

■ 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.

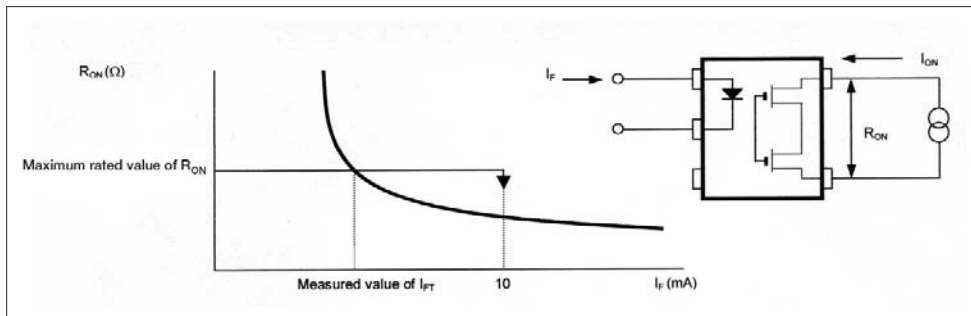
The built-in Current Limit Function (CLR models) has many uses. Traditionally used to clamp excessive over current fault conditions in telecom equipment, this feature can also be used to good effect to resist transient and short circuit conditions.

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	t_{ON}	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	t_{OFF}	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

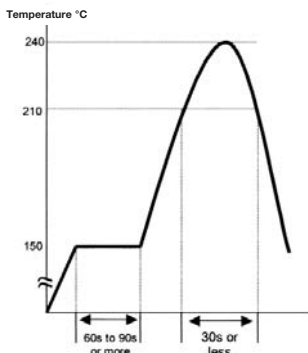
As far as it is possible, avoid raising the temperature of the device by observing the following restrictions.

Soldering leads directly

260°C max, 10 seconds max

Reflow soldering

- Lead temperature: 210°C max, 30 seconds max
Atmospheric temperature close of mold body surface: 240°C max, 10 seconds max
- 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/cm² 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.

Precautions



WARNING

Be sure to turn OFF the power when wiring the relay, otherwise an electric shock may be received.



WARNING

Do not touch the charged terminals of the SSR, otherwise an electric shock may be received.



CAUTION

Do not apply overvoltage or overcurrent to the I/O circuits of the SSR, otherwise the SSR may malfunction or burn.



CAUTION

Be sure to wire and solder the Relay under the proper soldering conditions, otherwise the Relay in operation may generate excessive heat and the Relay may burn.



CAUTION

Electrostatic sensitive devices. Keep in original packaging until required to use. Avoid touching device terminals. Take static handling precautions during processing.

Appearance Examples

DIP (Dual In-line Package)

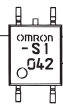
Omron Logo



Model name
LOT No.

SOP (Small Outline Package)

Omron Logo



Model name
LOT No.

SSOP (Shrink Small Outline Package)

Omron mark

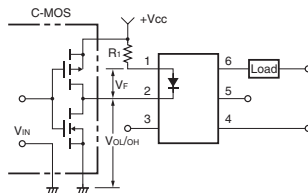


Model name
LOT No.

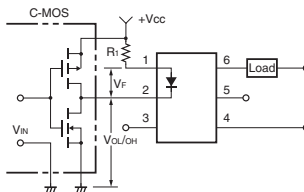
Note 'G3VM' is not printed on the actual product

Typical Relay Driving Circuit Examples

C-MOS



Transistor



Use the following formula to obtain the LED current limiting resistance value to assure that the relay operates accurately.

$$R_1 = \frac{V_{CC} - V_{OL} - V_F (ON)}{5 \text{ to } 20 \text{ mA}}$$

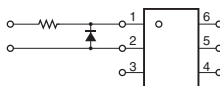
Use the following formula to obtain the LED forward voltage value to assure that the relay releases accurately.

$$V_F (OFF) = V_{CC} - V_{OH} < 0.8 \text{ V}$$

PROTECTION FROM SURGE VOLTAGE ON THE INPUT TERMINALS

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

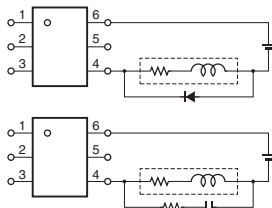
Surge Voltage Protection Circuit Example



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.



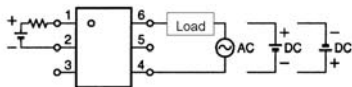
In direction A: 1.96 N

In direction B: 1.96 N

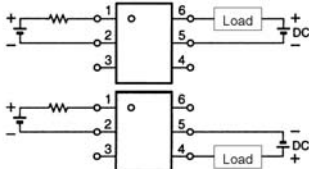
LOAD CONNECTION

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

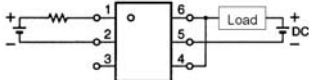
AC Connection



DC Single Connection



DC Parallel Connection



SOLDER MOUNTING

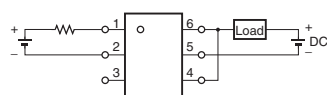
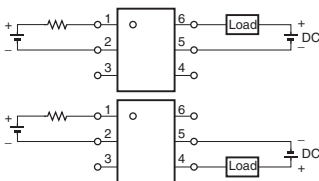
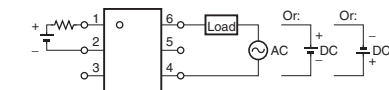
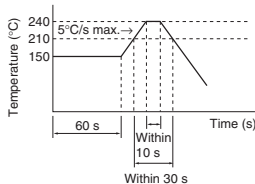
Maintain the following conditions during manual or reflow soldering of the relays in order to prevent the temperature of the relays from rising.

1. Pin Soldering



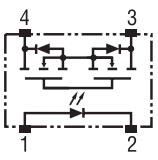
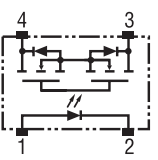
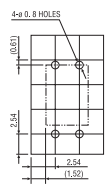
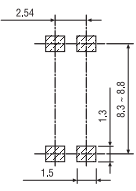
Solder each pin at a maximum temperature of 260°C within 10 s.

2. Reflow Soldering


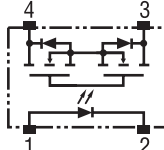
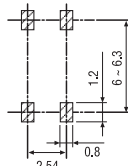
- Solder each pin at a maximum temperature of 260°C within 10 s.
- Make sure that the ambient temperature on the surface of the resin casing is 240°C max. for 10 s maximum.
- The following temperature changes are recommendable for soldering.




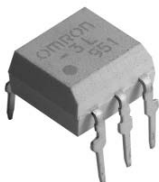
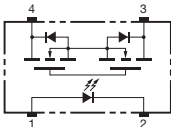
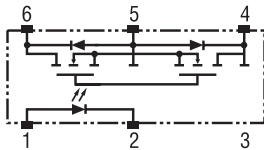
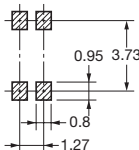
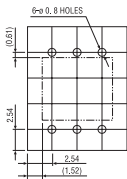
Technical Information – MOSFET Relays

Part Number (G3VM-)		-61A1	-351A	-353A	-353A1	-401A	-61D1	-351D	-353D	-353D1	-401D	
Style		Through-hole Device – 4 pin					Surface Mount Device – 4 pin					
												
Dimensions (L x W x H mm)		4.58 x 6.4 x 3.65					4.58 x 6.4 x 3.65					
Type		General Purpose					General Purpose					
Output	Load Voltage	60V	350V	350V	350V	400V	60V	350V	350V	350V	400V	
	Function	1a	1a	1b	1b	1a	1a	1a	1b	1b	1a	
	Cont. load current (connection A)	500mA	120mA	150mA	100mA	120mA	500mA	120mA	150mA	100mA	120mA	
	ON resistance	Typical	1 Ω	35 Ω	15 Ω	30 Ω	18 Ω	1 Ω	35 Ω	15 Ω	30 Ω	18 Ω
	Max.	2 Ω	50 Ω	25 Ω	50 Ω	35 Ω	2 Ω	50 Ω	25 Ω	50 Ω	35 Ω	
Input	LED forward current (max)	50 mA					50 mA					
	LED reverse voltage (max)	5V					5V					
	Trigger LED current	Typical	1.6mA	1mA	1mA	1mA	1mA	1.6mA	1mA	1mA	1mA	1mA
	Max.	3mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA	
Switching	Turn on Time	Typical	0.8ms	0.3ms	0.1ms	0.25ms	–	0.8ms	0.3ms	0.1ms	0.25ms	–
		Max.	2ms	1ms	1ms	0.5ms	1ms	2ms	1ms	1ms	0.5ms	1ms
	Turn off Time	Typical	0.1ms	0.1ms	1ms	0.5ms	–	0.1ms	0.1ms	1ms	0.5ms	–
		Max.	0.5ms	1ms	3ms	1ms	1ms	0.5ms	1ms	3ms	1ms	1ms
Dielectric Strength between I/O terminals		2,500 VAC					2,500 VAC					
Temperature	Operating	-40°C to 85°C					-40°C to 85°C					
	Storage	-55°C to 125°C					-55°C to 125°C					
Floating capacity between I/O terminals		0.8 pF					0.8 pF					
Insulation resistance		1,000 MΩ					1,000 MΩ					
Stick Quantity		100	100	100	100	100	100	100	100	100	100	
Reel Quantity (Tape & Reel)		–	–	–	–	–	1,500	1,500	1,500	1,500	1,500	
Terminal arrangement												
Mounting Holes												
Page		328	330	332	332	334	328	330	332	332	334	


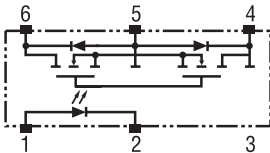
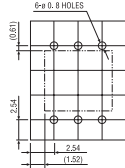
Technical Information – MOSFET Relays

Part Number (G3VM-)		-61G1	-81G1	-201G	-351G	-351GL	-353G	-353G1	-401G	-21GR	-21GR1	-41GR5	-41GR6	-61GR1	
Style		Small Outline Package – 4 pin													
															
Dimensions (L x W x H mm)		30.4 x 4.4 x 2.1													
Type		General Purpose								Special Purpose					
Output	Load Voltage	60V	80V	200V	350V	350V	350V	350V	400V	20 V	20 V	40 V	40 V	60 V	
	Function	1a	1a	1a	1a	1a	1b	1b	1a	1a	1a	1a	1a	1a	
	Cont. load current (connection A)	400 mA	350 mA	50 mA	110 mA	120 mA	120 mA	90 mA	120 mA	160 mA	300 mA	300 mA	120 mA	1,000 mA	
	ON resistance	Typical	1 Ω	1 Ω	40 Ω	35 Ω	15 Ω	15 Ω	30 Ω	17 Ω	5 Ω	1 Ω	1 Ω	10 Ω	0.32 Ω
		Max.	2 Ω	1.2 Ω	50 Ω	50 Ω	35 Ω	25 Ω	50 Ω	35 Ω	8 Ω	1.5 Ω	1.5 Ω	15 Ω	0.7 Ω
Input	LED forward current (max)	50 mA													
	LED reverse voltage (max)	5V													
	Trigger LED current	Typical	1.6mA	1mA	1mA	1mA	1mA	1mA	1mA	1mA	–	–	–	–	–
Max.		3mA	4mA	3mA	3mA	3mA	3mA	3mA	3mA	4mA	4mA	4mA	4mA	3mA	
Switching	Turn on Time	Typical	0.8ms	0.3ms	–	0.3ms	0.3ms	–	0.25ms	0.3ms	–	–	–	–	1.4ms
		Max.	2ms	1ms	1ms	1ms	1ms	1ms	1ms	1ms	0.5ms	0.5ms	0.5ms	0.5ms	3ms
	Turn off Time	Typical	0.1ms	0.1ms	–	1ms	0.1ms	–	0.5ms	0.1ms	–	–	–	–	0.6ms
		Max.	0.5ms	1ms	1ms	3ms	1ms	1ms	1ms	1ms	0.5ms	0.5ms	0.5ms	0.5ms	1ms
Dielectric Strength between I/O terminals		1,500 VAC													
Temperature	Operating	-40°C to 85°C								-20°C to 85°C					
	Storage	-55°C to 125°C								-40°C to 125°C					
Floating capacity between I/O terminals		0.8 pF													
Insulation resistance		1,000 MΩ													
Stick Quantity		100	100	100	100	100	100	100	100	100	100	100	100	100	
Reel Quantity (Tape & Reel)		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Terminal arrangement															
Mounting Holes															
Page		336	338	340	342	344	346	346	348	350	352	354	356	358	


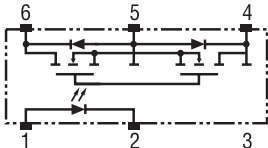
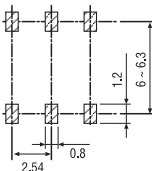
Technical Information – MOSFET Relays

Part Number (G3VM-)		-21LR	-21LR1	-41LR5	-41LR6	-61B1	-61BR	-351B	-353B	-353B1	-401B	-401BY	-601BY	
Style		Super Small Outline Package – 4 pin				Through Hole Device – 6 pin								
														
Dimensions (L x W x H mm)		1.7 x 4.2 x 1.8				7.12 x 6.4 x 3.65								
Type		Special Purpose				General Purpose						Telecom		
Output	Load Voltage	20 V	20 V	40 V	40 V	60 V	60 V	350 V	350 V	350 V	400 V	400 V	600 V	
	Function	1a	1a	1a	1a	1a	1a	1a	1b	1b	1a	1a hi isol	1a hi isol	
	Cont. load current (connection A)	160 mA	450 mA	300 mA	120 mA	500 mA	2,500 mA	120 mA	150 mA	100 mA	120 mA	120 mA	100 mA	
	ON resistance	Typical	5 Ω	0.8 Ω	1 Ω	10 Ω	1 Ω	0.065 Ω	25 Ω	15 Ω	27 Ω	17 Ω	17 Ω	25 Ω
	Max.	8 Ω	1.2 Ω	1.5 Ω	15 Ω	2 Ω	0.1 Ω	35 Ω	25 Ω	50 Ω	35 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50mA				50mA	30mA	50mA						
	LED reverse voltage (max)	5 V				5 V								
	Trigger LED current	Typical	–	–	–	–	1.6mA	1mA	1mA	1mA	1mA	1mA	–	1.6mA
	Max.	4mA	4mA	4mA	4mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA	5mA	
Switching	Turn on Time	Typical	–	–	–	–	0.8ms	1ms	0.3ms	0.1ms	0.25ms	0.3ms	0.3ms	0.2ms
		Max.	0.5ms	0.5ms	0.5ms	0.5ms	2ms	1.5ms	1ms	1ms	0.5ms	1ms	1ms	1.5ms
	Turn off Time	Typical	–	–	–	–	0.1ms	0.2ms	0.1ms	1ms	0.5ms	0.1ms	0.1ms	0.2ms
		Max.	0.5ms	0.5ms	0.5ms	0.5ms	0.5ms	0.4ms	1ms	3ms	1ms	1ms	1ms	1ms
Dielectric Strength between I/O terminals		1,500 VAC				2,500 VAC						5,000 VAC		
Temperature	Operating	-20°C to 85°C				-40°C to 85°C	-20°C to 85°C	-40°C to 85°C						
	Storage	-40°C to 125°C				-55°C to 125°C	-40°C to 125°C	-55°C to 125°C						
Floating capacity between I/O terminals		0.8 pF				0.8 pF								
Insulation resistance		1,000 MΩ				1,000 MΩ								
Stick Quantity		–	–	–	–	50	50	50	50	50	50	50	50	
Reel Quantity (Tape & Reel)		1,500	1,500	1,500	1,500	–	–	–	–	–	–	–	–	
Terminal arrangement														
Mounting Holes														
Page		360	362	364	360	368	370	372	374	374	376	378	380	


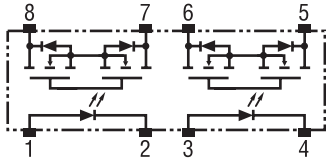
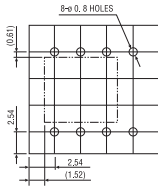
Technical Information – MOSFET Relays


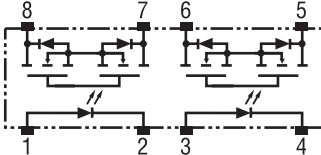
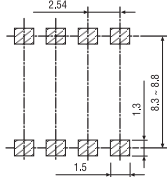
Part Number (G3VM-)		-61E1	-61ER	-351E	-353E	-353E1	-401E	-401EY	-601EY	
Style		Surface Mount Device – 6 pin								
										
Dimensions (L x W x H mm)		7.12 x 6.4 x 3.65								
Type		General Purpose						Telecom		
Output	Load Voltage	60 V	60 V	350 V	350 V	350 V	400 V	400 V	600 V	
	Function	1a	1a	1a	1b	1b	1a	1a hi isol	1a hi isol	
	Cont. load current (connection A)	500 mA	2,500 mA	120 mA	150 mA	100 mA	120 mA	120 mA	100 mA	
	ON resistance	Typical	1 Ω	0.065 Ω	25 Ω	15 Ω	27 Ω	17 Ω	17 Ω	25 Ω
		Max.	2 Ω	0.1 Ω	35 Ω	25 Ω	50 Ω	35 Ω	35 Ω	
Input	LED forward current (max)	50mA	30mA	50mA						
	LED reverse voltage (max)	5 V								
	Trigger LED current	Typical	1.6mA	1mA	1mA	1mA	1mA	1mA	–	1.6mA
		Max.	3mA	3mA	3mA	3mA	3mA	3mA	3mA	5mA
Switching	Turn on Time	Typical	0.8ms	1ms	0.3ms	0.1ms	0.25ms	0.3ms	0.3ms	0.2ms
		Max.	2ms	1.5ms	1ms	1ms	0.5ms	1ms	1ms	1.5ms
	Turn off Time	Typical	0.1ms	0.2ms	0.1ms	1ms	0.5ms	0.1ms	0.1ms	0.2ms
		Max.	0.5ms	0.4ms	1ms	3ms	1ms	1ms	1ms	1ms
Dielectric Strength between I/O terminals		2,500 VAC						5,000 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								
Stick Quantity		50	50	50	50	50	50	50	50	
Reel Quantity (Tape & Reel)		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
Terminal arrangement										
Mounting Holes										
Page		368	370	372	374	374	376	378	381	

Technical Information – MOSFET Relays


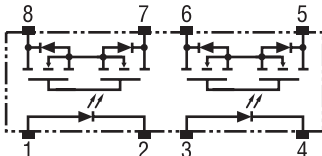
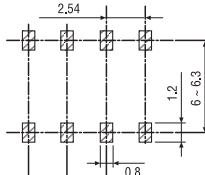
Part Number (G3VM-)		-61H1	-81HR	-201H1	-351H	-353H	-353H1	-401H	
Style		Small Outline Package – 6 pin							
									
Dimensions (L x W x H mm)		6.3 x 4.4 x 2.1							
Type		General Purpose	Special Purpose	General Purpose					
Output	Load Voltage	60 V	80V	200 V	350 V	350 V	350 V	400 V	
	Function	1a	1a	1a	1a	1b	2b	1a	
	Cont. load current (connection A)		400 mA	1,250 mA	200 mA	110 mA	120 mA	90 mA	120 mA
	ON resistance	Typical	1 Ω	2 Ω	5 Ω	25 Ω	15 Ω	27 Ω	17 Ω
		Max.	2 Ω	4 Ω	8 Ω	35 Ω	25 Ω	50 Ω	35 Ω
Input	LED forward current (max)		50 mA						
	LED reverse voltage (max)		5 V						
	Trigger LED current	Typical	1.6mA	2mA	1mA	1mA	1mA	1mA	1mA
		Max.	3mA	5mA	3mA	3mA	3mA	3mA	3mA
Switching	Turn on Time	Typical	0.8ms	2ms	0.6ms	0.3ms	–	0.25ms	0.3ms
		Max.	2ms	3ms	1.5ms	1ms	1ms	0.5ms	1ms
	Turn off Time	Typical	0.1ms	0.7ms	0.1ms	0.1ms	–	0.5ms	0.1ms
		Max.	0.5ms	1ms	1ms	1ms	3ms	1ms	1ms
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							
Stick Quantity		75	75	75	75	75	75	75	
Reel Quantity (Tape & Reel)		2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Terminal arrangement									
Mounting Holes									
Page		382	384	386	388	390	390	392	

Technical Information – MOSFET Relays

Part Number (G3VM-)		-22CO	-61CR	-62C1	-352C	-354C	-354C1	-355C	-355CR	-402C	
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								
Output	Load Voltage	20 V	60 V	60 V	350 V	350 V	350 V	350 V	350 V	400 V	
	Function	2a	1a	2a	2a	2b	2b	1c	1c	2a	
	Cont. load current (connection A)		150 mA	500 mA	500 mA	120 mA	150 mA	100 mA	100 mA	120 mA	120 mA
	ON resistance	Typical	2 Ω	–	1 Ω	25 Ω	15 Ω	30 Ω	40 Ω	15 Ω	18 Ω
		Max.	4 Ω	0.12 Ω	2 Ω	50 Ω	25 Ω	50 Ω	50 Ω	25 Ω	35 Ω
Input	LED forward current (max)		50 mA								
	LED reverse voltage (max)		6 V			5 V					
	Trigger LED current	Typical	1.15mA	–	1.6mA	1mA	1mA	1mA	1mA	1mA	1mA
		Max.	5mA	5mA	3mA	3mA	3mA	3mA	3mA	3mA	
Switching	Turn on Time	Typical	–	–	0.8ms	0.3ms	0.1ms	0.25ms	0.3ms	–	–
		Max.	1ms	5ms	2ms	1ms	1ms	0.5ms	1ms	1ms	1ms
	Turn off Time	Typical	–	–	0.1ms	0.1ms	1ms	0.5ms	0.15ms	–	–
		Max.	1ms	5ms	0.5ms	1ms	3ms	1ms	1ms	1ms	1ms
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									
Stick Quantity		50	50	50	50	50	50	50	50	50	
Reel Quantity (Tape & Reel)		–	–	–	–	–	–	–	–	–	
Terminal arrangement											
Mounting Holes											
Page		394	396	398	400	402	402	404	404	406	

Part Number (G3VM-)		-22FO	-61FR	-62F1	-352F	-354F	-354F1	-355F	-355FR	-402F	
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						
Output	Load Voltage	20 V	60 V	60 V	350 V	350 V	350 V	350 V	350 V	400 V	
	Function	2a	1a	2a	2a	2b	2b	1c	1c	2a	
	Cont. load current (connection A)	150 mA	500 mA	500 mA	120 mA	150 mA	100 mA	100 mA	120 mA	120 mA	
	ON resistance	Typical	2 Ω	–	1 Ω	25 Ω	15 Ω	30 Ω	40 Ω	15 Ω	18 Ω
		Max.	4 Ω	0.12 Ω	2 Ω	50 Ω	25 Ω	50 Ω	50 Ω	25 Ω	35 Ω
Input	LED forward current (max)		50 mA								
	LED reverse voltage (max)		6 V			5 V					
	Trigger LED current	Typical	1.15mA	–	1.6mA	1mA	1mA	1mA	1mA	1mA	1mA
		Max.	5mA	5mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA
Switching	Turn on Time	Typical	–	–	0.8ms	0.3ms	0.1ms	0.25ms	0.3ms	–	–
		Max.	1ms	5ms	2ms	1ms	1ms	0.5ms	1ms	1ms	1ms
	Turn off Time	Typical	–	–	0.1ms	0.1ms	1ms	0.5ms	0.15ms	–	–
		Max.	1ms	5ms	0.5ms	1ms	3ms	1ms	1ms	1ms	1ms
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 M Ω									
Stick Quantity		50	50	50	50	50	50	50	50	50	
Reel Quantity (Tape & Reel)		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
Terminal arrangement											
Mounting Holes											
Page		394	396	398	400	402	402	404	404	406	

Technical Information – MOSFET Relays

Part Number (G3VM-)		-62J1	-202J1	-352J	-354J	-354J1	-355J	-355JR	-402J	
Style		Small Outline Package – 8 pin								
										
Dimensions (L x W x H mm)		9.4 x 4.4 x 2.1								
Type		General Purpose								
Output	Load Voltage	60 V	200 V	350 V	350 V	350 V	350 V	350 V	400 V	
	Function	2a	2a	2a	2b	2b	1c	1c	2a	
	Cont. load current (connection A)	400 mA	200 mA	110 mA	120 mA	90 mA	90 mA	90 mA	120 mA	
	ON resistance	Typical	1 Ω	5 Ω	35 Ω	15 Ω	30 Ω	40 Ω	15 Ω	17 Ω
		Max.	2 Ω	8 Ω	50 Ω	25 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	1.6mA	1mA	1mA	1mA	1mA	1mA	1mA	1mA
		Max.	3mA	3mA	3mA	3mA	3mA	3mA	3mA	3mA
Switching	Turn on Time	Typical	0.8ms	0.6ms	0.3ms	–	0.25ms	0.3ms	–	0.3ms
		Max.	2ms	1.5ms	1ms	1ms	0.5ms	1ms	1ms	1ms
	Turn off Time	Typical	0.1ms	0.1ms	0.1ms	–	0.5ms	0.15ms	–	0.1ms
		Max.	0.5ms	1ms	1ms	3ms	1ms	1ms	3ms	1ms
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								
Stick Quantity		50	50	50	50	50	50	50	50	
Reel Quantity (Tape & Reel)		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Terminal arrangement										
Mounting Holes										
Page		408	410	412	414	414	416	416	418	

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.

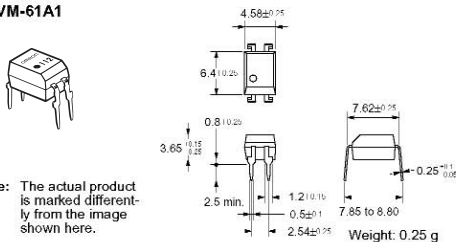
List of Models

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)		1,500

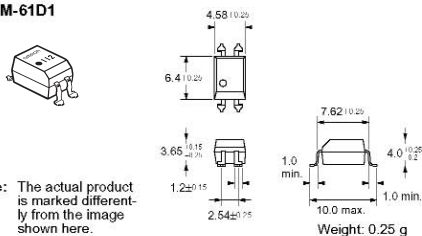
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61A1

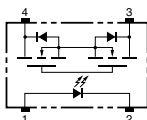


G3VM-61D1

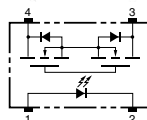


Terminal Arrangement/Internal Connections (Top View)

G3VM-61A1

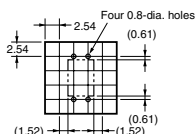


G3VM-61D1



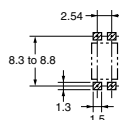
PCB Dimensions (Bottom View)

G3VM-61A1



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-61D1



Absolute Maximum Ratings (Ta = 25°C)

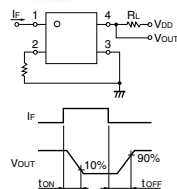
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_{ON}/^{\circ}\text{C}$	-0.5	mA/ $^{\circ}\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^{\circ}\text{C}$
Output	Output dielectric strength	V_{OUT}	60	V
	Continuous load current	I_O	500	mA
	ON current reduction rate	$\Delta I_{ON}/^{\circ}\text{C}$	-5.0	mA/ $^{\circ}\text{C}$
	Connection temperature	T_J	125	$^{\circ}\text{C}$
	Dielectric strength between input and output (See note 1.)	$V_{L(1)}$	2,500	Vrms
Operating temperature				T_a
Storage temperature				T_{stg}
Soldering temperature (10 s)				T_{sld}

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_1	---	30	---	pF
	Trigger LED forward current	I_{F1}	---	1.6	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	1	2	Ω
	Current leakage when the relay is open	I_{1-2AK}	---	---	1.0	μA
Capacity between I/O terminals		C_{1O}	---	0.6	---	pF
Insulation resistance		R_{1O}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	0.8	2.0	ms
Turn-OFF time		t_{OFF}	---	0.1	0.5	ms

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



Recommended Operating Conditions

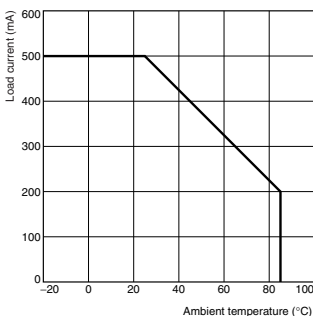
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(1)}$	---	---	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	$^{\circ}\text{C}$

Engineering Data

Load Current vs. Ambient Temperature

G3VM-61A1(D1)



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.

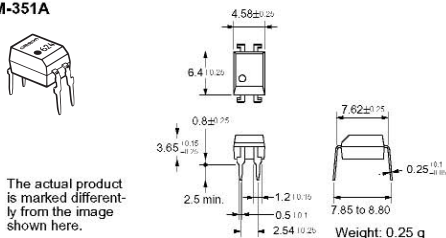
■ List of Models

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)	---	1,500

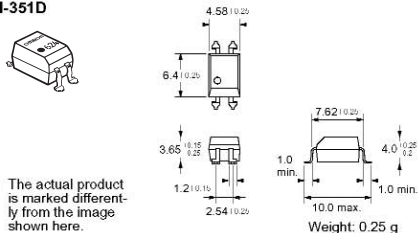
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-351A

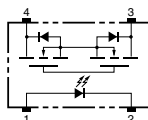


G3VM-351D

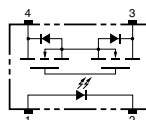


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-351A

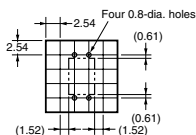


G3VM-351D



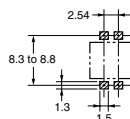
■ PCB Dimensions (Bottom View)

G3VM-351A



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

G3VM-351D



Absolute Maximum Ratings (Ta = 25°C)

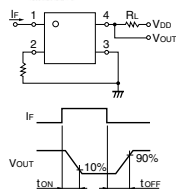
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{H(O)}$	2,500	Vrms
	Operating temperature	T_a	-40 to +85	°C
	Storage temperature	T_{stg}	-55 to +125	°C
	Soldering temperature (10 s)	---	260	°C

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_I	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	I_{FI}	---	1	3	mA	$I_O = 120 \text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	---	25	35	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}, t < 1 \text{ s}$
			---	35	50	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
	Current leakage when the relay is open	I_{FAK}	---	---	1.0	μA	$V_{OFF} = 350 \text{ V}$
	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	$V_{IO} = 500 \text{ VDC}, \text{RoH} < 80\%$
	Turn-ON time	t_{ON}	---	0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \text{ Ω}, V_{(H)} = 20 \text{ V}$ (See note 2.)
	Turn-OFF time	t_{OFF}	---	0.1	1.0	ms	

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



Recommended Operating Conditions

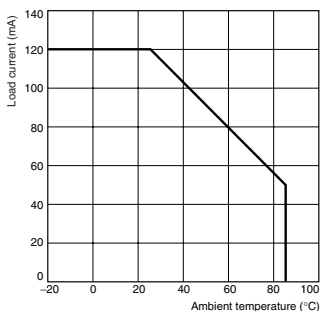
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	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.
General-purpose Series Added.

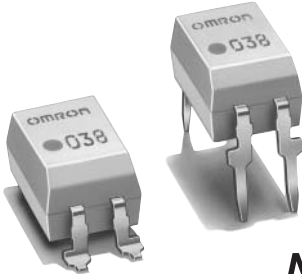
- Switches minute analog signals.
- Switching AC and DC.
- General-purpose series (high ON-resistance) added.

■ Application Examples

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

■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NC	PCB terminals	350 VAC	G3VM-353A	100	—
	Surface-mounting terminals		G3VM-353A1		
			G3VM-353D		
			G3VM-353D1		
			G3VM-353D(TR)	—	1,500
			G3VM-353D1(TR)		



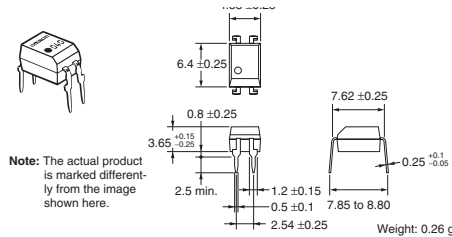
NEW

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

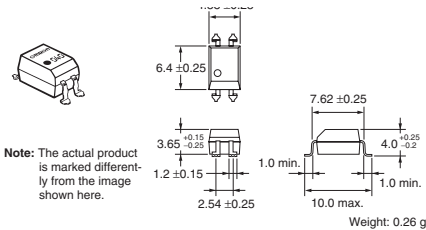
■ Dimensions

Note: All units are in millimetres unless otherwise indicated.

G3VM-353A/A1

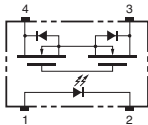


G3VM-353D/D1

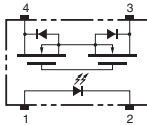


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-353A/A1

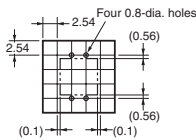


G3VM-353D/D1



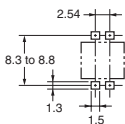
■ PCB Dimensions (Bottom View)

G3VM-353A/A1



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

G3VM-353D/D1



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	ΔI _F /°C	-0.5	mA/°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 (100)	mA
	ON current reduction rate	ΔI _{ON} /°C	-1.5 (-1)	mA/°C
	Connection temperature	T _J	125	°C
	Dielectric strength between input and output (See note 1.)	V _{I/O}	2,500	Vrms
Operating temperature		T _a	-40 to 85	°C
Storage temperature		T _{stg}	-55 to 125	°C
Soldering temperature (10 s)		---	260	°C

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.

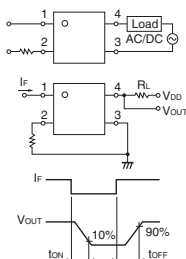
Values inside parentheses () are for G3VM-353A1/D1.

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
	Reverse current	I _R	---	---	10	μA
	Capacity between terminals	C _{IT}	---	30	---	pF
	Trigger LED forward current	I _{FT}	---	1	3	mA
Output	Maximum resistance with output ON	R _{ON}	---	15 (30)	25 (50)	Ω
	Current leakage when the relay is open	I _{LEAK}	---	---	1.0	μA
	Capacity between I/O terminals	C _{I/O}	---	0.8	---	pF
Insulation resistance		R _{I/O}	1,000	---	---	MΩ
Turn-ON time		t _{ON}	---	0.1 (0.25)	1.0 (0.5)	ms
Turn-OFF time		t _{OFF}	---	1.0 (0.5)	3.0 (1)	ms

Values inside parentheses () are for G3VM-353A1/D1.

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.

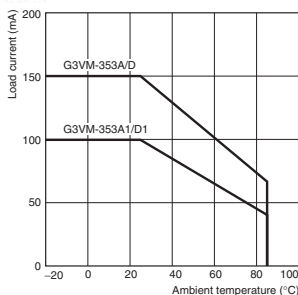
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V _{DD}	---	---	280	V
Operating LED forward current	I _F	5	---	25	mA
Continuous load current	I _O	---	---	150 (100)	mA
Operating temperature	T _a	-20	---	65	°C

Values inside parentheses () are for G3VM-353A1/D1.

Engineering Data

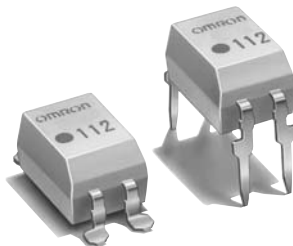
Load Current vs. Ambient Temperature

G3VM-353A/D
G3VM-353A1/D1



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.

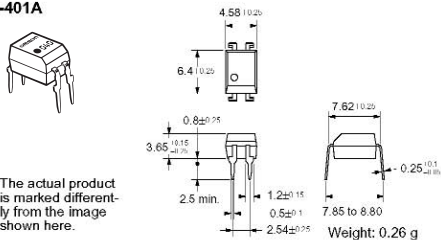
List of Models

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)	---	1,500

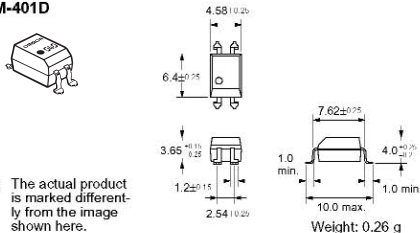
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-401A

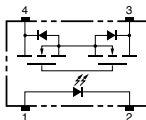


G3VM-401D

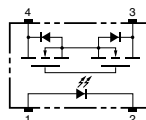


Terminal Arrangement/Internal Connections (Top View)

G3VM-401A

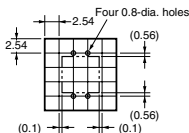


G3VM-401D



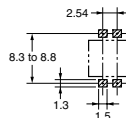
PCB Dimensions (Bottom View)

G3VM-401A



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401D



Absolute Maximum Ratings (Ta = 25°C)

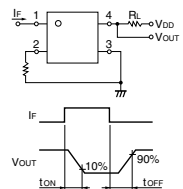
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(K)}$	2,500	Vrms
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
	Reverse current	I_R	—	—	10	μA
	Capacity between terminals	C_I	—	30	—	pF
	Trigger LED forward current	I_{F-I}	—	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	—	18	35	Ω
	Current leakage when the relay is open	I_{I-FAK}	—	—	1.0	μA
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	—	—	MΩ	$V_{I-O} = 500$ VDC, $RoH \leq 60\%$
Turn-ON time	t_{ON}	—	—	1.0	ms	$I_F = 5$ mA, $R_I = 200$ Ω, $V_{(H)} = 20$ V (See note 2.)
Turn-OFF time	t_{OFF}	—	—	1.0	ms	

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



Recommended Operating Conditions

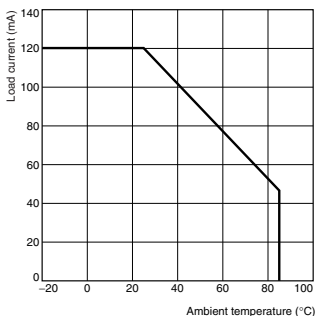
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	—	—	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

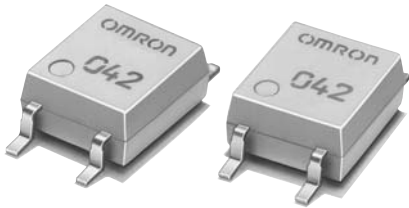
Load Current vs. Ambient Temperature

G3VM-401A(D)



New 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

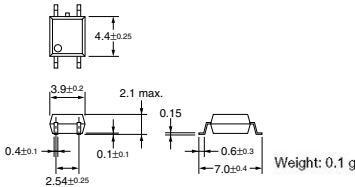
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61G1

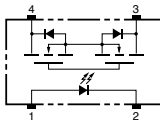


Note: The actual product is marked differently from the image shown here.



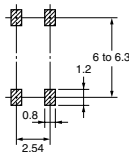
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61G1



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

G3VM-61G1



Absolute Maximum Ratings (Ta = 25°C)

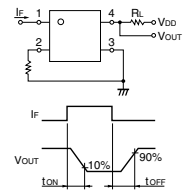
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{i-o}	1,500	Vrms
Operating temperature		T_a	-40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_i	---	30	---	pF
	Trigger LED forward current	I_{F1}	---	1.6	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	1	2	Ω
	Current leakage when the relay is open	I_{i-oAK}	---	---	1.0	μA
Capacity between I/O terminals		C_{i-o}	---	0.8	---	pF
Insulation resistance		R_{i-o}	1,000	---	---	MΩ
Turn-ON time		tON	---	0.8	2.0	ms
Turn-OFF time		tOFF	---	0.1	0.5	ms

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



Recommended Operating Conditions

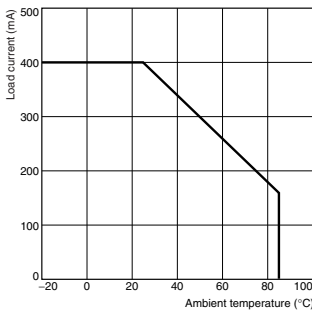
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(i-o)}$	---	---	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	---	65	°C

Engineering Data

Load Current vs. Ambient Temperature

G3VM-61G1

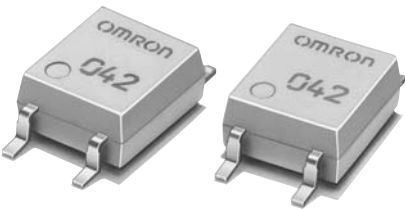


MOSFET Relay – G3VM-81G1

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

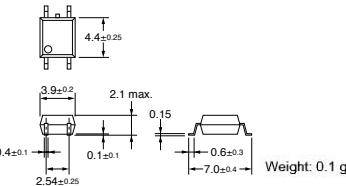
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-81G1

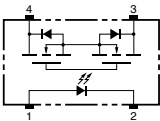


Note: The actual product is marked differently from the image shown here.



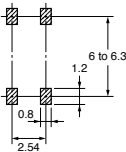
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-81G1



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

G3VM-81G1



Absolute Maximum Ratings (Ta = 25°C)

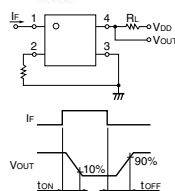
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OUT}	80	V
	Continuous load current	I_O	350	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.5	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(L-O)}$	1,500	Vrms
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{F-I}	---	1.0	4.0	mA
Output	Maximum resistance with output ON	R_{ON}	---	1.0	1.2	Ω
	Current leakage when the relay is open	I_{I-OK}	---	0.2	1.0	nA
Capacity between I/O terminals	C_{I-O}	---	0.6	---	---	pF
Insulation resistance	R_{I-O}	1,000	---	---	---	MΩ
Turn-ON time	t_{ON}	---	0.3	0.5	---	ms
Turn-OFF time	t_{OFF}	---	0.3	0.5	---	ms

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



Recommended Operating Conditions

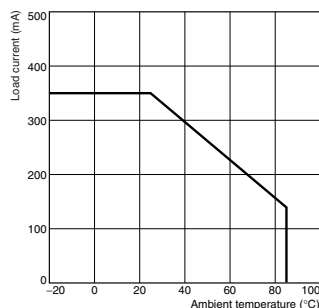
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(O)}$	---	---	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

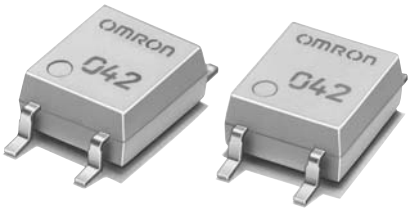
Load Current vs. Ambient Temperature

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

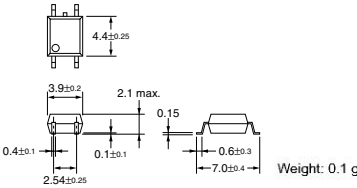
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-201G

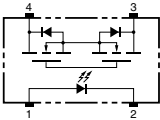


Note: The actual product is marked differently from the image shown here.



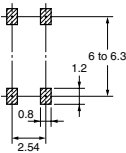
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-201G



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

G3VM-201G



Absolute Maximum Ratings (Ta = 25°C)

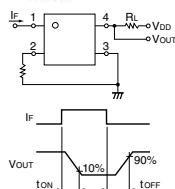
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OFF}	200	V
	Continuous load current	I_O	50	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{IC}	1,500	Vrms
Operating temperature		T_a	-40 to +85	°C
Storage temperature		T_{stg}	-55 to +100	°C
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_1	---	30	---	pF
	Trigger LED forward current	I_{FI}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	30	50	Ω
	Current leakage when the relay is open	I_{LOAK}	---	---	0.01	μA
Capacity between I/O terminals		C_{IO}	---	0.8	---	pF
Insulation resistance		R_{IO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	0.04	0.1	ms
Turn-OFF time		t_{OFF}	---	0.1	0.2	ms

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



Recommended Operating Conditions

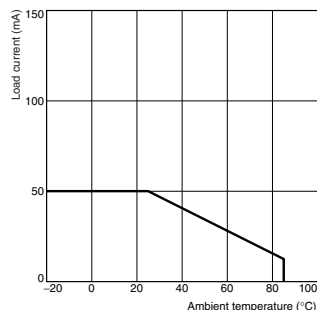
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	180	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

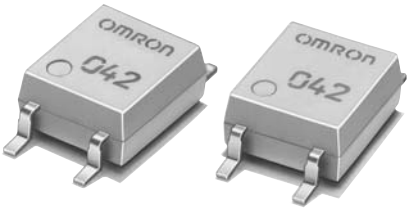
Load Current vs. Ambient Temperature

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

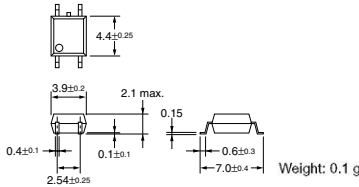
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-351G

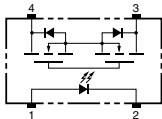


Note: The actual product is marked differently from the image shown here.



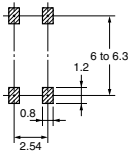
■ Terminal Arrangement/Internal Connections (Top View)

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
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OFR}	350	V
	Continuous load current	I_O	110	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.1	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{IC1}	1,500	Vrms
Operating temperature		T_a	-40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
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_I	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	I_{F1}	---	1	3	mA	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	---	25	35	Ω	$I_F = 5 \text{ mA}$, $I_O = 110 \text{ mA}$, $t < 1 \text{ s}$
			---	35	50	Ω	$I_F = 5 \text{ mA}$, $I_O = 110 \text{ mA}$
	Current leakage when the relay is open	I_{I-FAK}	---	---	1.0	μA	$V_{(O)T} = 350 \text{ V}$
	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	---	---	M Ω	$V_{I/O} = 500 \text{ VDC}$, $\text{RoH} < 80\%$	
Turn-ON time	t_{ON}	---	0.3	1.0	ms	$I_F = 5 \text{ mA}$, $R_L = 200 \Omega$	
Turn-OFF time	t_{OFF}	---	0.1	1.0	ms	$V_{(H)} = 20 \text{ V}$ (See note 2.)	

Recommended Operating Conditions

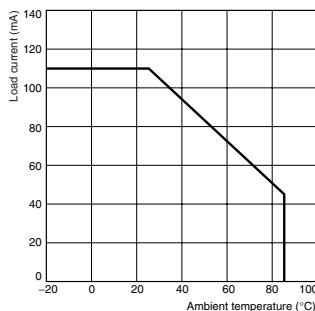
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{III}	---	---	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	---	85	°C

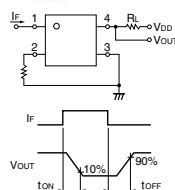
Engineering Data

Load Current vs. Ambient Temperature

G3VM-351G

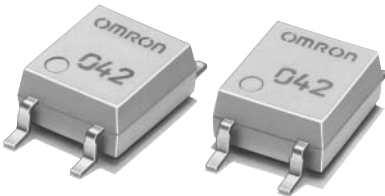


Note: 2. Turn-ON and Turn-OFF Times



MOSFET Relay with 350-V Load Voltage and SOP Current Limit

- G3VM-351G Current Limit Relays.
- Limit current of 150 to 300 mA.



NEW

■ Application Examples

- Electronic automatic exchange systems
- Multi-functional telephones
- Cordless telephones
- 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	Current limit	Minimum packaging unit	
					Number per stick	Taping quantity
SPST-NO	Surface-mounting terminals	350 VAC	G3VM-351GL	Yes	100	—
			G3VM-351GL(TR)		—	2,500

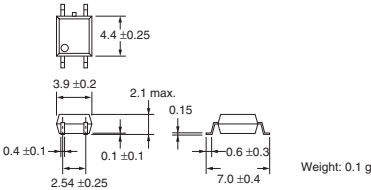
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-351GL

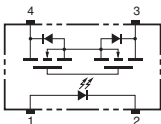


Note: The actual product is marked differently from the image shown here.



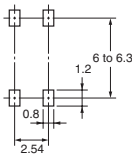
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-351GL



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

G3VM-351GL



Absolute Maximum Ratings (Ta = 25°C)

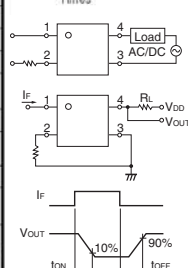
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	6	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{IO}	1,500	Vrms
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_T	---	30	---	pF
	Trigger LED forward current	I_{FT}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	15	35	Ω
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA
Limit current	I_{LIM}	150	---	300	mA	$I_F = 5 \text{ mA}$, $V_{DD} = 5 \text{ V}$, $t = 5 \text{ ms}$
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	$V_{IO} = 500 \text{ V DC}$, $R_{OH} \leq 60\%$
Turn-ON time	t_{ON}	---	0.3	1.0	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	1.0	ms	

Note 2. Turn-ON and Turn-OFF Times



Recommended Operating Conditions

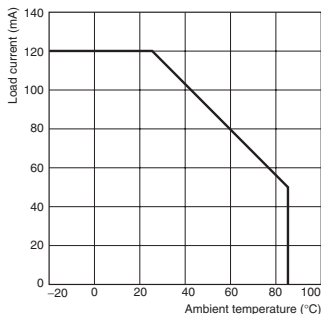
Use the G3VM under the following conditions so that the Relay will operate properly.

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

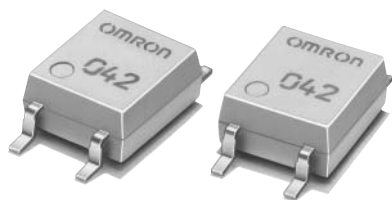
G3VM-351GL



MOSFET Relay – G3VM-353G/G1

Analog-switching MOSFET Relay with SPST-NC (Single-pole, Single-throw, Normally Closed) Contacts. General-purpose Series Added.

- New models with SPST-NC contacts and a 4-pin SOP package now included in 350-V load voltage series.
- Continuous load current of 120 mA (90 mA).
- Dielectric strength of 1,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.



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	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NC	PCB terminals	350 VAC	G3VM-353A	100	—
	Surface-mounting terminals		G3VM-353A1		
			G3VM-353D		
			G3VM-353D1		
			G3VM-353D(TR)	—	1,500
		G3VM-353D1(TR)			

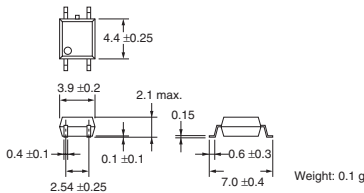
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-353G/G1

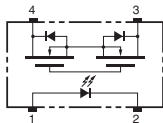


Note: The actual product is marked differently from the image shown here.



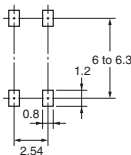
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-353G/G1



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

G3VM-353G/G1



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
	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 (90)	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2 (-0.9)	mA/°C
Dielectric strength between input and output (See note 1.)		$V_{I/O}$	1,500	Vrms
Operating temperature		T_a	-40 to 85	°C
Storage temperature		T_{stg}	-55 to 125	°C
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.

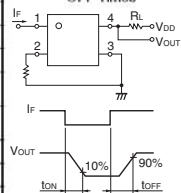
Values inside parentheses () are for G3VM-353G1.

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
	Reverse current	I_R	---	10	μA	$I_F = 10 \text{ mA}$
	Capacity between terminals	C_T	---	30	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	I_{FG}	---	1	mA	$I_{OFF} = 10 \text{ μA}$
Output	Maximum resistance with output ON	R_{ON}	---	15 (30)	Ω	$I_O = 120 \text{ mA}$
	Current leakage when the relay is open	I_{LEAK}	---	1.0	μA	$V_{OFF} = 350 \text{ V}, I_F = 5 \text{ mA}$
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	$V_{I/O} = 500 \text{ V DC}, R_{OH} \leq 60\%$
Turn-ON time		t_{ON}	---	(0.25)	ms	$I_F = 5 \text{ mA}, R_L = 200 \text{ Ω}$
Turn-OFF time		t_{OFF}	---	(0.5)	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)

Values inside parentheses () are for G3VM-353G1.

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.

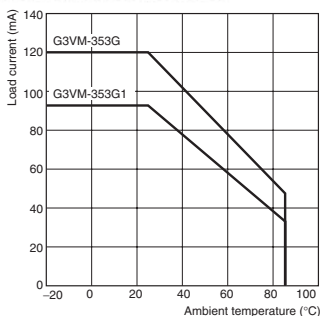
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	200	V
Operating LED forward current	I_F	5	---	25	mA
Continuous load current	I_O	---	---	120 (90)	mA
Operating temperature	T_a	-20	---	65	°C

Values inside parentheses () are for G3VM-353G1.

Engineering Data

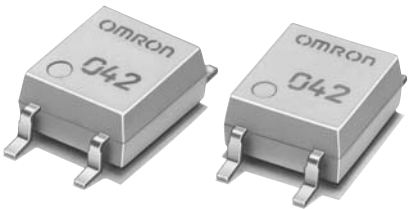
Load Current vs. Ambient Temperature

G3VM-353G/G1



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

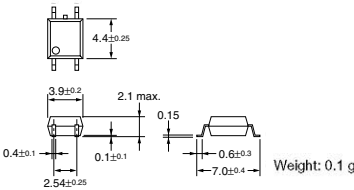
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-401G

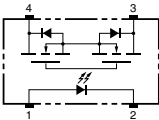


Note: The actual product is marked differently from the image shown here.



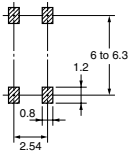
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-401G



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

G3VM-401G



Absolute Maximum Ratings (Ta = 25°C)

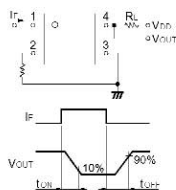
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{RP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OUT}	400	V
	Continuous load current	I_O	120	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C
	Dielectric strength between input and output (See note 1.)	V_{IO}	1,500	Vrms
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_i	---	30	---	pF
	Trigger LED forward current	I_{F1}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	17	35	Ω
	Current leakage when the relay is open	I_{LAK}	---	---	1.0	μA
Capacity between I/O terminals		C_{IO}	---	0.8	---	pF
Insulation resistance		R_{IO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	0.3	1	ms
Turn-OFF time		t_{OFF}	---	0.1	1	ms

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



Recommended Operating Conditions

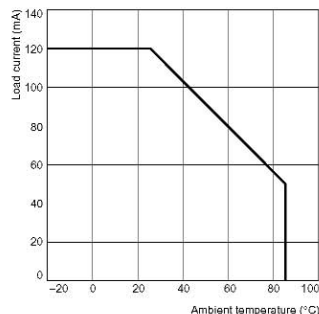
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{IO}	---	---	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

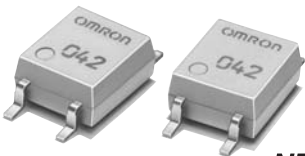
Load Current vs. Ambient Temperature

G3VM-401G



New MOSFET Relay with Low Output Capacitance and ON Resistance ($C_{xR} = 5\text{pF} \bullet \Omega$) 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.

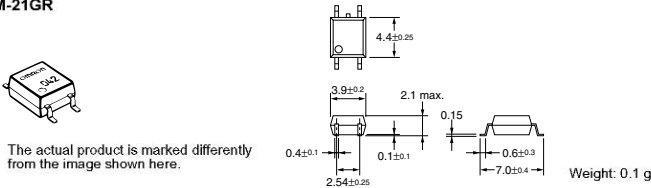
■ List of Models

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

■ Dimensions

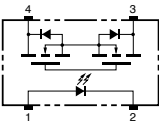
Note: All units are in millimeters unless otherwise indicated.

G3VM-21GR



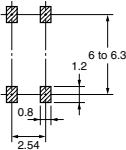
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21GR



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

G3VM-21GR



Absolute Maximum Ratings (Ta = 25°C)

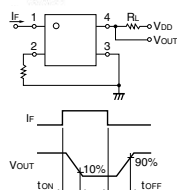
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OUT}	20	V
	Continuous load current	I_O	160	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.6	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(L-O)}$	1,500	Vrms
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-40 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	5	8	Ω
	Current leakage when the relay is open	I_{I-FAK}	---	---	1.0	nA
	Capacity between terminals	C_{OUT}	---	1.0	2.5	pF
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF
Insulation resistance		R_{I-O}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	0.5	---	ms
Turn-OFF time		t_{OFF}	---	0.5	---	ms

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



Recommended Operating Conditions

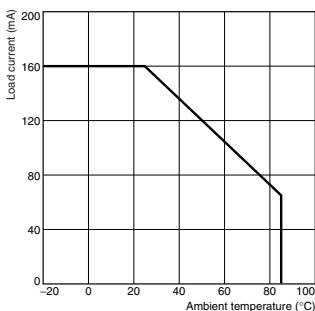
Use the G3VM under the following conditions so that the Relay will operate properly.

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

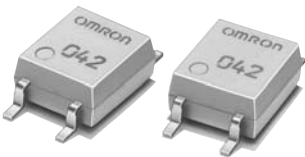
Load Current vs. Ambient Temperature

G3VM-21GR



New MOSFET Relay with Low Output Capacitance and ON Resistance ($C_xR = 5\text{pF}\cdot\Omega$) 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

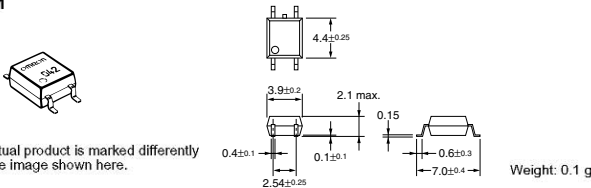
■ List of Models

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

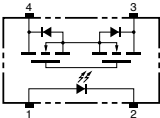
Note: All units are in millimeters unless otherwise indicated.

G3VM-21GR1



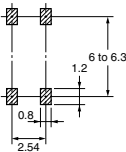
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21GR1



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

G3VM-21GR1



Absolute Maximum Ratings (Ta = 25°C)

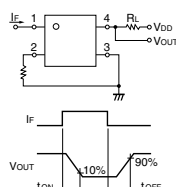
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OIT}	20	V
	Continuous load current	I_O	300	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.0	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{ICD}	1,500	Vrms
				AC for 1 min
Operating temperature				T_a
				-20 to +85 °C
Storage temperature				T_{stg}
				-55 to +125 °C
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	1	1.5	Ω
	Current leakage when the relay is open	I_{I+AK}	---	---	1.0	nA
	Capacity between terminals	C_{O+}	---	5.0	12.0	pF
	Capacity between I/O terminals	C_{ICD}	---	0.8	---	pF
Insulation resistance		R_{ICD}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	---	0.5	ms
Turn-OFF time		t_{OFF}	---	---	0.5	ms

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



Recommended Operating Conditions

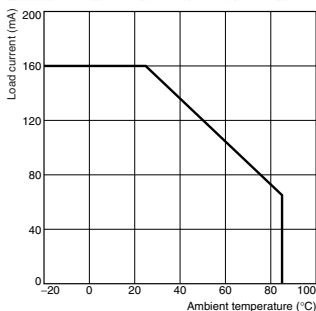
Use the G3VM under the following conditions so that the Relay will operate properly.

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

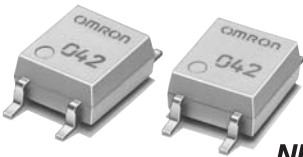
Load Current vs. Ambient Temperature

G3VM-21GR1



New MOSFET Relay with Low Output Capacitance and ON Resistance ($C_xR = 10\text{pF} \cdot \Omega$) in a 40-V Load Voltage Model

- ON resistance of $1\ \Omega$ (typical) suppresses output signal attenuation.
- Leakage current of $1.0\ \text{nA}$ 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

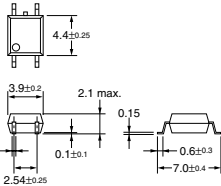
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41GR5



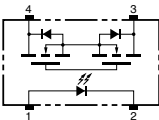
Note: The actual product is marked differently from the image shown here.



Weight: 0.1 g

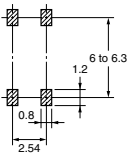
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41GR5



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

G3VM-41GR5



■ Absolute Maximum Ratings (Ta = 25°C)

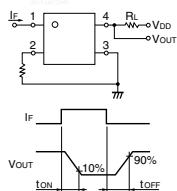
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OUT}	40	V
	Continuous load current	I_O	300	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-3.0	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{IKO}	1,500	Vrms
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-40 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FT}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	1.0	1.5	Ω
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	nA
	Capacity between terminals	C_{OFF}	---	10.0	14.0	pF
	Capacity between I/O terminals	C_{IO}	---	0.8	---	pF
Insulation resistance		R_{IKO}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	0.5	ms	
Turn-OFF time		t_{OFF}	---	0.5	ms	

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



■ Recommended Operating Conditions

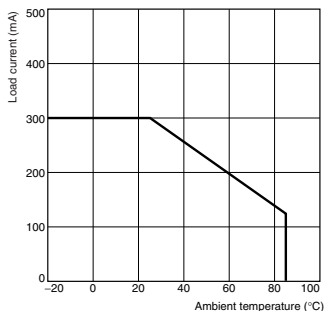
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{IKO}	---	---	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

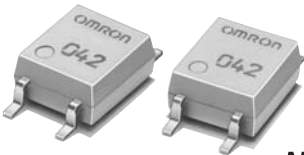
Load Current vs. Ambient Temperature

G3VM-41GR5



New MOSFET Relay with Low Output Capacitance and ON Resistance ($C_xR = 10\text{pF} \cdot \Omega$) 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

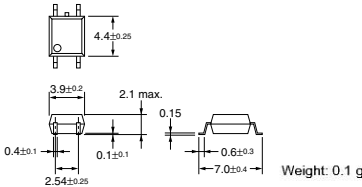
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41GR6

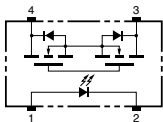


Note: The actual product is marked differently from the image shown here.



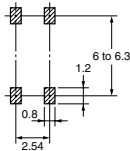
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41GR6



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

G3VM-41GR6



Absolute Maximum Ratings (Ta = 25°C)

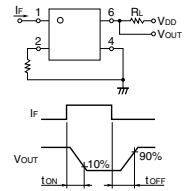
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{RP}	1	A
	LED forward current reduction rate	$\Delta I_{ON}/^{\circ}\text{C}$	0.5	mA/ $^{\circ}\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^{\circ}\text{C}$
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/ $^{\circ}\text{C}$
	Connection temperature	T_J	125	$^{\circ}\text{C}$
	Dielectric strength between input and output (See note 1.)	V_{LO}	1,500	Vrms AC for 1 min
Operating temperature		T_a	-20 to +85	$^{\circ}\text{C}$
Storage temperature		T_{stg}	-55 to +125	$^{\circ}\text{C}$
Soldering temperature (10 s)		---	260	$^{\circ}\text{C}$

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{F1}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	10	15	Ω
	Current leakage when the relay is open	I_{FAK}	---	---	1.0	nA
	Capacity between terminals	C_{OFF}	---	1.0	2.0	pF
	Capacity between I/O terminals	C_{LO}	---	0.8	---	pF
Insulation resistance		R_{LO}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	---	0.5	ms
Turn-OFF time		t_{OFF}	---	---	0.5	ms

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



Recommended Operating Conditions

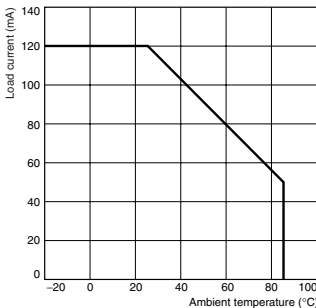
Use the G3VM under the following conditions so that the Relay will operate properly.

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_a	25	---	60	$^{\circ}\text{C}$

Engineering Data

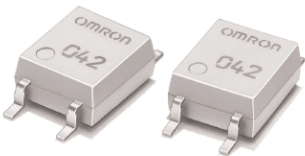
Load Current vs. Ambient Temperature

G3VM-41GR6



New MOSFET 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

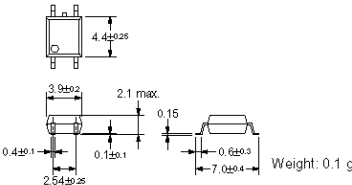
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61GR1

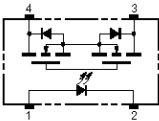


Note: The actual product is marked differently from the image shown here.



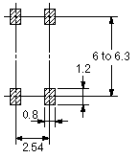
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61GR1



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

G3VM-61GR1



Absolute Maximum Ratings (Ta = 25°C)

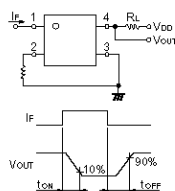
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	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
Storage temperature				T_{stg} 55 to +125 °C
Soldering temperature (10 s)				260 °C

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
	Reverse current	I_R	---	---	10	µA
	Capacity between terminals	C_T	---	15	---	pF
	Trigger LED forward current	I_{FT}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	0.7	---	Ω
	Current leakage when the relay is open	I_{LEAK}	0.25	0.2	100	nA
Capacity between I/O terminals		C_{LO}	---	0.8	---	pF
Insulation resistance		R_{LO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	1.4	3.0	ms
Turn-OFF time		t_{OFF}	---	0.6	1.0	ms

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



Recommended Operating Conditions

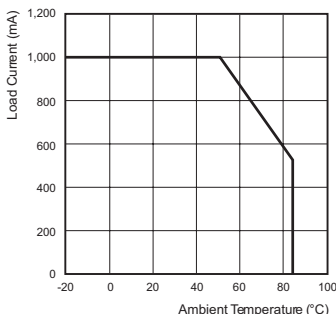
Use the G3VM under the following conditions so that the Relay will operate properly.

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



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

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



NEW  Approval pending

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

■ Application Examples

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

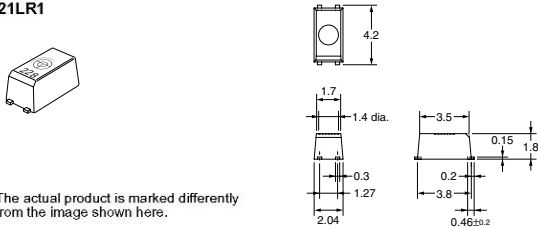
■ List of Models

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

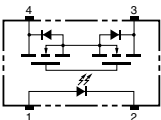


Note: The actual product is marked differently from the image shown here.

Weight: 0.03 g

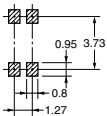
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21LR1



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

G3VM-21LR1



Absolute Maximum Ratings (Ta = 25°C)

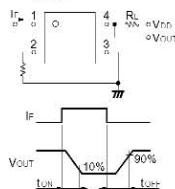
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	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 +65 °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
	Reverse current	I_R	—	—	10	μA
	Capacity between terminals	C_I	—	15	—	pF
	Trigger LED forward current	I_{F1}	—	—	4	mA
Output	Maximum resistance with output ON	R_{ON}	—	0.8	1.2	Ω
	Current leakage when the relay is open	$I_{(OFF)}$	—	—	1.0	nA
	Capacity between terminals	C_{OFF}	—	5.0	12.0	pF
	Capacity between I/O terminals	$C_{(IO)}$	—	0.8	—	pF
Insulation resistance		$R_{(IO)}$	1,000	—	—	MΩ
Turn-ON time		t_{ON}	—	—	0.5	ms
Turn-OFF time		t_{OFF}	—	—	0.5	ms

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



Recommended Operating Conditions

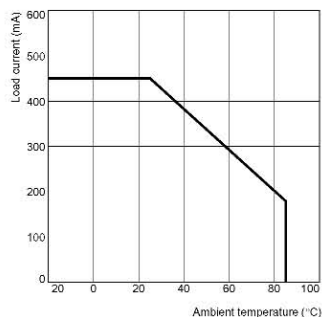
Use the G3VM under the following conditions so that the Relay will operate properly.

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	—	60	°C

Engineering Data

Load Current vs. Ambient Temperature

G3VM-21LR1



World’s Smallest SSOP Package
MOSFET Relay with Low Output
Capacitance and ON Resistance
(CxR = 5pF• Ω) in a 20-V Load
Voltage Model

- ON resistance of 1 Ω (typical) suppresses output signal attenuation.



NEW Approval pending

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

■ Application Examples

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

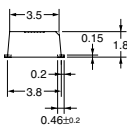
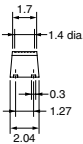
■ List of Models

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



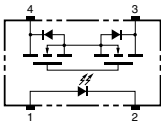
Note: A tolerance of ± 0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

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

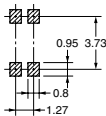
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21LR1



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

G3VM-21LR1



■ Absolute Maximum Ratings (Ta = 25°C)

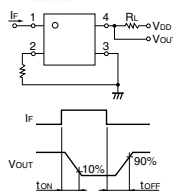
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{COT}	20	V
	Continuous load current	I_O	450	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-4.5	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{LO}	1,500	Vrms
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-40 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	0.8	1.2	Ω
	Current leakage when the relay is open	I_{LOAK}	---	---	1.0	nA
	Capacity between terminals	C_{COT}	---	5.0	12.0	pF
	Capacity between I/O terminals	C_{LO}	---	0.8	---	pF
Insulation resistance		R_{LO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	---	0.5	ms
Turn-OFF time		t_{OFF}	---	---	0.5	ms

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



■ Recommended Operating Conditions

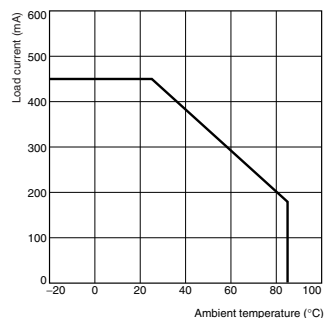
Use the G3VM under the following conditions so that the Relay will operate properly.

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	---	60	°C

■ Engineering Data

Load Current vs. Ambient Temperature

G3VM-21LR1



World’s Smallest SSOP Package
MOSFET Relay with Low Output
Capacitance and ON Resistance
(CxR = 10pF• Ω) in a 40-V Load
Voltage Model

- ON resistance of 1 Ω (typical) suppresses output signal attenuation.



NEW  Approval pending

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

■ Application Examples

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

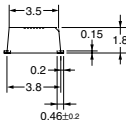
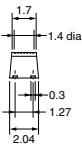
■ List of Models

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

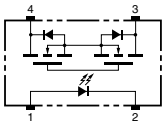


Note: A tolerance of ±0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

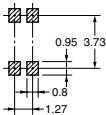
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41LR5



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

G3VM-41LR5



Absolute Maximum Ratings (Ta = 25°C)

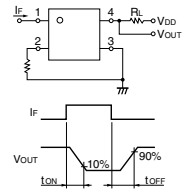
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_{F}/^{\circ}\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(L)}$	1,500	Vrms
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-40 to +125	°C
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	1.0	1.5	Ω
	Current leakage when the relay is open	I_{I-OK}	---	---	1.0	nA
	Capacity between terminals	C_{OFF}	---	10	14	pF
	Capacity between I/O terminals	C_{LO}	---	0.8	---	pF
Insulation resistance		R_{LO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	0.5	---	ms
Turn-OFF time		t_{OFF}	---	0.5	---	ms

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



Recommended Operating Conditions

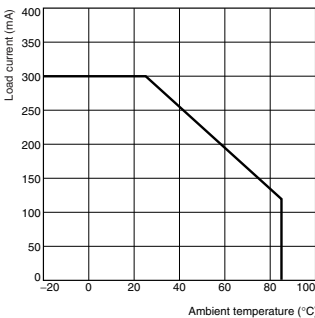
Use the G3VM under the following conditions so that the Relay will operate properly.

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-41LR5



World's Smallest SSOP Package
MOSFET 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.



NEW  Approval pending

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

■ Application Examples

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

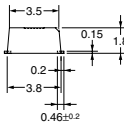
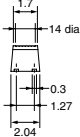
■ List of Models

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



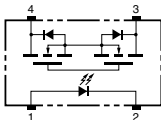
Note: A tolerance of ±0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

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

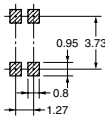
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41LR6



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

G3VM-41LR6



Absolute Maximum Ratings (Ta = 25°C)

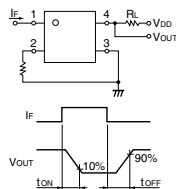
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_{F}/^{\circ}\text{C}$	0.5	$\text{mA}/^{\circ}\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^{\circ}\text{C}$
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	$\text{mA}/^{\circ}\text{C}$
	Connection temperature	T_J	125	$^{\circ}\text{C}$
	Dielectric strength between input and output (See note 1.)	V_{L-O}	1,500	Vrms
Operating temperature		T_a	-20 to +85	$^{\circ}\text{C}$
Storage temperature		T_{stg}	-40 to +125	$^{\circ}\text{C}$
Soldering temperature (10 s)		---	260	$^{\circ}\text{C}$

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	10	15	Ω
	Current leakage when the relay is open	I_{LAK}	---	---	1.0	nA
	Capacity between terminals	C_{OFF}	---	1.0	2.0	pF
Capacity between I/O terminals		C_{L-O}	---	0.8	---	pF
Insulation resistance		R_{L-O}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	---	0.5	ms
Turn-OFF time		t_{OFF}	---	---	0.5	ms

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



Recommended Operating Conditions

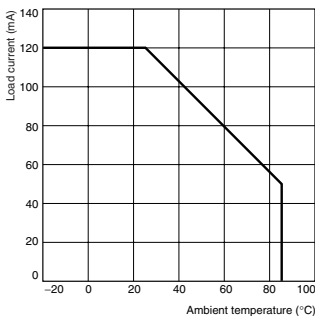
Use the G3VM under the following conditions so that the Relay will operate properly.

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_a	25	---	60	$^{\circ}\text{C}$

Engineering Data

Load Current vs. Ambient Temperature

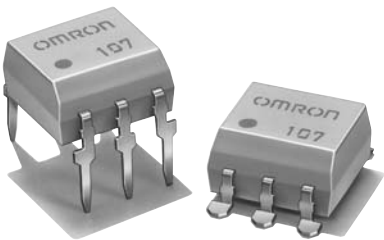
G3VM-41LR6



MOSFET Relay – G3VM-61B1/E1

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.

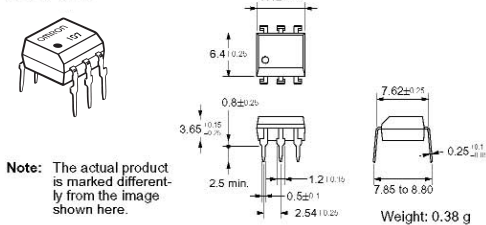
■ List of Models

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)		1,500

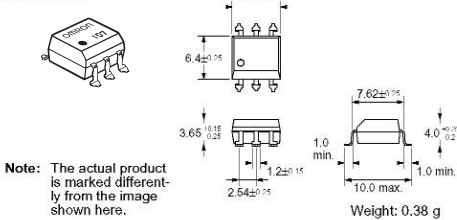
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61B1

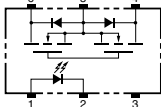


G3VM-61E1

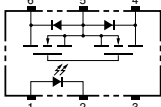


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61B1

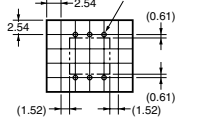


G3VM-61E1



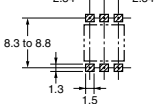
■ PCB Dimensions (Bottom View)

G3VM-61B1



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

G3VM-61E1

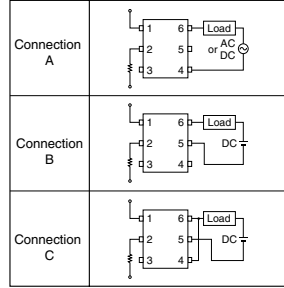


Absolute Maximum Ratings (Ta = 25°C)

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	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°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	500	mA
		Connection B	500	
		Connection C	1,000	
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	0.5
		Connection B		0.5
		Connection C		-10.0
	Connection temperature	T_J	125	°C
Dielectric strength between input and output (See note 1.)		V_{I-O}	2,500	Vrms
Operating temperature		T_R	40 to +85	°C
Storage temperature		T_{stg}	55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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.

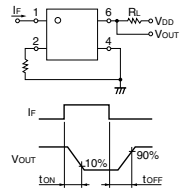
Connection Diagram



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	μA	$V_R = 5\text{ V}$
	Capacity between terminals		C_T	---	30	---	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current		I_{F-I}	---	1.6	3	mA	$I_O = 500\text{ mA}$
Output	Maximum resistance with output ON	Connection A	$R_{(ON)}$	---	1	2	Ω	$I_F = 5\text{ mA},$ $I_O = 500\text{ mA}$
		Connection B	---	0.5	1	Ω	$I_F = 5\text{ mA},$ $I_O = 500\text{ mA}$	
		Connection C	---	0.25	---	Ω	$I_F = 5\text{ mA},$ $I_O = 1,000\text{ mA}$	
	Current leakage when the relay is open		$I_{L(ON)}$	---	---	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	---	---	M Ω	$V_{I(O)} = 500\text{ VDC},$ $RoH < 00\%$	
Turn-ON time		t_{ON}	---	0.8	2.0	ms	$I_F = 5\text{ mA}, R_L = 200\text{ }\Omega,$	
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

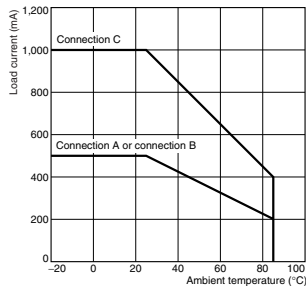
Use the G3VM under the following conditions so that the Relay will operate properly.

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)

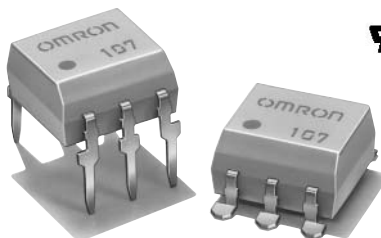


New, High-capacity (2.5-A) MOSFET Relay, Ideal for Analog Signal Switching

- Switches minute analog signals.
- Low ON-resistance of 0.1 Ω max.
- Continuous load current of 2.5 A.

■ Application Examples

- Measurement devices
- Security systems
- I/O for alarm



NEW

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

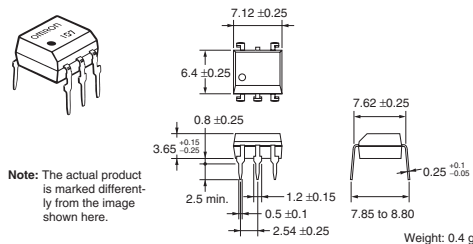
■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NO	PCB terminals	60 VAC	G3VM-61BR	50	—
	Surface-mounting terminals		G3VM-61ER	—	—
			G3VM-61ER(TR)	—	1,500

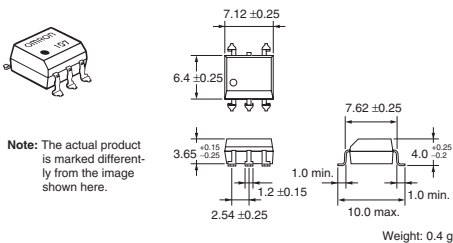
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61BR

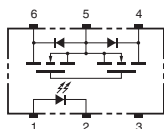


G3VM-61ER

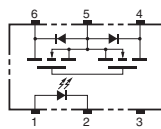


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61BR

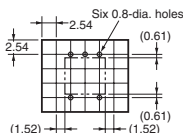


G3VM-61ER



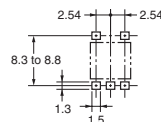
■ PCB Dimensions (Bottom View)

G3VM-61BR



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

G3VM-61ER



Absolute Maximum Ratings (Ta = 25°C)

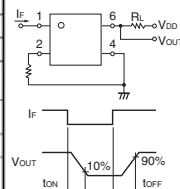
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	30	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OFF}	60	V
	Continuous load current	I_O	2,500	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-22	mA/°C
	Connection temperature	T_J	125	°C
Dielectric strength between input and output (See note 1.)		$V_{I/O}$	2,500	Vrms
Operating temperature		T_a	-20 to 85	°C
Storage temperature		T_{stg}	-40 to 125	°C
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	1.18	1.33	1.48	V
	Reverse current	I_R	---	10	μA	$V_R = 5\text{ V}$
	Capacity between terminals	C_T	---	70	---	pF
	Trigger LED forward current	I_{FT}	---	1.0	3	mA
Output	Maximum resistance with output ON	---	0.065	0.1	Ω	$I_F = 10\text{ mA}$, $I_O = 2\text{ A}$
	Current leakage when the relay is open	I_{LEAK}	---	1.0	10	nA
Capacity between I/O terminals		$C_{I/O}$	---	0.8	---	pF
Insulation resistance		$R_{I/O}$	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	1.0	1.5	ms
Turn-OFF time		t_{OFF}	---	0.2	0.4	ms

Note 2. Turn-ON and Turn-OFF Times



Recommended Operating Conditions

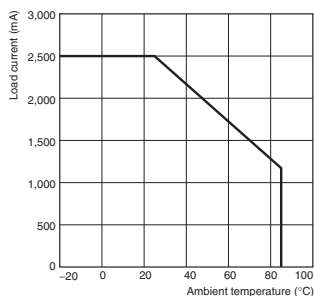
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{OD}	---	---	48	V
Operating LED forward current	I_F	10	---	20	mA
Continuous load current	I_O	---	---	2,500	mA
Operating temperature	T_a	25	---	60	°C

Engineering Data

Load Current vs. Ambient Temperature

G3VM-61BR/ER



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.

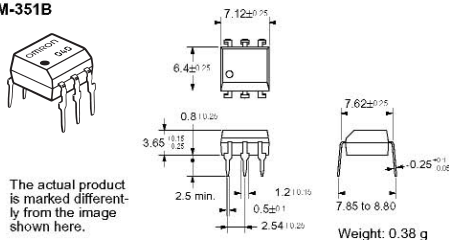
List of Models

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

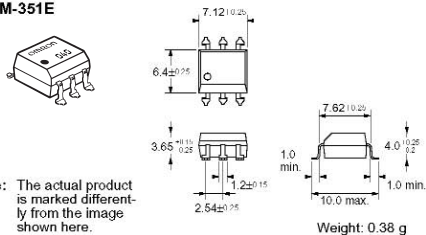
Note: All units are in millimeters unless otherwise indicated.

G3VM-351B



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

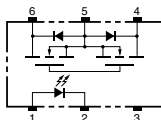
G3VM-351E



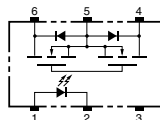
Note: The actual product is marked differently from the image shown here.

Terminal Arrangement/Internal Connections (Top View)

G3VM-351B

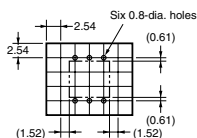


G3VM-351E



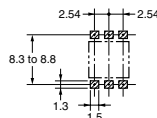
PCB Dimensions (Bottom View)

G3VM-351B



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-351E

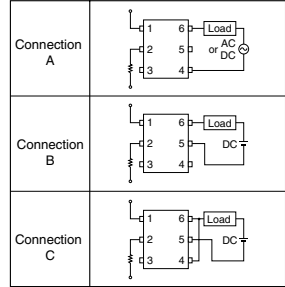


■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 μ 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}	350	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_{i-o}	2,500	Vrms	AC for 1 min
Operating temperature		T_H	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.

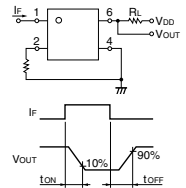
Connection Diagram



■ 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	μ A	$V_R = 5$ V
	Capacity between terminals		C_T	---	30	---	pF	$V = 0$, $f = 1$ MHz
	Trigger LED forward current		I_{F1}	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	25	35	Ω	$I_F = 5$ mA, $I_O = 120$ mA, $t < 1$ s
			---	35	50	Ω	$I_F = 5$ mA, $I_O = 120$ mA	
		Connection B	---	28	40	Ω	$I_F = 5$ mA, $I_O = 120$ mA	
	Connection C	---	14	20	Ω	$I_F = 5$ mA, $I_O = 240$ mA		
	Current leakage when the relay is open		I_{LEAK}	---	---	1.0	μ 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 Ω	$V_{i(o)} = 500$ VDC, RoH < 60%
Turn-ON time		t_{ON}	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ Ω , $V_{DD} = 20$ 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

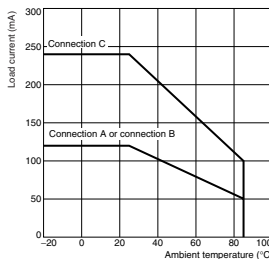
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	260	V
Operating LED forward current	I_F	5	10	25	mA
Continuous load current	I_O	---	---	100	mA
Operating temperature	T_H	-20	---	65	°C

■ Engineering Data

Load Current vs. Ambient Temperature

G3VM-351B(E)



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

General-purpose Series Added.

- Switches minute analog signals.
- Switching AC and DC.
- General-purpose series (high ON-resistance) added.

■ Application Examples

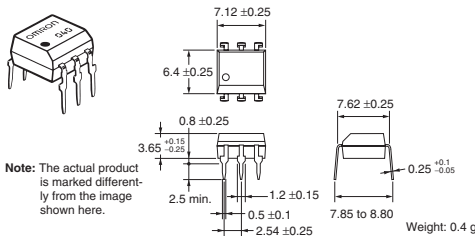
- Electronic automatic exchange systems
- Security systems
- Datacom (modem) systems
- FA systems
- Measurement devices

■ List of Models

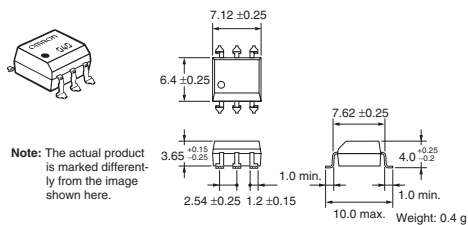
Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NO	PCB terminals	60 VAC	G3VM-353B	50	—
	Surface-mounting terminals		G3VM-353B1		
			G3VM-353E		
			G3VM-353E1		
			G3VM-353E(TR)	—	1,500
		G3VM-353E1(TR)			

■ Dimensions

Note: All units are in millimetres unless otherwise indicated.
G3VM-353B/B1

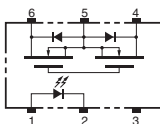


G3VM-353E/E1

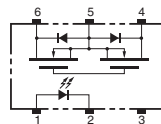


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-353B/B1

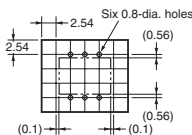


G3VM-353E/E1



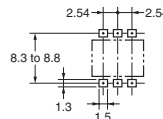
■ PCB Dimensions (Bottom View)

G3VM-353B/B1



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

G3VM-353E/E1

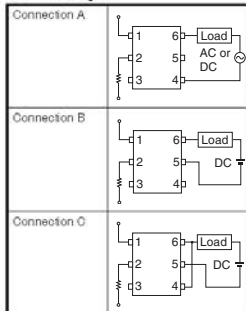


Absolute Maximum Ratings (Ta = 25°C)

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	$\text{mA}/^\circ\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^\circ\text{C}$
Output	Output dielectric strength	V_{OFF}	350	V
	Continuous load current	Connection A	150 (100)	mA
		Connection B	150 (100)	
		Connection C	300 (200)	
	ON current reduction rate	Connection A	-1.5 (-1)	$\text{mA}/^\circ\text{C}$
		Connection B	-1.5 (-1)	
		Connection C	-3.0 (-2)	
	Connection temperature	T_J	125	$^\circ\text{C}$
Dielectric strength between input and output (See note 1.)		V_{IO}	2,500	Vrms
Operating temperature		T_a	-40 to 85	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to 125	$^\circ\text{C}$
Soldering temperature (10 s)		---	260	$^\circ\text{C}$

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



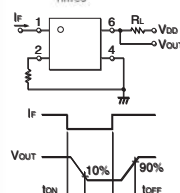
Values inside parentheses () are for G3VM-353B1/E1.

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	$I_{OFF} = 10 \mu\text{A}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	15 (27)	25 (50)	Ω	$I_O = 150 \text{ mA}$
		Connection B	---	8 (20)	14 (43)	Ω	$I_O = 150 \text{ mA}$
		Connection C	---	4 (10)	7 (---)	Ω	$I_O = 300 \text{ mA}$
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA	$I_F = 5 \text{ mA}, V_{OFF} = 350 \text{ V}$
	Capacity between I/O terminals	C_{IO}	---	0.8	---	pF	$f = 1 \text{ MHz}, V_F = 0 \text{ V}$
Insulation resistance		$R_{I/O}$	1,000	---	---	M Ω	$V_{I/O} = 500 \text{ V DC}, R_{OH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.1 (0.25)	1.0 (0.5)	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega$
Turn-OFF time		t_{OFF}	---	1.0 (0.5)	3.0 (1)	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)

Values inside parentheses () are for G3VM-353B1/E1.

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.

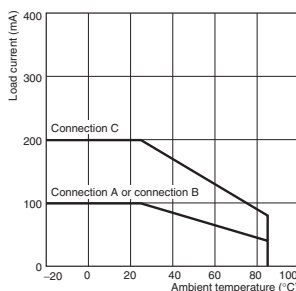
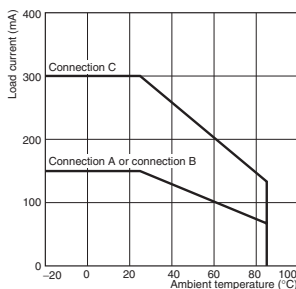
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DO}	---	---	280	V
Operating LED forward current	I_F	5	---	25	mA
Continuous load current	I_O	---	---	150 (100)	mA
Operating temperature	T_a	-20	---	65	$^\circ\text{C}$

Values inside parentheses () are for G3VM-353B1/E1.

Engineering Data

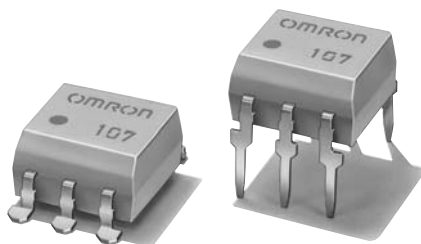
Load Current vs. Ambient Temperature
G3VM-353B/E

Load Current vs. Ambient Temperature
G3VM-353B1/E1



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.

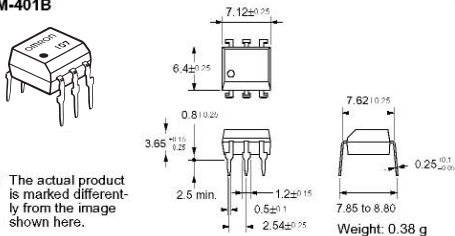
■ List of Models

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)	---

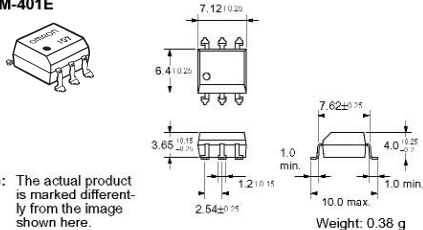
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-401B

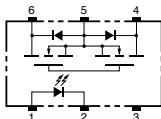


G3VM-401E

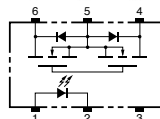


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-401B

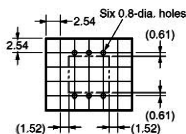


G3VM-401E



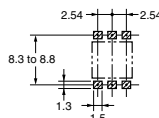
■ PCB Dimensions (Bottom View)

G3VM-401B



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

G3VM-401E

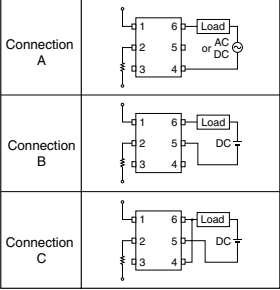


Absolute Maximum Ratings (Ta = 25°C)

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	$\Delta I_{FA}/^{\circ}\text{C}$	-0.5	mA/ $^{\circ}\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^{\circ}\text{C}$
Output	Output dielectric strength	V_{OFF}	400	V
	Continuous load current	Connection A	120	mA
		Connection B	120	mA
		Connection C	240	mA
	ON current reduction rate	Connection A	1.2	mA/ $^{\circ}\text{C}$
		Connection B	1.2	mA/ $^{\circ}\text{C}$
		Connection C	-2.4	mA/ $^{\circ}\text{C}$
	Connection temperature	T_J	125	$^{\circ}\text{C}$
Dielectric strength between input and output (See note 1.)		V_{IC}	2,500	Vrms
Operating temperature		T_R	40 to +85	$^{\circ}\text{C}$
Storage temperature		T_{stg}	55 to +125	$^{\circ}\text{C}$
Soldering temperature (10 s)		---	260	$^{\circ}\text{C}$

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.

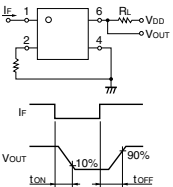
Connection Diagram



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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_T	---	30	---	pF
	Trigger LED forward current	I_{FT}	---	1	3	mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	17	Ω
		Connection B	---	11	20	Ω
		Connection C	---	6	10	Ω
	Current leakage when the relay is open	I_{LAK}	---	---	1.0	μA
Capacity between I/O terminals		C_{IC}	---	0.8	---	pF
Insulation resistance		R_{IC}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	0.3	1.0	ms
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms

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



Recommended Operating Conditions

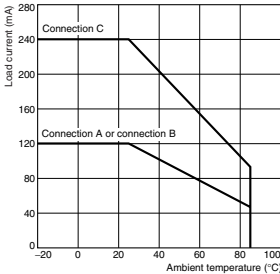
Use the G3VM under the following conditions so that the Relay will operate properly.

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_R	20	---	65	$^{\circ}\text{C}$

Engineering Data

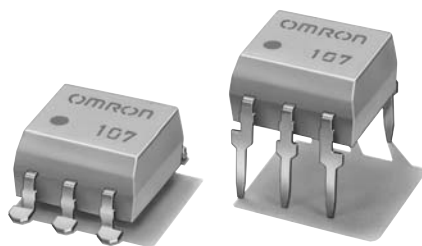
Load Current vs. Ambient Temperature

G3VM-401B(E)



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.

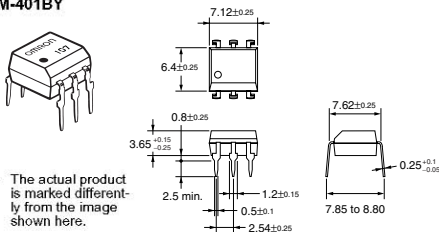
■ List of Models

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

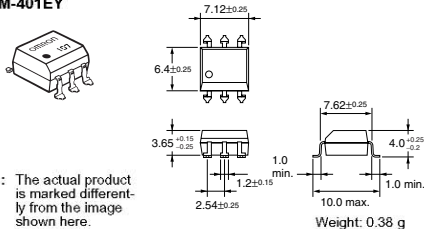
Note: All units are in millimeters unless otherwise indicated.

G3VM-401BY



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

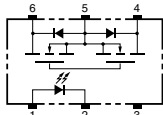
G3VM-401EY



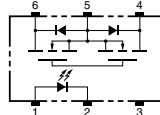
Note: The actual product is marked differently from the image shown here.

■ Terminal Arrangement/Internal Connections (Top View)

G3VM-401BY

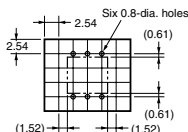


G3VM-401EY



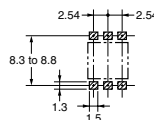
■ PCB Dimensions (Bottom View)

G3VM-401BY



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

G3VM-401EY

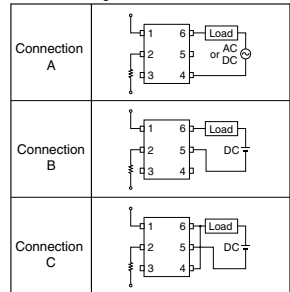


Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_{\mu}/^{\circ}\text{C}$	-0.5	mA/ $^{\circ}\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_j	125	$^{\circ}\text{C}$
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	-1.2	mA/ $^{\circ}\text{C}$
		Connection B	-1.2	
		Connection C	-2.4	
	Connection temperature	T_j	125	$^{\circ}\text{C}$
Dielectric strength between input and output (See note 1.)		$V_{\text{L-O}}$	5,000	Vrms
Operating temperature		T_A	-40 to +85	$^{\circ}\text{C}$
Storage temperature		T_{stg}	-55 to +125	$^{\circ}\text{C}$
Soldering temperature (10 s)		---	260	$^{\circ}\text{C}$

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.

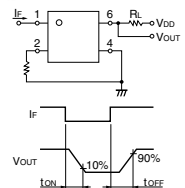
Connection Diagram



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	$I_{\text{F}} = 10 \text{ mA}$
	Reverse current		I_{R}	---	---	10	μA	$V_{\text{R}} = 5 \text{ V}$
	Capacity between terminals		C_{T}	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current		I_{F1}	---	---	3	mA	$I_{\text{O}} = 120 \text{ mA}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	17	35	Ω	$I_{\text{F}} = 5 \text{ mA},$ $I_{\text{O}} = 120 \text{ mA}$
		Connection B	---	11	20	Ω	$I_{\text{F}} = 5 \text{ mA},$ $I_{\text{O}} = 120 \text{ mA}$	
		Connection C	---	6	10	Ω	$I_{\text{F}} = 5 \text{ mA},$ $I_{\text{O}} = 240 \text{ mA}$	
	Current leakage when the relay is open		I_{LEAK}	---	---	1.0	μA	$V_{\text{OFF}} = 400 \text{ V}$
	Capacity between I/O terminals		$C_{\text{L-O}}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_{\text{S}} = 0 \text{ V}$
Insulation resistance		$R_{\text{L-O}}$	1,000	---	---	M Ω	$V_{\text{L-O}} = 500 \text{ VDC},$ $\text{RoH} < 80\%$	
Turn-ON time		t_{ON}	---	0.3	1.0	ms	$I_{\text{F}} = 5 \text{ mA}, R_{\text{L}} = 200 \Omega,$ $V_{\text{DD}} = 20 \text{ V}$ (See note 2.)	
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms		

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



Recommended Operating Conditions

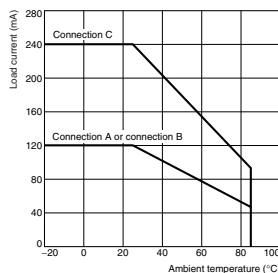
Use the G3VM under the following conditions so that the Relay will operate properly.

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_A	-20	---	85	$^{\circ}\text{C}$

Engineering Data

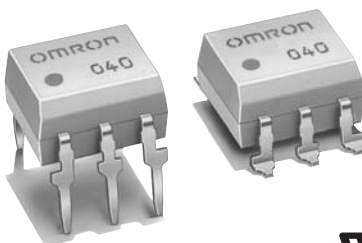
Load Current vs. Ambient Temperature

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.

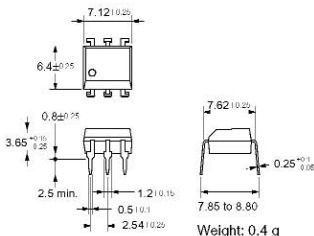
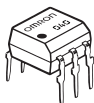
■ List of Models

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)	---	1,500

■ Dimensions

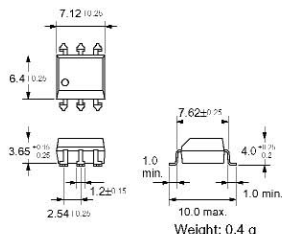
Note: All units are in millimeters unless otherwise indicated.

G3VM-601BY



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

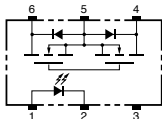
G3VM-601EY



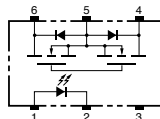
Note: The actual product is marked differently from the image shown here.

■ Terminal Arrangement/Internal Connections (Top View)

G3VM-601BY

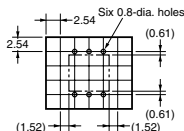


G3VM-601EY



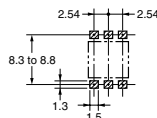
■ PCB Dimensions (Bottom View)

G3VM-601BY



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

G3VM-601EY

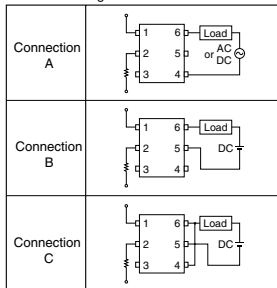


Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_j	125	°C
Output	Output dielectric strength	V_{CIR}	600	V
	Continuous load current	Connection A	100	mA
		Connection B	100	
		Connection C	200	
	ON current reduction rate	Connection A	1.0	mA/°C
		Connection B	1.0	
		Connection C	-2.0	
	Connection temperature	T_j	125	°C
Dielectric strength between input and output (See note 1.)				
		$V_{L\Delta}$	5,000	Vrms
		AC for 1 min		
Operating temperature		T_H	40 to +85	°C
Storage temperature		T_{stg}	55 to +125	°C
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.

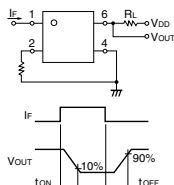
Connection Diagram



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	μA	$V_R = 5\text{ V}$
	Capacity between terminals		C_T	---	30	---	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current		I_{F1}	---	1.6	5	mA	$I_O = 100\text{ mA}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	25	35	Ω	$I_F = 10\text{ mA},$ $I_O = 100\text{ mA}$
				---	30	45	Ω	$I_F = 10\text{ mA},$ $I_O = 100\text{ mA}$
		Connection B	---	23	35	Ω	$I_F = 10\text{ mA},$ $I_O = 100\text{ mA}$	
	Connection C	---	12	18	Ω	$I_F = 10\text{ mA},$ $I_O = 200\text{ mA}$		
	Current leakage when the relay is open		I_{LEAK}	---	---	1.0	μA	$V_{OFF} = 600\text{ V}$
	Capacity between I/O terminals		$C_{L\Delta}$	---	0.8	---	pF	$f = 1\text{ MHz}, V_S = 0\text{ V}$
Insulation resistance		$R_{L\Delta}$	1,000	---	---	M Ω	$V_{L\Delta} = 500\text{ VDC},$ $RoH < 60\%$	
Turn-ON time		t_{ON}	---	0.2	1.5	ms	$I_F = 5\text{ mA}, R_L = 200\text{ }\Omega,$ $V_{DD} = 20\text{ V (See note 2.)}$	
Turn-OFF time		t_{OFF}	---	0.2	1.0	ms		

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



Recommended Operating Conditions

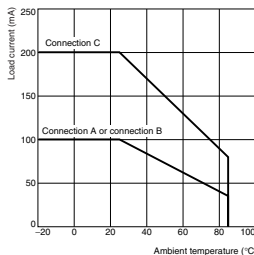
Use the G3VM under the following conditions so that the Relay will operate properly.

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_H	-20	---	65	°C

Engineering Data

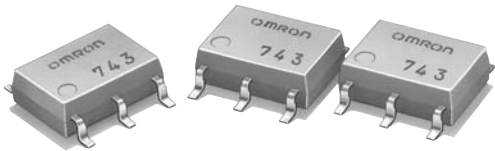
Load Current (vs. Ambient Temperature)

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 

■ 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	60 VAC	G3VM-61H1	75	---
			G3VM-61H1(TR)	---	2,500

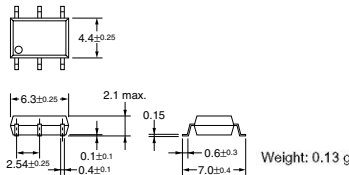
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61H1

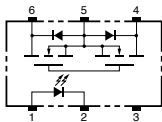


Note: The actual product is marked differently from the image shown here.



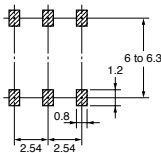
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61H1



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

G3VM-61H1

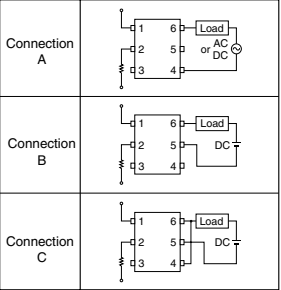


Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	$\text{mA}/^\circ\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^\circ\text{C}$
Output	Output dielectric strength	V_{CIT}	60	V
	Continuous load current	Connection A	400	mA
		Connection B	400	
		Connection C	800	
	ON current reduction rate	Connection A	4.0	$\text{mA}/^\circ\text{C}$
		Connection B	4.0	
		Connection C	-8.0	
	Connection temperature	T_J	125	$^\circ\text{C}$
Dielectric strength between input and output (See note 1.)		V_{IC}	1,500	Vrms
Operating temperature		T_R	40 to +85	$^\circ\text{C}$
Storage temperature		T_{stg}	55 to +125	$^\circ\text{C}$
Soldering temperature (10 s)		---	260	$^\circ\text{C}$

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.

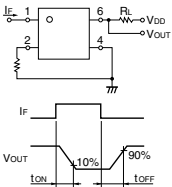
Connection Diagram



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	μA	$V_R = 5\text{ V}$
	Capacity between terminals		C_T	---	30	---	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current		I_{F1}	---	1.6	3	mA	$I_O = 400\text{ mA}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	1	2	Ω	$I_F = 5\text{ mA}$ $I_O = 400\text{ mA}$
		Connection B	---	0.5	1	Ω	$I_F = 5\text{ mA}$ $I_O = 400\text{ mA}$	
		Connection C	---	0.25	---	Ω	$I_F = 5\text{ mA}$ $I_O = 800\text{ mA}$	
	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	---	---	M Ω	$V_{ILO} = 500\text{ VDC}$, $R_{Ht} < 80\%$	
Turn-ON time		t_{ON}	---	0.8	2.0	ms	$I_F = 5\text{ mA}, R_L = 200\text{ }\Omega$, $V_{DO} = 20\text{ V}$ (See note 2).	
Turn-OFF time		t_{OFF}	---	0.1	0.5	ms		

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



Recommended Operating Conditions

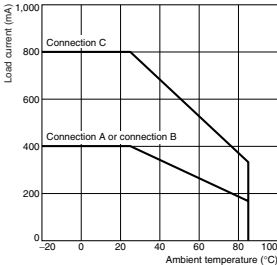
Use the G3VM under the following conditions so that the Relay will operate properly.

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_R	20	---	65	$^\circ\text{C}$

Engineering Data

Load Current vs. Ambient Temperature

G3VM-61H1



New High-capacity MOSFET 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

■ 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-81HR	75	---
			G3VM-81HR(TR)	---	2,500

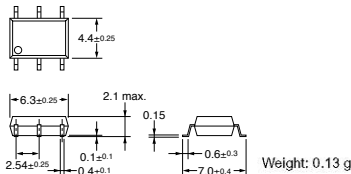
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-81HR

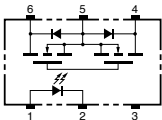


Note: The actual product is marked differently from the image shown here.



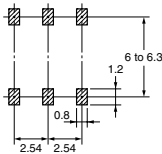
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-81HR



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

G3VM-81HR



Absolute Maximum Ratings (Ta = 25°C)

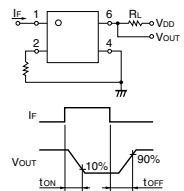
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	$\text{mA}/^\circ\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	$^\circ\text{C}$
Output	Output dielectric strength	V_{OUT}	80	V
	Continuous load current	I_O	1,250	mA
	ON current reduction rate	$\Delta I_{\text{ON}}/^\circ\text{C}$	-12.5	$\text{mA}/^\circ\text{C}$
	Connection temperature	T_J	125	$^\circ\text{C}$
	Dielectric strength between input and output (See note 1.)	$V_{\text{I-O}}$	1,500	Vrms
Operating temperature		T_a	-20 to +85	$^\circ\text{C}$
Storage temperature		T_{stg}	-40 to +125	$^\circ\text{C}$
Soldering temperature (10 s)		---	260	$^\circ\text{C}$

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{F-I}	---	2	5	mA
Output	Maximum resistance with output ON	R_{ON}	---	0.11	0.15	Ω
	Current leakage when the relay is open	$I_{\text{I-OK}}$	---	1.2	1.5	nA
Capacity between I/O terminals		$C_{\text{I-O}}$	---	0.8	---	pF
Insulation resistance		$R_{\text{I-O}}$	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	2.0	3.0	ms
Turn-OFF time		t_{OFF}	---	0.7	1.0	ms

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



Recommended Operating Conditions

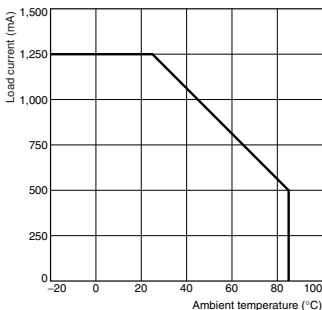
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{\text{I(O)}}$	---	---	64	V
Operating LED forward current	I_F	5	---	30	mA
Continuous load current	I_O	---	---	1,250	mA
Operating temperature	T_a	25	---	60	$^\circ\text{C}$

Engineering Data

Load Current vs. Ambient Temperature

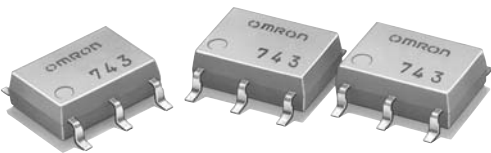
G3VM-81HR



MOSFET Relay – G3VM-201H1

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

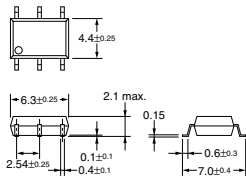
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-201H1



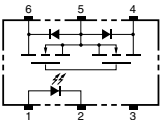
Note: The actual product is marked differently from the image shown here.



Weight: 0.13 g

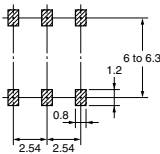
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-201H1



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

G3VM-201H1

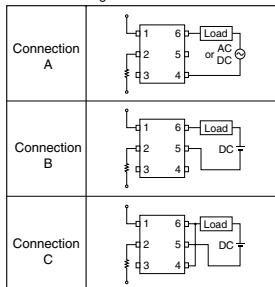


■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 μ 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}	200	V	
	Continuous load current	Connection A	I_O	200	mA
		Connection B		200	
		Connection C		400	
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	2.0	mA/°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_{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.

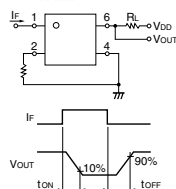
Connection Diagram



■ 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	μ A	$V_R = 5$ V
	Capacity between terminals	C_T	---	30	---	pF	$V = 0$, $f = 1$ MHz
	Trigger LED forward current	I_{TL}	---	1	3	mA	$I_O = 200$ mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	5	Ω	$I_F = 5$ mA, $I_O = 200$ mA
		Connection B		---	3	Ω	$I_F = 5$ mA, $I_O = 200$ mA
		Connection C		---	1.5	Ω	$I_F = 5$ mA, $I_O = 400$ mA
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μ 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 Ω	$V_{I-O} = 500$ VDC, $RoH < 60\%$
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

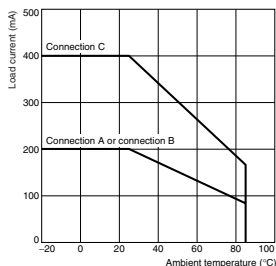
Use the G3VM under the following conditions so that the Relay will operate properly.

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	---	80	°C

■ Engineering Data

Load Current vs. Ambient Temperature

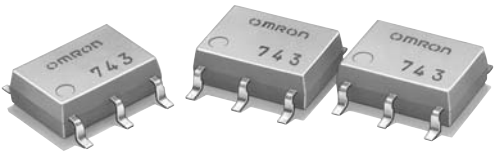
G3VM-201H1



MOSFET Relay – G3VM-351H

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

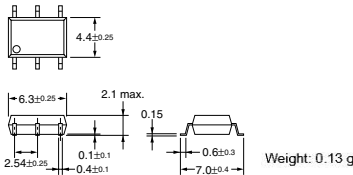
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-351H

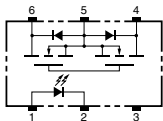


Note: The actual product is marked differently from the image shown



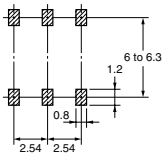
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-351H



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

G3VM-351H

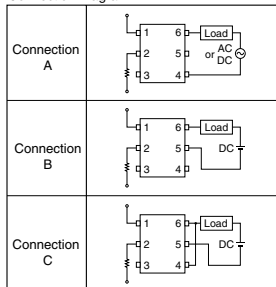


Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°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	mA
		Connection C	220	mA
	ON current reduction rate	Connection A	1.1	mA/°C
		Connection B	1.1	mA/°C
		Connection C	-2.2	mA/°C
	Connection temperature	T_j	125	°C
Dielectric strength between input and output (See note 1.)				
	V_{IK}	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.

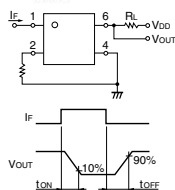
Connection Diagram



Electrical Characteristics (Ta = 25°C)

Item		Symbol	Mini- mum	Typical	Maxi- mum	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_{F1}	---	1	3	mA	$I_O = 110\text{ mA}$	
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	25	35	Ω	$I_F = 5\text{ mA}$ $I_O = 110\text{ mA}, t < 1\text{ s}$
			---	35	50	Ω	$I_F = 5\text{ mA}$ $I_O = 110\text{ mA}$	
		Connection B	---	28	40	Ω	$I_F = 5\text{ mA}$ $I_O = 110\text{ mA}$	
	Connection C	---	14	20	Ω	$I_F = 5\text{ mA}$ $I_O = 220\text{ mA}$		
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA	$V_{OFF} = 350\text{ V}$	
	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	---	---	M Ω	$V_{IO} = 500\text{ VDC}$, RoH < 80%	
Turn-ON time		tON	---	0.3	1.0	ms	$I_F = 5\text{ mA}, R_L = 200\text{ }\Omega$, $V_{DD} = 20\text{ V}$ (See note 2.)	
Turn-OFF time		tOFF	---	0.1	1.0	ms		

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



Recommended Operating Conditions

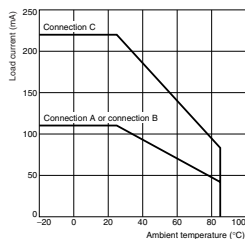
Use the G3VM under the following conditions so that the Relay will operate properly.

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

Engineering Data

Load Current vs. Ambient Temperature

G3VM-351H



MOSFET Relay – G3VM-353H/H1

Analog-switching MOSFET Relay with SPST-NC (Double-pole, Single-throw, Normally Closed) Contacts. General-purpose Series Added.

- New models with SPST-NC contacts and a 6-pin SOP package now included in 350-V load voltage series.
- Continuous load current of 120 mA (90 mA).
- Dielectric strength of 1,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.



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	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NC	Surface-mounting terminals	350 VAC	G3VM-353H	75	—
			G3VM-353H1		
			G3VM-353H(TR)	—	2,500
			G3VM-353H1 (TR)		

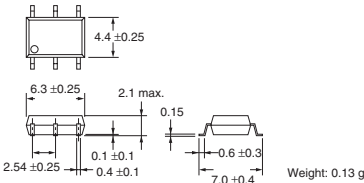
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-353H/H1

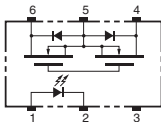


Note: The actual product is marked differently from the image shown here.



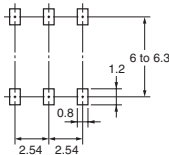
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-353H/H1



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

G3VM-353H/H1

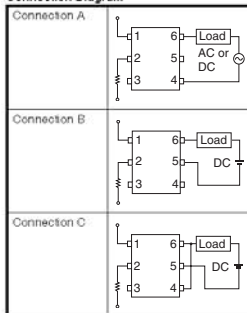


■ Absolute Maximum Ratings (Ta = 25°C)

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
	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 (90)	mA
		Connection B	120 (90)	mA
		Connection C	240 (180)	mA
	ON current reduction rate	Connection A	-1.2 (-0.9)	mA/°C
		Connection B	-1.2 (-0.9)	mA/°C
		Connection C	-2.4 (-1.8)	mA/°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)				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



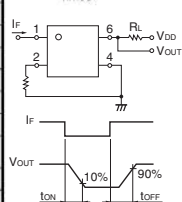
Values inside parentheses () are for G3VM-353H1.

■ 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_{FC}	---	1.0	3.0	mA	$I_{OFF} = 10 \mu\text{A}$	
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	15 (27)	25 (50)	Ω	$I_O = 120 \text{ mA}$
		Connection B	---	8 (20)	14 (43)	Ω	$I_O = 120 \text{ mA}$	
		Connection C	---	4 (10)	---	Ω	$I_O = 240 \text{ mA}$	
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA	$V_{OFF} = 350 \text{ V}, I_F = 5 \text{ mA}$	
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 Ω	$V_{I/O} = 500 \text{ V DC}, R_{OH} \leq 60\%$	
Turn-ON time		t_{ON}	---	(0.25)	1.0 (0.5)	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega$	
Turn-OFF time		t_{OFF}	---	(0.5)	3.0 (1)	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)	

Values inside parentheses () are for G3VM-353H1.

Note 2. Turn-ON and Turn-OFF Times



■ Recommended Operating Conditions

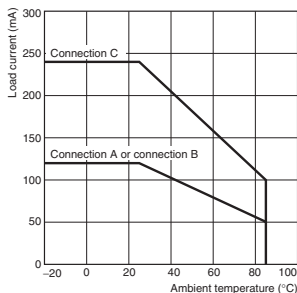
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	280	V
Operating LED forward current	I_F	---	---	25	mA
Continuous load current	I_O	---	---	120 (90)	mA
Operating temperature	T_a	-20	---	65	°C

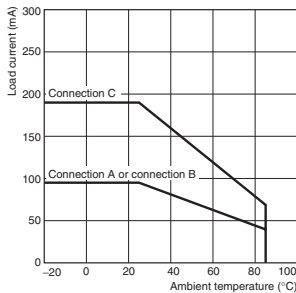
Values inside parentheses () are for G3VM-353H1.

■ Engineering Data

Load Current vs. Ambient Temperature
G3VM-353H

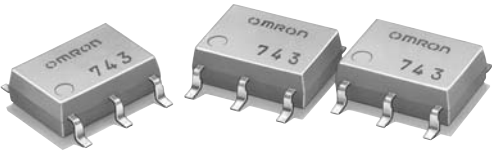


Load Current vs. Ambient Temperature
G3VM-353H1



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

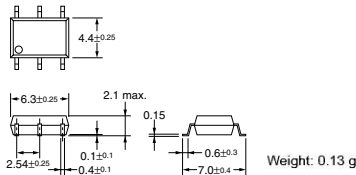
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-401H

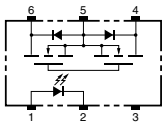


Note: The actual product is marked differently from the image shown here.



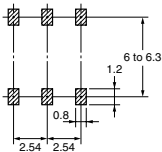
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-401H



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

G3VM-401H

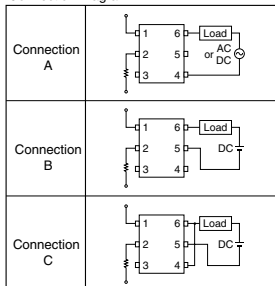


■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°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
		Connection B		1.2
		Connection C		-2.4
	Connection temperature	T_J	125	°C
Dielectric strength between input and output (See note 1.)		$V_{(A)}$	1,500	Vrms
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{stg}	55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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.

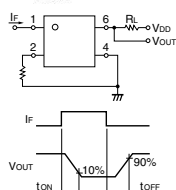
Connection Diagram



■ 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	μA	$V_R = 5\text{ V}$
	Capacity between terminals		C_T	---	30	---	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current		I_{F1}	---	1	3	mA	$I_O = 120\text{ mA}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	17	35	Ω	$I_F = 5\text{ mA}$ $I_O = 120\text{ mA}$
		Connection B	---	11	20	Ω	$I_F = 5\text{ mA}$ $I_O = 120\text{ mA}$	
		Connection C	---	6	---	Ω	$I_F = 5\text{ mA}$ $I_O = 240\text{ mA}$	
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA	$V_{OFF} = 400\text{ V}$	
Capacity between I/O terminals		$C_{(A)}$	---	0.8	---	pF	$f = 1\text{ MHz}, V_S = 0\text{ V}$	
Insulation resistance		$R_{(A)}$	1,000	---	---	M Ω	$V_{(A)} = 500\text{ VDC}$, RoH < 80%	
Turn-ON time		tON	---	0.3	1.0	ms	$I_F = 5\text{ mA}, R_L = 200\text{ }\Omega$	
Turn-OFF time		tOFF	---	0.1	1.0	ms	$V_{DD} = 20\text{ V}$ (See note 2.)	

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



■ Recommended Operating Conditions

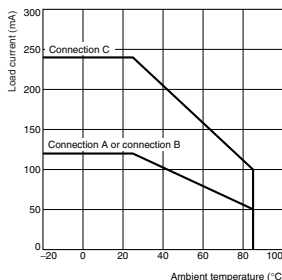
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	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-401H



New MOSFET Relay Featuring
Unique Contact Construction
(1 Input Channel Drives 2 Output
Channels)

- Ideal for application in line interface and data logging blocks.
- Switches minute analog signals.
- Switching AC and DC.



NEW  Approval pending

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

■ Application Examples

- ADSL modems and routers
- Edge routers
- Data storage devices

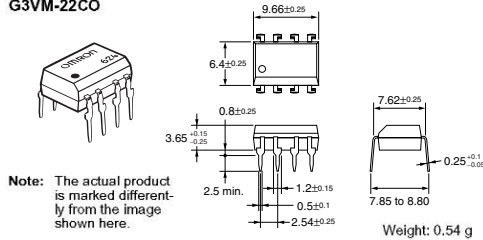
■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	PCB terminals	20 VAC	G3VM-22CO	50	---
	Surface-mounting terminals		G3VM-22FO		
			G3VM-22FO(TR)		1,500

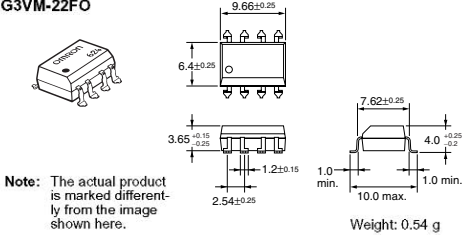
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-22CO

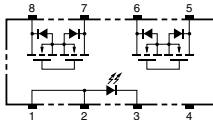


G3VM-22FO

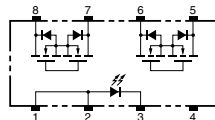


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-22CO

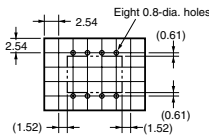


G3VM-22FO



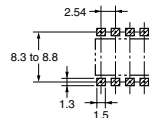
■ PCB Dimensions (Bottom View)

G3VM-22CO



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

G3VM-22FO

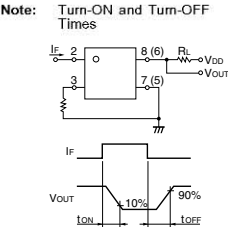


■ Absolute Maximum Ratings (Ta = 25°C)

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
	LED reverse voltage	V_R	8	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OIT}	20	V
	Continuous load current	I_O	150	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.5	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output	$V_{(L)}$	2,500	Vrms
				AC for 1 min
Operating temperature				T_a
				-40 to +85 °C
Storage temperature				T_{stg}
				-55 to +125 °C
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	1.5	5	mA
Output	Maximum resistance with output ON	R_{ON}	---	2	4	Ω
	Current leakage when the relay is open	I_{FAK}	---	10×10^{-6}	1.0	μA
Capacity between I/O terminals		C_{IO}	---	0.8	---	pF
Insulation resistance		R_{IO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	---	1.0	ms
Turn-OFF time		t_{OFF}	---	---	1.0	ms



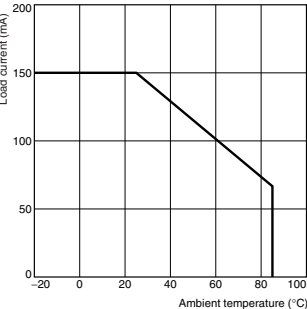
■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	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 MOSFET 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

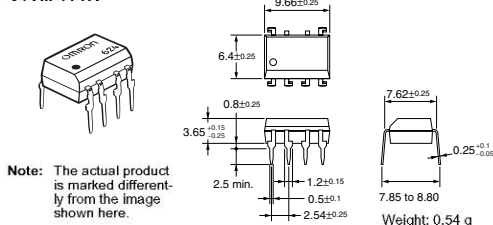
■ List of Models

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)	---

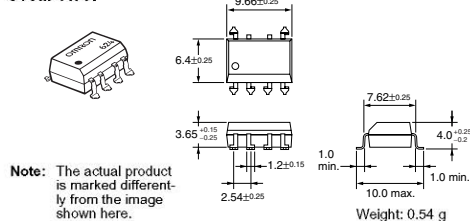
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-61CR

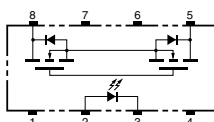


G3VM-61FR

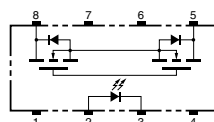


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61CR

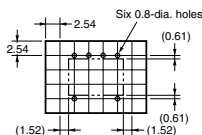


G3VM-61FR



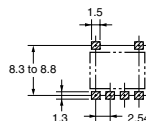
■ PCB Dimensions (Bottom View)

G3VM-61CR



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

G3VM-61FR



Absolute Maximum Ratings (Ta = 25°C)

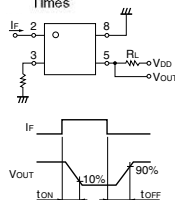
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	0.5	mA/°C
	LED reverse voltage	V_R	6	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(L)}$	1,500	Vrms
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	15	---	pF
	Trigger LED forward current	I_{FI}	---	---	5	mA
Output	Maximum resistance with output ON	R_{ON}	---	0.12	Ω	$I_F = 10 \text{ mA}$, $I_O = 1 \text{ A}$
	Current leakage when the relay is open	I_{I-AK}	---	1.0	4.0	nA
Capacity between I/O terminals		$C_{(L)}$	---	0.8	---	pF
Insulation resistance		$R_{(L)}$	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	5.0	ms	$I_F = 10 \text{ mA}$, $R_L = 200 \Omega$, $V_{DD} = 20 \text{ V}$ (See note 2.)
Turn-OFF time		t_{OFF}	---	3.0	ms	

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



Recommended Operating Conditions

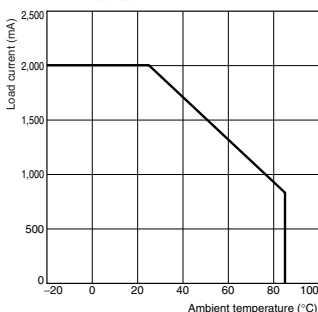
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	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

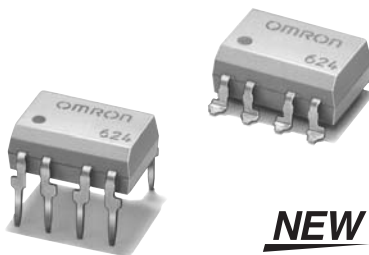
Load Current vs. Ambient Temperature

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.

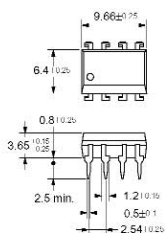
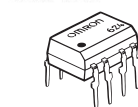
List of Models

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)	---

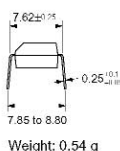
Dimensions

Note: All units are in millimeters unless otherwise indicated.

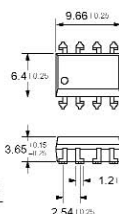
G3VM-62C1



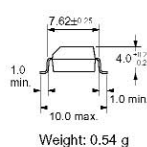
Note: The actual product is marked differently from the image shown here.



G3VM-62F1

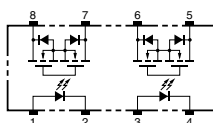


Note: The actual product is marked differently from the image shown here.

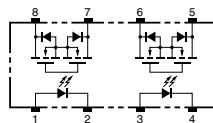


Terminal Arrangement/Internal Connections (Top View)

G3VM-62C1

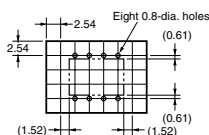


G3VM-62F1



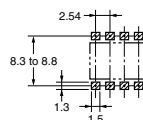
PCB Dimensions (Bottom View)

G3VM-62C1



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-62F1



Absolute Maximum Ratings (Ta = 25°C)

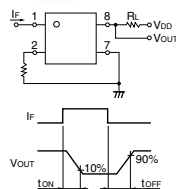
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OFF}	60	V
	Continuous load current	I_O	500	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-5.0	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{L-O}	2,500	Vrms AC for 1 min
Operating temperature		T_a	-40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	µA
	Capacity between terminals	C_1	---	30	---	pF
	Trigger LED forward current	I_{FI}	---	1.6	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	1.0	2.0	Ω
	Current leakage when the relay is open	I_{LAK}	---	---	1.0	µA
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF
Insulation resistance		R_{I-O}	1,000	---	---	MΩ
Turn-ON time		tON	---	0.8	2.0	ms
Turn-OFF time		tOFF	---	0.1	0.5	ms

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



Recommended Operating Conditions

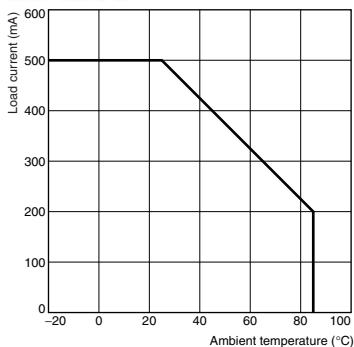
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	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

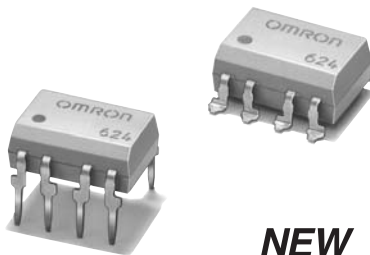
Load Current vs. Ambient Temperature

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.

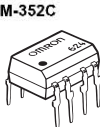
■ List of Models

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	---	---
			G3VM-352F(TR)	---	1,500

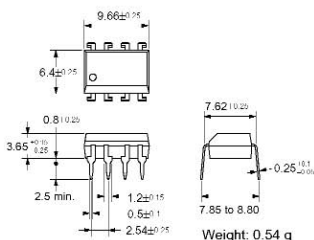
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-352C



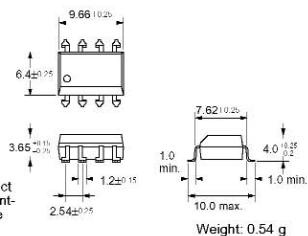
Note: The actual product is marked differently from the image shown here.



G3VM-352F

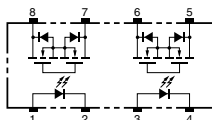


Note: The actual product is marked differently from the image shown here.

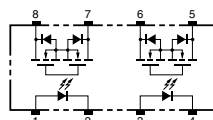


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-352C

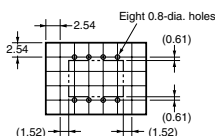


G3VM-352F



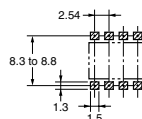
■ PCB Dimensions (Bottom View)

G3VM-352C



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

G3VM-352F



■ Absolute Maximum Ratings (Ta = 25°C)

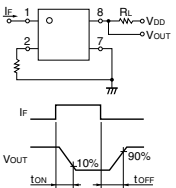
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{ICO}	2,500	Vrms
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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_I	---	30	---	pF
	Trigger LED forward current	I_{FI}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	25	35	Ω
			---	35	50	Ω
	Current leakage when the relay is open	I_{FAK}	---	---	1.0	μA
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	$V_{ICO} = 500 \text{ VDC}, R_{oH} < 80\%$
Turn-ON time	t_{ON}	---	0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \text{ } \Omega, V_{(DI)} = 20 \text{ V}$ (See note 2.)
Turn-OFF time	t_{OFF}	---	0.1	1.0	ms	

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



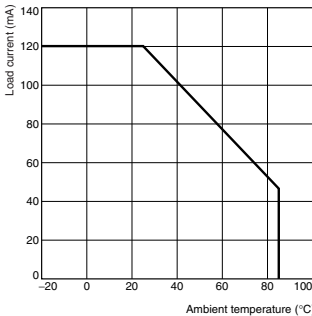
■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(DI)}$	---	---	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	---	85	°C

■ Engineering Data

Load Current vs. Ambient Temperature
G3VM-352C(F)



**Analog-switching MOSFET Relay
with DPST-NC (Double-pole, Single-
throw, Normally Closed) Contacts.
General-purpose Series Added.**

- Switches minute analog signals.
- Switching AC and DC.
- General-purpose series (high ON-resistance) added.

■ Application Examples

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

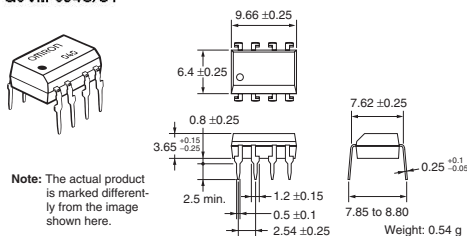
■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
DPST-NC	PCB terminals	350 VAC	G3VM-354C	50	—
	Surface-mounting terminals		G3VM-354C1		
			G3VM-354F		
			G3VM-354F1		
			G3VM-354F(TR)	—	1,500
			G3VM-354F1(TR)		

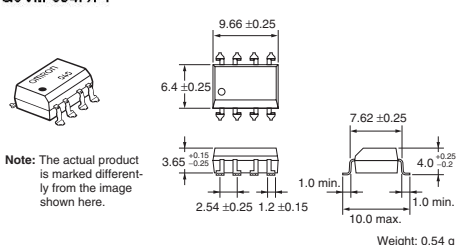
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3 VM-354C/C1

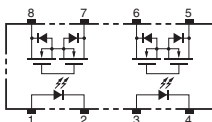


G3 VM-354F/F1

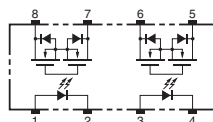


■ Terminal Arrangement/Internal Connections (Top View)

G3 VM-354C/C1

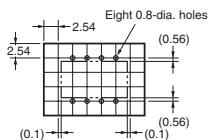


G3 VM-354F/F1



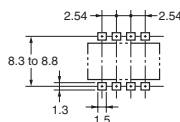
■ PCB Dimensions (Bottom View)

G3VM-354C/C1



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

G3 VM-354F/F1



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	ΔI _F /°C	~0.5	mA/°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 (100)	mA
	ON current reduction rate	ΔI _{ON} /°C	~1.5 (~1)	mA/°C
	Connection temperature	T _J	125	°C
	Dielectric strength between input and output (See note 1.)	V _{I/O}	2,500	Vrms
Operating temperature		T _a	-40 to 85	°C
Storage temperature		T _{stg}	-65 to 125	°C
Soldering temperature (10 s)		---	260	°C

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.

Values inside parentheses () are for G3VM-354C1/F1.

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
	Reverse current	I _R	---	---	10	μA
	Capacity between terminals	C _F	---	30	---	pF
	Trigger LED forward current	I _{FT}	---	1	3	mA
Output	Maximum resistance with output ON	R _{ON}	---	15 (30)	25 (50)	Ω
	Current leakage when the relay is open	I _{LEAK}	---	---	1.0	μA
Capacity between I/O terminals		C _{I/O}	---	0.8	---	pF
Insulation resistance		R _{I/O}	1,000	---	---	MΩ
Turn-ON time		t _{ON}	---	0.1 (0.25)	1.0 (0.5)	ms
Turn-OFF time		t _{OFF}	---	1.0 (0.5)	3.0 (1)	ms

Values inside parentheses () are for G3VM-354C1/F1.

Recommended Operating Conditions

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

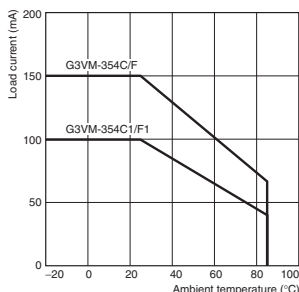
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V _{DD}	---	---	280	V
Operating LED forward current	I _F	5	---	25	mA
Continuous load current	I _O	---	---	150 (100)	mA
Operating temperature	T _a	-20	---	65	°C

Values inside parentheses () are for G3VM-354C1/F1.

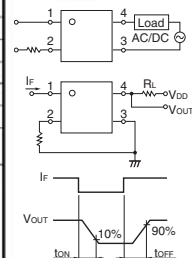
Engineering Data

Load Current vs. Ambient Temperature

G3VM-354C/F
G3VM-354C1/F1



Note 2. Turn-ON and Turn-OFF Times



New MOS FET Relay with Both SPST-NO and SPST-NC Contacts Incorporated in a Single DIP Package.

General-purpose Series Added.

- SPST-NO/SPST-NC models now included in the 350-V load voltage series.
- Continuous load current of 120 mA (90 mA).
- Dielectric strength of 2,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.

■ Application Examples

- Measurement devices
- Security systems

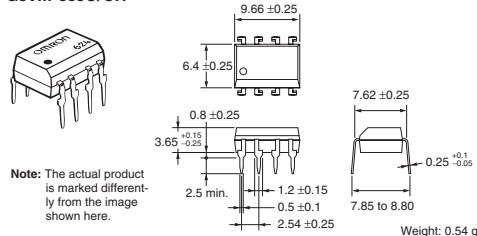
■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NO/SPST-NC	PCB terminals	350 VAC	G3VM-355CR	50	—
	Surface-mounting terminals		G3VM-355C		
			G3VM-355FR		
			G3VM-355F		
			G3VM-355FR(TR)	—	1,500
			G3VM-355F(TR)		

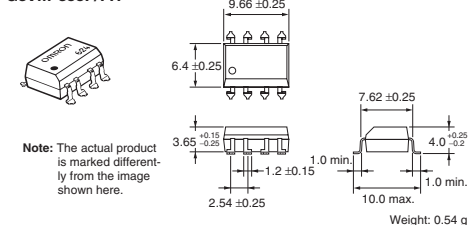
■ Dimensions

Note: All units are in millimetres unless otherwise indicated.

G3VM-355C/CR

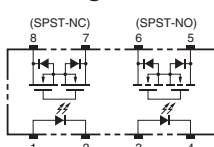


G3VM-355F/FR

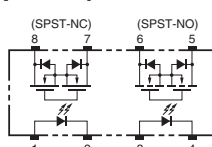


■ Terminal Arrangement/Internal Connections (Top View)

G3VM-355C/CR

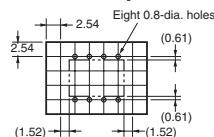


G3VM-355F/FR



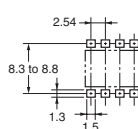
■ PCB Dimensions (Bottom View)

G3VM-355C/CR



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

G3VM-355F/FR



■ 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	$\Delta I_{FP}/^{\circ}\text{C}$	-0.5	mA/°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 (100)	mA
	ON current reduction rate	$\Delta I_{ON}/^{\circ}\text{C}$	-1.2 (-1)	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{I/O}$	2,500	Vrms
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.

Values inside parentheses () are for G3VM-355C/F.

■ 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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_T	---	30	---	pF
	Trigger LED forward current	I_{FT}	---	1	3	mA
						SPST-NO: $I_O = 120$ mA SPST-NC: $I_{OFF} = 10$ μA
Output	Maximum resistance with output ON	R_{ON}	---	15 (40)	25 (50)	Ω
						SPST-NO: $I_F = 5$ mA, $I_O = 120$ mA SPST-NC: $I_F = 0$ mA, $I_O = 120$ mA
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA
						$V_{OFF} = 350$ V
Capacity between I/O terminals	$C_{I/O}$	---	0.8	---	---	pF
						$f = 1$ MHz, $V_F = 0$ V
Insulation resistance	$R_{I/O}$	1,000	---	---	---	M Ω
						$V_{I/O} = 500$ V DC, $R_{ON} \leq 60\%$
Turn-ON time	SPST-NO	t_{ON}	---	(0.3)	1.0	ms
	SPST-NC	---	---	(0.25)	1.0	ms
Turn-OFF time	SPST-NO	t_{OFF}	---	(0.15)	1.0	ms
	SPST-NC	---	---	(0.5)	3.0 (1)	ms

Values inside parentheses () are for G3VM-355C/F.

■ 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_{OB}	---	---	280	V
Operating LED forward current	I_F	---	5	25	mA
Continuous load current	I_O	---	---	120 (100)	mA
Operating temperature	T_a	---	-20	65	°C

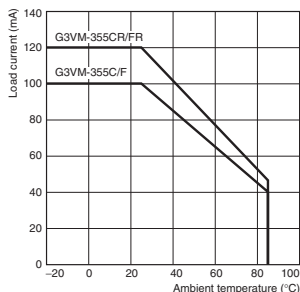
Values inside parentheses () are for G3VM-355C/F.

■ Engineering Data

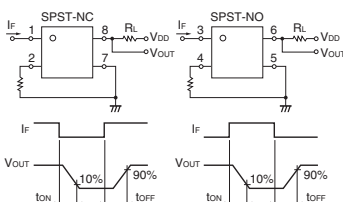
Load Current vs. Ambient Temperature

G3VM-355C/F

G3VM-355CR/FR

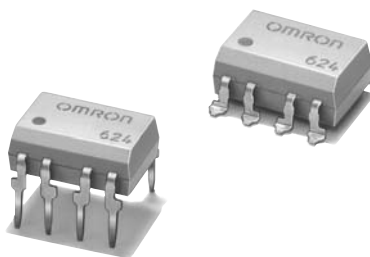


Note 2. Turn-ON and Turn-OFF Times



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.

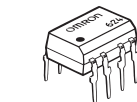
List of Models

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)	---	1,500

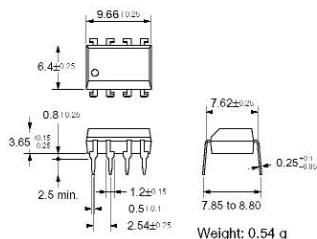
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-402C



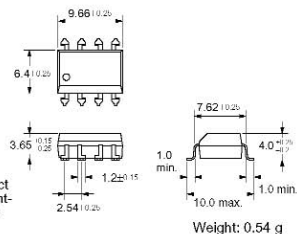
Note: The actual product is marked differently from the image shown here.



G3VM-402F

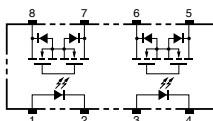


Note: The actual product is marked differently from the image shown here.

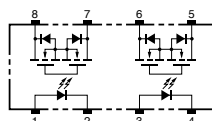


Terminal Arrangement/Internal Connections (Top View)

G3VM-402C

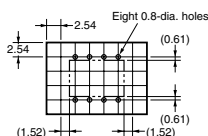


G3VM-402F



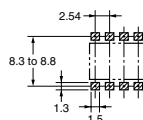
PCB Dimensions (Bottom View)

G3VM-402C



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-402F



Absolute Maximum Ratings (Ta = 25°C)

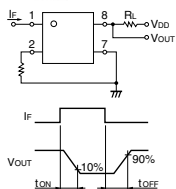
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	$V_{(H)}$	2,500	Vrms
Operating temperature		T_a	-40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_1	---	30	---	pF
	Trigger LED forward current	I_{FI}	---	1	3	mA
Output	Maximum resistance with output ON	$R_{(N)}$	---	18	35	Ω
	Current leakage when the relay is open	$I_{(HAK)}$	---	---	1.0	μA
Capacity between I/O terminals		C_{1O}	---	0.8	---	pF
Insulation resistance		R_{1O}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	---	1.0	ms
Turn-OFF time		t_{OFF}	---	---	1.0	ms

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



Recommended Operating Conditions

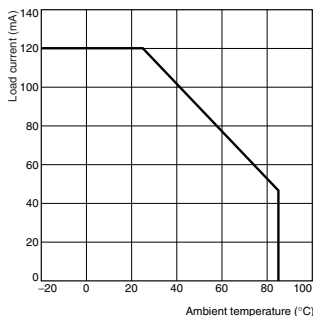
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	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.

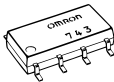
■ List of Models

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

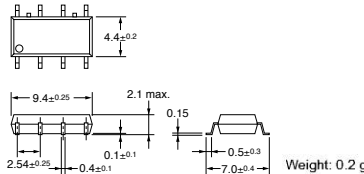
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-62J1

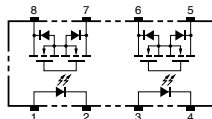


Note: The actual product is marked differently from the image shown here.



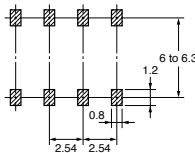
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-62J1



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

G3VM-62J1



Absolute Maximum Ratings (Ta = 25°C)

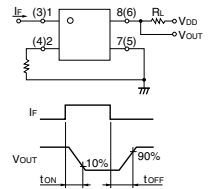
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Dielectric strength between input and output (See note 1.)	$V_{(i-o)}$	1,500	Vrms
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{slg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_i	---	30	---	pF
	Trigger LED forward current	I_{F-I}	---	1.6	3	mA
Output	Maximum resistance with output ON	$R_{(ON)}$	---	1.0	2.0	Ω
	Current leakage when the relay is open	$I_{(HAK)}$	---	---	1.0	μA
Capacity between I/O terminals		C_{i-o}	---	0.8	---	pF
Insulation resistance		R_{i-o}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	0.8	2.0	ms
Turn-OFF time		t_{OFF}	---	0.1	0.5	ms

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



Recommended Operating Conditions

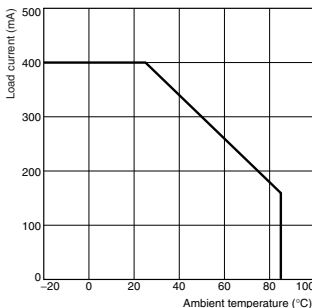
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(H)}$	---	---	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

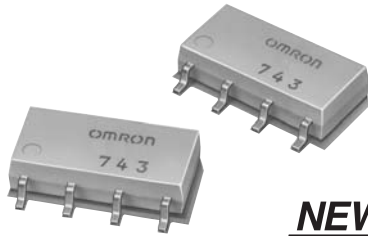
Load Current vs. Ambient Temperature

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.

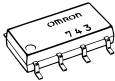
List of Models

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

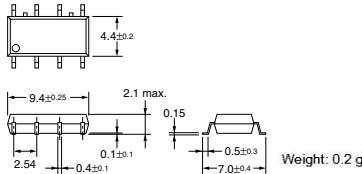
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-202J1

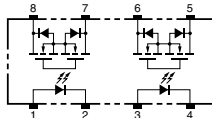


Note: The actual product is marked differently from the image shown here.



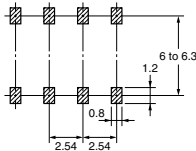
Terminal Arrangement/Internal Connections (Top View)

G3VM-202J1



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-202J1



Absolute Maximum Ratings (Ta = 25°C)

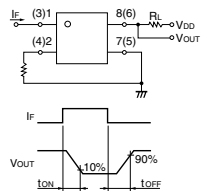
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	V_{OUT}	200	V
	Continuous load current	I_O	200	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-2.0	mA/°C
	Dielectric strength between input and output (See note 1.)	$V_{(i)}$	1,500	Vrms
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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_i	---	30	---	pF	$V = 0\text{ V}, f = 1\text{ MHz}$
	Trigger LED forward current	I_{F1}	---	1	3	mA	$I_O = 200\text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	---	5	8	Ω	$I_F = 5\text{ mA},$ $I_O = 200\text{ mA}$
	Current leakage when the relay is open	I_{LAK}	---	---	1.0	μA	$V_{(OFF)} = 200\text{ V}$
Capacity between I/O terminals		C_{iO}	---	0.8	---	pF	$f = 1\text{ MHz}, V_B = 0\text{ V}$
Insulation resistance		R_{iO}	1,000	---	---	M Ω	$V_{iO} = 500\text{ VDC},$ $\text{RoH} < 80\%$
Turn-ON time		tON	---	0.6	1.5	ms	$I_F = 5\text{ mA}, R_i = 200\ \Omega,$
Turn-OFF time		tOFF	---	0.1	1	ms	$V_{(OFF)} = 20\text{ V}$ (See note 2.)

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



Recommended Operating Conditions

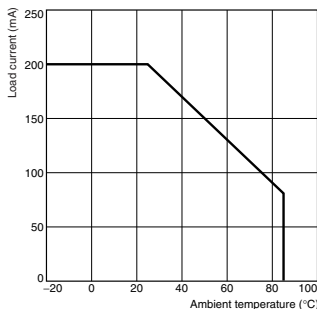
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{(ii)}$	---	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

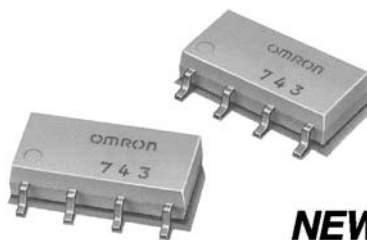
Load Current vs. Ambient Temperature

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

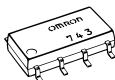
List of Models

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

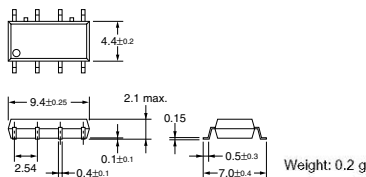
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-352J

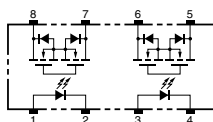


Note: The actual product is marked differently from the image shown here.



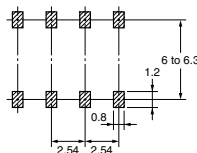
Terminal Arrangement/Internal Connections (Top View)

G3VM-352J



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-352J



Absolute Maximum Ratings (Ta = 25°C)

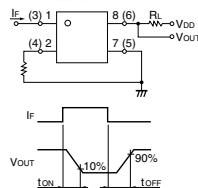
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Dielectric strength between input and output (See note 1.)	V_{IC}	1,500	V _{rms}
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature (10 s)		---	260	°C

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	Mini- mum	Typical	Maxi- mum	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_I	—	30	—	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current	I_{F1}	—	1	3	mA	$I_O = 110\text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	—	25	35	Ω	$I_F = 5\text{ mA},$ $I_O = 110\text{ mA}, t < 1\text{ s}$
			—	35	50	Ω	$I_F = 5\text{ mA},$ $I_O = 110\text{ mA}$
	Current leakage when the relay is open	I_{1-FAK}	—	—	1.0	μA	$V_{OHT} = 350\text{ V}$
	Capacity between I/O terminals		C_{IO}	—	0.8	—	pF
Insulation resistance		R_{IO}	1,000	—	—	M Ω	$V_{IO} = 500\text{ VDC},$ $\text{RoH} < 60\%$
Turn-ON time		tON	—	0.3	1	ms	$I_F = 5\text{ mA}, R_1 = 200\ \Omega,$ $V_{IH1} = 20\text{ V}$ (See note 2.)
Turn-OFF time		tOFF	—	0.1	1	ms	

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



Recommended Operating Conditions

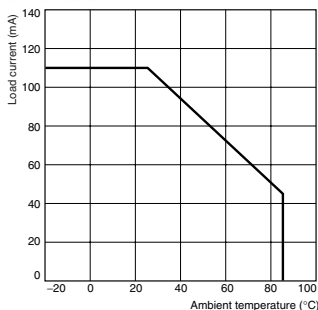
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{H1}	---	---	280	V
Operating LED forward current	I_F	5	10	25	mA
Continuous load current	I_O	---	---	100	mA
Operating temperature	T_a	20	---	65	°C

Engineering Data

Load Current vs. Ambient Temperature

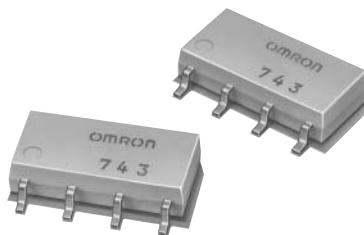
G3VM-352J



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

General-purpose Series Added.

- New models in 350-V load voltage series with DPST-NC contacts and an 8-pin SOP package.
- Continuous load current of 120 mA (90 mA).
- Dielectric strength of 1,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.



NEW

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

■ Application Examples

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

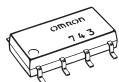
■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
DPST-NC	Surface-mounting terminals	350 VAC	G3VM-354J	50	–
			G3VM-354J1		
			G3VM-354J(TR)	–	2,500
			G3VM-354J1(TR)		

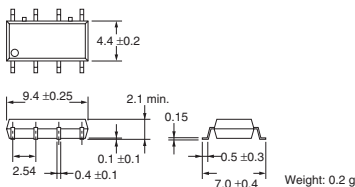
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-354J/J1

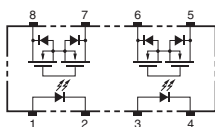


Note: The actual product is marked differently from the image shown here.



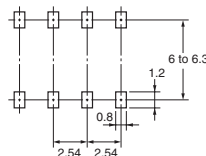
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-354J/J1



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

G3VM-354J/J1



■ 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
	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 (90)	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2 (-0.9)	mA/°C
	Connection temperature	T_J	125	°C
Dielectric strength between input and output (See note 1.)		V_{IO}	1,500	Vrms
Operating temperature		T_a	-40 to 85	°C
Storage temperature		T_{stg}	-65 to 125	°C
Soldering temperature (10 s)		---	260	°C

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.

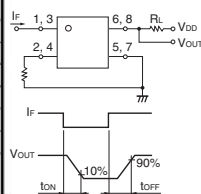
Values inside parentheses () are for G3VM-354J1.

■ 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
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_T	---	30	---	pF
	Trigger LED forward current	I_{FC}	---	1	3	mA
Output	Maximum resistance with output ON	R_{ON}	---	15 (30)	25 (50)	Ω
	Current leakage when the relay is open	I_{LEAK}	---	---	1.0	μA
	Capacity between I/O terminals	C_{IO}	---	0.6	---	pF
	Insulation resistance	R_{IO}	1,000	---	---	MΩ
Turn-ON time		t_{ON}	---	(0.25)	1.0 (0.5)	ms
Turn-OFF time		t_{OFF}	---	(0.5)	3.0 (1)	ms

Values inside parentheses () are for G3VM-354J1.

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.

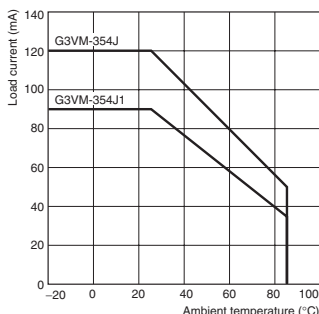
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	---	---	280	V
Operating LED forward current	I_F	5	---	25	mA
Continuous load current	I_O	---	---	120 (90)	mA
Operating temperature	T_a	-20	---	85	°C

Values inside parentheses () are for G3VM-354J1.

■ Engineering Data

Load Current vs. Ambient Temperature

G3VM-354J/J1



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

General-purpose Series Added.

- 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 (90 mA).
- Dielectric strength of 1,500 Vrms between I/O.
- General-purpose series (high ON-resistance) added.



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

■ Application Examples

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

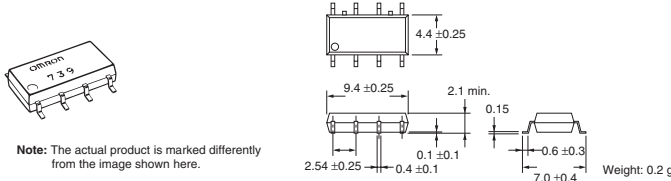
■ List of Models

Contact form	Terminals	Load Voltage (peak value)	Model	Minimum packaging unit	
				Number per stick	Taping quantity
SPST-NO/SPST-NC	Surface-mounting terminals	350 VAC	G3VM-355JR	50	—
			G3VM-355J		
			G3VM-355JR(TR)	—	2,500
			G3VM-355J(TR)		

■ Dimensions

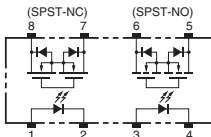
Note: All units are in millimeters unless otherwise indicated.

G3VM-355J/JR



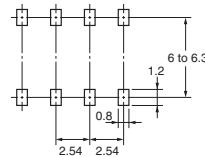
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-355J/JR



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

G3VM-355J/JR



■ 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
	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 (90)	mA
	ON current reduction rate	$\Delta I_{OH}/^\circ\text{C}$	-1.2 (-0.9)	mA/°C
	Connection temperature	T_J	125	°C
	Dielectric strength between input and output (See note 1.)	V_{IO}	1,500	Vrms
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.

Values inside parentheses () are for G3VM-355J.

■ 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
	Reverse current	I_R	—	—	10	μA
	Capacity between terminals	C_T	—	30	—	pF
	Trigger LED forward current	I_{FT}	—	1	3	mA
		I_{FC}	—	—	—	SPST-NO: $I_O = 120$ mA
Output	Maximum resistance with output ON	R_{ON}	—	15 (40)	25 (50)	Ω
	Current leakage when the relay is open	I_{LEAK}	—	—	1.0	μA
	Capacity between I/O terminals	C_{IO}	—	0.8	—	pF
	Insulation resistance	R_{IO}	1,000	—	—	MΩ
	Turn-ON time	SPST-NO: t_{ON}	—	(0.3)	1.0	ms
Turn-OFF time	SPST-NC	—	—	(0.25)	1.0	ms
	SPST-NO	t_{OFF}	—	(0.15)	1.0	ms
	SPST-NC	—	—	(0.5)	3.0 (1)	ms

Values inside parentheses () are for G3VM-355J.

■ Recommended Operating Conditions

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

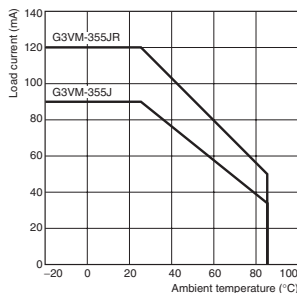
Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V_{DD}	—	—	280	V
Operating LED forward current	I_F	5	—	25	mA
Continuous load current	I_O	—	—	120 (90)	mA
Operating temperature	T_A	-20	—	65	°C

Values inside parentheses () are for G3VM-355J.

■ Engineering Data

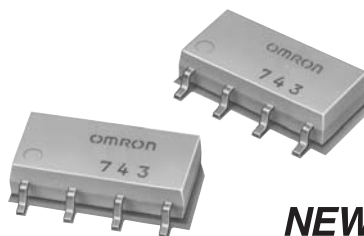
Load Current vs. Ambient Temperature

G3VM-355J/JR



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

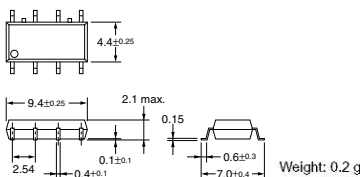
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-402J

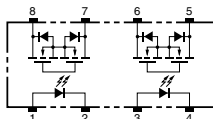


Note: The actual product is marked differently from the image shown here.



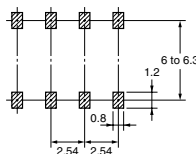
Terminal Arrangement/Internal Connections (Top View)

G3VM-402J



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-402J



Absolute Maximum Ratings (Ta = 25°C)

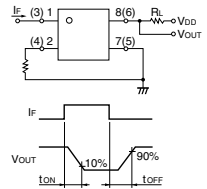
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{RP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_J	125	°C
Output	Output dielectric strength	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
	Dielectric strength between input and output (See note 1.)	V_{IC}	1,500	V _{rms} AC for 1 min
Operating temperature		T_a	40 to +85	°C
Storage temperature		T_{stg}	-55 to +125	°C
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	Mini- mum	Typical	Maxi- mum	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_1	—	30	—	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current	I_{F1}	—	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_{LAK}	—	—	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	—	—	M Ω	$V_{IO} = 500\text{ VDC},$ $RoH < 60\%$
Turn-ON time		tON	—	0.3	1	ms	$I_F = 10\text{ mA}, R_L = 200\ \Omega,$
Turn-OFF time		tOFF	—	0.1	1	ms	$V_{(ON)} = 20\text{ V}$ (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_{II1}	---	---	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-402J

