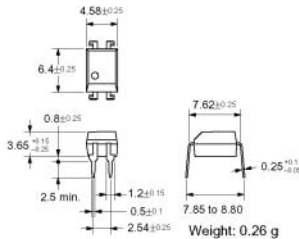
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401A	100	---
	Surface-mounting terminals		G3VM-401D		
				G3VM-401D(TR)	---

### Dimensions

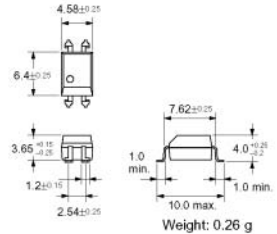
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-401A



**Note:** The actual product is marked differently from the image shown here.

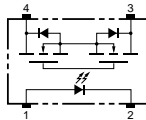
G3VM-401D



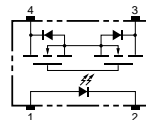
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

G3VM-401A

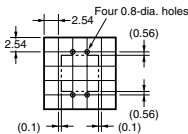


G3VM-401D



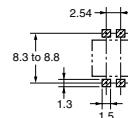
### PCB Dimensions (Bottom View)

G3VM-401A



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401D





**■ Absolute Maximum Ratings (Ta = 25°C)**

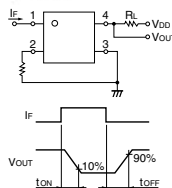
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	400	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{IO}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	18	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 400$ V
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	f = 1 MHz, $V_s = 0$ V	
Insulation resistance	$R_{IO}$	1,000	---	---	M $\Omega$	$V_{IO} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

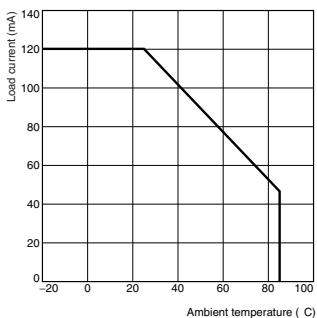
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

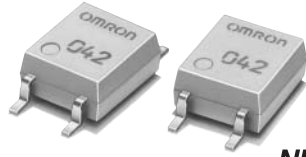
**Load Current vs. Ambient Temperature**

G3VM-401A(D)



**New MOS FET Relay with Low Output Capacitance and ON Resistance ( $C_{xR} = 5pF \cdot \Omega$ ) in a 20-V Load Voltage Model**

- Output capacitance of 1 pF (typical) allows high-frequency applications.
- Leakage current of 1.0 nA max. when output relay is open.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21GR	100	
			G3VM-21GR(TR)	---	2,500

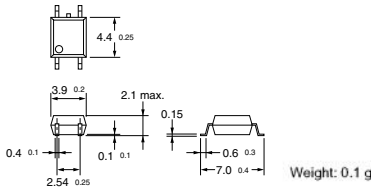
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-21GR**

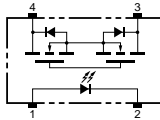


**Note:** The actual product is marked differently from the image shown here.



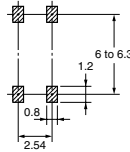
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-21GR**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-21GR**



**■ Absolute Maximum Ratings (Ta = 25°C)**

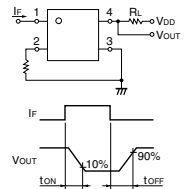
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	160	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.6	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	5	8	$\Omega$	$I_F = 5$ mA, $I_O = 160$ mA, $t < 1$ s
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 20$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	1.0	2.5	pF	$V = 0$ , $f = 100$ MHz, $t < 1$ s
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	$t_{ON}$	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

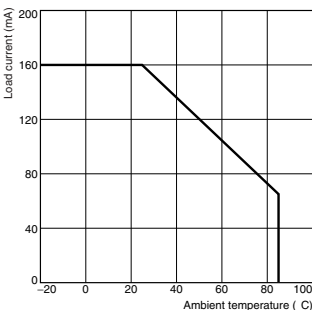
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	20	V
Operating LED forward current	$I_F$	7	---	30	mA
Continuous load current	$I_O$	---	---	160	mA
Operating temperature	$T_a$	25	---	60	°C

**■ Engineering Data**

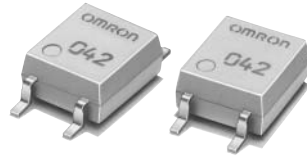
**Load Current vs. Ambient Temperature**

G3VM-21GR



**New MOS FET Relay with Low Output Capacitance and ON Resistance ( $C_{xR} = 5pF \cdot \Omega$ ) in a 20-V Load Voltage Model**

- ON resistance of 1 W (typical) suppresses output signal attenuation.
- Leakage current of 1.0 nA max. when output relay is open.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21GR1	100	
			G3VM-21GR1(TR)	---	2,500

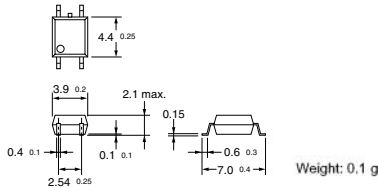
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-21GR1

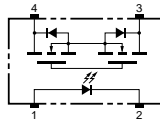


**Note:** The actual product is marked differently from the image shown here.



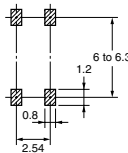
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-21GR1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-21GR1



**■ Absolute Maximum Ratings (Ta = 25°C)**

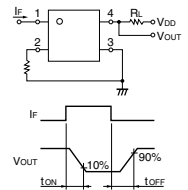
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	300	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.0	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	—	15	—	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	—	—	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	—	1	1.5	$\Omega$	$I_F = 5$ mA, $I_O = 300$ mA, $t < 1$ s
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	nA	$V_{OFF} = 20$ V $T_a = 50^\circ\text{C}$
	Capacity between terminals	$C_{OFF}$	—	5.0	12.0	pF	$V = 0$ , $f = 100$ MHz, $t < 1$ s
Capacity between I/O terminals	$C_{I/O}$	—	0.8	—	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	—	—	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	—	—	0.5	ms	$I_F = 10$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	—	—	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

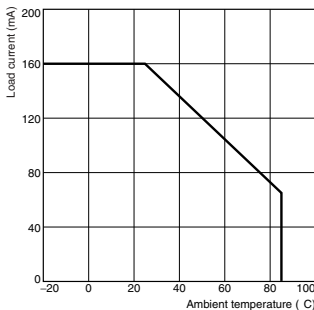
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	20	V
Operating LED forward current	$I_F$	7	—	30	mA
Continuous load current	$I_O$	—	—	300	mA
Operating temperature	$T_a$	25	—	60	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-21GR1



**New MOS FET Relay with Low Output Capacitance and ON Resistance ( $C_xR = 10pF \cdot \Omega$ ) in a 40-V Load Voltage Model**

- ON resistance of 1  $\Omega$  (typical) suppresses output signal attenuation.
- Leakage current of 1.0 nA max. when output relay is open.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41GR5	100	---
			G3VM-41GR5(TR)	---	2,500

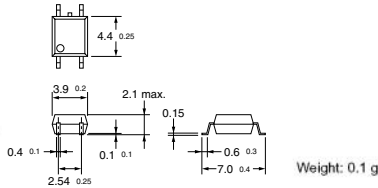
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-41GR5**

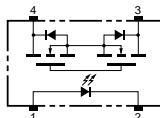


**Note:** The actual product is marked differently from the image shown here.



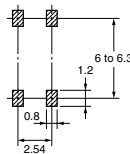
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-41GR5**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-41GR5**



**■ Absolute Maximum Ratings (Ta = 25°C)**

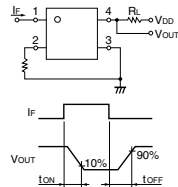
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	300	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.0	mA/°C	Ta ≥ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	1.0	1.5	Ω	$I_F = 5 \text{ mA}, I_O = 300 \text{ mA}, t < 1 \text{ s}$
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 30 \text{ V}, T_a = 50^\circ\text{C}$
	Capacity between terminals	$C_{OFF}$	---	10.0	14.0	pF	$V = 0, f = 100 \text{ MHz}, t < 1 \text{ s}$
Capacity between I/O terminals	$C_{I/O}$	---	0.6	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$	
Insulation resistance	$R_{I/O}$	1,000	---	---	MΩ	$V_{I/O} = 500 \text{ VDC}, R_{oH} \leq 60\%$	
Turn-ON time	$t_{ON}$	---	---	0.5	ms	$I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	0.5	ms		

Note: 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

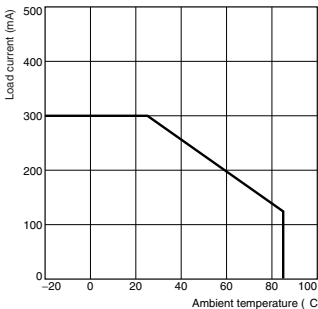
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	300	mA
Operating temperature	$T_a$	25	---	60	°C

**■ Engineering Data**

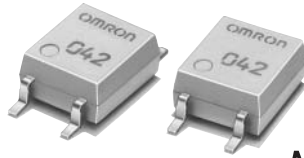
**Load Current vs. Ambient Temperature**

G3VM-41GR5



**New MOS FET Relay with Low Output Capacitance and ON Resistance (CxR = 10pF•Ω) in a 40-V Load Voltage Model**

- Output capacitance of 1 pF (typical) allows high-frequency applications.
- Leakage current of 1.0 nA max. when output relay is open.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41GR6	100	---
			G3VM-41GR6(TR)	---	2,500

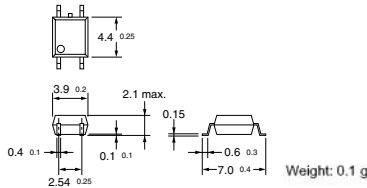
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-41GR6

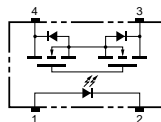


**Note:** The actual product is marked differently from the image shown here.



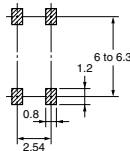
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-41GR6



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-41GR6





**■ Absolute Maximum Ratings (Ta = 25°C)**

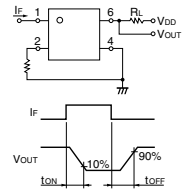
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_{FR}$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{FDO}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	10	15	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA, t < 1 s
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 30$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	1.0	2.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 80%	
Turn-ON time	$t_{ON}$	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	0.5	ms		

Note: 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

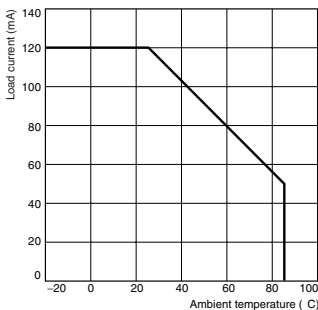
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	25	---	60	°C

**■ Engineering Data**

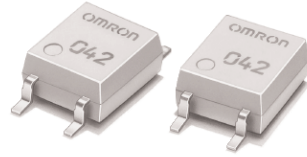
**Load Current vs. Ambient Temperature**

G3VM-41GR6



## New MOS FET Relay Designed for Switching Minute Signals and Analog Signals

- Upgraded G3VM-61G1 Series.
- Continuous load current of 1000 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW** 

### ■ Application Examples

- Broadband systems
- Data loggers
- Measurement devices
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	60 VAC	G3VM-61GR1	100	---
			G3VM-61GR1(TR)	---	2,500

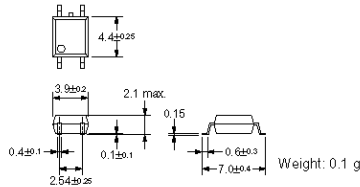
### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-61GR1

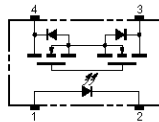


**Note:** The actual product is marked differently from the image shown here.



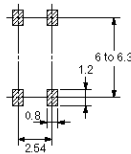
### ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-61GR1



### ■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-61GR1



## Absolute Maximum Ratings (Ta = 25°C)

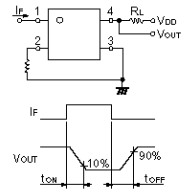
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	60	V	
	Continuous load current	$I_O$	1000	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-13.3	mA/°C	Ta $\geq$ 50°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{LO}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 400$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	---	0.7	$\Omega$	$I_F = 5$ mA, $I_O = 400$ mA
	Current leakage when the relay is open	$I_{LEAK}$	0.25	0.2	100	nA	$V_{OFF} = 60$ V
Capacity between I/O terminals	$C_{LO}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{LO}$	1,000	---	---	M $\Omega$	$V_{LO} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	---	1.4	3.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	0.6	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



## Recommended Operating Conditions

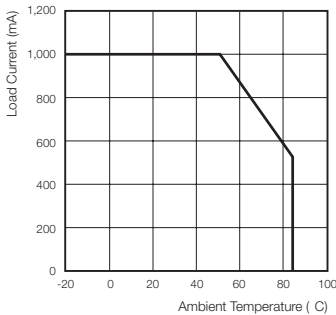
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	10	20	mA
Continuous load current	$I_O$	---	---	1,000	mA
Operating temperature	$T_a$	25	---	65	°C

## Engineering Data

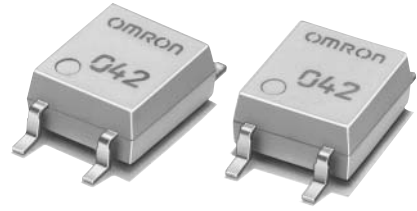
### Load Current vs. Ambient Temperature

G3VM-61GR1



**New MOSFET Relay Designed for Switching Minute Signals and Analog Signals**

- Upgraded G3VM-S1 Series.
- Continuous load current of 400 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Data loggers
- Measurement devices
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	60 VAC	G3VM-61G1	100	---
			G3VM-61G1(TR)	---	2,500

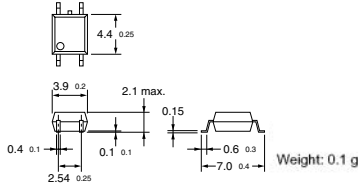
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-61G1

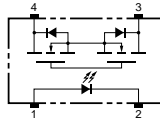


**Note:** The actual product is marked differently from the image shown here.



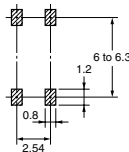
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-61G1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-61G1



**■ Absolute Maximum Ratings (Ta = 25°C)**

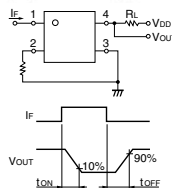
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	60	V	
	Continuous load current	$I_O$	400	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-4.0	mA/°C	Ta ≥ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	—	—	10	µA	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	—	30	—	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	—	1.6	3	mA	$I_O = 400 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	—	1	2	Ω	$I_F = 5 \text{ mA}, I_O = 400 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	µA	$V_{OFF} = 60 \text{ V}$
Capacity between I/O terminals	$C_{I/O}$	—	0.8	—	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$	
Insulation resistance	$R_{I/O}$	1,000	—	—	MΩ	$V_{I/O} = 500 \text{ VDC}, R_{oH} \leq 60\%$	
Turn-ON time	$t_{ON}$	—	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note 2.)	
Turn-OFF time	$t_{OFF}$	—	0.1	0.5	ms		

Note: 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

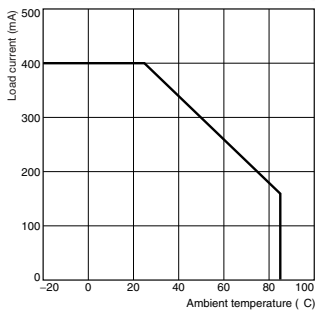
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	—	—	400	mA
Operating temperature	$T_B$	-20	—	65	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

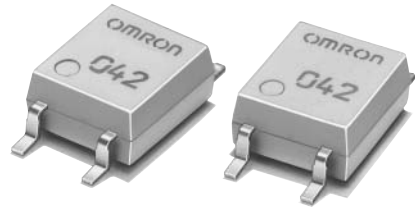
G3VM-61G1



**New Relay Incorporating a MOSFET  
Optically Coupled with an Infrared  
LED**

**Has a 4-pin SOP Package and 80-V  
Load Voltage**

- Continuous load current of 350 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	80 VAC	G3VM-81G1	100	---
			G3VM-81G1(TR)	---	2,500

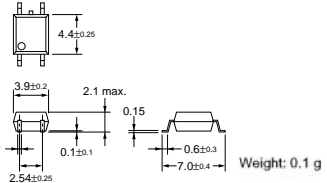
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-81G1

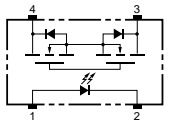


**Note:** The actual product is marked differently from the image shown here.



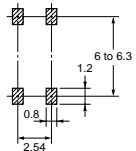
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-81G1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-81G1



**Absolute Maximum Ratings (Ta = 25°C)**

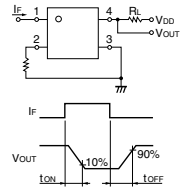
Item	Symbol	Rating	Unit	Measurement Conditions			
Input	LED forward current	$I_F$	50	mA			
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps		
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C		
	LED reverse voltage	$V_R$	5	V			
	Connection temperature	$T_J$	125	°C			
Output	Output dielectric strength	$V_{OFF}$	80	V			
	Continuous load current	$I_O$	350	mA			
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.5	mA/°C	Ta $\geq$ 25°C		
	Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)				$V_{I/O}$	1,500	Vrms	AC for 1 min
Operating temperature				$T_a$	-40 to +85	°C	With no icing or condensation
Storage temperature				$T_{stg}$	-55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)				---	260	°C	10 s

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1.0	4.0	mA	$I_O = 350$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	1.0	1.2	$\Omega$	$I_F = 5$ mA, $I_O = 350$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	0.2	1.0	nA	$V_{OFF} = 30$ V, Ta = 50°C
Capacity between I/O terminals		$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V
Insulation resistance		$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$
Turn-ON time		tON	---	0.3	0.5	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)
Turn-OFF time		tOFF	---	0.3	0.5	ms	

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

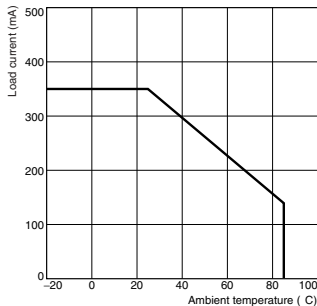
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	64	V
Operating LED forward current	$I_F$	5	---	30	mA
Continuous load current	$I_O$	---	---	350	mA
Operating temperature	$T_a$	25	---	60	°C

**Engineering Data**

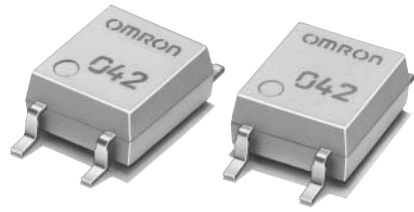
**Load Current vs. Ambient Temperature**

G3VM-81G1



**Slim, 2.1-mm High MOSFET Relay with Miniature, Flat, 4-pin SOP Package Load Voltage**

- New models with 4-pin SOP package now available in the 200-V load voltage series.
- Leakage current of 0.01µA max. when output relay is open.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	200 VAC	G3VM-201G	100	---
			G3VM-201G(TR)	---	2,500

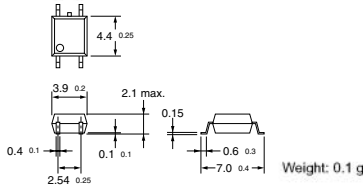
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-201G**

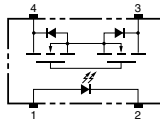


**Note:** The actual product is marked differently from the image shown here.



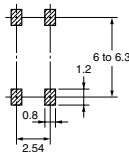
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-201G**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-201G**





**Absolute Maximum Ratings (Ta = 25°C)**

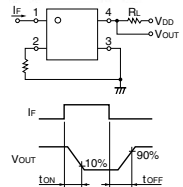
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	200	V	
	Continuous load current	$I_O$	50	mA	
	ON current reduction rate	$\Delta I_{ON}/\text{°C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min
Operating temperature	$T_A$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +100	°C	With no icing or condensation	
Soldering temperature (10 s)	—	280	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	—	30	—	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	—	1	3	mA	$I_O = 50$ mA
Output	Maximum resistance with output ON	$R_{ON}$	—	30	50	$\Omega$	$I_F = 5$ mA, $I_O = 50$ mA
	Current leakage when the relay is open	$I_{LEAK}$	—	—	0.01	$\mu$ A	$V_{OFF} = 200$ V, Ta = 25°C
Capacity between I/O terminals	$C_{I-O}$	—	0.8	—	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	—	—	M $\Omega$	$V_{I-O} = 500$ VDC, $R_{oH} \leq 80\%$	
Turn-ON time	tON	—	0.04	0.1	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 10$ V (See note 2.)	
Turn-OFF time	tOFF	—	0.1	0.2	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

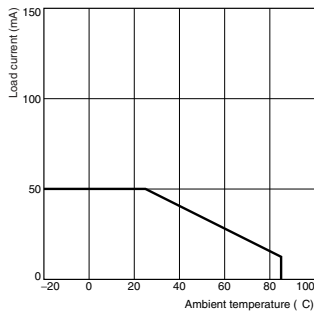
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	160	V
Operating LED forward current	$I_F$	5	7.5	15	mA
Continuous load current	$I_O$	—	—	40	mA
Operating temperature	$T_A$	25	—	60	°C

**Engineering Data**

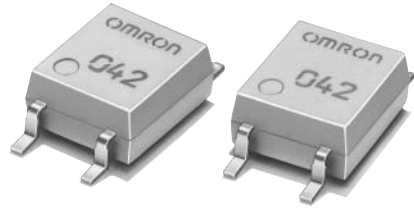
**Load Current vs. Ambient Temperature**

G3VM-201G



**Slim, 2.1-mm High Relay  
Incorporating a MOSFET Optically  
Coupled with an Infrared LED in a  
Miniature, Flat SOP**

- Upgraded G3VM-S2 Series.
- Continuous load current of 110 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	350 VAC	G3VM-351G	100	---
			G3VM-351G(TR)	---	2,500

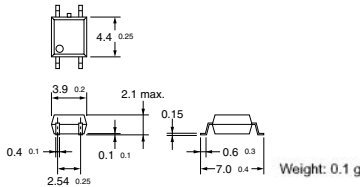
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-351G

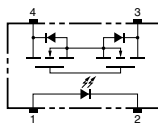


**Note:** The actual product is marked differently from the image shown here.



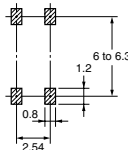
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-351G



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-351G



**■ Absolute Maximum Ratings (Ta = 25°C)**

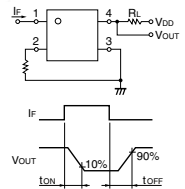
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	110	mA	
	ON current reduction rate	$\Delta I_{ON}/\text{C}$	-1.1	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	—	30	—	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	—	1	3	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	—	25	35	$\Omega$	$I_F = 5$ mA, $I_O = 110$ mA, t < 1 s
			—	35	50	$\Omega$	$I_F = 5$ mA, $I_O = 110$ mA
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I-O}$	—	0.8	—	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	—	—	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 80%	
Turn-ON time	tON	—	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	—	0.1	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

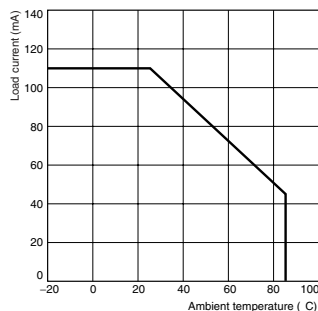
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	—	—	100	mA
Operating temperature	$T_a$	-20	—	65	°C

**■ Engineering Data**

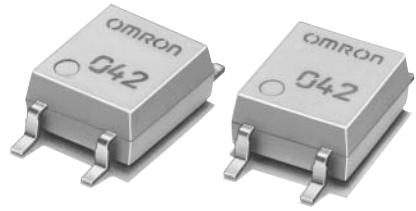
**Load Current vs. Ambient Temperature**

G3VM-351G



**Analog-switching MOSFET Relay with SPST-NC (Single-pole, Single-throw, Normally Closed) Contacts**

- New models with SPST-NC contacts and a 4-pin SOP package included in 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NC	Surface-mounting terminals	350 VAC	G3VM-353G	100	---
			G3VM-353G(TR)	---	2,500

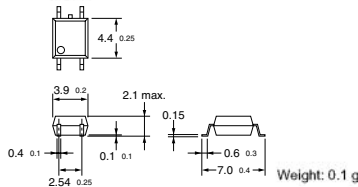
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-353G

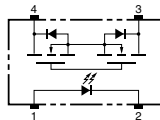


**Note:** The actual product is marked differently from the image shown here.



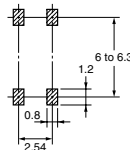
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-353G



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-353G



**Absolute Maximum Ratings (Ta = 25°C)**

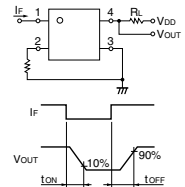
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
Dielectric strength between input and output (See note 1.)		$V_{I/O}$	1,500	Vrms	AC for 1 min
Operating temperature		$T_B$	-40 to +85	°C	With no icing or condensation
Storage temperature		$T_{stg}$	-55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)		---	260	°C	10 s

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	15	25	$\Omega$	$I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V, $I_F = 5$ mA
Capacity between I/O terminals		$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V
Insulation resistance		$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$
Turn-ON time		tON	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)
Turn-OFF time		tOFF	---	---	3.0	ms	

Note: 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

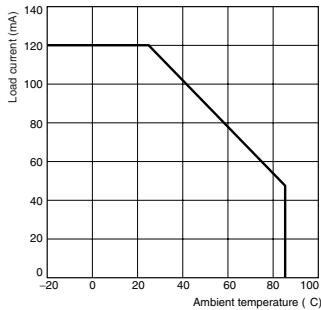
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	260	V
Operating LED forward current	$I_F$	5	---	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	65	°C

**Engineering Data**

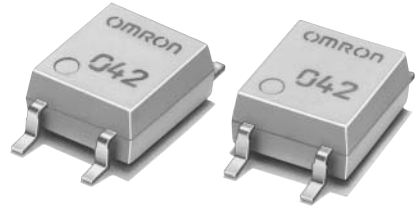
**Load Current vs. Ambient Temperature**

G3VM-353G



## Expanded Range of Analog-Switching MOSFET Relays in 400-V Load Voltage Series

- New models with a 4-pin SOP package now included in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

### Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	400 VAC	G3VM-401G	100	---
			G3VM-401G(TR)	---	2,500

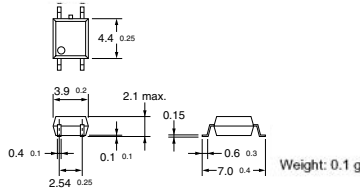
### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-401G

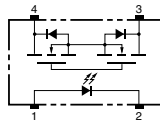


**Note:** The actual product is marked differently from the image shown here.



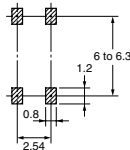
### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-401G



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-401G



**■ Absolute Maximum Ratings (Ta = 25°C)**

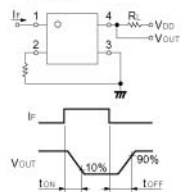
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	400	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
Dielectric strength between input and output (See note 1.)	$V_{IO}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	280	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	17	35	$\Omega$	$I_F = 5$ mA $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 400$ V
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{IO}$	1,000	---	---	M $\Omega$	$V_{IO} = 500$ VDC. RoH $\leq$ 60%	
Turn-ON time	tON	---	0.3	1	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	1	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

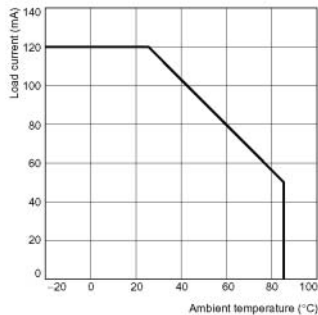
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_a$	-20	---	85	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-401G



**World's Smallest SSOP Package  
MOS FET Relay with Low Output  
Capacitance and ON Resistance  
( $C_xR = 5\text{pF} \cdot \Omega$ ) in a 20-V Load  
Voltage Model**



**NEW** Approval pending

■ Output capacitance of 1 pF (typical) allows high frequency applications.

**Note:** Information correct as of October, 2002, according to data obtained by OMRON.

**Note:** The actual product is marked differently from the image shown here.

**■ Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

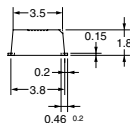
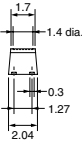
**■ List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21LR1	---
			G3VM-21LR1(TR)	1,500

**■ Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-21LR1



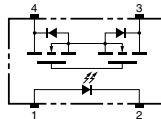
**Note:** A tolerance of  $\pm 0.1$  mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

**Note:** The actual product is marked differently from the image shown here.

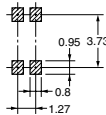
**■ Terminal Arrangement/Internal Connections (Top View)**

G3VM-21LR1



**■ Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-21LR1





**■ Absolute Maximum Ratings (Ta = 25°C)**

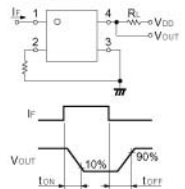
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	450	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-4.5	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	0.8	1.2	$\Omega$	$I_F = 5$ mA, $I_O = 450$ mA, $t = 10$ ms
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 20$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	5.0	12.0	pF	$V = 0$ , $f = 100$ MHz, $t < 1$ s
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

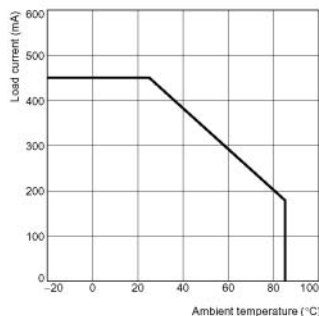
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	20	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	450	mA
Operating temperature	$T_a$	25	---	80	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-21LR1



**World's Smallest SSOP Package  
MOS FET Relay with Low Output  
Capacitance and ON Resistance  
( $C_{xR} = 5\text{pF} \cdot \Omega$ ) in a 20-V Load  
Voltage Model**



**NEW** Approval pending

■ ON resistance of 1  $\Omega$  (typical) suppresses output signal attenuation.

**Note:** Information correct as of October, 2002, according to data obtained by OMRON.

**Note:** The actual product is marked differently from the image shown here.

**■ Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

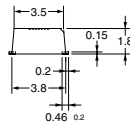
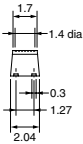
**■ List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21LR1	---
			G3VM-21LR1(TR)	1,500

**■ Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-21LR1



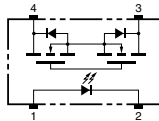
**Note:** A tolerance of  $\pm 0.1$  mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

**Note:** The actual product is marked differently from the image shown here.

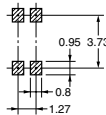
**■ Terminal Arrangement/Internal Connections (Top View)**

G3VM-21LR1



**■ Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-21LR1



**■ Absolute Maximum Ratings (Ta = 25°C)**

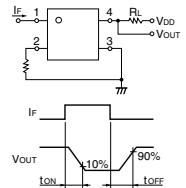
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	450	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-4.5	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0, f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	0.8	1.2	$\Omega$	$I_F = 5$ mA, $I_O = 450$ mA, $t = 10$ ms
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 20$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	5.0	12.0	pF	$V = 0, f = 100$ MHz, $t < 1$ s
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RH $\leq$ 60%	
Turn-ON time	tON	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

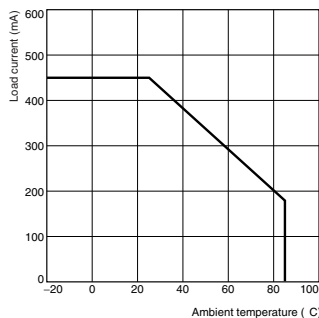
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	20	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	450	mA
Operating temperature	$T_R$	25	---	60	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-21LR1



**World's Smallest SSOP Package  
MOS FET Relay with Low Output  
Capacitance and ON Resistance  
( $C_{xR} = 10\text{pF} \cdot \Omega$ ) in a 40-V Load  
Voltage Model**



**NEW** Approval pending

- ON resistance of 1  $\Omega$  (typical) suppresses output signal attenuation.

**Note:** Information correct as of October, 2002, according to data obtained by OMRON.

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

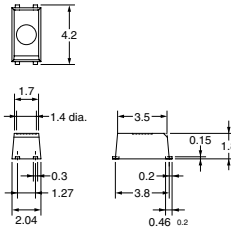
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41LR5	—
			G3VM-41LR5(TR)	1,500

**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-41LR5



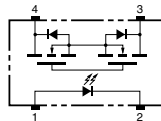
**Note:** A tolerance of  $\pm 0.1$  mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

**Note:** The actual product is marked differently from the image shown here.

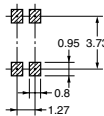
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-41LR5



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-41LR5



**Absolute Maximum Ratings (Ta = 25°C)**

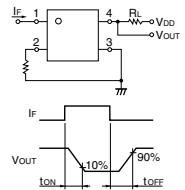
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ C$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	300	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ C$	-3.0	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	1.0	1.5	$\Omega$	$I_F = 5$ mA, $I_O = 300$ mA, t = 10 ms
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 30$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	10	14	pF	V = 0, f = 100 MHz, t < 1 s
Capacity between I/O terminals	$C_{I-O}$	---	0.6	---	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

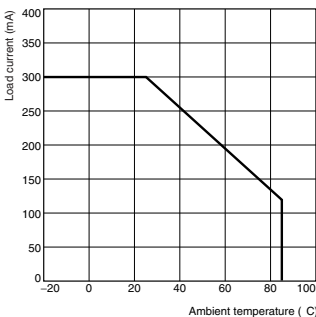
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	300	mA
Operating temperature	$T_B$	25	---	60	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-41LR5



**World's Smallest SSOP Package  
MOS FET Relay with Low Output  
Capacitance and ON Resistance  
( $C_xR = 10\text{pF} \cdot \Omega$ ) in a 40-V Load  
Voltage Model**



**NEW** Approval pending

■ Output capacitance of 1 pF (typical) allows high-frequency applications.

**Note:** Information correct as of October, 2002, according to data obtained by OMRON.

**Note:** The actual product is marked differently from the image shown here.

**■ Application Examples**

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

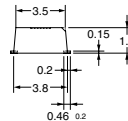
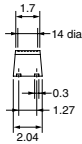
**■ List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41LR6	---
			G3VM-41LR6(TR)	1,500

**■ Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-41LR6



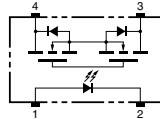
**Note:** A tolerance of  $\pm 0.1$  mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

**Note:** The actual product is marked differently from the image shown here.

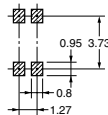
**■ Terminal Arrangement/Internal Connections (Top View)**

G3VM-41LR6



**■ Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-41LR6



**■ Absolute Maximum Ratings (Ta = 25°C)**

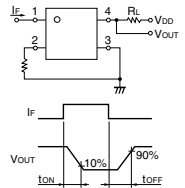
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 100$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	10	15	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA, $t = 10$ ms
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	nA	$V_{OFF} = 30$ V, Ta = 50°C
	Capacity between terminals	$C_{OFF}$	---	1.0	2.0	pF	$V = 0$ , $f = 100$ MHz, $t < 1$ s
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	---	---	0.5	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

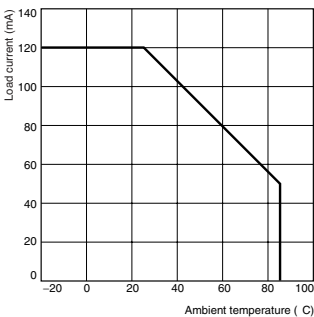
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	25	---	60	°C

**■ Engineering Data**

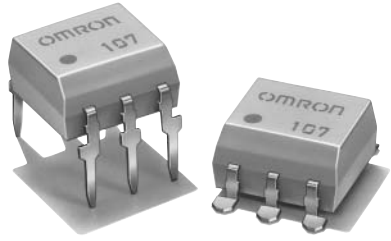
**Load Current vs. Ambient Temperature**

G3VM-41LR6



**Analog-Switching MOSFET Relay for High Switching Currents, with Dielectric Strength of 2.5 kVAC between I/O.**

- Upgraded G3VM-61 B/E Series.
- Switches minute analog signals.
- Leakage current of 1µA max. when output relay is open.



**NEW** Approval pending

**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

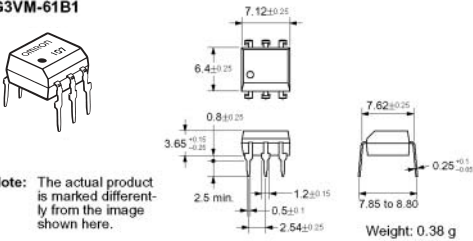
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	60 VAC	G3VM-61B1	50	---
	Surface-mounting terminals		G3VM-61E1		
			G3VM-61E1(TR)		

**Dimensions**

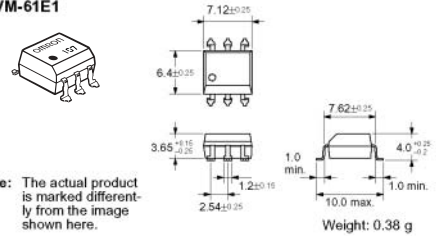
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-61B1



**Note:** The actual product is marked differently from the image shown here.

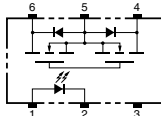
G3VM-61E1



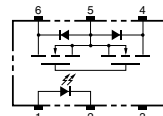
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-61B1

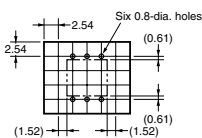


G3VM-61E1



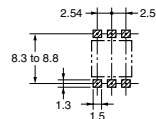
**PCB Dimensions (Bottom View)**

G3VM-61B1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-61E1



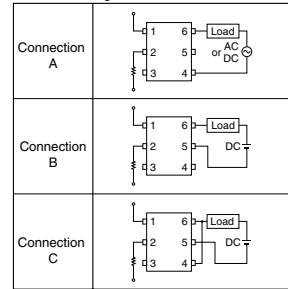


**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A		
	LED forward current reduction rate	$\Delta I_{FN}/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	80	V		
	Continuous load current	Connection A	500	mA		
		Connection B	500			
		Connection C	1,000			
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C
		Connection B		-0.5		
Connection C			-10.0			
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{LO}$	2,500	Vrms	AC for 1 min		
Operating temperature	$T_R$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	--	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

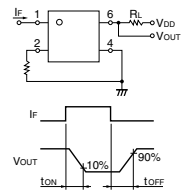
Connection Diagram



**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$	
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5 \text{ V}$	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$	
	Trigger LED forward current	$I_{FT}$	---	1.6	3	mA	$I_O = 500 \text{ mA}$	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	1	2	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 500 \text{ mA}$
		Connection B		---	0.5	1	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 500 \text{ mA}$
		Connection C		---	0.25	---	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 1,000 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu\text{A}$	$V_{OFF} = 60 \text{ V}$	
Capacity between I/O terminals	$C_{LO}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_S = 0 \text{ V}$		
Insulation resistance	$R_{LO}$	1,000	---	---	M $\Omega$	$V_{LO} = 500 \text{ VDC}$ , $RoH \leq 60\%$		
Turn-ON time	$t_{ON}$	---	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega$		
Turn-OFF time	$t_{OFF}$	---	0.1	0.5	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

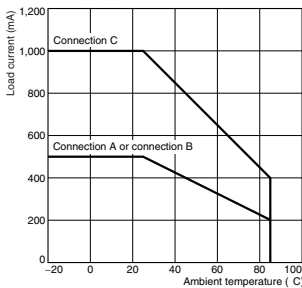
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	500	mA
Operating temperature	$T_R$	-20	---	65	°C

**Engineering Data**

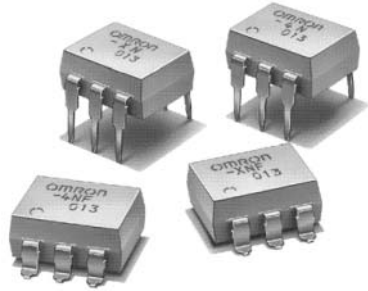
**Load Current vs. Ambient Temperature**

G3VM-61B1(E1)



**SSR for Switching Analog Signals,  
with an I/O Dielectric Strength of  
2.5 kVAC Using Optical Isolation**

- Switches minute analog signals.
- Linear voltage and current characteristics.
- Switches AC and DC.
- Low ON-resistance.
- Current leakage less than 1 μA between output terminals when they are open.
- Surface-mounting models also available.
- UL/CSA approval pending.



**Ordering Information**

Contact form	Terminals	Load Voltage (peak value)	Model	Number per stick	Taping quantity
SPST-NO	PCB terminals	60 VAC	G3VM-XN	50	-
		400 VAC	G3VM-4N		
	Surface-mounting terminals	60 VAC	G3VM-XNF		
		400 VAC	G3VM-4NF		

**Model Number Legend**

**G3VM-**        
                   1      2

**1. Lead Voltage**

- XN: A load voltage of 60 VDC or 60 VAC (peak value)
- 4N: A load voltage of 400 VDC or 400 VAC (peak value)

**2. Terminal**

- None: PCB terminal
- F: Surface mounting terminals

**Application Examples**

- Electronic automatic exchange systems
- Measurement control systems
- Data gathering systems
- Measuring systems

Specifications

■ Absolute Maximum Ratings (Ta = 25°C)

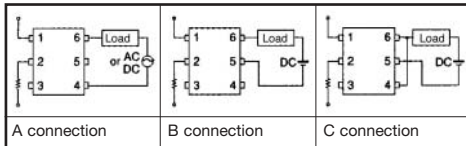
Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Conditions	
Input	LED forward current	$I_F$	30 mA		–	
	Repetitive peak LED forward current	$I_{FP}$	1 A		100- $\mu$ s pulses, 100 pps	
	LED reverse voltage	$V_R$	5 V		–	
Output	Output dielectric strength (load voltage)	$V_{BO}$	-60 to 60 V	-400 to 400 V	DC or AC peak value	
			0 to 60 V	0 to 400 V	DC	
	Continuous load current (see note 1)	A connection	$I_O$	300 mA	150 MA	–
		B connection		450 mA	200 MA	
C connection		600 mA		300 MA		
Dielectric strength between I/O terminals (see note 2)		$V_{I-O}$	2,500 V AC		1 min	
Ambient temperature		$T_a$	-20 to 85°C		With no icing or condensation	
Storage temperature		$T_{stg}$	-55 to 100°C		With no icing or condensation	
Max. soldering temperature and time		–	260°C		10 s	

Note: 1. The load current attenuation rates for the different types of connection are as follows:

G3VM-XN(F): A: -3.0 mA/°C; B: -4.5 mA/°C; C: -6.0 mA/°C  
 G3VM-4N(F): A: -1.5 mA/°C; B: -2.0 mA/°C; C: -3.0 mA/°C

2. The dielectric strength between I/O terminals was measured with voltage applied to all of the LED pins and with voltage applied to all of the light-receiving parts respectively.

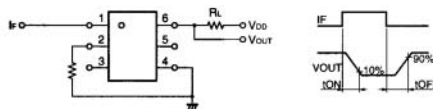
Connection Circuit Diagram



■ Electrical Performance (Ta = 25°C)

Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Unit	Conditions
Input	LED forward current	$V_F$	1.2 V min, 1.7 V max.		V	$I_F = 10$ mA
	Trigger LED forward current	$I_{FT}$	5 mA max.			$I_O = 300$ mA (G3VM-XN(F)) $I_O = 150$ mA (G3VM-4N(F))
Output	Output ON resistance	A Connection	$R_{ON}$	2 $\Omega$ max.	12 $\Omega$ max.	$I_F = 10$ mA $I_O = \text{Max.}$
		B Connection		1 $\Omega$ max.	6 $\Omega$ max.	
		C Connection		0.5 $\Omega$ max.	3 $\Omega$ max.	
Switching current leakage		$I_{LEAK}$	1.0 $\mu$ A max.		$\mu$ A	$V_{off} = 60$ V (G3VM-XN(F)) $V_{off} = 400$ V (G3VM-4N(F))
Operate time		$T_{ON}$	0.5 ms max.	1.0 ms max.	ms	$R_L = 200$ $\Omega$ (see note)
Release time		$T_{OFF}$	0.5 ms max.	1.0 ms max.	ms	$V_{DD} = 20$ V, $I_F = 10$ mA
Floating capacity between I/O terminals		$C_{I-O}$	0.8 pF, TYP		pF	f = 1MHz

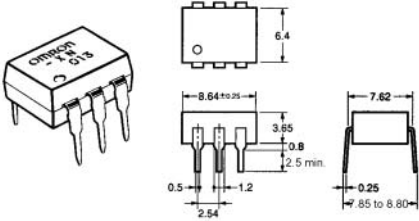
Note: 1. The operate and release time were measured in the way shown below.



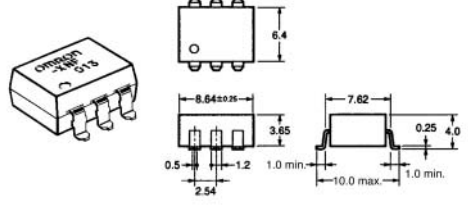
## Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-XN  
G3VM-4N



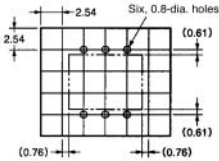
G3VM-XNF  
G3VM-4NF



Note: "G3VM" is not printed on the actual product.

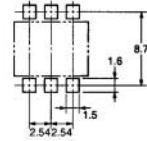
### ■ PCB Dimensions (Bottom View)

G3VM-XN  
G3VM-4N



### ■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-XNF  
G3VM-4NF

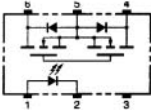


Note: Mounting pad dimensions shown are top view.

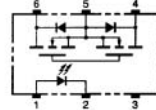
## Installation

### ■ Terminal Arrangement/Internal connection (Top View)

G3VM-XN  
G3VM-4N



G3VM-XNF  
G3VM-4NF



**New Series with 350-V Load Voltage**

- Upgraded G3VM-3 Series.
- Continuous load current of 120 mA
- Dielectric strength of 2,500 Vrms between I/O.
- Operating time of 0.3 ms (typical).



**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**NEW** Approval pending

**Note:** The actual product is marked differently from the image shown here.

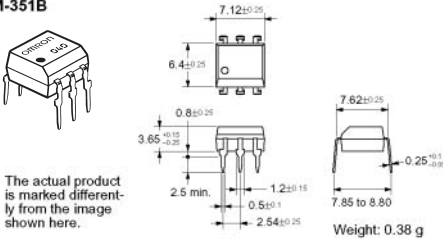
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-351B	50	---
	Surface-mounting terminals		G3VM-351E		
			G3VM-351E(TR)	---	1,500

**Dimensions**

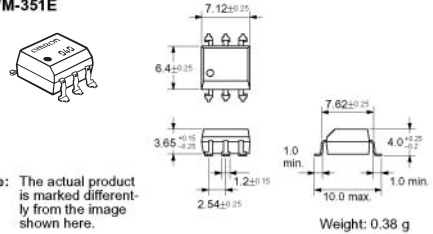
**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-351B**



**Note:** The actual product is marked differently from the image shown here.

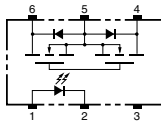
**G3VM-351E**



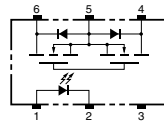
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-351B**

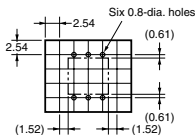


**G3VM-351E**



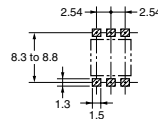
**PCB Dimensions (Bottom View)**

**G3VM-351B**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-351E**

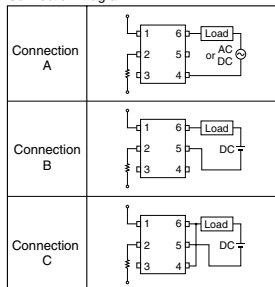


**Absolute Maximum Ratings (Ta = 25°C)**

Item		Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_{FP}/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_{RI}$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength		$V_{OFF}$	350	V	
	Continuous load current	Connection A	$I_O$	120	mA	
		Connection B		120		
		Connection C		140		
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
		Connection B		-1.2		
		Connection C		-2.4		
Connection temperature		$T_J$	125	°C		
Dielectric strength between input and output (See note 1.)		$V_{IO}$	2,500	Vrms	AC for 1 min	
Operating temperature		$T_R$	-40 to +85	°C	With no icing or condensation	
Storage temperature		$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)		—	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

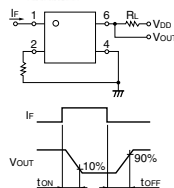
Connection Diagram



**Electrical Characteristics (Ta = 25°C)**

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	—	30	—	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	—	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	Connection A	—	25	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA, $t < 1$ s
			—	35	50	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
		Connection B	—	28	40	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Connection C	—	14	20	$\Omega$	$I_F = 5$ mA, $I_O = 240$ mA	
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals		$C_{IO}$	—	0.8	—	pF	$f = 1$ MHz, $V_S = 0$ V
Insulation resistance		$R_{IO}$	1,000	—	—	M $\Omega$	$V_{IO} = 500$ VDC, RoH $\geq$ 60%
Turn-ON time		$t_{ON}$	—	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)
Turn-OFF time		$t_{OFF}$	—	0.1	1.0	ms	

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

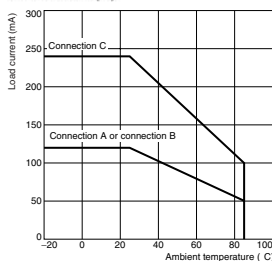
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	280	V
Operating LED forward current	$I_F$	5	10	25	mA
Continuous load current	$I_O$	—	—	100	mA
Operating temperature	$T_R$	-20	—	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-351B(E)



**Analog-switching MOSFET Relay with 350-V Load Voltage and Current Limit.**

- Approved standards: UL1577 (File No. E80555)



**Application Examples**

- Electronic automatic exchange systems
- Multi-functional telephones
- Cordless telephones
- Measuring devices

**Note:** The actual product is marked differently from the image shown here.

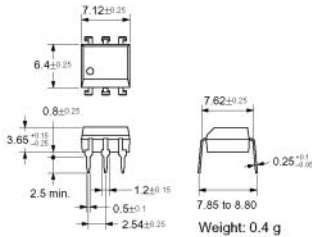
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-3L	Yes	50	---
	Surface-mounting terminals		G3VM-3FL			
			G3VM-3FL(TR)			

**Dimensions**

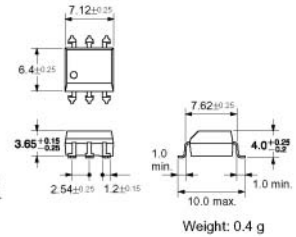
**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-3L**



**Note:** The actual product is marked differently from the image shown here.

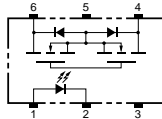
**G3VM-3FL**



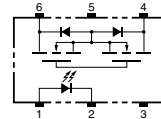
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-3L**

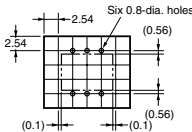


**G3VM-3FL**



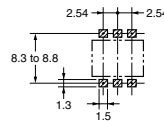
**PCB Dimensions (Bottom View)**

**G3VM-3L**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-3FL**



**Absolute Maximum Ratings (Ta = 25°C)**

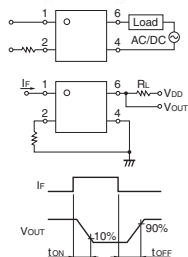
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/\text{°C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_A$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	---	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	22	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Limit current	$I_{LM}$	150	---	300	mA	$I_F = 5$ mA, $V_{DD} = 5$ V, $t = 5$ ms	
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	$t_{ON}$	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	1.0	ms		

Note: 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

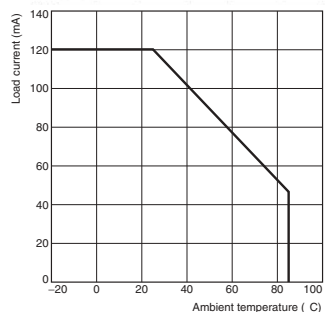
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	260	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_A$	-20	---	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-3(F)L







**Absolute Maximum Ratings (Ta = 25°C)**

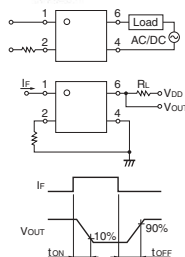
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_{FP}/C$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/C$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I-O}$	2,500	Vrms	AC for 1 min
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	280	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	---	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	22	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Limit current	$I_{LIM}$	150	---	300	mA	$I_F = 5$ mA, $V_{DD} = 5$ V, t = 5 ms	
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

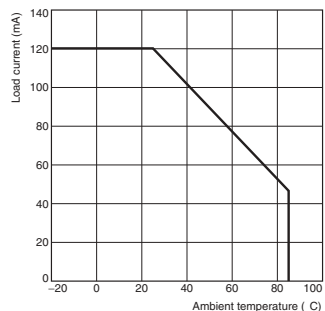
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	85	°C

**Engineering Data**

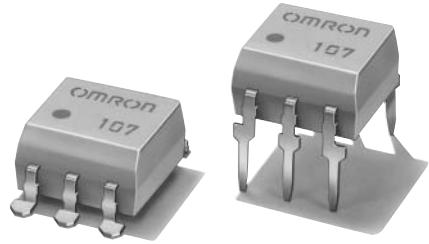
**Load Current vs. Ambient Temperature**

G3VM-3(F)L



## New Series of Analog-switching MOSFET Relays with Dielectric Strength of 2.5 kVAC between I/O Using Optical Isolation

- Switches minute analog signals.
- Leakage current of 1µA max. when output relay is open.
- Upgraded G3VM-4N Series.



### Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems

**Note:** The actual product is marked differently from the image shown here.

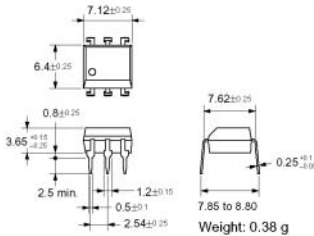
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401B	50	---
	Surface-mounting terminals		G3VM-401E		
			G3VM-401E(TR)	---	

### Dimensions

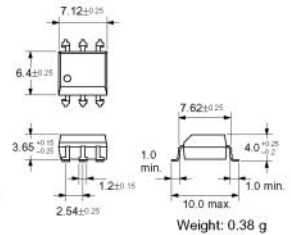
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-401B



**Note:** The actual product is marked differently from the image shown here.

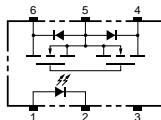
G3VM-401E



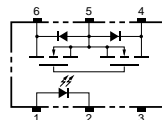
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

G3VM-401B

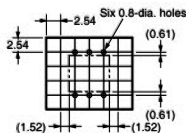


G3VM-401E



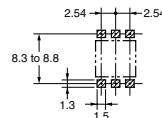
### PCB Dimensions (Bottom View)

G3VM-401B



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401E

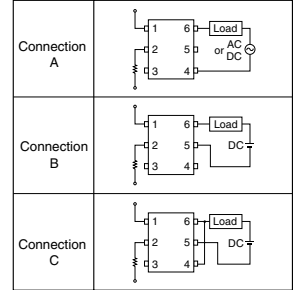


**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A		
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	400	V		
	Continuous load current	Connection A	120	mA		
		Connection B	120			
		Connection C	240			
	ON current reduction rate	Connection A	$\Delta I_{ON}/\text{°C}$	-1.2	mA/°C	Ta ≥ 25°C
		Connection B		-1.2		
		Connection C		-2.4		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min		
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

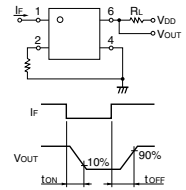
Connection Diagram



**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$	
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5 \text{ V}$	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$	
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120 \text{ mA}$	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	17	35	$\Omega$	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
		Connection B	---	11	20	$\Omega$	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$	
		Connection C	---	6	10	$\Omega$	$I_F = 5 \text{ mA}, I_O = 240 \text{ mA}$	
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu\text{A}$	$V_{OFF} = 350 \text{ V}$	
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_S = 0 \text{ V}$		
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500 \text{ VDC}, RoH \leq 60\%$		
Turn-ON time	$t_{ON}$	---	0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{(D)} = 20 \text{ V}$ (See Note 2.)		
Turn-OFF time	$t_{OFF}$	---	0.1	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



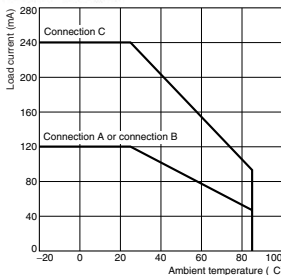
**Recommended Operating Conditions**

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	85	°C

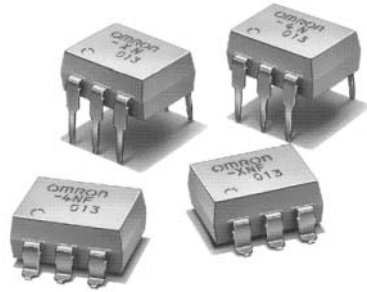
**Engineering Data**

**Load Current vs. Ambient Temperature  
G3VM-401B(E)**



**SSR for Switching Analog Signals,  
with an I/O Dielectric Strength of  
2.5 kVAC Using Optical Isolation**

- Switches minute analog signals.
- Linear voltage and current characteristics.
- Switches AC and DC.
- Low ON-resistance.
- Current leakage less than 1 μA between output terminals when they are open.
- Surface-mounting models also available.
- UL/CSA approval pending.



Ordering Information

Contact form	Terminals	Load Voltage (peak value)	Model	Number per stick	Taping quantity
SPST-NO	PCB terminals	60 VAC	G3VM-XN	50	-
		400 VAC	G3VM-4N		
	Surface-mounting terminals	60 VAC	G3VM-XNF		
		400 VAC	G3VM-4NF		

Model Number Legend

**G3VM-**        

1      2

**1. Load Voltage**

- XN: A load voltage of 60 VDC or 60 VAC (peak value)
- 4N: A load voltage of 400 VDC or 400 VAC (peak value)

**2. Terminal**

- None: PCB terminals
- F: Surface-mounting terminals

Application Examples

- Electronic automatic exchange systems
- Measurement control systems
- Data gathering systems
- Measuring systems

Specifications

■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Conditions	
Input	LED forward current	$I_F$	30 mA		–	
	Repetitive peak LED forward current	$I_{FP}$	1 A		100- $\mu$ s pulses, 100 pps	
	LED reverse voltage	$V_R$	5 V		–	
Output	Output dielectric strength (load voltage)	$V_{BO}$	-60 to 60 V	-400 to 400 V	DC or AC peak value	
			0 to 60 V	0 to 400 V	DC	
	Continuous load current (see note 1)	A connection	$I_O$	300 mA	150 MA	–
		B connection		450 mA	200 MA	
C connection		600 mA		300 MA		
Dielectric strength between I/O terminals (see note 2)		$V_{I-O}$	2,500 V AC		1 min	
Ambient temperature		$T_a$	-20 to 85°C		With no icing or condensation	
Storage temperature		$T_{stg}$	-55 to 100°C		With no icing or condensation	
Max. soldering temperature and time		–	260°C		10 s	

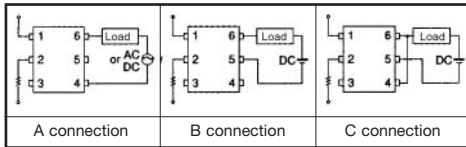
Note: 1. The load current attenuation rates for the different types of connection are as follows:

G3VM-XN(F): A: -3.0 mA/°C; B: -4.5 mA/°C; C: -6.0 mA/°C

G3VM-4N(F): A: -1.5 mA/°C; B: -2.0 mA/°C; C: -3.0 mA/°C

2. The dielectric strength between I/O terminals was measured with voltage applied to all of the LED pins and with voltage applied to all of the light-receiving parts respectively.

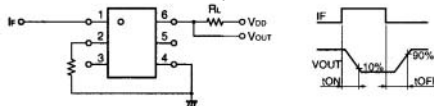
Connection Circuit Diagram



■ Electrical Performance (Ta = 25°C)

Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Unit	Conditions
Input	LED forward current	$V_F$	1.2 V min, 1.7 V max.		V	$I_F = 10$ mA
	Trigger LED forward current	$I_{FT}$	5 mA max.			
Output	Output ON resistance	A Connection	$R_{ON}$	2 $\Omega$ max.	12 $\Omega$ max.	$I_F = 10$ mA $I_O = 300$ mA (G3VM-XN(F)) $I_O = 150$ mA (G3VM-4N(F))
		B Connection		1 $\Omega$ max.	6 $\Omega$ max.	
		C Connection		0.5 $\Omega$ max.	3 $\Omega$ max.	
	Switching current leakage	$I_{LEAK}$	1.0 $\mu$ A max.		$\mu$ A	$V_{off} = 60$ V (G3VM-XN(F)) $V_{off} = 400$ V (G3VM-4N(F))
Operate time		$T_{ON}$	0.5 ms max.	1.0 ms max.	ms	$R_L = 200$ $\Omega$ (sse note)
Release time		$T_{OFF}$	0.5 ms max.	1.0 ms max.	ms	$V_{DD} = 20$ V, $I_F = 10$ mA
Floating capacity between I/O terminals		$C_{I-O}$	0.8 pF, TYP		pF	f = 1MHz

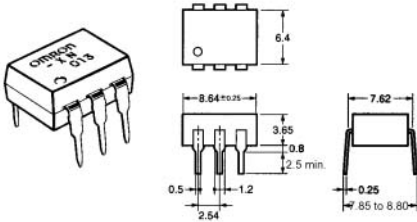
Note: 1. The operate and release time were measured in the way shown below.



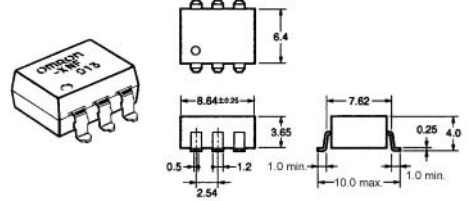
## Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-XN  
G3VM-4N



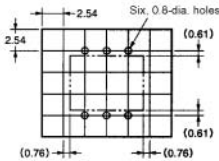
G3VM-XNF  
G3VM-4NF



Note: "G3VM" is not printed on the actual product.

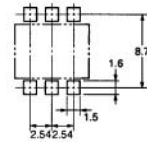
### ■ PCB Dimensions (Bottom View)

G3VM-XN  
G3VM-4N



### ■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-XNF  
G3VM-4NF

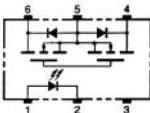


Note: Mounting pad dimensions shown are top view.

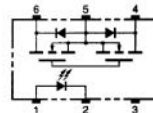
## Installation

### ■ Terminal Arrangement/Internal connection (Top View)

G3VM-XN  
G3VM-4N



G3VM-XNF  
G3VM-4NF

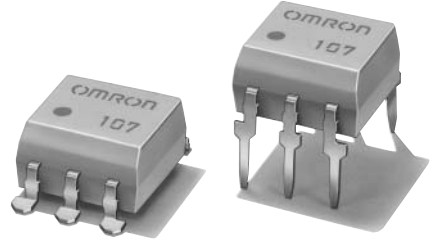


**Analog-switching MOSFET Relay with Dielectric Strength of 5 kVAC between I/O Using Optical Isolation**

- Switches minute analog signals.
- Leakage current of 1 μA max. when output relay is open.

**Application Examples**

- Electronic automatic exchange systems
- Measurement devices
- FA systems



**Note:** The actual product is marked differently from the image shown here.

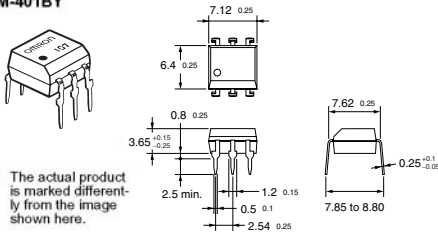
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401BY	50	---
	Surface-mounting terminals		G3VM-401EY	---	1,500
			G3VM-401EY (TR)	---	1,500

**Dimensions**

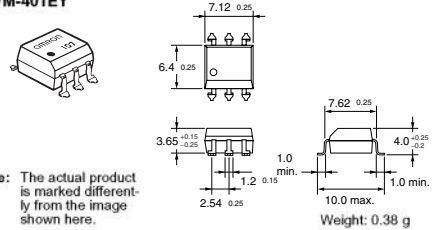
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-401BY



**Note:** The actual product is marked differently from the image shown here.

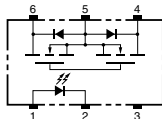
G3VM-401EY



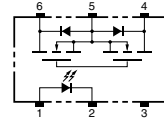
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-401BY

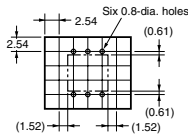


G3VM-401EY



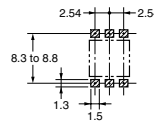
**PCB Dimensions (Bottom View)**

G3VM-401BY



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-401EY



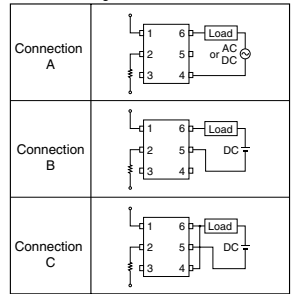


**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta > 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	400	V		
	Continuous load current	Connection A	120	mA		
		Connection B	120			
		Connection C	240			
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta > 25°C
		Connection B		-1.2		
Connection C			-2.4			
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{IO}$	5,000	Vrms	AC for 1 min		
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{slg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

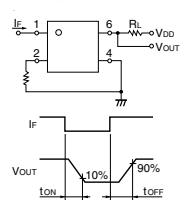
Connection Diagram



**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA	
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1$ MHz	
	Trigger LED forward current	$I_{FT}$	---	---	3	mA	$I_O = 120$ mA	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	17	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
		Connection B	---	11	20	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA	
		Connection C	---	6	10	$\Omega$	$I_F = 5$ mA, $I_O = 240$ mA	
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 400$ V	
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V		
Insulation resistance	$R_{IO}$	1,000	---	---	M $\Omega$	$V_{IO} = 500$ VDC, $RoH \leq 80\%$		
Turn-ON time	$t_{ON}$	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)		
Turn-OFF time	$t_{OFF}$	---	0.1	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



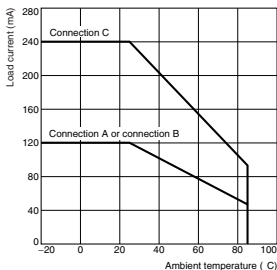
**Recommended Operating Conditions**

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_a$	-20	---	85	°C

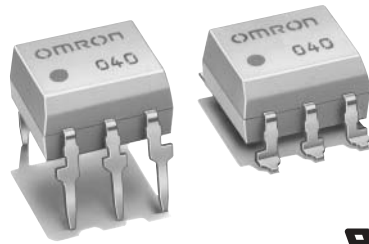
**Engineering Data**

**Load Current vs. Ambient Temperature**  
G3VM-401BY(EY)



## Analog-switching MOSFET Relay with a Dielectric Strength of 5 kVAC between I/O Using Optical Isolation

- Switches minute analog signals.
- Switching AC and DC.
- Peak load voltage of 600 V.
- Dielectric strength of 5 kVAC between I/O.



### Application Examples

- Electronic automatic exchange systems
- FA systems
- Measurement devices
- Security systems

**Note:** The actual product is marked differently from the image shown here.

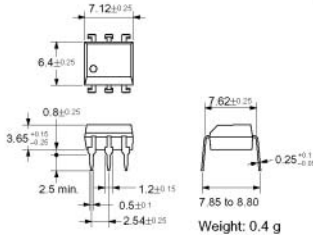
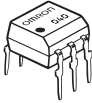
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	600 VAC	G3VM-601BY	50	---
	Surface-mounting terminals		G3VM-601EY		
			G3VM-601EY(TR)		

### Dimensions

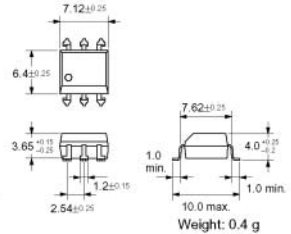
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-601BY



**Note:** The actual product is marked differently from the image shown here.

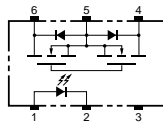
#### G3VM-601EY



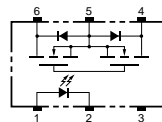
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-601BY

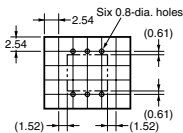


#### G3VM-601EY



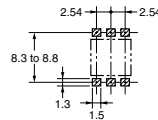
### PCB Dimensions (Bottom View)

#### G3VM-601BY



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-601EY

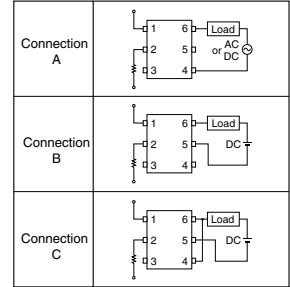


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta > 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	800	V		
	Continuous load current	Connection A	$I_O$	100	mA	
		Connection B		100		
		Connection C		200		
	ON current reduction rate	Connection A	$\Delta I_{ON}/\text{°C}$	-1.0	mA/°C	Ta > 25°C
		Connection B		-1.0		
		Connection C		-2.0		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	5,000	Vrms	AC for 1 min		
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	280	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

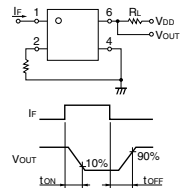
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA	
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz	
	Trigger LED forward current	$I_{FT}$	---	1.6	5	mA	$I_O = 100$ mA	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	25	35	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA
			---	30	45	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA	
			---	23	35	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA	
	Connection B	---	12	18	$\Omega$	$I_F = 10$ mA, $I_O = 200$ mA		
		Connection C	---	---	---	---	---	
Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 800$ V		
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V		
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$		
Turn-ON time	tON	---	0.2	1.5	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)		
Turn-OFF time	tOFF	---	0.2	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

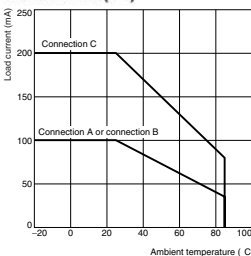
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	480	V
Operating LED forward current	$I_F$	7.5	15	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

**G3VM-601BY(EY)**



**Switches Minute Signals and Analog Signals, 6-pin SOP Package and 60-V Load Voltage**

- Continuous load current of 400 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	60 VAC	G3VM-61H1	75	---
			G3VM-61H1(TR)	---	2,500

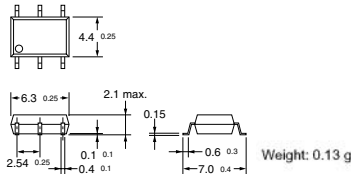
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-61H1**

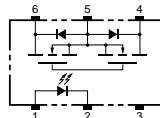


**Note:** The actual product is marked differently from the image shown here.



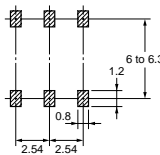
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-61H1**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-61H1**

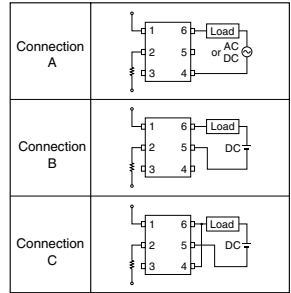


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_{CN}/^\circ\text{C}$	-0.5	$\text{mA}/^\circ\text{C}$	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	60	V		
	Continuous load current	Connection A	400	mA		
		Connection B	400			
		Connection C	800			
	ON current reduction rate	Connection A	$\Delta I_{CN}/^\circ\text{C}$	-4.0	$\text{mA}/^\circ\text{C}$	Ta $\geq$ 25°C
		Connection B		-4.0		
		Connection C		-8.0		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min		
Operating temperature	$T_R$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

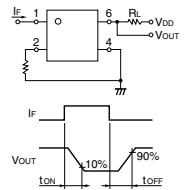
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$	
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5 \text{ V}$	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$	
	Trigger LED forward current	$I_{FT}$	---	1.6	3	mA	$I_F = 400 \text{ mA}$	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	1	2	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 400 \text{ mA}$
		Connection B		---	0.5	1	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 400 \text{ mA}$
		Connection C		---	0.25	---	$\Omega$	$I_F = 5 \text{ mA}$ $I_O = 800 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu\text{A}$	$V_{OFF} = 60 \text{ V}$	
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_S = 0 \text{ V}$		
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500 \text{ VDC}$ , $RoH \leq 80\%$		
Turn-ON time	$t_{ON}$	---	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega$		
Turn-OFF time	$t_{OFF}$	---	0.1	0.5	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

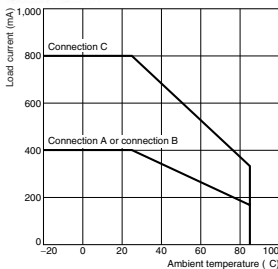
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	46	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	400	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-61H1



MOSFET Relays

**New High-capacity MOS FET Relays  
Allowing Switching of a 1.25-A  
Continuous Load Current with  
a 80-V Load Voltage.**



- Continuous load current of 1,250 mA.
- Dielectric strength of 1,500 Vrms between I/O.

**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

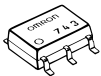
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	80 VAC	G3VM-81HR	75	---
			G3VM-81HR(TR)	---	2,500

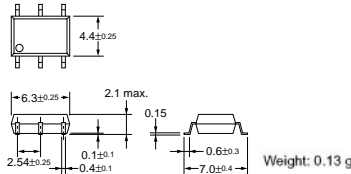
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-81HR**

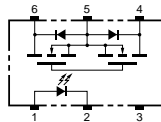


**Note:** The actual product is marked differently from the image shown here.



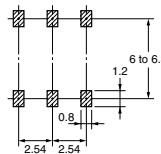
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-81HR**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-81HR**



**■ Absolute Maximum Ratings (Ta = 25°C)**

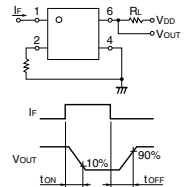
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	80	V	
	Continuous load current	$I_O$	1,250	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-12.5	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-40 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	15	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	2	5	mA	$I_O = 1,250$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	0.11	0.15	$\Omega$	$I_F = 5$ mA, $I_O = 1,250$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	1.2	1.5	nA	$V_{OFF} = 20$ V, Ta = 50°C
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	2.0	3.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.7	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

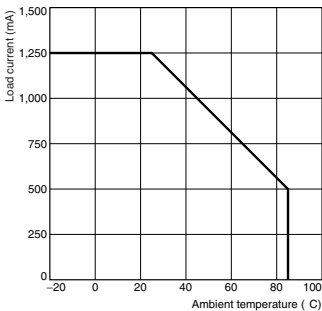
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	64	V
Operating LED forward current	$I_F$	5	---	30	mA
Continuous load current	$I_O$	---	---	1,250	mA
Operating temperature	$T_B$	25	---	60	°C

**■ Engineering Data**

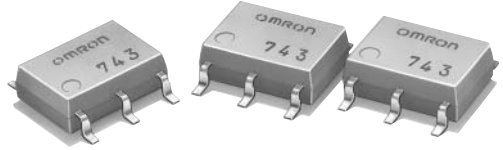
**Load Current vs. Ambient Temperature**

G3VM-81HR



**Slim, 2.1-mm High, MOSFET Relay with Miniature, Flat, 6-pin SOP Package**

- New models with 6-pin SOP package now available in the 200-V load voltage series.
- Continuous load current of 200 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

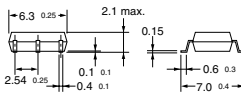
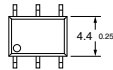
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	200 VAC	G3VM-201H1	75	---
			G3VM-201H1(TR)	---	2,500

**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-201H1

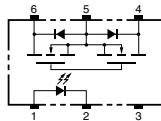


Weight: 0.13 g

**Note:** The actual product is marked differently from the image shown here.

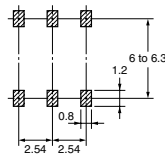
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-201H1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-201H1



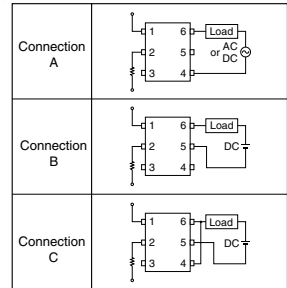


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/^\circ C$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	200	V		
	Continuous load current	Connection A	200	mA		
		Connection B	200			
		Connection C	400			
	ON current reduction rate	Connection A	$\Delta I_{CM}/^\circ C$	-2.0	mA/°C	Ta $\geq$ 25°C
		Connection B		-2.0		
		Connection C		-4.0		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{IO}$	1,500	Vrms	AC for 1 min		
Operating temperature	$T_a$	-40 to +65	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	--	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

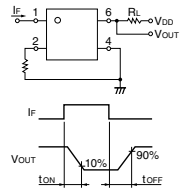
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA	
	Reverse current	$I_R$	--	--	10	$\mu$ A	$V_R = 5$ V	
	Capacity between terminals	$C_T$	--	30	--	pF	$V = 0, f = 1$ MHz	
	Trigger LED forward current	$I_{FT}$	--	1	3	mA	$I_O = 200$ mA	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	--	5	8	$\Omega$	$I_F = 5$ mA, $I_O = 200$ mA
		Connection B		--	3	5	$\Omega$	$I_F = 5$ mA, $I_O = 200$ mA
		Connection C		--	1.5	--	$\Omega$	$I_F = 5$ mA, $I_O = 400$ mA
	Current leakage when the relay is open	$I_{LEAK}$	--	--	1.0	$\mu$ A	$V_{OFF} = 200$ V	
Capacity between I/O terminals	$C_{IO}$	--	0.8	--	pF	$f = 1$ MHz, $V_s = 0$ V		
Insulation resistance	$R_{IO}$	1,000	--	--	M $\Omega$	$V_{IO} = 500$ VDC, $RoH \leq 60\%$		
Turn-ON time	$t_{ON}$	--	0.6	1.5	ms	$I_F = 5$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)		
Turn-OFF time	$t_{OFF}$	--	0.1	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

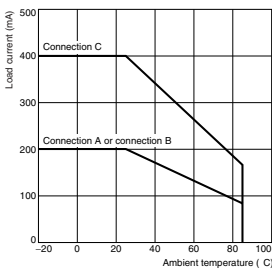
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	--	--	160	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	--	--	130	mA
Operating temperature	$T_a$	- 20	--	60	°C

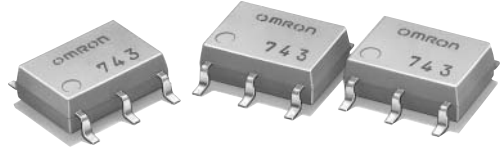
**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-201H1



**Slim 2.1mm high relay incorporating a MOSFET Optically Coupled with an Infrared LED in a Miniature, Flat SOP**



- Upgraded G3VM-S3 Series.
- Continuous load current of 110 mA.
- Dielectric strength of 1,500 Vrms between I/O.

**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

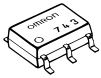
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	350 VAC	G3VM-351H	75	---
			G3VM-351H(TR)	---	2,500

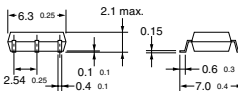
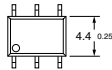
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-351H



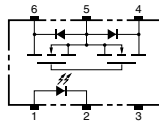
**Note:** The actual product is marked differently from the image shown



Weight: 0.13 g

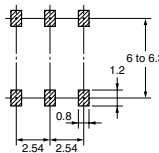
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-351H



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-351H

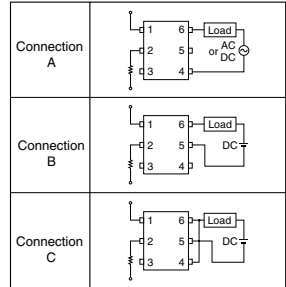


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	350	V		
	Continuous load current	Connection A	110	mA		
		Connection B	110			
		Connection C	220			
	ON current reduction rate	Connection A	$\Delta I_{ON}/\text{°C}$	-1.1	mA/°C	Ta $\geq$ 25°C
		Connection B		-1.1		
		Connection C		-2.2		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{IO}$	1,500	Vrms	AC for 1 min		
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{slg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	280	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

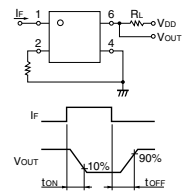
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA	
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1$ MHz	
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 110$ mA	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	25	35	$\Omega$	$I_F = 5$ mA $I_O = 110$ mA, $t < 1$ s
			---	35	50	$\Omega$	$I_F = 5$ mA $I_O = 110$ mA	
			---	28	40	$\Omega$	$I_F = 5$ mA $I_O = 110$ mA	
	Connection B	$R_{ON}$	---	14	20	$\Omega$	$I_F = 5$ mA $I_O = 220$ mA	
		Connection C	$R_{ON}$	---	14	20	$\Omega$	$I_F = 5$ mA $I_O = 220$ mA
Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V		
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V		
Insulation resistance	$R_{IO}$	1,000	---	---	M $\Omega$	$V_{IO} = 500$ VDC, $R_{oH} \leq 60\%$		
Turn-ON time	$t_{ON}$	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200 \Omega, V_{DD} = 20$ V (See note 2.)		
Turn-OFF time	$t_{OFF}$	---	0.1	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

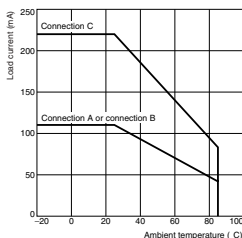
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	10	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	85	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-351H



**Analog-switching MOS FET Relay with SPST-NC (Single-pole, Single-throw, Normally Closed) Contacts**

- New models in 350-V load voltage series with SPST-NC contacts and a 6-pin SOP package.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

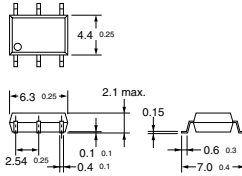
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NC	Surface-mounting terminals	350 VAC	G3VM-353H	75	---
			G3VM-353H(TR)	---	2,500

**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-353H

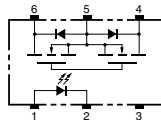


**Note:** The actual product is marked differently from the image shown here.

Weight: 0.13 g

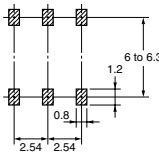
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-353H



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-353H

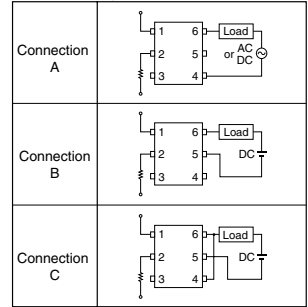


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	350	V		
	Continuous load current	Connection A	120	mA		
		Connection B	120			
		Connection C	240			
	ON current reduction rate	Connection A	$\Delta I_{ON}/\text{°C}$	-1.2	mA/°C	Ta $\geq$ 25°C
		Connection B		-1.2		
		Connection C		-2.4		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{LO}$	1,500	Vrms	AC for 1 min		
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	280	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

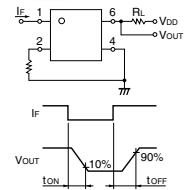
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1.0	3.0	mA	$I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	Connection A	---	15	25	$\Omega$	$I_O = 120$ mA
		Connection B	---	8	14	$\Omega$	$I_O = 120$ mA
		Connection C	---	4	---	$\Omega$	$I_O = 240$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V, $I_F = 5$ mA
Capacity between I/O terminals	$C_{LO}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{LO}$	1,000	---	---	M $\Omega$	$V_{LO} = 500$ VDC, $RoH \leq 80\%$	
Turn-ON time	$t_{ON}$	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	---	3.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

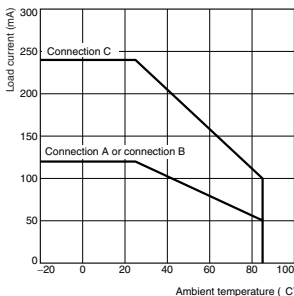
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	---	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_a$	-20	---	85	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

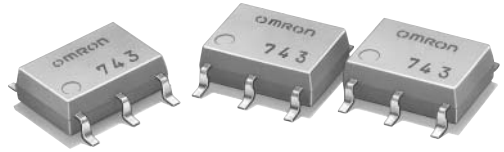
G3VM-353H



MOSFET Relays

## Expanded Range of Analog Switching MOSFET Relays with 400-V Load Voltage

- New models with a 6-pin SOP package now included in 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

### Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	400 VAC	G3VM-401H	75	---
			G3VM-401H(TR)	---	2,500

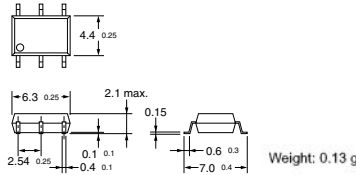
### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-401H



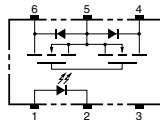
**Note:** The actual product is marked differently from the image shown here.



Weight: 0.13 g

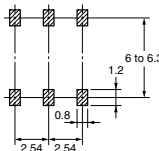
### Terminal Arrangement/Internal Connections (Top View)

G3VM-401H



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401H

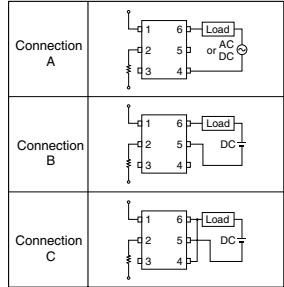


**■ Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_J$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	400	V		
	Continuous load current	Connection A	120	mA		
		Connection B	120			
		Connection C	240			
	ON current reduction rate	Connection A	$\Delta I_{ON}/\text{°C}$	-1.2	mA/°C	Ta $\geq$ 25°C
		Connection B		-1.2		
		Connection C		-2.4		
Connection temperature	$T_J$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min		
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation		
Storage temperature	$T_{slg}$	-55 to +125	°C	With no icing or condensation		
Soldering temperature (10 s)	---	260	°C	10 s		

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

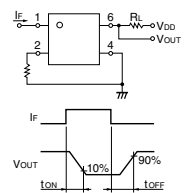
Connection Diagram



**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA	
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V	
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz	
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	17	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
		Connection B	---	11	20	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA	
		Connection C	---	6	---	$\Omega$	$I_F = 5$ mA, $I_O = 240$ mA	
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 400$ V	
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V		
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, $RoH \leq 80\%$		
Turn-ON time	$t_{ON}$	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)		
Turn-OFF time	$t_{OFF}$	---	0.1	1.0	ms			

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

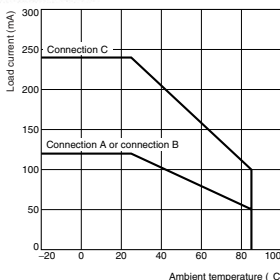
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	85	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-401H







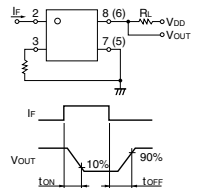
**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	
	LED forward current reduction rate	$\Delta I_{FC}/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	6	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	150	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.5	mA/°C	Ta ≥ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output	$V_{I/O}$	2.500	Vrms	AC for 1 min
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{slg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	—	—	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	—	15	—	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	—	1.5	5	mA	$I_O = 150 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	—	2	4	Ω	$I_F = 5 \text{ mA}, I_O = 150 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	—	$10 \times 10^{-6}$	1.0	μA	$V_{OFF} = 20 \text{ V}$
Capacity between I/O terminals	$C_{I/O}$	—	0.8	—	pF	$f = 1 \text{ MHz}, V_S = 0 \text{ V}$	
Insulation resistance	$R_{I/O}$	1,000	—	—	MΩ	$V_{I/O} = 500 \text{ VDC}, \text{RoH} \leq 60\%$	
Turn-ON time	$t_{ON}$	—	—	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note.)	
Turn-OFF time	$t_{OFF}$	—	—	1.0	ms		

Note: Turn-ON and Turn-OFF Times



MOSFET Relays

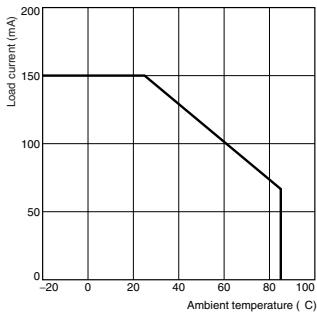
**Recommended Operating Conditions**

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	—	—	20	V
Operating LED forward current	$I_F$	5	—	30	mA
Continuous load current	$I_O$	—	—	150	mA
Operating temperature	$T_a$	-25	—	65	°C

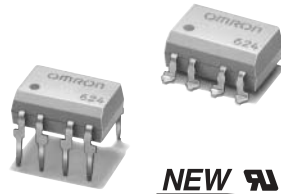
**Engineering Data**

**Load Current vs. Ambient Temperature**  
G3VM-22CO(FO)



## New High-capacity MOS FET Relay Allowing Switching of a 2-A Continuous Load Current

- Package designed with 1 channel and 8 pins.
- Low ON-resistance of 0.12 Ω max.
- Leakage current of 1.0 nA (typical) between output terminals when they are open.



**NEW** Approval pending

### Application Examples

- Semiconductor testers
- Measurement devices
- Security systems

**Note:** The actual product is marked differently from the image shown here.

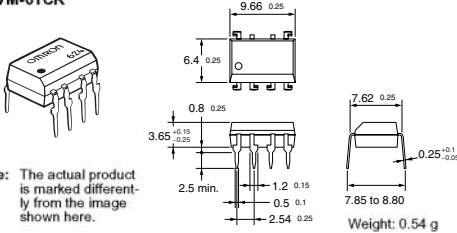
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	60 VAC	G3VM-61CR	50	---
	Surface-mounting terminals		G3VM-61FR		
			G3VM-61FR(TR)		

### Dimensions

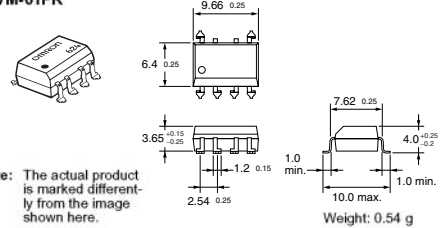
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-61CR



**Note:** The actual product is marked differently from the image shown here.

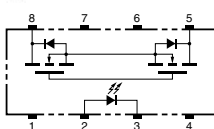
#### G3VM-61FR



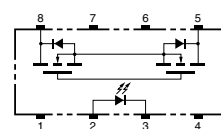
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-61CR

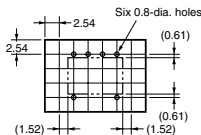


#### G3VM-61FR



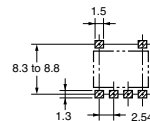
### PCB Dimensions (Bottom View)

#### G3VM-61CR



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-61FR



**Absolute Maximum Ratings (Ta = 25°C)**

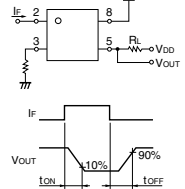
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	6	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	60	V	
	Continuous load current	$I_O$	2,000	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-20	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{IO}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-20 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.2	1.4	V	$I_F = 20$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 6$ V
	Capacity between terminals	$C_T$	---	15	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	---	5	mA	$I_O = 1$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	---	0.12	$\Omega$	$I_F = 10$ mA, $I_O = 1$ A
	Current leakage when the relay is open	$I_{LEAK}$	---	1.0	4.0	nA	$V_{OFF} = 20$ V Ta = 50°C
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{IO}$	1,000	---	---	M $\Omega$	$V_{IO} = 500$ VDC, RH $\leq$ 60%	
Turn-ON time	tON	---	---	5.0	ms	$I_F = 10$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	3.0	ms		

Note: 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

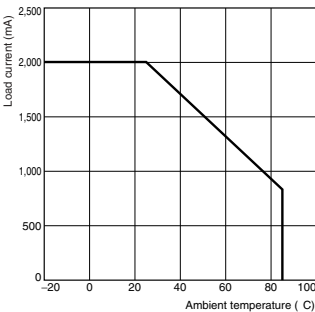
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current	$I_O$	---	---	2	A
Operating temperature	$T_a$	25	---	50	°C

**Engineering Data**

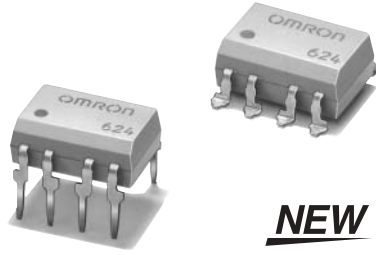
**Load Current vs. Ambient Temperature**

G3VM-61CR(FR)



**New Analog-switching MOSFET Relays with 2 Output channels. Dielectric Strength of 2.5 kVAC between I/O.**

- Switches minute analog signals.
- Dielectric strength of 2,500 Vrms between I/O.
- Surface-mounting models included in series.



**NEW**

**Application Examples**

- Measurement devices
- Security systems

**Note:** The actual product is marked differently from the image shown here.

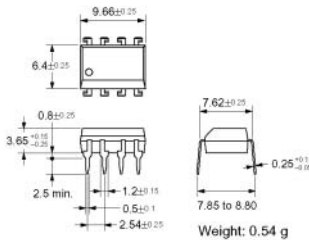
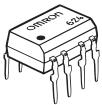
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	PCB terminals	60 VAC	G3VM-62C1	50	---
	Surface-mounting terminals		G3VM-62F1		
			G3VM-62F1(TR)	---	

**Dimensions**

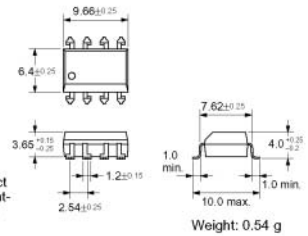
**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-62C1**



**Note:** The actual product is marked differently from the image shown here.

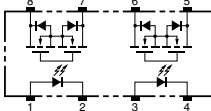
**G3VM-62F1**



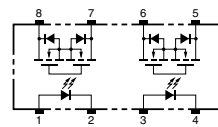
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-62C1**

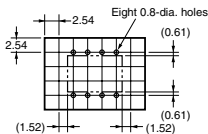


**G3VM-62F1**



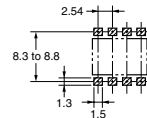
**PCB Dimensions (Bottom View)**

**G3VM-62C1**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-62F1**



**■ Absolute Maximum Ratings (Ta = 25°C)**

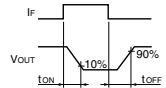
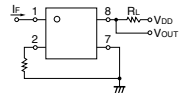
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{CEF}$	60	V	
	Continuous load current	$I_O$	500	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-5.0	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1.6	3	mA	$I_O = 500$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	1.0	2.0	$\Omega$	$I_F = 5$ mA, $I_O = 500$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{CEF} = 60$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	tON	---	0.8	2.0	ms	$I_F = 5$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

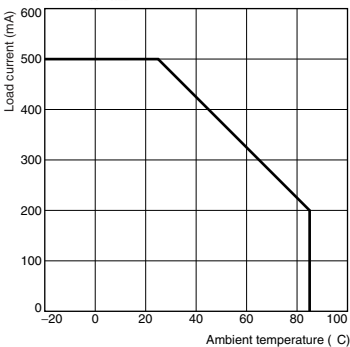
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	500	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

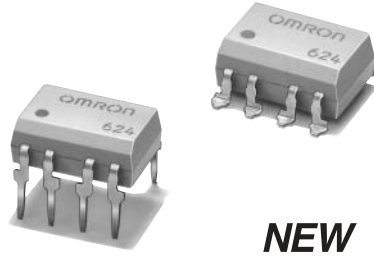
**Load Current vs. Ambient Temperature**

G3VM-62C1(F1)



**New Series with 350-V Load Voltage Including Models with 2 Outputs.**

- Upgraded G3VM-W Series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.



**NEW**

**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

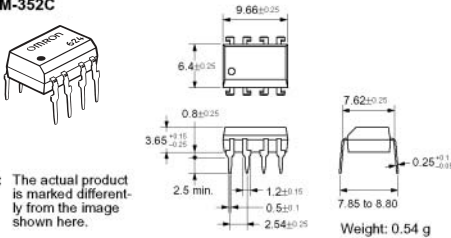
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	PCB terminals	350 VAC	G3VM-352C	50	---
	Surface-mounting terminals		G3VM-352F	---	1,500
			G3VM-352F(TR)	---	

**Dimensions**

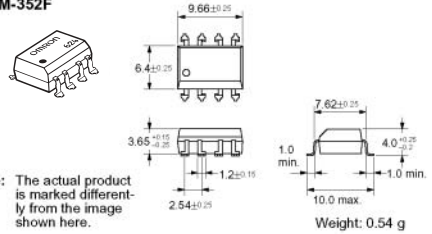
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-352C



**Note:** The actual product is marked differently from the image shown here.

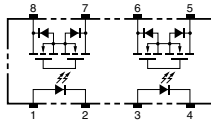
G3VM-352F



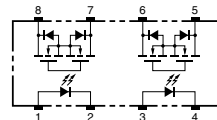
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-352C

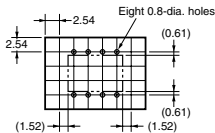


G3VM-352F



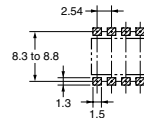
**PCB Dimensions (Bottom View)**

G3VM-352C



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-352F



**Absolute Maximum Ratings (Ta = 25°C)**

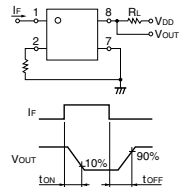
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	25	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA, t < 1 s
			---	35	50	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	tON	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

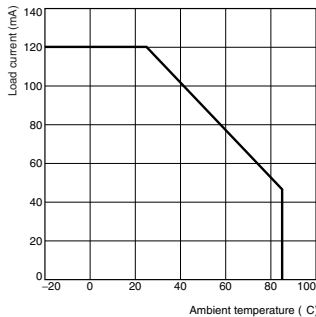
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

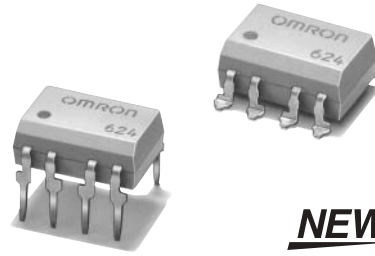
G3VM-352C(F)



**New Series with 350-V Load Voltage  
Current-limiting Models with  
2 Outputs.**

**Application Examples**

- Electronic automatic exchange systems
- Multi-functional telephones
- Cordless telephones
- Measurement devices



**NEW**

**Note:** The actual product is marked differently from the image shown here.

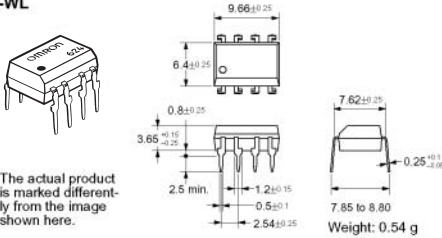
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
DPST-NO	PCB terminals	350 VAC	G3VM-WL	Yes	50	---
	Surface-mounting terminals		G3VM-WFL			
			G3VM-WFL(TR)			

**Dimensions**

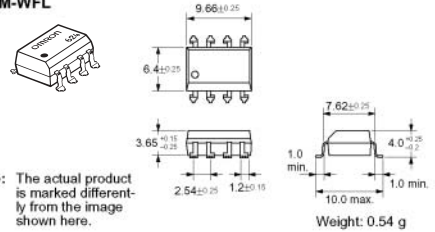
**Note:** All units are in millimeters unless otherwise indicated.

G3VM-WL



**Note:** The actual product is marked differently from the image shown here.

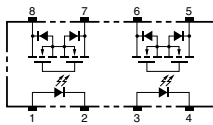
G3VM-WFL



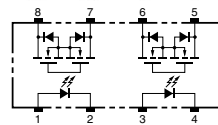
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

G3VM-WL

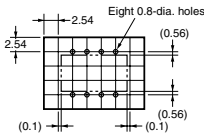


G3VM-WFL



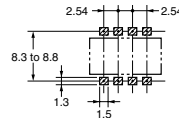
**PCB Dimensions (Bottom View)**

G3VM-WL



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-WFL





**■ Absolute Maximum Ratings (Ta = 25°C)**

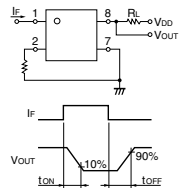
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	6	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	—	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	—	—	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	—	30	—	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	—	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	—	22	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	—	—	1.0	$\mu$ A	$V_{OFF} = 350$ V
Limit current	$I_{LM}$	150	—	300	mA	$I_F = 5$ mA, $V_{(D)} = 5$ V, $t = 5$ ms	
Capacity between I/O terminals	$C_{I/O}$	—	0.8	—	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	—	—	M $\Omega$	$V_{I/O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	—	—	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{(D)} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	—	—	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

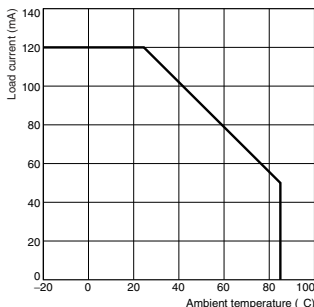
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(D)}$	—	—	280	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	—	—	100	mA
Operating temperature	$T_B$	-20	—	85	°C

**■ Engineering Data**

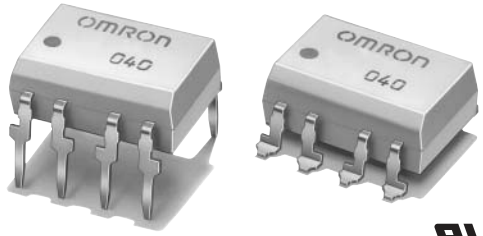
**Load Current vs. Ambient Temperature**

**G3VM-W(F)L**



**Analog-switching MOSFET Relay with DPST-NC (Double-pole, Single-throw, Normally Closed) Contacts**

- Switches minute analog signals.
- Switching AC and DC.



**Application Examples**

- Electronic automatic exchange systems
- Security systems
- Datacom (modem) systems
- FA systems
- Measurement devices

**Note:** The actual product is marked differently from the image shown here.

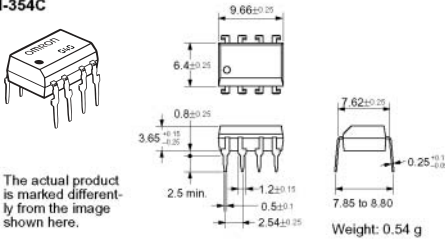
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NC	PCB terminals	350 VAC	G3VM-354C	50	---
	Surface-mounting terminals		G3VM-354F		
			G3VM-354F(TR)	---	

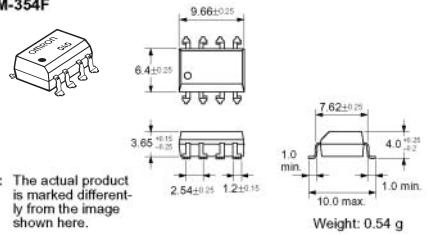
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-354C

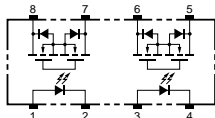


G3VM-354F

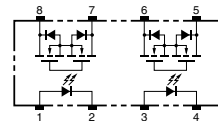


**Terminal Arrangement/Internal Connections (Top View)**

G3VM-354C

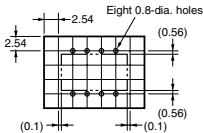


G3VM-354F



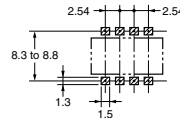
**PCB Dimensions (Bottom View)**

G3VM-354C



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-354F



**■ Absolute Maximum Ratings (Ta = 25°C)**

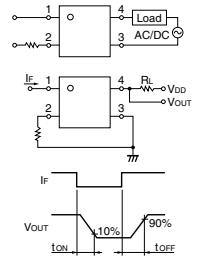
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	150	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.5	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I-O}$	2,500	Vrms	AC for 1 min
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	15	25	$\Omega$	$I_O = 150$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$I_F = 5$ mA, $V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	tON	---	0.1	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	1.0	3.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

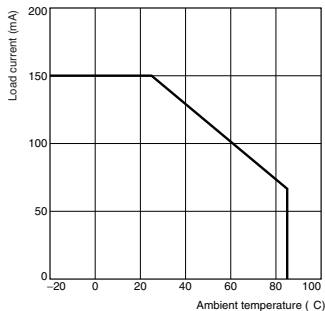
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	---	25	mA
Continuous load current	$I_O$	---	---	150	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

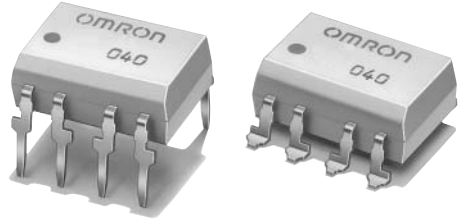
**Load Current vs. Ambient Temperature**

G3VM-354C(F)



## New MOSFET Relay with Both SPST-NO and SPST-NC Contacts Incorporated in a Single DIP Package

- SPST-NO/SPST-NC models now included in the 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.



**NEW** Approval pending

### Application Examples

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

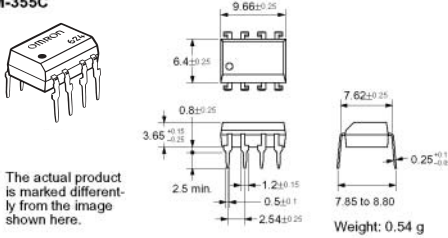
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO/ SPST-NC	PCB terminals	350 VAC	G3VM-355C	50	---
	Surface-mounting terminals		G3VM-355F		
			G3VM-355F(TR)		

### Dimensions

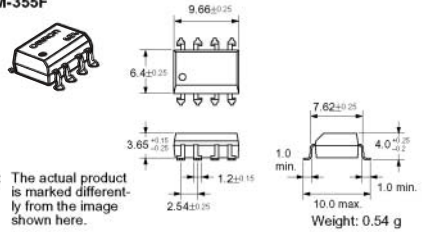
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-355C



**Note:** The actual product is marked differently from the image shown here.

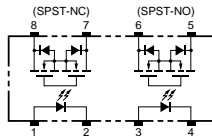
#### G3VM-355F



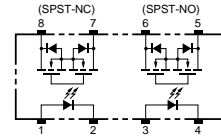
**Note:** The actual product is marked differently from the image shown here.

### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-355C

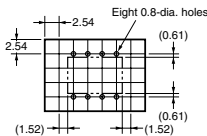


#### G3VM-355F



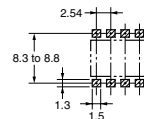
### PCB Dimensions (Bottom View)

#### G3VM-355C



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

#### G3VM-355F



**■ Absolute Maximum Ratings (Ta = 25°C)**

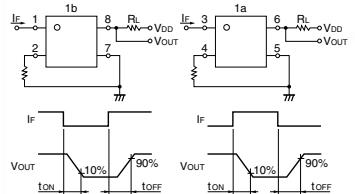
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	100	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.0	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
	Dielectric strength between input and output (See note 1.)	$V_{I-O}$	2,500	Vrms	AC for 1 min
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	SPST-NO: $I_F = 100$ mA SPST-NC: $I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	30	35	$\Omega$	SPST-NO: $I_F = 5$ mA, $I_O = 100$ mA SPST-NC: $I_F = 0$ mA, $I_O = 100$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I-O}$	---	0.6	---	pF	f = 1 MHz, $V_s = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	SPST-NO	$t_{ON}$	---	0.25	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)
			---	0.3	1.0	ms	
Turn-OFF time	SPST-NO	$t_{OFF}$	---	0.5	1.0	ms	
			---	0.15	1.0	ms	

Note: 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

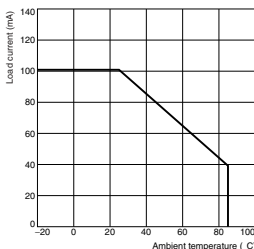
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{ID}$	---	---	280	V
Operating LED forward current	$I_F$	5	10	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	85	°C

**■ Engineering Data**

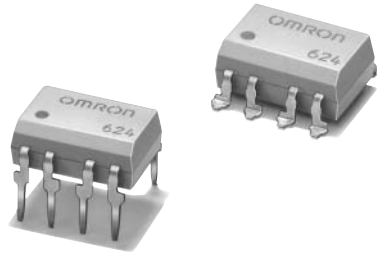
**Load Current vs. Ambient Temperature**

G3VM-355C(F)



**New Expanded Range of Analog switching MOSFET Relays with 400-V Load Voltage with 2 Output Channels.**

- A 2-channel Relay now included in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2,500 Vrms between I/O.



**NEW** Approval pending

**Application Examples**

- Measurement devices
- Security systems
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

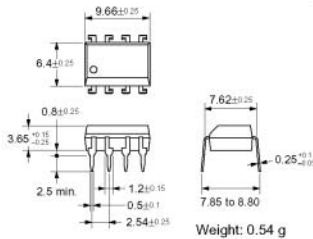
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	PCB terminals	400 VAC	G3VM-402C	50	---
	Surface-mounting terminals		G3VM-402F	---	1,500
			G3VM-402F(TR)	---	

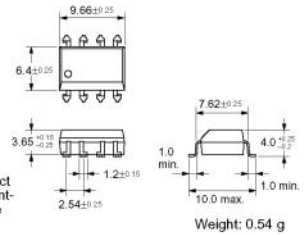
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-402C**



**G3VM-402F**

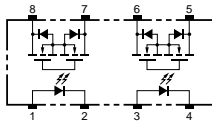


**Note:** The actual product is marked differently from the image shown here.

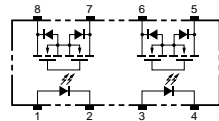
**Note:** The actual product is marked differently from the image shown here.

**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-402C**

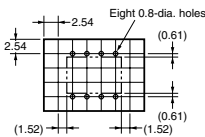


**G3VM-402F**



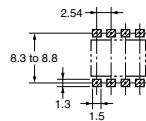
**PCB Dimensions (Bottom View)**

**G3VM-402C**



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

**G3VM-402F**



**■ Absolute Maximum Ratings (Ta = 25°C)**

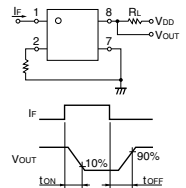
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	400	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	18	35	$\Omega$	$I_F = 5$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 400$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, $V_S = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, $R_{RH} \leq 60\%$	
Turn-ON time	tON	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	---	1.0	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

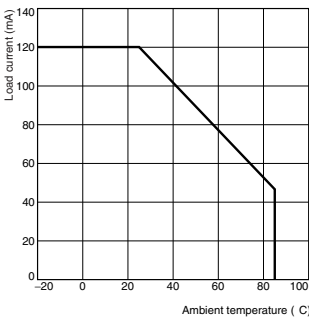
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-402C(F)



**New MOSFET Relay Designed for Switching Minute Signals and Analog Signals. Has 2 Channels and a 60-V Load Voltage**

- Continuous load current of 400 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data Loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

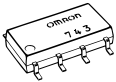
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	Surface-mounting terminals	60 VAC	G3VM-62J1	50	---
			G3VM-62J1(TR)	---	2,500

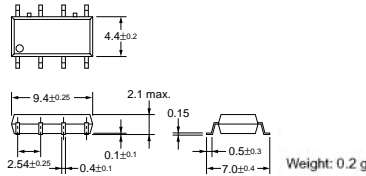
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-62J1

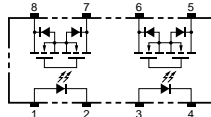


**Note:** The actual product is marked differently from the image shown here.



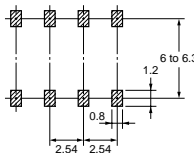
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-62J1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-62J1





**Absolute Maximum Ratings (Ta = 25°C)**

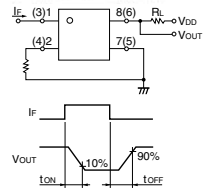
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	80	V	
	Continuous load current	$I_O$	400	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-4.0	mA/°C	Ta $\geq$ 25°C
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{slg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	280	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1.6	3	mA	$I_O = 400$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	1.0	2.0	$\Omega$	$I_F = 5$ mA $I_O = 400$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 60$ V
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	tON	---	0.8	2.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	0.5	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

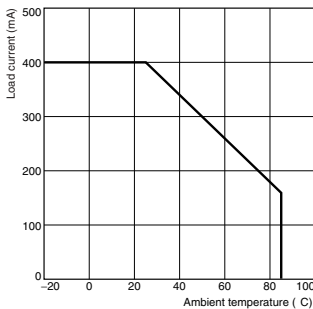
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	400	mA
Operating temperature	$T_a$	-20	---	85	°C

**Engineering Data**

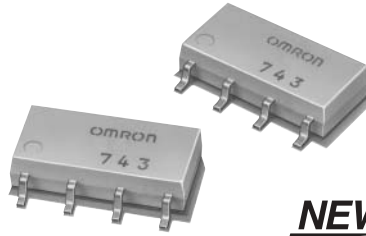
**Load Current vs. Ambient Temperature**

G3VM-62J1



**Slim, 2.1-mm High MOSFET Relay with Miniature, Flat, 8-pin SOP Package**

- New models with 2 channels and an 8-pin SOP package now available in the 200-V load voltage series.
- Continuous load current of 200 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

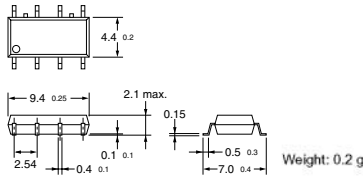
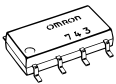
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	Surface-mounting terminals	200 VAC	G3VM-202J1	50	---
			G3VM-202J1(TR)	---	2,500

**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

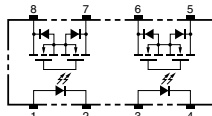
G3VM-202J1



**Note:** The actual product is marked differently from the image shown here.

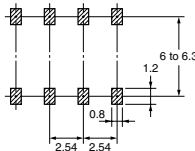
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-202J1



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-202J1



**Absolute Maximum Ratings (Ta = 25°C)**

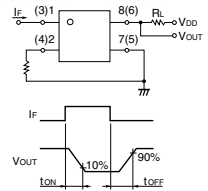
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/\text{C}$	-0.5	mA/C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	200	V	
	Continuous load current	$I_O$	200	mA	
	ON current reduction rate	$\Delta I_{ON}/\text{C}$	-2.0	mA/C	Ta $\geq$ 25°C
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	280	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 200$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	5	8	$\Omega$	$I_F = 5$ mA, $I_O = 200$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 200$ V
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	f = 1 MHz, $V_s = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, RoH $\leq$ 80%	
Turn-ON time	tON	---	0.6	1.5	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	tOFF	---	0.1	1	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

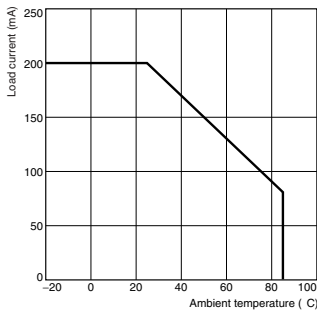
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	150	200	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	130	mA
Operating temperature	$T_a$	-20	---	85	°C

**Engineering Data**

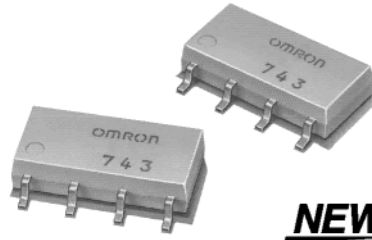
**Load Current vs. Ambient Temperature**

G3VM-202J1



**Slim, 2.1-mm High Relay  
Incorporating a MOSFET Optically  
Coupled with an Infrared LED in a  
Miniature, Flat SOP Package**

- New models with 2 channels and an 8-pin SOP package included in 350-V load voltage series.
- Continuous load current of 110 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Note:** The actual product is marked differently from the image shown here.

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

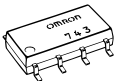
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	Surface-mounting terminals	350 VAC	G3VM-352J	50	---
			G3VM-352J(TR)	---	2,500

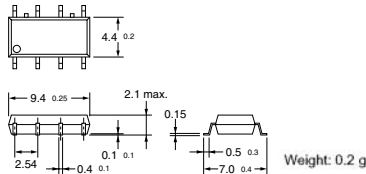
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-352J

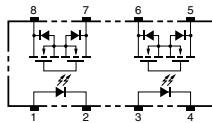


**Note:** The actual product is marked differently from the image shown here.



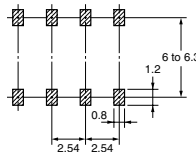
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-352J



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-352J



**■ Absolute Maximum Ratings (Ta = 25°C)**

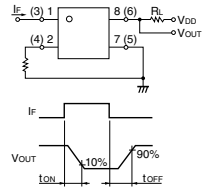
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	110	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.1	mA/°C	Ta $\geq$ 25°C
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 110$ mA
Output	Maximum resistance with output ON	$R_{ON}$	---	25	35	$\Omega$	$I_F = 5$ mA, $I_O = 110$ mA, $t < 1$ s
			---	35	50	$\Omega$	$I_F = 5$ mA, $I_O = 110$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I-O}$	---	0.8	---	pF	$f = 1$ MHz, $V_S = 0$ V	
Insulation resistance	$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, $RoH \leq 60\%$	
Turn-ON time	$t_{ON}$	---	0.3	1	ms	$I_F = 5$ mA, $R_f = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	0.1	1	ms	$V_{DD} = 20$ V (See note 2.)	

**Note:** 2. Turn-ON and Turn-OFF Times



MOSFET Relays

**■ Recommended Operating Conditions**

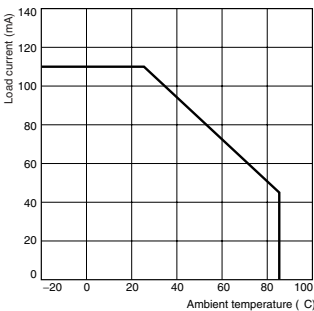
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	10	25	mA
Continuous load current	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	85	°C

**■ Engineering Data**

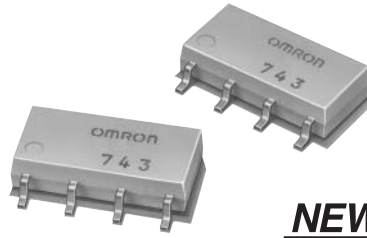
**Load Current vs. Ambient Temperature**

G3VM-352J



**Analog-switching MOSFET Relay with DPST-NC (Double-pole, Single-throw, Normally Closed) Contacts**

- New models with SPST-NC contacts and an 8-pin SOP package now included in 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

**Application Examples**

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

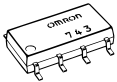
**List of Models**

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NC	Surface-mounting terminals	350 VAC	G3VM-354J	50	---
			G3VM-354J(TR)	---	2,500

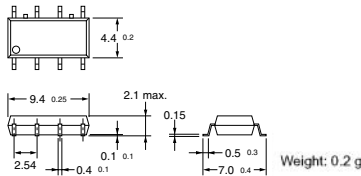
**Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-354J

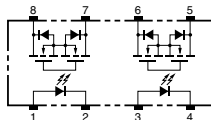


**Note:** The actual product is marked differently from the image shown here.



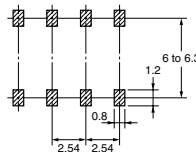
**Terminal Arrangement/Internal Connections (Top View)**

G3VM-354J



**Actual Mounting Pad Dimensions (Recommended Value, Top View)**

G3VM-354J



**■ Absolute Maximum Ratings (Ta = 25°C)**

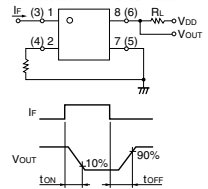
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	15	25	$\Omega$	$I_O = 120$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V, $I_F = 5$ mA
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, $V_s = 0$ V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RoH $\leq$ 60%	
Turn-ON time	$t_{ON}$	---	---	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$	
Turn-OFF time	$t_{OFF}$	---	---	3.0	ms	$V_{DD} = 20$ V (See note 2.)	

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

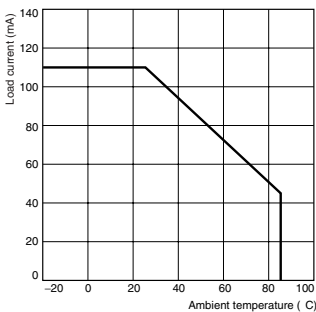
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	---	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	85	°C

**■ Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-354J



## New MOSFET Relay with Both SPST-NO and SPST-NC Contacts Incorporated in a Single SOP Package

- SPST-NO/SPST-NC models with an 8-pin SOP package now available in the 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

### Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

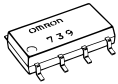
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO/ SPST-NC	Surface-mounting terminals	350 VAC	G3VM-355J	50	---
			G3VM-355J(TR)	---	2,500

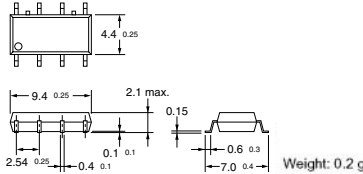
### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-355J

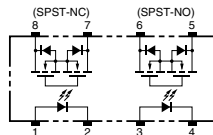


**Note:** The actual product is marked differently from the image shown here.



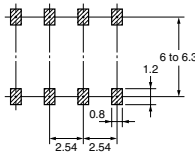
### Terminal Arrangement/Internal Connections (Top View)

G3VM-355J



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-355J





**■ Absolute Maximum Ratings (Ta = 25°C)**

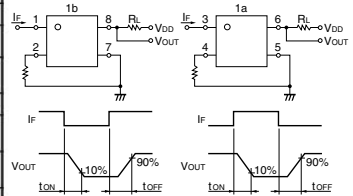
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_{F/C}$	-0.5	mA/°C	Ta $\geq$ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	350	V	
	Continuous load current	$I_O$	90	mA	
	ON current reduction rate	$\Delta I_{ON/C}$	-0.9	mA/°C	Ta $\geq$ 25°C
	Connection temperature	$T_J$	125	°C	
Dielectric strength between input and output (See note 1.)	$V_{I/O}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**■ Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V
	Capacity between terminals	$C_T$	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	SPST-NO: $I_O = 90$ mA
		$I_{FC}$	---	---	---	---	SPST-NC: $I_{OFF} = 10$ $\mu$ A
Output	Maximum resistance with output ON	$R_{ON}$	---	30	35	$\Omega$	SPST-NO: $I_F = 5$ mA, $I_O = 90$ mA
			---	40	50	$\Omega$	SPST-NC: $I_F = 0$ mA, $I_O = 90$ mA
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	$\mu$ A	$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance	$R_{I/O}$	1,000	---	---	M $\Omega$	$V_{I/O} = 500$ VDC, RH $\leq$ 60%	
Turn-ON time	SPST-NO	$t_{ON}$	---	0.25	1.0	ms	$I_F = 5$ mA, $R_L = 200$ $\Omega$ , $V_{DD} = 20$ V (See note 2.)
	SPST-NC	---	---	0.3	1.0	ms	
Turn-OFF time	SPST-NO	$t_{OFF}$	---	0.5	1.0	ms	
	SPST-NC	---	---	0.15	1.0	ms	

**Note:** 2. Turn-ON and Turn-OFF Times



**■ Recommended Operating Conditions**

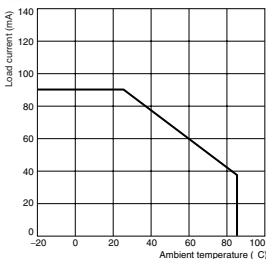
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	280	V
Operating LED forward current	$I_F$	5	10	25	mA
Continuous load current	$I_O$	---	---	90	mA
Operating temperature	$T_B$	-20	---	65	°C

**■ Engineering Data**

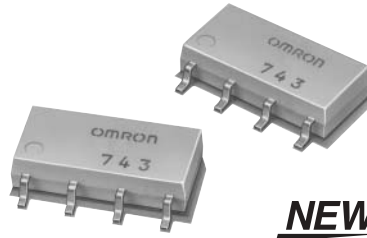
**Load Current vs. Ambient Temperature**

G3VM-355J



### Expanded Range of Analog-Switching MOSFET Relays with 400-V Load Voltage

- New models with two channels and an 8-pin SOP package included in 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



**NEW**

### Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

**Note:** The actual product is marked differently from the image shown here.

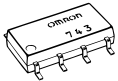
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	Surface-mounting terminals	400 VAC	G3VM-402J	50	---
			G3VM-402J(TR)	---	2,500

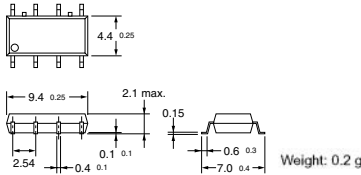
### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

G3VM-402J

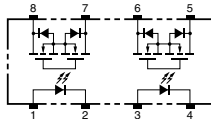


**Note:** The actual product is marked differently from the image shown here.



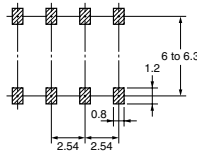
### Terminal Arrangement/Internal Connections (Top View)

G3VM-402J



### Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-402J



**Absolute Maximum Ratings (Ta = 25°C)**

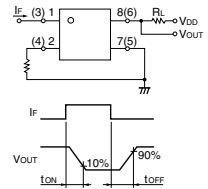
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_J$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	400	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta ≥ 25°C
Dielectric strength between input and output (See note 1.)	$V_{IO}$	1,500	Vrms	AC for 1 min	
Operating temperature	$T_B$	-40 to +85	°C	With no icing or condensation	
Storage temperature	$T_{Stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)	---	260	°C	10 s	

**Note:** 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	1	3	mA	$I_O = 120 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	17	35	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	μA	$V_{OFF} = 400 \text{ V}$
Capacity between I/O terminals	$C_{IO}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_S = 0 \text{ V}$	
Insulation resistance	$R_{IO}$	1,000	---	---	MΩ	$V_{IO} = 500 \text{ VDC}, R_{oH} \leq 60\%$	
Turn-ON time	$t_{ON}$	---	0.3	1	ms	$I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{(O)} = 20 \text{ V}$ (See note 2.)	
Turn-OFF time	$t_{OFF}$	---	0.1	1	ms		

**Note:** 2. Turn-ON and Turn-OFF Times



**Recommended Operating Conditions**

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{OD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_B$	-20	---	65	°C

**Engineering Data**

**Load Current vs. Ambient Temperature**

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