#### ■ 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.

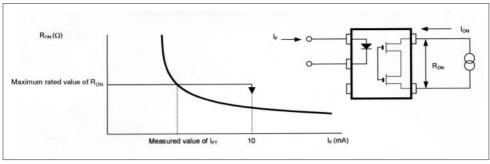
The built-in Current Limit Function (CLR models) has many uses. Traditionally used to clamp excessive over current fault conditions in telecom equipment, this feature can also be used to good effect to resist transient and short circuit conditions.

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



Relationship between Ron and IFT

# PRECAUTIONS WHEN MOUNTING DEVICES ON PCBS Soldering

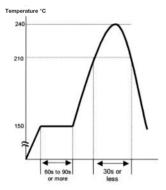
As far as it is possible, avoid raising the temperature of the device by observing the following restrictions.

#### Soldering leads directly

260°C max, 10 seconds max

#### Reflow soldering

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



#### c) Precautions when heating

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

When using a halogen lamp of 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 ultrasoni 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

# $\hat{}$

#### 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

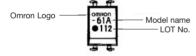
Be sure to wire and solder the Relay under the proper soldering conditions, otherwise the Relay in operation may generate excessive heat and the Relay may burn.

#### CAUTION

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

# Appearence Examples





SOP (Small Outline Package)



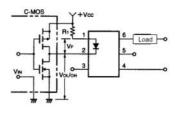
SSOP (Shrink Small Outline Package)



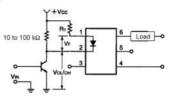
Note 'G3VM' is not printed on the actual product

#### 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.

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

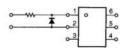
Use the following formula to obtain the LED forward voltage value to assure that the relay releases accurately.

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

# 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.

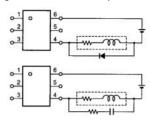
#### Surge Voltage Protection Circuit Example



# 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 thr 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.

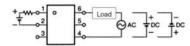


In direction A: 1.96 N In direction B: 1.96 N

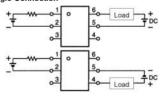
#### LOAD CONNECTION

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

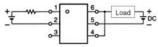
#### **AC** Connection



#### **DC Single Connection**



#### **DC Parallel Connection**



#### SOLDER MOUNTING

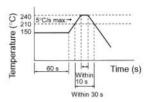
Maintain the following conditions during manual or reflow soldering of the relays in order to prevent the temperature of the relays from rising.

#### 1. Pin Solderina

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

#### 2. Reflow Soldering

- a. Solder each pin at a maximum temperature of 260  $^{\circ}\text{C}$  within 10 s.
- b. Make sure that the ambient temperature on the surface of the resin casing is 240C max. for 10 s maximum.
- c. The following temperature changes are recommendable for soldering.



Style			Through-hole D	Device – 4 pin						
Dimension	s (L x W x H mm	)	4.58 x 6.4 x 3.65							
Туре			General Purpose	9	Telecom	General Purpo	ose			
Part Numb	er (G3VM-)		-61A1	-351A	-2L	-353A	-401A			
Output	Load Voltage		60 V	350 V	350 V	350 V	400 V			
	Function  Cont. load current (connection A)		1a	1a	1a CLF	1b	1a			
			500 mA	120 mA	120 mA	150 mA	120 mA			
	ON resistance	Typical	1 Ω	35 Ω	22 Ω	15 Ω	18 Ω			
		Max.	2 Ω	50 Ω	35 Ω	25 Ω	35 Ω			
Input	LED forward co	urrent			50 mA					
	LED reverse vo	ltage	5 V		6 V	5 V				
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA			
	current	Max.	3 mA	3 mA	3 mA	3 mA	3 mA			
Switching	Turn-on Time	Typical	0.8 ms	0.3 ms	-	1 ms	-			
Charact- eristics		Max.	2 ms	1 ms	1 ms	1 ms	1 ms			
	Turn-off Time	Typical	0.1 ms	0.1 ms	_	1 ms	-			
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms			
Dielectric S I/O termina	Strength betwee als	n			2,500 VAC	,				
Tempera-	Operating				-40°C to 85°	,C				
ture	Storage				-55°C to 125	°C				
Floating ca	pacity between		0.8 pF							
Insulation I	resistance		1,000 ΜΩ							
Page			378	382	380	384	386			

Style			Surface Mount De	evice – 4 pin							
Dimension	s (L x W x H mm	1)	4.58 x 6.4 x 3.65								
Туре			General Purpose		Telecom		General Purpose				
Part Numb	er (G3VM-)		-61D1	-351D	-2FL	-353D	-401D				
Output	Load Voltage		60 V	350 V	350 V	350 V	400 V				
	Function		1a	1a	1a CLF	1b	1a				
	Cont. load current (connection A)		500 mA	120 mA	120 mA	150 mA	120 mA				
	ON resistance	Typical	1 Ω	35 Ω	22 Ω	15 Ω	18 Ω				
		Max.	2 Ω	50 Ω	35 Ω	25 Ω	35 Ω				
Input	LED forward cu	urrent	50 mA								
	LED reverse vo (max)	ltage	5 V		6 V	5 V					
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA				
	current	Max.	3 mA	3 mA	3 mA	3 mA	3 mA				
Switching	Turn-on Time	Typical	0.8 ms	0.3 ms	-	1 ms	-				
Charact- eristics		Max.	2 ms	1 ms	1 ms	1 ms	1 ms				
	Turn-off Time	Typical	0.1 ms	0.1 ms	-	1 ms	-				
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms				
Dielectric S I/O termina	Strength betweens	n			2,500 VAC						
Tempera-	Operating		-40°C to 85°C								
ture	Storage		-55°C to 125°C								
Floating ca	pacity between als		0.8 pF								
Insulation	resistance				1,000 ΜΩ						
Page			378	382	380	384	386				

ICCIIII				i riciays			Cillicon				
Style			Small Outline Pac	kage – 4 pin							
Dimension	s (L x W x H mm	)	3.9 x 4.4 x 2.1								
Туре			Special Purpose								
Part Numb	er (G3VM-)		-21GR	21GR1	41GR5	-41GR6	-61GR1				
Output	Load Voltage		20 V	20 V	40 V	40 V	60 V				
	Function  Cont. load current (connection A)		1a	1a	1a	1a	1a				
			420 V	20 V	40 V	40 V	60 V				
	ON resistance	Typical	5 Ω	1 Ω	1 Ω	10 Ω	0.32 Ω				
		Max.	8 Ω	1.5 Ω	1.5Ω	15 Ω	0.7 Ω				
Input	LED forward co (max)	urrent	50 mA	50 mA	50 mA	50 mA	50 mA				
	LED reverse vo (max)	ltage	5 V	5 V	5 V	5 V	5 V				
	Trigger LED current	Typical	-	-	-	-	-				
	current	Max.	4 mA	4 mA	4 mA	4 mA	3 mA				
Switching Charact-	Turn-on Time	Typical	-	-	-	-	1.4 ms				
eristics		Max.	0.5 ms	0.5 ms	0.5 ms	0.5 ms	3 ms				
	Turn-off Time	Typical	-	-	_	-	0.2 ms				
		Max.	0.5 ms	0.5 ms	0.5 ms	0.5 ms	1 ms				
Dielectric Strength between I/O terminals			1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC				
Tempera- ture	Operating		-20°C to 85°C	-20°C to 85°C	-20°C to 85°C	-20°C to 85°C	-40°C to 85°C				
	Storage		-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C	-40°C to 125°C				
Floating ca	pacity between		0.8 pF	0.8 pF	0.8 pF	0.8 pF	0.8 pF				
Insulation I	resistance		1,000 ΜΩ	1,000 ΜΩ	1,000 ΜΩ	1,000 ΜΩ	1,000 ΜΩ				
Page	·		388	390	392	394	396				
				1	1	1	1				

Style			Small Outline F	ackage - 4 pin							
				Onnaon a							
Dimension	s (L x W x H mm	)	3.9 x 4.4 x 2.1								
Туре			General Purpose								
Part Numb	er (G3VM-)		-61G1	-81G1	-201G	-351G	-353G	-401G			
Output	Load Voltage		60 V	80 V	200 V	350 V	350 V	400 V			
	Function		1a	1a	1a	1a	1b	1a			
	Cont. load curr (connection A)	ent	400 mA	350 mA	50 mA	110 mA	120 mA	120 mA			
	ON resistance	Typical	1 Ω	1 Ω	40 Ω	35 Ω	15 Ω	17 Ω			
		Max.	2 Ω	1.2 Ω	50 Ω	50 Ω	25 Ω	35 Ω			
Input	LED forward cu (max)	ırrent			50	mA					
	LED reverse vo (max)	ltage			5	V					
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA			
	current	Max.	3 mA	4 mA	3 mA	3 mA	3 mA	3 mA			
Switching Charact-	Turn-on Time	Typical	0.8 ms	0.3 ms	-	1 ms	-	0.3 ms			
eristics		Max.	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms			
	Turn-off Time	Typical	0.1 ms	0.1 ms	-	1 ms	-	0.1 ms			
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms			
Dielectric S I/O termina	Strength betwee	n			1,50	O VAC					
Tempera-	Operating				-40°C	to 85°C					
ture	Storage				-55°C t	o 125°C					
Floating ca	pacity between lls		0.8 pF								
Insulation I	esistance		1,000 ΜΩ								
Page			398	400	402	404	406	408			

			I - MOSFET			Ollikoli				
Style			Super Small Outline	Package - 4 pin						
				330						
Dimension	s (L x W x H mm	)	1.7 x 4.2 x 1.8							
Туре			Special Purpose							
Part Numb	er (G3VM-)		-21LR	21LR1	-41LR5	-41LR6				
Output	Output Load Voltage		20 V	20 V	40 V	40 V				
	Function		1a	1a	1a	1a				
	Cont. load current (connection A)		160 mA	450 mA	300 mA	120 mA				
	ON resistance	Typical	5 Ω	0.8 Ω	1 Ω	10 Ω				
		Max.	8 Ω	1.2 Ω	1.5 Ω	15 Ω				
Input	LED forward cu (max)	ırrent	50 mA	50 mA	50 mA	50 mA				
	LED reverse vo (max)	ltage	5 V	5 V	5 V	5 V				
	Trigger LED current	Typical	-	-	-	-				
		Max.	4 mA	4 mA	4 mA	4 mA				
Switching Charact-	Turn-on Time	Typical	-	-	-	-				
eristics		Max.	0.5ms	0.5ms	0.5ms	0.5ms				
	Turn-off Time	Typical	-	-	-	-				
		Max.	0.5ms	0.5ms	0.5ms	0.5ms				
Dielectric S I/O termina	Strength betwee	n	1,500 VAC	1,500 VAC	1,500 VAC	1,500 VAC				
Tempera- ture	Operating		-20°C to 85°C	-20°C to 85°C	-20°C to 85°C					
	Storage		-40°C to 125°C	-40°C to 125°C	-40°C to 125°C					
Floating ca	pacity between		0.8 pF	0.8 pF	0.8 pF	0.8 pF				
Insulation i	resistance		1,000 ΜΩ	1,000 ΜΩ	1,000 ΜΩ	1,000 ΜΩ				
Page			410	412	414	416				

Style			Through-	hole Device	- 6 pin						
Dimensions	s (L x W x H mm	)	7.12 x 6.4 x 3.65	8.64 x 6.4 x 3.65	7.12 x 6.4	x 3.65		8.64 x 6.4 x 3.65	7.12 x 6.4	x 3.65	
Туре			General Purpose	High Per- formance	General Purpose	Telecom	General P	urpose	High Per- formance	Telecom	
Part Numb	er (G3VM-)		-61B1	-XN	-351B	-3L	-353B	-401B	-4N	-401BY	-601BY
Output	tput Load Voltage		60 V	60 V	350 V	350 V	350 V	400 V	400 V	400 V	600 V
Function			1a	1a hiperf	1a	1a CLF	1b	1a	1a hiperf	1a hi isol	1a hi isol
	Cont. load current (connection A)		500 mA	300 mA	120 mA	120 mA	150 mA	120 mA	150 mA	120 mA	100 mA
	ON resistance	Typical	1 Ω	1.4 Ω	25 Ω	22 Ω	15 Ω	17 Ω	-	17 Ω	25 Ω
		Max.	2 Ω	2 Ω	35 Ω	35 Ω	25 Ω	35 Ω	12 Ω	35 Ω	35 Ω
Input	LED forward cu (max)	ırrent	50 mA	30 mA		50	mA		30 mA	50	mA
	LED reverse vo (max)	ltage					5 V				
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	_	1 mA	1 mA	1 mA	-	1.6 mA
	current	Max.	3 mA	5 mA	3 mA	3 mA	3 mA	3 mA	5 mA	3 mA	5 mA
Switching	Turn-on Time	Typical	0.8 ms	0.2 ms	0.3 ms	-	0.1 ms	0.3 ms	0.3 ms	0.3 ms	0.2 ms
Charact- eristics		Max.	2 ms	0.5 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1.5 ms
	Turn-off Time	Typical	0.1 ms	0.2 ms	0.1 ms	-	1 ms	0.1 ms	0.3 ms	0.1 ms	0.2 ms
		Max.	0.5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	1 ms	1 ms
Dielectric S I/O termina	Strength between Ils	n				2,500 VAC				5,000	) VAC
Tempera-	Operating						40°C to 85°	С			
ture	Storage					-5	55°C to 125°	°C			
Floating ca	pacity between lls		0.8 pF								
Insulation r	esistance		1,000 ΜΩ								
Page			418	420	423	425	427	429	431	434	436

	Technical information - MOSFET Relays Office I										
Style			Surface M	lount Devic	e – 6 pin						
			OTHER TO								
Dimensions	s (L x W x H mm	)	7.12 x 6.4 x 3.65	8.64 x 6.4 x 3.65	x 6.4					7.12 x 6.4	x 3.65
Туре			General Purpose	High Per- formance	General Purpose	Telecom	General P	urpose	High Per- formance	Telecom	
Part Numb	er (G3VM-)		-61E1	-XNF	-351E	-3FL	-353E	-401E	-4NF	-401EY	-601EY
Output	ut Load Voltage		60 V	60 V	350 V	350 V	350 V	400 V	400 V	400 V	600 V
	Function  Cont. load current (connection A)		1a	1a hiperf	1a	1a CLF	1b	1a	1a hiperf	1a hi isol	1a hi isol
			500 mA	300 mA	120 mA	120 mA	150 mA	120 mA	150 mA	120 mA	100 mA
	ON resistance	Typical	1 Ω	1.4 Ω	25 Ω	22 Ω	15 Ω	17 Ω	8 Ω	17 Ω	22 Ω
		Max.	2 Ω	2 Ω	35 Ω	35 Ω	25 Ω	35 Ω	12 Ω	35 Ω	35 Ω
Input	LED forward cu (max)	ırrent	50 mA	30 mA		50	mA		30 mA	50	mA
	LED reverse vo (max)	ltage					5 V				
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	-	1 mA	1 mA	1 mA	-	1.6 mA
	current	Max.	3 mA	5 mA	3 mA	3 mA	3 mA	3 mA	5 mA	3 mA	5 mA
Switching Charact-	Turn-on Time	Typical	0.8 ms	0.2 ms	0.3 ms	-	0.1 ms	0.3 ms	0.3 ms	0.3 ms	0.5 ms
eristics		Max.	2 ms	0.5 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1.5 ms
	Turn-off Time	Typical	0.1 ms	0.2 ms	0.1 ms	-	1 ms	0.1 ms	0.3 ms	0.1 ms	0.1 ms
		Max.	0.5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	1 ms	1 ms
Dielectric S I/O termina	strength between Is	n				2,500 VAC	;			5,000	) VAC
Tempera-	Operating					-	40°C to 85°	С			
ture	Storage					-5	55°C to 125	°C			
Floating ca	pacity between Is		0.8 pF								
Insulation r	esistance		1,000 ΜΩ								
Page			418	420	423	425	427	429	431	434	436

Style			Small Outline P	ackage - 6 pin							
				omeon 43							
Dimension	s (L x W x H mm	)	6.3 x 4.4 x 2.1								
Туре			General Purpose	Special Purpose	General Purpos	e					
Part Numb	er (G3VM-)		-61H1	-81HR	-201H1	-351H	-353H	-401H			
Output	Load Voltage		60 V	80 V	200 V	350 V	350 V	400 V			
	Function  Cont. load current (connection A)		1a	1a	1a	1a	1b	1a			
			400 mA	1,250 mA	200 mA	110 mA	120 mA	120 mA			
	ON resistance	Typical	1 Ω	2 Ω	5 Ω	25 Ω	15 Ω	17 Ω			
		Max.	2 Ω	4 Ω	8 Ω	35 Ω	25 Ω	35 Ω			
Input	LED forward cu (max)	ırrent			50	mA					
	LED reverse vo (max)	ltage			5	V					
	Trigger LED	Typical	1.6 mA	2 mA	1 mA	1 mA	1 mA	1 mA			
	current	Max.	3 mA	5 mA	3 mA	3 mA	3 mA	3 mA			
Switching	Turn-on Time	Typical	0.8 ms	2 ms	0.6 ms	0.3 ms	-	0.3 ms			
Charact- eristics		Max.	2 ms	3 ms	1.5 ms	1 ms	1 ms	1 ms			
	Turn-off Time	Typical	0.1 ms	0.7 ms	0.1 ms	0.1 ms	-	0.1 ms			
		Max.	0.5 ms	1 ms	1 ms	1 ms	3 ms	1 ms			
Dielectric S I/O termina	Strength betwee	n			1,50	0 VAC					
Tempera-	Operating		-40°C to 85°C	-20°C to 85°C		-40°C	to 85°C				
ture	Storage		-55°C to 125°C	-40°C to 125°C		-55°C t	o 125°C				
Floating ca	pacity between lls			0.8 pF							
Insulation I	esistance		1,000 ΜΩ								
Page			438	440	442	444	446	448			

					J.J.						
Style			Through-ho	ole Device - 8	B pin						
Dimension	s (L x W x H mm	)	9.66 x 6.4 x	3.65							
Туре			Special Purp	pose	General Pu	rpose	Telecom	General Pur	pose		
Part Numb	er (G3VM-)		-22CO	-61CR	-62C1	-352C	-WL	-354C	-355C	-402C	
Output	Output Load Voltage		60 V	60 V	60 V	350 V	350 V	350 V	350 V	400 V	
	Function		2a	1a	2a	2a	2a CLF	2b	1c	2a	
	Cont. load curr (connection A)	ent	150 mA	500 mA	500 mA	120 mA	120 mA	150 mA	100 mA	120 mA	
	ON resistance	Typical	2 Ω	-	1 Ω	25 Ω	22 Ω	15 Ω	30 Ω	18 Ω	
		Max.	4 Ω	0.12	2 Ω	50 Ω	35 Ω	25 Ω	35 Ω	35 Ω	
Input	LED forward cu (max)	ırrent				50	mA				
	LED reverse vo	ltage	6V		5	V	6 V		5 V		
	Trigger LED	Typical	1.15 mA	-	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA	
	current	Max.	5 mA	5 mA	3 mA	3 mA	3 mA	3 mA	3 mA	3 mA	
Switching Charact-	Turn-on Time	Typical	-	-	0.8 ms	0.3 ms	-	0.1 ms	0.3 ms	-	
eristics		Max.	1 ms	5 ms	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms	
	Turn-off Time	Typical	-	-	0.1 ms	0.1 ms	_	1 ms	0.15 ms	-	
		Max.	1 ms	5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	
Dielectric S I/O termina	Strength betwee ils	n	2,500 VAC	1,500 VAC	500 VAC 2,500 VAC						
Tempera-	Operating		-40°C to 85°C	-20°C to 85°C			-40°C	to 85°C			
ture	Storage					-55°C t	o 125°C				
Floating ca	pacity between ils						3.0	3 pF			
Insulation	resistance	1,000 ΜΩ									
Page			450	452	454	456	458	460	462	464	

Style			Surface Mo	ount Device -	· 8 pin						
				e get get							
Dimension	s (L x W x H mm	)	9.66 x 6.4 x 3.65								
Туре			Special Purp	oose	General Pu	eneral Purpose Telecom General Purpose					
Part Numb	er (G3VM-)		-22FO	-61FR	-62F1	-352F	-WFL	-354F -355F -402F			
Output	Load Voltage		20 V	60 V	60 V	350 V	350 V	350 V	350 V	400 V	
F	Function		2a	1a	2a	2a	2a CLF	2b	1c	2a	
	Cont. load curr (connection A)	ent	150mA	500 mA	500 mA	120mA	120mA	150mA	100mA	120mA	
	ON resistance	Typical	2 Ω	?	1 Ω	25 Ω	22 Ω	15 Ω	30 Ω	18 Ω	
		Max.	4 Ω		2 Ω	50 Ω	35 Ω	25 W	35 Ω	35 Ω	
Input	LED forward cu (max)	urrent				50	mA				
	LED reverse vo	ltage	6	V	5	V	6 V		5 V		
	Trigger LED	Typical	1.5 mA	-	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA	
	current	Max.	5 mA	5 mA	3 mA	3 mA	3 mA	3 mA	3 mA	3 mA	
Switching	Turn-on Time	Typical	-	-	0.8 ms	0.3 ms	-	0.1 ms	0.3 ms	-	
Charact- eristics		Max.	1 ms	5 ms	2 ms	1 ms	1 ms	1 ms	1 ms	1 ms	
	Turn-off Time	Typical	-	-	0.1 ms	0.1 ms	-	1 ms	0.15 ms	-	
		Max.	1 ms	5 ms	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms	
Dielectric S I/O termina	Strength betwee	n	2,500 VAC	1,500 VAC			2,500	) VAC			
Tempera-	Operating		-40°C to 85°C	-20°C to 85°C			-40°C	to 85°C			
ture	Storage					-55°C t	o 125°C				
Floating ca	pacity between					3.0	3 pF				
Insulation	resistance		1,000 ΜΩ								
Page			450	452	454	456	458	460	462	464	

ICCIIII	icai intorr	nation		Lineia	ys			OHROH			
Style			Small Outline	Package – 8 pi	n						
				OTTING!							
Dimension	s (L x W x H mm	)	9.4 x 4.4 x 2.1								
Туре			General Purpos	se							
Part Numb	er (G3VM-)		-62J1	-202J1	-352J	-354J	-355J	-402J			
Output	Output Load Voltage		60 V	200 V	350 V	350 V	350 V	400 V			
	Function		2a	2a	2a	2b	1c	2a			
	Cont. load curr (connection A)	ent	400 mA	200mA	110mA	120mA	90 mA	120mA			
	ON resistance	Typical	1 Ω	5 Ω	35 Ω	15 Ω	30 Ω	17 Ω			
		Max.	2 Ω	8 Ω	50 Ω	25 Ω	35 Ω	35 Ω			
Input	LED forward cu (max)	urrent		50 mA							
	LED reverse vo (max)	ltage	5 V								
	Trigger LED	Typical	1.6 mA	1 mA	1 mA	1 mA	1 mA	1 mA			
	current	Max.	3 mA	3 mA	3 mA	3 mA	3 mA	3 mA			
Switching	Turn-on Time	Typical	0.8 ms	0.6 ms	0.3 ms	-	0.3 ms	0.3 ms			
Charact- eristics		Max.	2 ms	1.5 ms	1 ms	1 ms	1 ms	1 ms			
	Turn-off Time	Typical	0.1 ms	0.1 ms	0.1 ms	-	0.15ms	0.1 ms			
		Max.	0.5 ms	1 ms	1 ms	3 ms	1 ms	1 ms			
Dielectric S I/O termina	Strength betwee	n			1	1,500 VAC					
Tempera-	Operating				-41	0°C to 85°C					
ture	Storage				-55	5°C to 125°C					
Floating ca	pacity between als		0.8 pF								
Insulation	nsulation resistance			1,000 ΜΩ							
Page			466	468	470	472	474	476			

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

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



The actual product is marked differently from the image

#### ■ Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■ 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		G3VM-61D1		
	terminals		G3VM-61D1(TR)		1,500

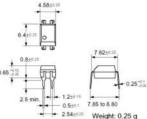
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





Note: The actual product is marked differently from the image



G3VM-61D1

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# ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-61A1

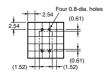


#### G3VM-61D1



# ■ PCB Dimensions (Bottom View)

#### G3VM-61A1



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

G3VM-61D1



# ACCEET Bolove

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

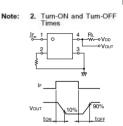
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	J <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>EP</sub>	1	А	100 μs pulses, 100 pps
	LED forward current reduc- tion rate	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	T <sub>j</sub>	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	60	V.	
	Continuous load current	lo.	500	mA	
	ON current reduction rate	A IONPC	-5.0	mA/°C	Ta≥25°C
	Connection temperature	Ti	125	°C	
	c strength between input and See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operation	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	*C	With no icing or condensation
Solderin	g temperature (10 s)	***	260	°C.	10 s

 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.

Note:

# ■ Electrical Characteristics (Ta = 25°C)

	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V	
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz	
	Trigger LED forward current	1 <sub>FT</sub>		1.6	3	mA	I <sub>O</sub> = 500 mA	
Output	Maximum resistance with output ON	RON		1:	2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 500 mA	
	Current leakage when the relay is open	LEAK	-	= 1	1.0	μΑ	V <sub>OFF</sub> = 60 V	
Capacity	y between I/O terminals	CIO	-	0.8	-	pF	f = 1 MHz, Vs = 0 V	
Insulatio	on resistance	Rio	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON		0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$	
Tum-OF	um-OFF time			0.1	0.5	ms	V <sub>DD</sub> = 20 V (See note 2	



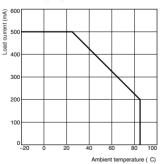
# ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-	-	48	V
Operating LED forward current	l <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo			500	mA.
Operating temperature	Ta	- 20		65	°C

## **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-61A1(D1)



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

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



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



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#### ■List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-2L	Yes	100	
	Surface-mounting		G3VM-2FL			
	terminals		G3VM-2FL(TR)	1		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





Note: The actual product

shown here.

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G3VM-2FL



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shown here



4.58±0.25



# ■Terminal Arrangement/Internal Connections (Top View)

G3VM-2L

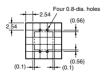


G3VM-2FL



#### ■PCB Dimensions (Bottom View)

G3VM-2L



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

G3VM-2FL



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	А	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔIp/°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>	6	٧	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo.	120	mA	
	ON current reduction rate	∆I <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
	ic strength between input and See note 1.)	VI-O	2,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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 <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 6 V
	Capacity between terminals	CT		30	***	pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		22	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK	) <del>es</del> si		1.0	μА	V <sub>OFF</sub> = 350 V
Limit cu	rrent	I <sub>LIM</sub>	150		300	mA	I <sub>F</sub> = 5 mA, V <sub>DD</sub> = 5 V, t = 5 ms
Capacity	between I/O terminals	C <sub>1-O</sub>		0.8		pF	f = 1 MHz, Vs = 0 V
Insulatio	n resistance	R <sub>I-O</sub>	1,000	_		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Tum-ON	l time	tON			1.0	ms	$I_F$ = 5 mA, $R_L$ = 200 $Ω$ ,
Tum-OF	F time	tOFF		770	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

# 

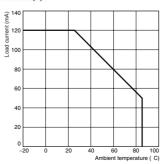
# ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	٧
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo lo	1	-	100	mA
Operating temperature	Ta	- 20	-	65	°C

## **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-2(F)L



# New Standard Series with 350-V Load

- Upgraded G3VM-2 Series.
- Continuous load current of 120 mA.
- Dielectric strength of 2.500 Vrms between I/O.
- Operating time of 0.3 ms (typical)



The actual product is marked differently from the image

# ■Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

# ■ 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	1	G3VM-351D		
	terminals		G3VM-351D(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





Note: The actual product is marked differently from the image





-0.5±0.1 - 2.54±0.25

# Weight: 0.25 g

#### G3VM-351D



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







# ■Terminal Arrangement/Internal Connections (Top View)

#### G3VM-351A

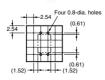


#### G3VM-351D



# ■PCB Dimensions (Bottom View)

#### G3VM-351A



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

G3VM-351D



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	1 <sub>EP</sub>	1	۸	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ lp/°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	( )
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	VOFF	350	V	
	Continuous load current	l <sub>0</sub>	120	mA	
	ON current reduction rate	Δ l <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	
Dielectr output (	ric strength between input and (See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ing temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderii	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	I <sub>R</sub>	-		10	μА	V <sub>R</sub> = 5 V	
	Capacity between terminals	CT	-	30		pF	V = 0, f = 1 MHz	
	Trigger LED forward current	let .	-	1	3	mA	I <sub>O</sub> = 120 mA	
Output	Maximum resistance with output ON	R <sub>ON</sub>		25	35	Ω	I <sub>F</sub> = 5 mA. I <sub>O</sub> = 120 mA, t < 1 s	
				35	50	Ω	I <sub>F</sub> = 5 mA. I <sub>O</sub> = 120 mA	
	Current leakage when the relay is open	ILEAK	-	-	1.0	μА	V <sub>OFF</sub> = 350 V	
Capacity	y between I/O terminals	CHO	-	0.8		pF	f = 1 MHz, Vs = 0 V	
Insulatio	on resistance	R <sub>I-O</sub>	1,000	22		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON	N time	tON		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$	
Turn-OF	F time	tOFF	-	tOFF 0.1 1.0 m		ms	V <sub>DD</sub> = 20 V (See note 2.)	

# 

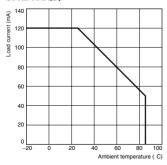
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-	-	280	V
Operating LED forward current	1 <sub>E</sub>	5	7.5	25	mA
Continuous load current	I <sub>O</sub>			100	mA
Operating temperature	Ta	- 20		65	°C

# **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-351A(D)



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

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

#### ■ Application Examples

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



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

#### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NC	PCB terminals	350 VAC	G3VM-353A	100	
	Surface-mounting		G3VM-353D		
	terminals		G3VM-353D(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

# G3VM-353A



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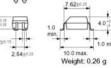


G3VM-353D









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

G3VM-353A

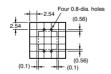


G3VM-353D



#### **■PCB** Dimensions (Bottom View)

#### G3VM-353A



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

G3VM-353D



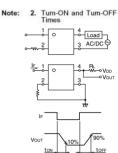
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>E</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	VOFF	350	V	
	Continuous load current	I <sub>O</sub>	150	mA	
	ON current reduction rate	∆ lon/°C	-1.5	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
	ic strength between input and See note 1.)	Vio	2,500	Vrms	AC for 1 min
Operati	ng temperature	T <sub>a</sub>	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

#### Note:

 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 5 V
	Capacity between termi- nals	C <sub>T</sub>		30		pF	V = 0, f = 1 MHz
	Trigger LED forward cur- rent	I <sub>FT</sub>		1	3	mA	I <sub>OFF</sub> = 10 μA
Output	Maximum resistance with output ON	R <sub>ON</sub>		15	25	Ω	I <sub>O</sub> = 150 mA
	Current leakage when the relay is open	ILEAK			1.0	μА	I <sub>F</sub> = 5 mA, V <sub>OFF</sub> = 350 V
Capacity	y between I/O terminals	CI-O		0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulatio	on resistance	Ri-O	1,000	550		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time Turn-OFF time		10N		0.1	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
		tOFF	-	1.0	3.0	ms	V <sub>DD</sub> = 20 V (See note 2.)



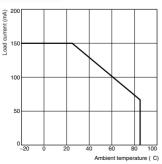
# ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	l <sub>F</sub>	5		25	mA
Continuous load current	lo			150	mA
Operating temperature	Ta	- 20		65	°C

# **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-353A(D)



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

- A 4-pin Relay now available in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2.500 Vrms between I/O.



# **NEW Approval pending**

Note: The actual product is marked differently from the image

shown here

#### ■Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■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	1	G3VM-401D	1	
	terminals		G3VM-401D(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



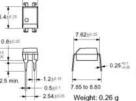


The actual product

is marked different-

ly from the image shown here.

0.5+01



#### G3VM-401D







4 58+025





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

#### G3VM-401A

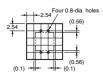


#### G3VM-401D



# ■PCB Dimensions (Bottom View)

#### G3VM-401A



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

G3VM-401D



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	400	V	
	Continuous load current	I <sub>O</sub>	120	mA	
	ON current reduction rate	∆ lon/°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	
Dielectr output (	ic strength between input and See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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.

Note:

# ■ Electrical Characteristics (Ta = 25°C)

9	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	let.		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	RON	-	18	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	ILEAK			1.0	μА	V <sub>OFF</sub> = 400 V
Capacity	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-C)</sub> = 500 VDC, RoH ≤ 60%
Tum-ON time		tON	222		1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Tum-OF	F time	10FF			1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

# 

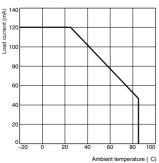
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			320	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo			100	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-401A(D)



# New MOS FET Relay with Low Output Capacitance and ON Resistance (CxR = 5pF• $\Omega$ ) 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.



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	20 VAC	G3VM-21GR	100	
	terminals	1	G3VM-21GR(TR)		2,500

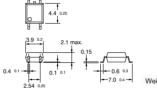
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21GR



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



# ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21GR



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

G3VM-21GR



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduc- tion rate	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	T <sub>i</sub>	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	20	V	
	Continuous load current	lo	160	mA	
	ON current reduction rate	A IONPC	-1.6	mA/°C	Ta≥25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectr output (	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

# ■ Electrical Characteristics (Ta = 25°C)

	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	-		10	μΑ	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>FT</sub>			4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	- 1	5	8	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 160 mA, t < 1 s
	Current leakage when the relay is open	LEAK	7.7%	-	1.0	nA	V <sub>OFF</sub> = 20 V, Ta = 50°C
	Capacity between terminals	C <sub>OFF</sub>	-	1.0	2.5	pF	V = 0, f = 100 MHz, t < 1 s
Capacit	y between I/O terminals	CHO	-	0.8	***	pF	f = 1 MHz, Vs = 0 V
Insulatio	on resistance	Rio	1,000			MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Turn-OF	F time	tOFF			0.5	ms	V <sub>DD</sub> = 20 V (See note 2.)

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

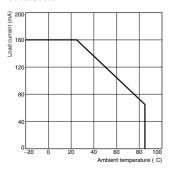
# ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-		20	V
Operating LED forward current	l <sub>F</sub>	7	-	30	mA
Continuous load current	lo			160	mA
Operating temperature	Ta	25	-	60	°C

# ■Engineering Data

# Load Current vs. Ambient Temperature G3VM-21GR



# New MOS FET Relay with Low Output Capacitance and ON Resistance (CxR = 5pF• $\Omega$ ) 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.



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	20 VAC	G3VM-21GR1	100	
2.17 1.3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	terminals	10 000000000000000000000000000000000000	G3VM-21GR1(TR)		2,500

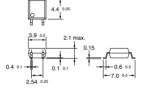
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-21GR1



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



Weight: 0.1

# ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-21GR1



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

G3VM-21GR1



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	lpp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>	5	٧	
	Connection temperature	T <sub>j</sub>	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	20	٧	
	Continuous load current	lo	300	mA	
	ON current reduction rate	Δ1 <sub>ON</sub> /°C	-3.0	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>j</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stq</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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)

	ltem	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>	een i	-	4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	-	1	1.5	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 300 mA, t < 1 s
	Current leakage when the relay is open	I <sub>LEAK</sub>			1.0	nA	V <sub>OFF</sub> = 20 V Ta = 50°C
	Capacity between terminals	C <sub>OFF</sub>	œ	5.0	12.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacit	y between I/O terminals	CI-O		0.8	-	pF	f = 1 MHz. Vs = 0 V
Insulatio	on resistance	Rio	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Tum-OF	F time	tOFF			0.5	ms	V <sub>DD</sub> = 20 V (See note 2.

# 2. Tum-ON and Turn-OFF R∟ W~~VDD

Note:

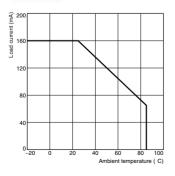
## ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>		-	20	V	
Operating LED forward current	1 <sub>F</sub>	7		30	mA	
Continuous load current	lo			300	mA	
Operating temperature	Ta	25		60	°C	

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-21GR1



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

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



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	40 VAC	G3VM-41GR5	100	
	terminals		G3VM-41GR5(TR)		2,500

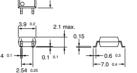
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





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



Weight: 0.1 a

# ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-41GR5



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

#### G3VM-41GR5



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	40	V	
	Continuous load current	lo	300	mA	
	ON current reduction rate	Δ I <sub>ON</sub> /°C	-3.0	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>j</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)	-	260	°C	10 s

 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.

Note:

# ■ Electrical Characteristics (Ta = 25°C)

y.	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between ter- minals	CT		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>			4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	RON	***	1.0	1.5	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 300 mA, t < 1 s
	Current leakage when the relay is open	LEAK	-	=	1.0	nA	V <sub>OFF</sub> = 30 V, Ta = 50°C
	Capacity between ter- minals	C <sub>OFF</sub>	275.0	10.0	14.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacit	y between I/O terminals	CI-O	***	0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-		MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON		-	0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Tum-OF	F time	tOFF			0.5	ms	V <sub>DD</sub> = 20 V (See note 2.)

# Note: 2. Turn-ON and Turn-OFF Times IE - 0 4 Re-OV00 OV00T IF VOUT 10% 90%

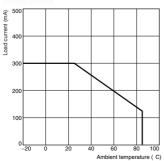
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			32	V
Operating LED forward current	l <sub>F</sub>	10	-	30	mA
Continuous load current	lo lo			300	mA
Operating temperature	Ta	25		60	°C

## ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-41GR5



# New MOS FET Relay with Low Output Capacitance and ON Resistance (CxR = $10pF \cdot \Omega$ ) 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.



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	40 VAC	G3VM-41GR6	100	
	terminals		G3VM-41GR6(TR)	***	2,500

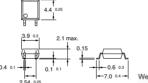
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-41GR6



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



Weight: 0.1

# ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-41GR6



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

G3VM-41GR6



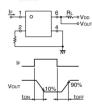
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>E</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	40	V	
	Continuous load current	I <sub>O</sub>	120	mA	
	ON current reduction rate	∆ lon/°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	
	ic strength between input and See note 1.)	V <sub>FO</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	ees:		10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	C <sub>T</sub>		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>		220	4	mA.	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		10	15	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA, t < 1 s
	Current leakage when the relay is open	ILEAK	***		1.0	nA	V <sub>OFF</sub> = 30 V, Ta = 50°C
	Capacity between terminals	COFF	***	1.0	2.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacity	y between I/O terminals	C <sub>I-O</sub>		0.8	***	pF	f = 1 MHz, Vs = 0 V
Insulatio	n resistance	R <sub>I-O</sub>	1,000	_		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Tum-ON	l time	tON			0.5	ms	$I_F = 10 \text{ mA}, R_L = 200 \Omega,$
Tum-OF	fum-OFF time		***		0.5	ms	V <sub>DD</sub> = 20 V (See note 2.

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



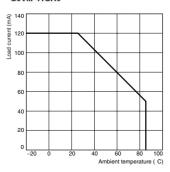
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			32	V
Operating LED forward current	l <sub>E</sub>	10		30	mA
Continuous load current	lo			120	mA
Operating temperature	Ta	25	***	60	°C

# **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-41GR6



# MOSFET Relay - G3VM-61GR1

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

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

# ■ 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		60 VAC	G3VM-61GR1	100	
	terminals		G3VM-61GR1(TR)		2,500

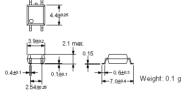
#### **■** Dimensions

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



Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>E</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	Α	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ1 <sub>F</sub> /°C	0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	٧	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	$V_{OFF}$	60	V	
	Continuous load current	lo	1000	mA	
	ON current reduction rate	∆l <sub>ON</sub> /°C	-13.3	mA/°C	Ta≥50°C
	Connection temperature	Tj	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>FO</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	40 to +85	°C	With no icing or condensation
Storage temperature		T <sub>stg</sub>	55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)			260	°C	10 s

 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.

Note:

# ■ Electrical Characteristics (Ta = 25°C)

Item .		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	C <sub>T</sub>		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 400 mA
Output	Maximum resistance with output ON	Ron			0.7	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
	Current leakage when the relay is open	ILEAK	0.25	0.2	100	nA	V <sub>OFF</sub> = 60 V
Capacity between I/O terminals		C <sub>I-O</sub>		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000			МΩ	V <sub>LO</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON		1.4	3.0	ms	$I_F = 5 \text{ mA}$ , $R_L = 200 \Omega$ ,
Turn-OFF time		tOFF		0.6	1.0	ms	V <sub>DD</sub> =20 V (See note 2.)

# Note: 2. Turn-ON and Turn-OFF Times 1. Turn-ON and Turn-OFF Turnes 1. Turnes

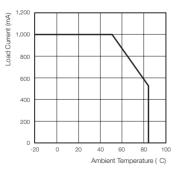
# ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			48	٧
Operating LED forward current	lF	5	10	20	mA
Continuous load current	ю			1,000	mA
Operating temperature	Ta	25		65	°C

## **■** Engineering Data

# Load Current vs. Ambient Temperature G3VM-61GR1



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

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





# ■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	60 VAC	G3VM-61G1	100	
l.	terminals		G3VM-61G1(TR)		2,500

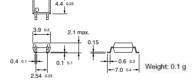
#### ■ Dimensions

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



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	lp.	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	VOFF	60	V	
	Continuous load current	10	400	mA	
	ON current reduction rate	∆ l <sub>ON</sub> <sup>∞</sup> C	-4.0	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectroutput (	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderi	ng temperature (10 s)		260	°C	10 s

 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.

Note:

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	-	30	10	μA pF	V <sub>R</sub> = 5 V
	Capacity between terminals	CT					V = 0, f = 1 MHz
	Trigger LED forward current	IFT		1.6	3	mA	I <sub>O</sub> = 400 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		1	2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
	Current leakage when the relay is open	LEAK	-	-	1.0	μА	V <sub>OFF</sub> = 60 V
Capacity	y between I/O terminals	C <sub>1-O</sub>		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000		-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time Turn-OFF time		tON		0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
		tOFF		0.1	0.5	ms	V <sub>DD</sub> = 20 V (See note 2.)

# 2. Tum-ON and Tum-OFF Times IF AND VOUT VOUT 1006 1006 1006 1006

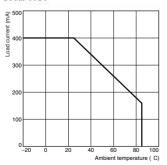
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-		48	V
Operating LED forward current	l <sub>E</sub>	5	7.5	25	mA
Continuous load current	I <sub>O</sub>	-		400	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

## Load Current vs. Ambient Temperature G3VM-61G1



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

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

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



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

#### ■Application Examples

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

#### ■List of Models

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

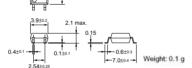
#### ■ Dimensions

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



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	l <sub>EP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	9
	Connection temperature	T <sub>j</sub>	125	°C	
Output	Output dielectric strength	Voff	80	V	
	Continuous load current	lo	350	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-3.5	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	J.
Dielectr output (	ic strength between input and See note 1.)	VIO	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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 <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT	***	1.0	4.0	mA	I <sub>O</sub> = 350 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		1.0	1.2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 350 mA
	Current leakage when the relay is open	LEAK	-	0.2	1.0	пА	V <sub>OFF</sub> = 30 V, Ta = 50°C
Capacity	y between I/O terminals	CI-O	55.0	0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time Turn-OFF time		tON	***	0.3	0.5	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
		tOFF	***	0.3	0.5	ms	V <sub>DD</sub> =20 V (See note 2.)

## 

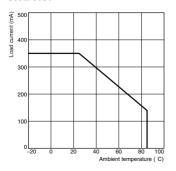
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-	-	64	V
Operating LED forward current	l <sub>F</sub>	5		30	mA
Continuous load current	lo			350	mA
Operating temperature	Ta	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.

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Note: The actual product is marked differently from the image

#### ■Application Examples

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

#### ■List of Models

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

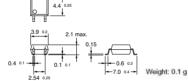
#### ■ Dimensions

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



	Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	lp	50	mA		
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 µs pulses, 100 pps	
	LED forward current reduction rate	Δ I <sub>E</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	V <sub>R</sub>	5	V		
	Connection temperature	Tj	125	°C	-	
Output	Output dielectric strength	V <sub>OFF</sub>	200	V		
	Continuous load current	l <sub>0</sub>	50	mA		
	ON current reduction rate	Δ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta≥25°C	
	Connection temperature	Tj	125	°C		
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min	
Operati	ng temperature	Ta	-40 to +85	"C	With no icing or condensation	
Storage	temperature	T <sub>sfg</sub>	-55 to +100	°C	With no icing or condensation	
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	let:		1	3	mA	I <sub>O</sub> = 50 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		30	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 50 mA
	Current leakage when the relay is open	LEAK		-	0.01	μА	V <sub>OFF</sub> = 200 V, Ta = 25°C
Capacity	y between I/O terminals	CHO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>HO</sub>	1,000	-	-	MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time Turn-OFF time		tON		0.04	0.1	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
		tOFF		0.1	0.2	ms	V <sub>DD</sub> = 10 V (See note 2.)

## 

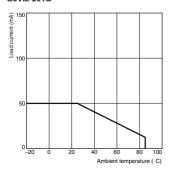
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			160	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	15	mA
Continuous load current	lo lo			40	mA
Operating temperature	Ta	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.



The actual product is marked differently from the image

shown here.

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#### ■Application Examples

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

#### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting	350 VAC	G3VM-351G	100	
	terminals		G3VM-351G(TR)	222	2,500

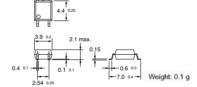
#### ■ Dimensions

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



14	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	ltb.	1	Α	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta≥25°C
	LED reverse voltage	V <sub>R</sub>	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	I <sub>O</sub>	110	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-1.1	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	"C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1,3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	1 <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>		25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA, t < 1 s
				35	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA
	Current leakage when the relay is open	ILEAK			1.0	μА	V <sub>OFF</sub> = 350 V
Capacit	y between I/O terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulatio	n resistance	R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Tum-ON	l time	tON		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Tum-QF	Turn-OFF time			0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

## 

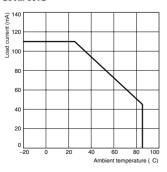
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo lo	1 -	-	100	mA
Operating temperature	Ta	- 20	-	65	°C

#### **■**Engineering Data

## Load Current vs. Ambient Temperature G3VM-351G



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

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



Note: The actual product is marked differently from the image

shown here.

#### ■Application Examples

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

#### ■ List of Models

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

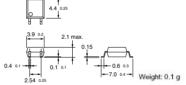
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-353G



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



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

#### G3VM-353G



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

#### G3VM-353G



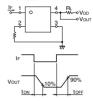
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	1 <sub>FP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	1
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo .	120	mA	
	ON current reduction rate	Δ l <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	C <sub>T</sub>		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>ET</sub>	===	1	3	mA	I <sub>OFF</sub> = 10 μA
Output	Maximum resistance with output ON	RON		15	25	Ω	I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	ILEAK			1.0	μА	V <sub>OFF</sub> = 350 V, I <sub>F</sub> = 5 mA
Capacit	y between I/O terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Ri-o	1,000			MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-Of	N time	tON			1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω,
Turn-OFF time		tOFF	-		3.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

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



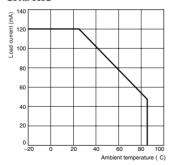
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-		280	V
Operating LED forward current	1 <sub>F</sub>	5	-	25	mA
Continuous load current	I <sub>O</sub>	-	-	120	mA
Operating temperature	Ta	- 20	1000	65	°C

#### **■**Engineering Data

## Load Current vs. Ambient Temperature G3VM-353G



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

- New models with a 4-pin SOP package now included in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1.500 Vrms between I/O.



NEW 91

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

#### ■Application Examples

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

#### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting	400 VAC	G3VM-401G	100	
C College College	terminals	000000000000000000000000000000000000000	G3VM-401G(TR)		2,500

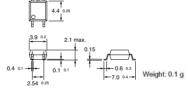
#### ■ Dimensions

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



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	l <sup>EP</sup>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	-
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	400	V	
	Continuous load current	I <sub>O</sub>	120	mA	
	ON current reduction rate	∆ lon/°C	-1.2	mA/°C	Ta ≥ 25°C
Dielectroutput (	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderi	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	IR	***	-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30	-	pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	RON		17	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK	7770	777/6	1.0	μА	V <sub>OFF</sub> = 400 V
Capacity	y between I/O terminals	CI-O		0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	5	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time Turn-OFF time		tON		0.3	1	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
		tOFF	440	0.1	1	ms	V <sub>DD</sub> = 20 V (See note 2.

## Times

2. Tum-ON and Turn-OFF

Note:

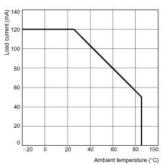
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			320	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	I <sub>O</sub>		-	120	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

### Load Current vs. Ambient Temperature G3VM-401G



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

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

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



**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	20 VAC	G3VM-21LR1	
	terminals		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



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>EP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	20	V	
	Continuous load current	lo .	450	mA	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-4.5	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	
Dielectrout (	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderi	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

ltem		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>				μΑ	V <sub>R</sub> = 5 V
	Capacity between terminals	CT				pF	V = 0, f = 1 MHz
	Trigger LED forward current	1 <sub>ET</sub>			4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	RON		0.8	1.2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 450 mA, t = 10 ms
	Current leakage when the relay is open	LEAK	.T.	75	1.0	пА	V <sub>OFF</sub> = 20 V, Ta = 50°C
	Capacity between terminals	COFF	***	5.0	12.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacity	y between I/O terminals	CHO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>FO</sub>	1,000	<del></del>	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Tum-ON	l time	tON	***		0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Tum-OF	Turn-OFF time				0.5	ms	V <sub>DD</sub> = 20 V (See note 2.

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



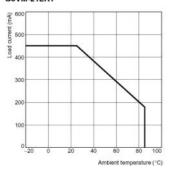
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			20	٧
Operating LED forward current	I <sub>F</sub>	10	-	30	mA
Continuous load current	lo			450	mA
Operating temperature	Ta	25		60	°C

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-21LR1



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

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

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



**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	20 VAC	G3VM-21LR1	
	terminals		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 a

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



## ACCEET Balaya

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

	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	l <sub>FP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	VOFF	20	V	
	Continuous load current	I <sub>O</sub>	450	mA	
	ON current reduction rate	Δ1 <sub>ON</sub> /°C	-4.5	mA/°C	Ta ≥ 25°C
	Connection temperature	Ti	125	°C	
Dielectr output (	ic strength between input and See note 1.)	VI-O	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>				μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT				pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>FT</sub>		***	4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	R <sub>CN</sub>		0.8	1.2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 450 mA, t = 10 ms
	Current leakage when the relay is open	LEAK	-	100	1.0	nA	V <sub>OFF</sub> = 20 V, Ta = 50°C
	Capacity between terminals	C <sub>OFF</sub>	-	5.0	12.0	pF	V = 0, f = 100 MHz, t < 1 s
Capacity	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Rio	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Tum-ON	N time	tON			0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Tum-OF	F time	tOFF			0.5	ms	$V_{DD} = 20 \text{ V (See note 2.)}$

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

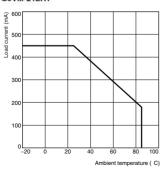
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			20	V
Operating LED forward current	I <sub>F</sub>	10		30	mA
Continuous load current	lo			450	mA
Operating temperature	Ta	25		60	°C

#### **■**Engineering Data

## Load Current vs. Ambient Temperature G3VM-21LR1



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

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

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



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

#### ■Application Examples

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

#### ■List of Models

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

#### ■ Dimensions

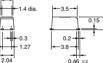
Note: All units are in millimeters unless otherwise indicated.

#### G3VM-41LR5



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





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



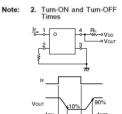
96 5	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	А	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	٧	Ŷ
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	40	V	
	Continuous load current	lo	300	mA	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-3,0	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

#### 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT	***	15		pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT	***		4	mA	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	RON		1.0	1.5	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 300 mA, t = 10 ms
	Current leakage when the relay is open	LEAK		-	1.0	пА	V <sub>OFF</sub> = 30 V, Ta = 50°C
	Capacity between terminals	COFF	-	10	14	pF	V = 0, f = 100 MHz, t < 1 s
Capacit	between I/O terminals	CIO	***	0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON	l time	tON			0.5	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω,
Turn-OFF time		tOFF	***		0.5	ms	V <sub>DD</sub> = 20 V (See note 2.)



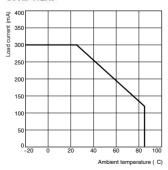
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			32	٧
Operating LED forward current	I <sub>F</sub>	10		30	mA
Continuous load current	l <sub>O</sub>			300	mA
Operating temperature	Ta	25		60	°C

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-41LR5



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

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

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



**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	40 VAC	G3VM-41LR6	
	terminals		G3VM-41LR6(TR)	1,500

#### ■ Dimensions

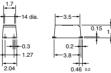
Note: All units are in millimeters unless otherwise indicated.

#### G3VM-41LR6









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

Weight: 0.03 g

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

#### G3VM-41LR6



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

G3VM-41LR6



# MOSEET Balaya

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

	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔlpPC	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	40	V	
	Continuous load current	16	120	mA	
	ON current reduction rate	∆I <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectr output (	ic strength between input and See note 1.)	V <sub>FO</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-40 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

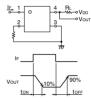
 The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

Note:

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

	Item		Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	1 <sub>R</sub>		770	10	μА	V <sub>R</sub> = 5 V	
	Capacity between terminals	CT		15	***	pF	V = 0, f = 1 MHz	
	Trigger LED forward current	1 <sub>FT</sub>			4	mA	I <sub>O</sub> = 100 mA	
Output	Maximum resistance with output ON	R <sub>ON</sub>	<del></del> :	10	15	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA, t = 10 ms	
	Current leakage when the relay is open	I <sub>LEAK</sub>	5755	-	1.0	nA	V <sub>OFF</sub> = 30 V, Ta = 50°C	
	Capacity between terminals	C <sub>OFF</sub>	-	1.0	2.0	pF	V = 0, f = 100 MHz, t < 1 s	
Capacity	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000	-0		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON		40	0.5	ms	I <sub>E</sub> = 10 mA, R <sub>L</sub> = 200 Ω V <sub>DD</sub> = 20 V (See note 2.	
Turn-OFF time		tOFF			0.5	ms		

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



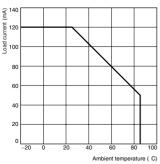
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	1-	-	32	٧
Operating LED forward current	1 <sub>E</sub>	10		30	mA
Continuous load current	I <sub>O</sub>			120	mA
Operating temperature	Ta	25	_	60	°C

#### **■**Engineering Data

#### Load Current vs. Ambient Temperature G3VM-41LR6



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

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





The actual product is marked differently from the image

#### ■Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■ 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	7	G3VM-61E1	1	
	terminals		G3VM-61E1(TR)	(26)	1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





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



-2.54+0.25

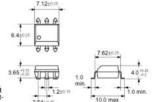


G3VM-61E1



shown here.

The actual product is marked different ly from the image shown here.



Weight: 0.38 a

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

#### G3VM-61B1

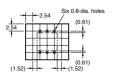


#### G3VM-61E1



#### ■PCB Dimensions (Bottom View)

#### G3VM-61B1



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

#### G3VM-61E1



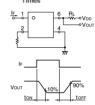
	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	LED forward current		50	mA	
	Repetitive per current	ak LED forward	lpp	1	Α	100 µs pulses, 100 pps
	LED forward c	urrent reduction	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta≥25°C
	LED reverse	voltage	VR	5	V	
	Connection temperature		Tj	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	60	V	
	Continuous load current	Connection A	l <sub>o</sub>	500	mΑ	
		Connection B		500		
		Connection C		1,000		
	ON current	Connection A	∆ I <sub>ON</sub> /°C	-0.5	mA/°C	Ta≥25°C
	reduction rate	Connection B		-0.5		
	5.000	Connection C		-10.0		
	Connection to	emperature	Tj	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	2,500	Vrms	AC for 1 min	
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Solderin	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			Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	LED forward voltage		1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		I <sub>FT</sub>		1.6	3	mA	I <sub>O</sub> = 500 mA
Output	Maximum resistance with output ON	Connection A	RON	-	1	2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 500 mA
		Connection B		-	0.5	1	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 500 mA
		Connection C		=	0.25	7	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 1,000 mA
	Current leakage when the relay is open		ILEAK			1.0	μΑ	V <sub>OFF</sub> = 60 V
Capacity between I/O terminals			C <sub>I-O</sub>		0.8	***	pF	f = 1 MHz, Vs = 0 V
Insulation resistance			R <sub>I-O</sub>	1,000	-		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON	-	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time			tOFF		0.1	0.5	ms	V <sub>DD</sub> = 20 V (See note 2

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



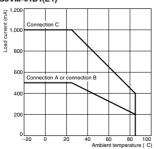
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			48	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo		***	500	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-61B1(E1)



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

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



#### Ordering Information -

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

#### Model Number Legend

## G3VM-

#### 1. Lead Voltage

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

#### 2. Terminal

None: PCB terminal

F: Surface mounting terminals

#### Application Examples -

- · Electronic automatic exchange systems
- · Measurement control systems

- · Data gathering systems
- Measuring systems

#### Specifications -

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

	Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Conditions
Input	LED forward cu	rrent	I <sub>F</sub>	30 mA		-
	Repetitive peak LED forward current		I <sub>FP</sub>	1 A		100-μs pulses, 100 pps
LED reverse voltage		V <sub>R</sub>	5 V		-	
Output			V <sub>BO</sub>	-60 to 60 V	-400 to 400 V	DC or AC peak value
(loa		d voltage)		0 to 60 V	0 to 400 V	DC
	Continuous load current (see note 1)	A connection	Io	300 mA	150 MA	-
		B connection		450 mA	200 MA	
		C connection		600 mA	300 MA	
Dielectric (see note	strength between 2)	n I/O terminals	V <sub>I-O</sub>	2,500 V AC		1 min
Ambient t	Ambient temperature			-20 to 85°C		With no icing or condensation
Storage temperature			Tstg	-55 to 100°C		With no icing or condensation
Max. sold	ering temperature	and time	-	260°C		10 s

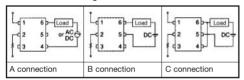
Note: 1. The load current attenuation rates for the different types of connection are as follows:

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

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

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

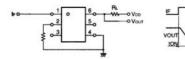
#### **Connection Circuit Diagram**



#### ■ Electrical Performance (Ta = 25°C)

	Iten	n	Symbol	G3VM-XN(F)	G3VM-4N(F)	Unit	Conditions
Input	LED forward current		V <sub>F</sub>	1.2 V min, 1.7	1.2 V min, 1.7 V max.		I <sub>F</sub> = 10 mA
Trigger LED forward current		I <sub>FT</sub>	5 mA max.	5 mA max.		$I_O = 300 \text{ mA (G3VM-XN(F))}$ $I_O = 150 \text{ mA (G3VM-4N(F))}$	
Output			R <sub>ON</sub>	2 Ω max. 12 Ω max.		Ω	I <sub>F</sub> = 10 mA
resistance	B Connection		1 Ω max.	6 Ω max.		I <sub>O</sub> = Max.	
		C Connection		0.5 Ω max.	3 Ω max.		
	Switching cur	rent leakage	I <sub>LEAK</sub>	1.0 μA max.		μА	Voff = 60 V (G3VM-XN(F)) Voff = 400 V (G3VM-4N(F))
Operate 1	Operate time		T <sub>ON</sub>	0.5 ms max.	1.0 ms max.	ms	$R_L = 200 \Omega$ (sse note)
Release time		T <sub>OFF</sub>	0.5 ms max.	1.0 ms max.	ms	V <sub>DD</sub> = 20 V, I <sub>F</sub> = 10 mA	
Floating	capacity betwee	n I/O terminals	C <sub>I-O</sub>	0.8 pF, TYP		pF	f = 1MHz

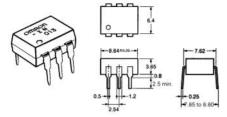
Note: 1. The operate and release time were measured in the way shown below.



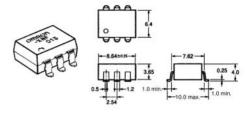
#### Dimensions -

Note: All units are in millimeters unless otherwise indicated.

G3VM-XN G3VM-4N



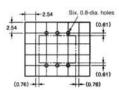
G3VM-XNF G3VM-4NF



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

#### ■ PCB Dimensions (Bottom View)

G3VM-XN G3VM-4N



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

G3VM-XNF G3VM-4NF



Note: Mounting pad dimensions shown are top view.

#### Installation -

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

G3VM-XN G3VM-4N



G3VM-XNF G3VM-4NF



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

- Upgraded G3VM-3 Series.
- Continuous load current of 120 mA
- Dielectric strength of 2.500 Vrms between I/O.
- Operating time of 0.3 ms (typical).





#### **NEW** Approval pending

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

#### ■ Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■ List of Models

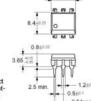
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-351B	50	
	Surface-mounting	1	G3VM-351E		
	terminals		G3VM-351E(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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

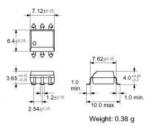


1.2+0.15 - 2.54±0.25



G3VM-351E

Note: The actual product is marked differently from the image



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

G3VM-351B

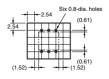


G3VM-351E



#### ■PCB Dimensions (Bottom View)

G3VM-351B



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

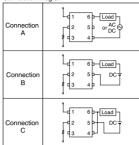
G3VM-351E



	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	I <sub>F</sub>	50	mA	
	Repetitive per current	ak LED forward	Ipp	1	A	100 μs pulses, 100 pps
	LED forward o	urrent reduction	ΔI <sub>F</sub> PC	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse	voltage	V <sub>R</sub>	5	٧	
	Connection temperature		T <sub>j</sub>	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	350	V	
	Continuous load current	Connection A	l <sub>O</sub>	120	mA	
		Connection B		120		
		Connection C		240		
	ON current	Connection A	∆ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	reduction rate	Connection B		-1.2		
		Connection C		-2.4		
	Connection to	emperature	Tj	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	2,500	Vrms	AC for 1 min	
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Solderin	ng 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.

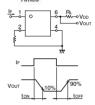
Connection Diagram



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

	Item			Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage		V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		IR		-	10	μA	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward o	urrent	J <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	Connection A	Ron	-	25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA, t < 1 s
					35	50	Ω	I <sub>F</sub> = 5 mA. I <sub>O</sub> = 120 mA
		Connection B		-	28	40	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection C			14	20	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 240 mA
	Current leakage when open	the relay is	LEAK		-	1.0	μА	V <sub>OFF</sub> = 350 V
Capacit	Capacity between I/O terminals		CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	***		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Tum-ON	l time		tON		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OF	Turn-OFF time				0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.

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



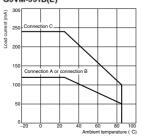
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	I <sub>F</sub>	5	10	25	mA.
Continuous load current	lo lo			100	mA.
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

#### Load Current vs. Ambient Temperature G3VM-351B(E)



# **MOSFET Relays**

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

■ Approved standards: UL1577 (File No. E80555)

#### ■Application Examples

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



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

#### ■List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-3L	Yes	50	
	Surface-mounting	7	G3VM-3FL	1		
	terminals		G3VM-3FL(TR)	1		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





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

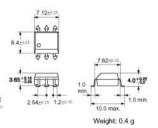


- 2.54±0.25



G3VM-3FL

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



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

G3VM-3L

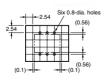


G3VM-3FL



#### ■PCB Dimensions (Bottom View)

G3VM-3L



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

G3VM-3FL



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>E</sub>	50	mA	
	Repetitive peak LED forward current	IFP	1	Α	100 µs pulses, 100 pps
	LED forward current reduction rate	ΔIpPC	-0.5	mA/°C	Ta≥25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	10	120	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	1 <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	1 <sub>FT</sub>			3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	RON		22	35	Ω	I <sub>F</sub> = 5 mA. I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK			1.0	μА	V <sub>OFF</sub> = 350 V
Limit cui	rrent	ILIM	150		300	mA	I <sub>F</sub> = 5 mA, V <sub>DD</sub> = 5 V, t = 5 ms
Capacity	between I/O terminals	CHO		0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Rio	1,000		-	MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF			1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

## 

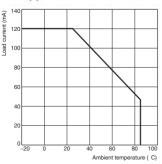
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>		-	280	٧
Operating LED forward current	l <sub>E</sub>	5	7.5	25	mA.
Continuous load current	lo		-	120	mA
Operating temperature	Ta	- 20		65	°C

#### ■Engineering Data

## Load Current vs. Ambient Temperature G3VM-3(F)L



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

■ Approved standards: UL1577 (File No. E80555)

#### ■Application Examples

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



R

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

#### ■List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
SPST-NO	PCB terminals	350 VAC	G3VM-3L	Yes	50	
	Surface-mounting	7	G3VM-3FL	1		
	terminals		G3VM-3FL(TR)	1		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.





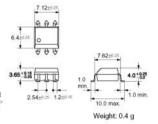
Note: The actual product is marked differently from the image shown here.



7.82±9.25 0.25 ± 1.85 to 8.80 Weight: 0.4 g

G3VM-3FL

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



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

G3VM-3L

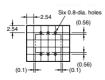


G3VM-3FL



#### ■PCB Dimensions (Bottom View)

G3VM-3L



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

G3VM-3FL



	item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	1 <sub>EP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>	5	V	
	Connection temperature	T <sub>j</sub>	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo	120	mA	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta≥25°C
	Connection temperature	T <sub>i</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderi	ng 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		Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	-	-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	1 <sub>FT</sub>	-	***	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	-	22	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK		5750	1.0	μА	V <sub>OFF</sub> = 350 V
Limit cu	rrent	LIM	150	-	300	mA	I <sub>F</sub> = 5 mA, V <sub>DD</sub> = 5 V, t = 5 ms
Capacity	y between I/O terminals	CHO	-	0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>FO</sub>	1,000			ΜΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω,
Turn-OF	Turn-OFF time		-	1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

## 

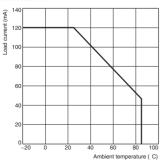
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	l <sub>O</sub>			120	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

## Load Current vs. Ambient Temperature G3VM-3(F)L



# MOSFET Relays

#### **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.



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

#### ■Application Examples

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

#### **■List of Models**

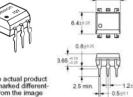
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401B	50	
	Surface-mounting		G3VM-401E	1	
	terminals		G3VM-401E(TR)		1,500

#### ■ Dimensions

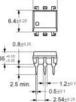
Note: All units are in millimeters unless otherwise indicated.



ly from the image shown here.



The actual product is marked different-

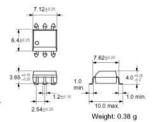


Weight: 0.38 g

# 7.85 to 8.80

The actual product is marked different ly from the image shown here.

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)

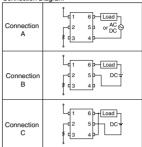
G3VM-401E



	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	I <sub>F</sub>	50	mA	
	Repetitive per current	ak LED forward	Ipp	1	Α	100 μs pulses, 100 pps
	LED forward o	urrent reduction	ΔI <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse	voltage	V <sub>R</sub>	5	٧	
	Connection temperature		T <sub>i</sub>	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	400	V	
	Continuous load current	Connection A	l <sub>O</sub>	120	mA	
		Connection B		120		
		Connection C		240		
	ON current	Connection A	ΔI <sub>ON</sub> /°C	-1.2	mA/°C	Ta≥25°C
	reduction rate	Connection B		-1.2		
		Connection C		-2.4		
	Connection te	emperature	T <sub>j</sub>	125	°C	
Dielectr output (	ic strength betv See note 1.)	ween input and	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ng temperature		Ta	-40 to +85	"C	With no icing or condensation
Storage	temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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.

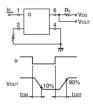
Connection Diagram



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

	Item	Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage Reverse current		VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
			I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward o	urrent	l <sub>FT</sub>		15	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	Connection A	R <sub>ON</sub>		17	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection B		-	11	20	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection C		-	6	10	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 240 mA
	Current leakage when open	the relay is	I <sub>LEAK</sub>			1.0	μА	V <sub>OFF</sub> = 350 V
Capacity between I/O terminals			CI-O	***	0.8	***	pF	f = 1 MHz, Vs = 0 V
Insulation resistance			RIO	1,000	***		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time			tOFF		0.1	1.0	ms	V <sub>00</sub> = 20 V (See note 2.

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



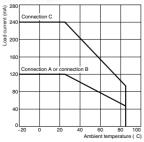
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			320	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo		(44)	120	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

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



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

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



#### Ordering Information -

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

#### Model Number Legend

G3VM-

#### 1. Load Voltage

XN: A load voltage of 60 VDC or 60 VAC (peak value)

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

#### 2. Terminal

None: PCB terminals

F: Surface-mounting terminals

#### Application Examples

- Electronic automatic exchange systems
- · Measurement control systems

- · Data gathering systems
- · Measuring systems

#### Specifications -

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

	Item		Symbol	G3VM-XN(F)	G3VM-4N(F)	Conditions
Input LED forward current		I <sub>F</sub>	30 mA		-	
	Repetitive peak LED forward current		I <sub>FP</sub>	1 A		100-μs pulses, 100 pps
LED reverse voltage		V <sub>R</sub>	5 V		-	
Output  Output dielectric strength		V <sub>BO</sub>	-60 to 60 V	-400 to 400 V	DC or AC peak value	
	(load voltage)			0 to 60 V	0 to 400 V	DC
	Continuous load current (see note 1)	A connection	I <sub>O</sub>	300 mA	150 MA	-
		B connection		450 mA	200 MA	
		C connection		600 mA	300 MA	
	Dielectric strength between I/O terminals (see note 2)			2,500 V AC		1 min
Ambient temperature			Та	-20 to 85°C		With no icing or condensation
Storage temperature			Tstg	-55 to 100°C		With no icing or condensation
Max. sold	ering temperature	and time	-	260°C		10 s

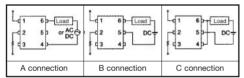
Note: 1. The load current attenuation rates for the different types of connection are as follows:

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

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

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

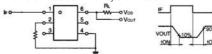
#### **Connection Circuit Diagram**



#### ■ Electrical Performance (Ta = 25°C)

	Iten	n	Symbol	G3VM-XN(F)	G3VM-4N(F)	Unit	Conditions
Input LED forward current		V <sub>F</sub>	1.2 V min, 1.7 V max.		٧	I <sub>F</sub> = 10 mA	
	Trigger LED forward current		I <sub>FT</sub>	5 mA max.			I <sub>O</sub> = 300 mA (G3VM-XN(F)) I <sub>O</sub> = 150 mA (G3VM-4N(F))
Output	Output ON resistance	A Connection	R <sub>ON</sub>	2 Ω max.	12 Ω max.	Ω	I <sub>F</sub> = 10 mA
		B Connection		1 Ω max.	6 Ω max.		I <sub>O</sub> = Max.
		C Connection		0.5 Ω max.	3 Ω max.		
	Switching current leakage		I <sub>LEAK</sub>	1.0 μA max.		μА	Voff = 60 V (G3VM-XN(F)) Voff = 400 V (G3VM-4N(F))
Operate time			T <sub>ON</sub>	0.5 ms max.	1.0 ms max.	ms	$R_L = 200 \Omega$ (sse note)
Release time			T <sub>OFF</sub>	0.5 ms max.	1.0 ms max.	ms	V <sub>DD</sub> = 20 V, I <sub>F</sub> = 10 mA
Floating capacity between I/O terminals			C <sub>I-O</sub>	0.8 pF, TYP		pF	f = 1MHz

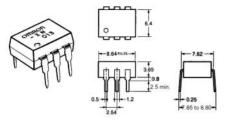
Note: 1. The operate and release time were measured in the way shown below.



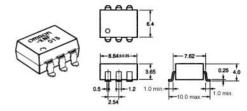
#### Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-XN G3VM-4N



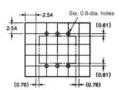
G3VM-XNF G3VM-4NF



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

#### ■ PCB Dimensions (Bottom View)

G3VM-XN G3VM-4N



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

G3VM-XNF G3VM-4NF



Note: Mounting pad dimensions shown are top view.

#### Installation -

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

G3VM-XN G3VM-4N



G3VM-XNF G3VM-4NF



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

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



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



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

#### **■List of Models**

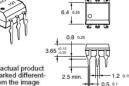
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401BY	50	
	Surface-mount-		G3VM-401EY	1	
	ing terminals	l l	G3VM-401EY (TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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

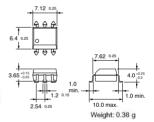




#### G3VM-401EY



The actual product is marked different-Note: ly from the image shown here.



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

G3VM-401BY

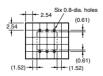


G3VM-401EY



#### ■PCB Dimensions (Bottom View)

G3VM-401BY



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

G3VM-401EY

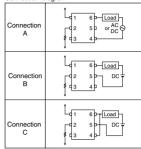


	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	l <sub>F</sub>	50	mA.	
	Repetitive per current	Repetitive peak LED forward current		1	A	100 µs pulses, 100 pps
	LED forward o	current reduction	Δ lp/°C	-0.5	mA/°C	Ta≥25°C
	LED reverse	voltage	VR	5	V	
	Connection temperature		T <sub>i</sub>	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	400	V	
	Continuous load current	Connection A	ю	120	mA	
		Connection B		120		
		Connection C		240		
	ON current	Connection A	ΔI <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	reduction rate	Connection B		-1.2		
		Connection C	1	-2.4	1	
	Connection to	Connection temperature		125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	5,000	Vrms	AC for 1 min	
Operating temperature		Ta	~40 to +85	°C	With no icing or condensatio	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensatio	
Solderin	ng temperature	(10 s)		260	°C	10 s

Note:

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

Connection Diagram

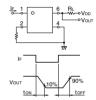


#### ■ Electrical Characteristics (Ta = 25°C)

Item			Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	LED forward voltage		1.0	1.15	1.3	٧	I <sub>F</sub> = 10 mA
	Reverse current		I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		l <sub>FT</sub>	***		3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	Connection A	RON	150	17	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection B			11	20	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection C			6	10	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 240 mA
	Current leakage when the relay is open		LEAK			1.0	μА	V <sub>OFF</sub> = 400 V
Capacit	y between I/O terminals		CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance			R <sub>I-O</sub>	1,000		-222	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON		0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time			tOFF		0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

#### Note:

2. Turn-ON and Turn-OFF Times



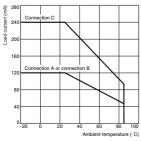
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>	-		320	V	
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA	
Continuous load current	I <sub>O</sub>	-		120	mA	
Operating temperature	Ta	- 20		65	°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.

# 

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

#### ■Application Examples

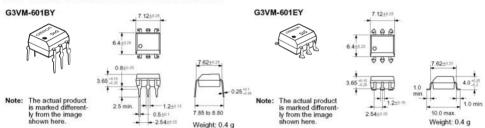
- · Electronic automatic exchange systems
- FA systems
- · Measurement devices
- · Security systems

#### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	600 VAC	G3VM-601BY	50	
	Surface-mounting		G3VM-601EY		
	terminals		G3VM-601EY(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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



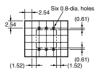


G3VM-601EY



#### ■PCB Dimensions (Bottom View)

G3VM-601BY



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

G3VM-601EY

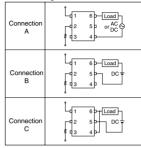


	Item		Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward	current	1 <sub>F</sub>	50	mA			
	Repetitive per current	Repetitive peak LED forward current		1	A	100 µs pulses, 100 pps		
	LED forward o	urrent reduction	Δ Ip/°C	-0.5	mA/°C	Ta≥25°C		
	LED reverse	voltage	VR	5	V			
	Connection temperature		Tj	125	°C			
Output	Output dielectric strength		VOFF	600	V			
	Continuous load current	Connection A	lo	100	mA			
		Connection B		100				
		Connection C		200				
	ON current	Connection A	∆ lov/°C	-1.0	mA/°C	Ta≥25°C		
	reduction rate	Connection B		-1.0				
	.5800.	Connection C		-2.0				
	Connection to	Connection temperature		125	°C			
Dielectric strength between input and output (See note 1.)			V <sub>I-O</sub>	5,000	Vrms	AC for 1 min		
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation			
Storage temperature			T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation		
Solderin	ig temperature	(10 s)		260	°C	10 s		

Note:

 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.

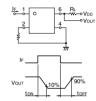
Connection Diagram



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

Item			Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage		VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		IR		-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	minals	CT		30	777	pF	V = 0, f = 1 MHz
	Trigger LED forward o	urrent	I <sub>FT</sub>		1,6	5	mA.	I <sub>O</sub> = 100 mA
Output	Maximum resistance with output ON	Connection A	Ron		25	35	Ω	I <sub>F</sub> = 10 mA, I <sub>O</sub> = 100 mA
					30	45	Ω	I <sub>F</sub> = 10 mA, I <sub>O</sub> = 100 mA
		Connection B			23	35	Ω	I <sub>F</sub> = 10 mA, I <sub>O</sub> = 100 mA
		Connection C		-	12	18	Ω	I <sub>F</sub> = 10 mA, I <sub>O</sub> = 200 mA
	Current leakage when the relay is open		LEAK		-	1.0	μА	V <sub>OFF</sub> = 600 V
Capacity	y between I/O terminals		C <sub>1-O</sub>		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000			МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time			tON		0.2	1.5	ms	$I_F = 5 \text{ mA}$ , $R_L = 200 \Omega$ ,
Tum-OFF time			tOFF		0.2	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.

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



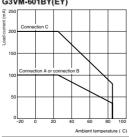
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			480	V
Operating LED forward current	l <sub>F</sub>	7.5	15	25	mA
Continuous load current	lo			100	mA
Operating temperature	T <sub>a</sub>	- 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.

# omeon omeon omeon 743 743

#### NEW **91**

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

#### ■Application Examples

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

#### ■List of Models

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

#### ■ Dimensions

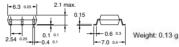
Note: All units are in millimeters unless otherwise indicated.

#### 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



# MOSFET Relays

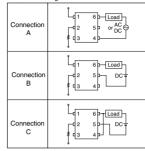
#### ■ Absolute Maximum Ratings (Ta = 25°C)

	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current		Ipp	1	Α	100 μs pulses, 100 pps
	LED forward c	urrent reduction	Δ Ip/°C	-0.5	mA/°C	Ta≥25°C
	LED reverse	voltage	VR	5	V	
	Connection temperature		T <sub>j</sub>	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	60	V	
	Continuous load current	Connection A	lo	400	mA	
		Connection B		400		
		Connection C		800		
	ON current	Connection A	∆ low/°C	-4.0	mA/°C	Ta≥25°C
	reduction rate	Connection B	1	-4.0		
		Connection C	1	-8.0	1	
	Connection te	mperature	Tj	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	1,500	Vrms	AC for 1 min	
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation	
Storage	temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature	(10 s)		260	°C	10 s

Note:

 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.

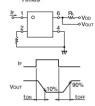
Connection Diagram



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

Item			Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	LED forward voltage		1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		IR			10	μA	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT	***	30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		I <sub>FT</sub>		1.6	3	mA	I <sub>O</sub> = 400 mA
Output	Maximum resistance with output ON	Connection A	Ron	-	1	2	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
		Connection B		***	0.5	1	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
		Connection C		-	0.25	-	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 800 mA
	Current leakage when the relay is open		LEAK		-	1.0	μА	V <sub>OFF</sub> = 60 V
Capacity	y between I/O terminals		C <sub>1-O</sub>		0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance			R <sub>I-O</sub>	1,000		_	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON		0.8	2.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω V <sub>DD</sub> = 20 V (See note 2
Turn-OFF time			tOFF		0.1	0.5	ms	

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



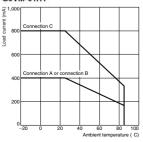
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>	-	I	48	٧	
Operating LED forward current	l <sub>F</sub>	5	7.5	25	mA	
Continuous load current	lo.			400	mA	
Operating temperature	Ta	- 20		65	°C	

#### **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-61H1



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

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





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

#### ■Application Examples

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

#### ■List of Models

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

#### ■ Dimensions

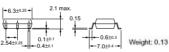
Note: All units are in millimeters unless otherwise indicated.

#### 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

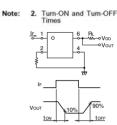


	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	1 <sub>EP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	ΔIF/°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	80	V	
	Continuous load current	lo	1,250	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-12.5	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-20 to +85	°C	With no icing or condensation
Storage temperature		T <sub>stg</sub>	-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	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V	
	Capacity between terminals	CT		15		pF	V = 0, f = 1 MHz	
	Trigger LED forward current	IFT		2	5	mA	I <sub>O</sub> = 1,250 mA	
Output	Maximum resistance with output ON	R <sub>ON</sub>		0.11	0.15	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 1,250 mA	
	Current leakage when the relay is open	LEAK	***	1.2	1.5	пА	V <sub>OFF</sub> = 20 V, Ta = 50°C	
Capacit	y between I/O terminals	CI-O		0.8	***	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000			МΩ	V <sub>HO</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON		2.0	3.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω, V <sub>DD</sub> = 20 V (See note 2.	
Turn-OFF time		tOFF		0.7	1.0	ms		



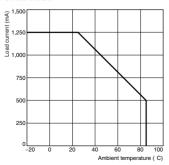
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>			64	V	
Operating LED forward current	1 <sub>E</sub>	5	1-	30	mA	
Continuous load current	lo		-	1,250	mA	
Operating temperature	Ta	25		60	°C	

#### ■Engineering Data

# Load Current vs. Ambient Temperature G3VM-81HR



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

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





#### ■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	200 VAC	G3VM-201H1	75	
	terminals		G3VM-201H1(TR)		2,500

#### ■ Dimensions

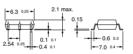
Note: All units are in millimeters unless otherwise indicated.

#### 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

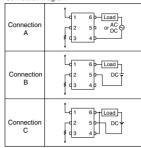


	ltem		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	I <sub>F</sub>	50	mA	
	Repetitive peak LED forward current		I <sub>FP</sub>	1	Α	100 μs pulses, 100 pps
	LED forward o	urrent reduction	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse	voltage	VR	5	V	
	Connection temperature		T <sub>j</sub>	125	°C	-
Output	Output dielectric strength		V <sub>OFF</sub>	200	V	
	Continuous load current	Connection A	I <sub>O</sub>	200	mA	
		Connection B		200		
		Connection C		400		
	ON current	Connection A	∆ low <sup>n</sup> C	-2.0	mA/°C	Ta ≥ 25°C
	reduction rate	Connection B		-2.0		
	1000	Connection C		-4.0	1	
	Connection to	emperature	Tj	125	°C	
Dielectr output (	ic strength betw See note 1.)	veen input and	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ting temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Solderin	ng temperature	(10 s)		260	°C	10 s

Note:

 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.

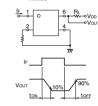
Connection Diagram



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

	Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage		V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	Reverse current		***		10	μA	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		l <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 200 mA
Output	Maximum resistance with output ON	Connection A	RON	-	5	8	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 200 mA
		Connection B		-	3	5	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 200 mA
		Connection C		575	1.5		Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
	Current leakage when open	Current leakage when the relay is open			-	1.0	μА	V <sub>OFF</sub> = 200 V
Capacity	y between I/O terminals		Ci-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000			МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON	e===	0.6	1.5	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$	
Turn-OFF time			1OFF	***	0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

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



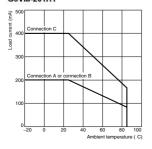
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	***		160	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	l <sub>O</sub>			130	mA
Operating temperature	Ta	- 20		60	°C

#### ■ Engineering Data

#### Load Current vs. Ambient Temperature G3VM-201H1



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

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





Note: The actual product is marked differently from the image

#### INL VV AG

#### ■Application Examples

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

#### ■ List of Models

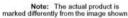
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting	350 VAC	G3VM-351H	75	
	terminals		G3VM-351H(TR)		2,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-351H







Weight: 0.13

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

G3VM-351H



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

G3VM-351H



# ACCEPT Bolovo

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

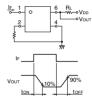
	Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward	current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current		IFP	1	A	100 µs pulses, 100 pps
	LED forward o	urrent reduction	ΔI <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse	voltage	VR	5	V	
	Connection temperature		T <sub>i</sub>	125	°C	
Output	Output dielectric strength		V <sub>OFF</sub>	350	V	
	Continuous load current	Connection A	lo	110	mA	
		Connection B		110		
		Connection C		220		1000000
	ON current	Connection A	∆ lon/°C	-1.1	mA/°C	Ta≥25°C
	reduction rate	Connection B		-1.1		
	1500	Connection C		-2.2	1	
	Connection temperature		T	125	°C	
Dielectr output (	ic strength betw See note 1.)	ween input and	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	perating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Solderin	ng 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			Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	LED forward voltage Reverse current		1.0	1.15	1.3	٧	I <sub>F</sub> = 10 mA
	Reverse current			***		10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		I <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 110 mA
Output	Maximum resistance with output ON	Connection A	Ron	***	25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA, t < 1 s
					35	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA
		Connection B		157FC	28	40	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA
		Connection C			14	20	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 220 mA
	Current leakage when the relay is open		LEAK	***		1.0	μА	V <sub>OFF</sub> = 350 V
Capacity	y between I/O terminals		CI-O	***	0.8	***	pF	f = 1 MHz, Vs = 0 V
insulation resistance		R <sub>I-O</sub>	1,000			МΩ	$V_{I-O} = 500 \text{ VDC}$ , RoH $\leq 60\%$	
Turn-ON time			tON		0.3	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω,
Turn-OF	Turn-OFF time				0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

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



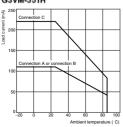
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	1 <sub>E</sub>	5	10	25	mA
Continuous load current	Io		-	100	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

### Load Current vs. Ambient Temperature G3VM-351H



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

- New models in 350-V load voltage series with SPST-NC contacts and a 6-pin SOP package.
- Continuous load current of 120 mA.
- Dielectric strength of 1.500 Vrms between I/O.



The actual product is marked differently from the image



#### ■Application Examples

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

#### ■List of Models

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

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-353H



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





Weight: 0.13

shown here.

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

#### G3VM-353H



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

G3VM-353H

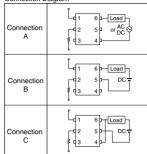


			170 100 100 100 100 100 100 100 100 100					
	Item	- 0	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward	current	le:	50	mA.			
	Repetitive per current	Repetitive peak LED forward current		1	А	100 μs pulses, 100 pps		
	LED forward o	urrent reduction	Δ1 <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C		
3	LED reverse	voltage	V <sub>R</sub>	5	V			
	Connection temperature		Tj	125	"C			
Output	Output dielectric strength		VoFF	350	V			
	Continuous load current	Connection A	ю	120	mA			
		Connection B		120				
		Connection C		240				
	ON current	Connection A	∆ lon/°C	-1.2	mA/°C	Ta ≥ 25°C		
	reduction rate	Connection B		-1.2				
	555001	Connection C	1	-2.4				
	Connection temperature		Tj	125	"C			
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	1,500	Vrms	AC for 1 min			
Operating temperature		Ta	-40 to +85	"C	With no icing or condensation			
Storage temperature			T <sub>stg</sub>	-55 to +125	"C	With no icing or condensation		
Solderin	ng temperature	(10 s)		260	°C	10 s		

Note:

 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

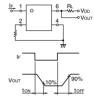


#### ■ Electrical Characteristics (Ta = 25°C)

Item			Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage		V <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		IFT	5775	1.0	3.0	mA	I <sub>OFF</sub> = 10 μA
Output	Maximum resistance with output ON	Connection A	Ron	***	15	25	Ω	I <sub>O</sub> = 120 mA
		Connection B		***	8	14	Ω	I <sub>O</sub> = 120 mA
		Connection C			4		Ω	I <sub>O</sub> = 240 mA
	Current leakage when open	Current leakage when the relay is open		-	-	1.0	μА	V <sub>OFF</sub> = 350 V, I <sub>F</sub> = 5 mA
Capacity	between I/O terminals		C <sub>1-O</sub>		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance			R <sub>I-O</sub>	1,000	777	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON		T-0.0	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω, V <sub>DD</sub> = 20 V (See note 2.
Turn-OFF time			tOFF	****	***	3.0	ms	

#### Note:

: 2. Turn-ON and Turn-OFF Times



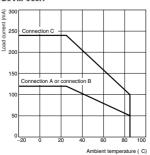
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>	_	-	280	V	
Operating LED forward current	I <sub>F</sub>	5		25	mA	
Continuous load current	lo	1	-	120	mA	
Operating temperature	Ta	- 20	-	65	°C	

#### ■ Engineering Data

# Load Current vs. Ambient Temperature G3VM-353H



#### 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.



Note: The actual product is marked differently from the image



#### ■Application Examples

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

#### ■List of Models

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

#### ■ Dimensions

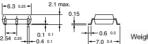
Note: All units are in millimeters unless otherwise indicated.

#### G3VM-401H



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





Weight: 0.13 g

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

#### G3VM-401H



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

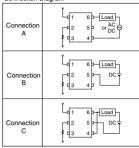
#### G3VM-401H



	Item		Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward	current	l <sub>F</sub>	50	mA .		
3	Repetitive per current	Repetitive peak LED forward current		1	A	100 μs pulses, 100 pps	
	LED forward o	urrent reduction	Δ Ip/°C	-0.5	mA/°C	Ta≥25°C	
	LED reverse	voltage	V <sub>R</sub>	5	V		
	Connection temperature		T <sub>j</sub>	125	°C		
Output	Output dielectric strength		VOFF	400	V		
	Continuous load current	Connection A	lo	120	mA		
		Connection B		120			
		Connection C		240			
	ON current	Connection A	∆ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta≥25°C	
	reduction rate	Connection B		-1.2			
	303	Connection C		-2.4	1		
	Connection temperature		T <sub>j</sub>	125	°C		
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	1,500	Vrms	AC for 1 min		
Operati	ng temperature		T <sub>p</sub>	-40 to +85	°C	With no icing or condensation	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation		
Solderin	ng 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		VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current		IR			10	μА	V <sub>R</sub> = 5 V
	Capacity between terr	ninals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current		let.		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	Connection A	Ron	==	17	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection B		***	11	20	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
		Connection C			6		Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 240 mA
	Current leakage when open	the relay is	LEAK		-	1.0	μΑ	V <sub>OFF</sub> = 400 V
Capacit	y between I/O terminals		CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance			R <sub>I-O</sub>	1,000	7762	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time			tON		0.3	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω, V <sub>DD</sub> = 20 V (See note 2)
Turn-OFF time			tOFF		0.1	1.0	ms	

#### Note:

2. Turn-ON and Turn-OFF Times



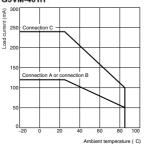
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>		-	320	٧	
Operating LED forward current	l <sub>F</sub>	5	7.5	25	mA	
Continuous load current	lo		-	120	mA	
Operating temperature	Ta	- 20		65	°C	

#### **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-401H



#### New MOS FET 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.





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	7	G3VM-22FO	1	
6.	terminals		G3VM-22FO(TR)		1,500

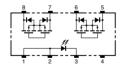
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

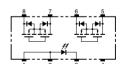


#### ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-22CO

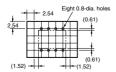


G3VM-22FO



#### ■PCB Dimensions (Bottom View)

G3VM-22CO



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

G3VM-22FO



	item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	l <sub>F</sub>	50	mA	-	
	Repetitive peak LED forward current	IFP	1	Α	100 μs pulses, 100 pps	
	LED forward current reduc- tion rate	Δ I <sub>E</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR	6	V		
	Connection temperature	Tj	125	°C		
Output	Output dielectric strength	V <sub>OFF</sub>	20	V		
	Continuous load current	lo .	150	mA		
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-1.5	mA/°C	Ta ≥ 25°C	
	Connection temperature	Tj	125	°C		
Dielectri output	c strength between input and	VIO	2,500	Vrms	AC for 1 min	
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)			260	°C	10 s	

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

ltem		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	VF	1.0	1.15  15 1.5	1.3 10  5	V	I <sub>F</sub> = 10 mA	
	Reverse current	IR				μA pF mA	V <sub>R</sub> = 5 V V = 0, f = 1 MHz	
	Capacity between terminals	C <sub>T</sub>						
	Trigger LED forward current						I <sub>O</sub> = 150 mA	
Output	Maximum resistance with output ON	R <sub>CN</sub>		2	4	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 150 mA	
	Current leakage when the relay is open	ILEAK	-	10×10 <sup>-6</sup>	1.0	μА	V <sub>OFF</sub> = 20 V	
Capacit	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	ΜΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON	_	-	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω V <sub>DD</sub> = 20 V (See note	
Turn-OFF time		tOFF	22		1.0	ms		

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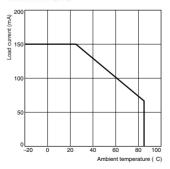
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>			20	٧	
Operating LED forward current	I <sub>F</sub>	5		30	mA	
Continuous load current	Io			150	mA	
Operating temperature	Ta	- 25		65	°C	

#### **■**Engineering Data

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



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

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



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

#### ■ 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		G3VM-61FR	1		
	terminals		G3VM-61FR(TR)		1,500	

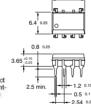
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

# G3VM-61CR



The actual product is marked differently from the image



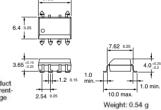






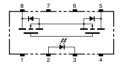






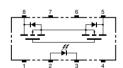
#### ■Terminal Arrangement/Internal Connections (Top View)

G3VM-61CR



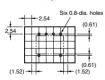
G3VM-61FR

G3VM-61FR



#### ■PCB Dimensions (Bottom View)

G3VM-61CR



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

G3VM-61FR



# MOSEET Balaya

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

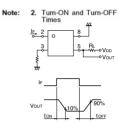
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	lpp	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ1 <sub>F</sub> /°C	-0,5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	6	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	60	V	
	Continuous load current	lo	2,000	mA	
	ON current reduction rate	∆ l <sub>ON</sub> <sup>N</sup> C	-20	mA/°C	Ta≥25°C
	Connection temperature	T <sub>j</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-20 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	VF	1.0	1.2	1.4	V	I <sub>F</sub> = 20 mA	
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 6 V	
	Capacity between terminals	CT		15	-	pF	V = 0, f = 1 MHz	
	Trigger LED forward current	l <sub>ET</sub>			5	mA	I <sub>O</sub> = 1 A	
Output	Maximum resistance with output ON	R <sub>ON</sub>		-	0.12	Ω	I <sub>F</sub> = 10 mA, I <sub>O</sub> = 1 A	
	Current leakage when the relay is open	I <sub>LEAK</sub>		1.0	4.0	nA	V <sub>OFF</sub> = 20 V Ta = 50°C	
Capacity b	etween I/O terminals	CHO		0.8	***	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON			5.0	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 Ω	
Turn-OFF time		tOFF			3.0	ms	V <sub>DD</sub> = 20 V (See note 2	



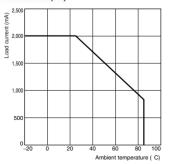
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			48	V
Operating LED forward current	1 <sub>F</sub>	10		30	mA
Continuous load current	l <sub>O</sub>			2	A
Operating temperature	Ta	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.



shown here



The actual product is marked differently from the image



#### ■Application Examples

- · Measurement devices
- · Security systems

#### ■ 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		50		
	Surface-mounting	7	G3VM-62F1	1		
	terminals		G3VM-62F1(TR)	122	1,500	

#### ■ Dimensions

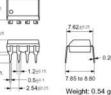
Note: All units are in millimeters unless otherwise indicated.







9.66+0.25



The actual product is marked differently from the image

shown here.

G3VM-62F1



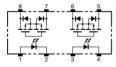
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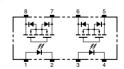


#### ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-62C1

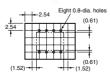


G3VM-62F1



#### ■PCB Dimensions (Bottom View)

G3VM-62C1



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

G3VM-62F1



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	"C	
Output	Output dielectric strength	VOFF	60	V	
	Continuous load current	lo	500	mA	
	ON current reduction rate	ΔI <sub>ON</sub> /°C	-5.0	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	"C	
Dielectrout (	ic strength between input and See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderii	ng 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 <sub>F</sub>	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 5 V	
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz	
	Trigger LED forward current	IFT		1.6	3	mA	I <sub>O</sub> = 500 mA	
Output	Maximum resistance with output ON	RON		1.0	2.0	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 500 mA	
	Current leakage when the relay is open	LEAK		-	1.0	μА	V <sub>OFF</sub> = 60 V	
Capacit	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON		0.8	2.0	ms	$I_F$ = 5 mA, $R_L$ = 200 $Ω$ ,	
Turn-OFF time		tOFF		0.1	0.5	ms	V <sub>DD</sub> = 20 V (See note 2	

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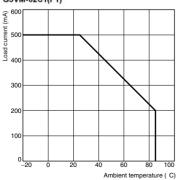
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-	-	48	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo.			500	mA
Operating temperature	Ta	- 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.







#### ■Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

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

9.66+02

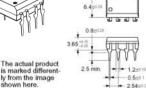
#### ■ List of Models

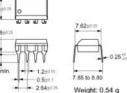
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape	
DPST-NO	PCB terminals	350 VAC	G3VM-352C 50		-	
	Surface-mounting	1	G3VM-352F			
	terminals		G3VM-352F(TR)		1,500	

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

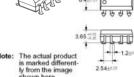








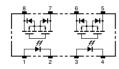
G3VM-352F



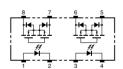


#### ■Terminal Arrangement/Internal Connections (Top View)

G3VM-352C

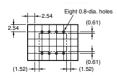


G3VM-352F



#### ■PCB Dimensions (Bottom View)

G3VM-352C



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

G3VM-352F



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	l <sub>EP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δlp/°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo	120	mA	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	Tj	125	°C	×
	ic strength between input and See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	1 <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>	-	1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	Ron	-	25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA, t < 1 s
				35	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK			1.0	μА	V <sub>OFF</sub> = 350 V
Capacity	y between I/O terminals	CHO	-	0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Ri-O	1,000	(C)	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON	-	0.3	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF		0.1	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

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

Vour 10% 90%

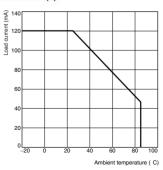
#### ■ Recommended Operating Conditions

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

Item	Symbol Minimum		Typical	Maximum	Unit	
Output dielectric strength	V <sub>DD</sub>			280	٧	
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA	
Continuous load current	I <sub>O</sub>	-		100	mA	
Operating temperature	Ta	- 20		65	°C	

#### **■**Engineering Data

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



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

#### ■ Application Examples

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







The actual product is marked differently from the image Note:

9.6610

#### ■List of Models

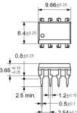
Contact form	Terminals	Load voltage (peak value)	Model	Current limit	Number per stick	Number per tape
DPST-NO	PCB terminals	ninals 350 VAC G3VM-WL Yes 50	50	777		
	Surface-mounting		G3VM-WFL	1		
	terminals		G3VM-WFL(TR)			1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



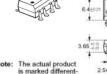
Note: The actual product is marked differently from the image shown here







G3VM-WFL



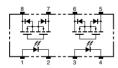




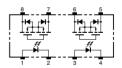
Weight: 0.54 g

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

G3VM-WL

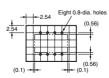


G3VM-WFL



#### ■PCB Dimensions (Bottom View)

G3VM-WL



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

G3VM-WFL



Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	6	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	10	120	mA	
	ON current reduction rate	Δ l <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectr output (	ic strength between input and See note 1.)	VIO	2,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

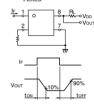
#### Note:

 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		Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	IR	***		10	μA	V <sub>R</sub> = 5 V
	Capacity between terminals	CT	***	30	***	pF	V = 0, f = 1 MHz
	Trigger LED forward current	1 <sub>FT</sub>	***	1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	-	22	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	LEAK			1.0	μА	V <sub>OFF</sub> = 350 V
Limit cu	rrent	LIM	150		300	mA	I <sub>F</sub> = 5 mA, V <sub>00</sub> = 5 V, t = 5 ms
Capacity	y between I/O terminals	CHO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	()	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF			1.0	ms	V <sub>00</sub> = 20 V (See note 2.)

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



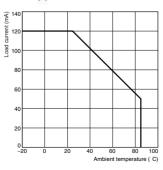
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo	-	-	100	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-W(F)L



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

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

# OMRON 040



#### ■Application Examples · Electronic automatic exchange systems

- · Security systems
- · Datacom (modem) systems
- · FA systems
- · Measurement devices

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

#### ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NC	PCB terminals	350 VAC	G3VM-354C	50	
	Surface-mounting	1	G3VM-354F		
	terminals		G3VM-354F(TR)	773	1,500

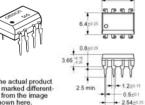
#### ■ Dimensions

G3VM-354C

Note: All units are in millimeters unless otherwise indicated.

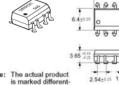


Note: The actual product is marked different ly from the image shown here.



# 7.62±0.25 7.85 to 8.80 Weight: 0.54 g

G3VM-354F



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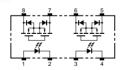
shown here.



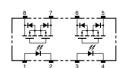


#### ■Terminal Arrangement/Internal Connections (Top View)

G3VM-354C

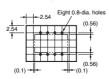


G3VM-354F



#### ■PCB Dimensions (Bottom View)

G3VM-354C



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

G3VM-354F

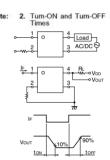


	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	lp	50	mA	
	Repetitive peak LED forward current	lpp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ l <sub>E</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo .	150	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-1.5	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>j</sub>	125	°C	
	ic strength between input and See note 1.)	VI-O	2,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30	-	pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT	***	1	3	mA	I <sub>OFF</sub> = 10 μA
Output	Maximum resistance with output ON	RON		15	25	Ω	I <sub>O</sub> = 150 mA
	Current leakage when the relay is open	LEAK	***	***	1.0	μА	I <sub>F</sub> = 5 mA, V <sub>OFF</sub> = 350 V
Capacity	y between I/O terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000			МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON		0.1	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω,
Turn-OFF time		tOFF	***	1.0	3.0	ms	V <sub>DD</sub> = 20 V (See note 2.)



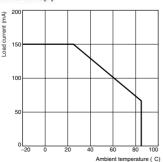
#### **■**Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-	-	280	٧
Operating LED forward current	I <sub>F</sub>	5		25	mA
Continuous load current	l <sub>O</sub>			150	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

# Load Current vs. Ambient Temperature G3VM-354C(F)



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

- SPST-NO/SPST-NC models now included in the 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2.500 Vrms between I/O.







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

#### ■ Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■List of Models

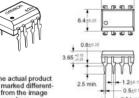
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO/	PCB terminals	350 VAC	G3VM-355C	50	
SPST-NC	Surface-mounting		G3VM-355F		
	terminals		G3VM-355F(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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



1.240.15 0.5+01 -2.54±025





G3VM-355F

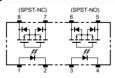




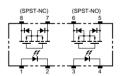


#### ■Terminal Arrangement/Internal Connections (Top View)

G3VM-355C

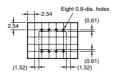


G3VM-355F



#### **■PCB** Dimensions (Bottom View)

G3VM-355C



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

G3VM-355F



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	lp	50	mA	
	Repetitive peak LED forward current	I <sub>FP</sub>	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	٧	
	Connection temperature	Tj	125	"C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo .	100	mA	
	ON current reduction rate	ΔI <sub>ON</sub> /°C	-1.0	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>j</sub>	125	"C	
	ic strength between input and See note 1.)	V <sub>FO</sub>	2,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	"C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderi	ng 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	LED forward voltage		1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse curr	ent	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 5 V
	Capacity bets	Capacity between terminals			30		pF	V = 0, f = 1 MHz
	Trigger LED f	orward current	lfT		1	3	mA	SPST-NO: I <sub>O</sub> = 100 mA
								SPST-NC: I <sub>OFF</sub> = 10 µA
Out- put Maximum output ON		sistance with	R <sub>ON</sub>		30	35	Ω	SPST-NO: I <sub>F</sub> = 5 mA, I <sub>O</sub> = 100 mA
					40	50		SPST-NC: I <sub>F</sub> = 0 mA, I <sub>O</sub> = 100 mA
	Current leaks relay is open	Current leakage when the relay is open			-	1.0	μА	V <sub>OFF</sub> = 350 V
Capa	city between I/C	) terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insula	tion resistance	-101	R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC. RoH ≤ 60%
Turn-4	ON time	SPST- NO	tON	-	0.25	1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$ $V_{DD} = 20 \text{ V}$
		SPST- NC			0.3	1.0	ms	(See note 2.)
		SPST- NO	tOFF		0.5	1.0	ms	]
	SPST- NC			-	0.15	1.0	ms	1

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

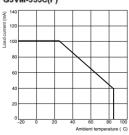
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	-		280	V
Operating LED forward current	I <sub>F</sub>	5	10	25	mA
Continuous load current	l <sub>O</sub>	-	-	100	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

# Load Current vs. Ambient Temperature G3VM-355C(F)



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

- A 2-channel Relay now included in the 400-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 2.500 Vrms between I/O.



shown here.







**NEW** Approval pending

#### ■Application Examples

- · Measurement devices
- · Security systems
- · Amusement machines

#### ■ List of Models

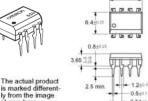
Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DPST-NO	PST-NO PCB terminals 400 VAC G3VM-402C		G3VM-402C	50	
	Surface-mounting		G3VM-402F		
	terminals		G3VM-402F(TR)		1,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



The actual product ly from the image shown here.



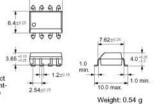
0.5+0.1 - 2.54±0.25

Weight: 0.54 g



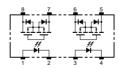






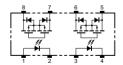
#### ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-402C



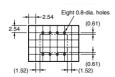
G3VM-402F

G3VM-402F



#### ■PCB Dimensions (Bottom View)

G3VM-402C



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

G3VM-402F



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	IFP	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δlp/°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	/
Output	Output dielectric strength	V <sub>OFF</sub>	400	V	1
	Continuous load current	lo	120	mA.	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
Dielectrout (	ric strength between input and (See note 1.)	V <sub>I-O</sub>	2,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	777	-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT	***	30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>		1	3	mA	I <sub>O</sub> = 120 mA
Output	Maximum resistance with output ON	RON		18	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	ILEAK		-	1.0	μА	V <sub>OFF</sub> = 400 V
Capacity	y between I/O terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF		***	1.0	ms	V <sub>DD</sub> = 20 V (See note 2.)

# 2. Turn-ON and Turn-OFF Times RL ₩V--•VDD -•Vout 90%

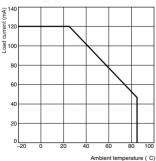
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			320	V
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo			100	mA
Operating temperature	Ta	- 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.

# OMRON 743 NEW 91

#### ■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	60 VAC	G3VM-62J1	50	
	terminals	P-1-10-00/-11-01-0	G3VM-62J1(TR)		2,500

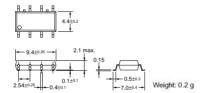
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated

#### G3VM-62J1

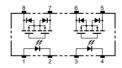


Note: The actual product is marked differently from the image shown here.



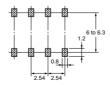
#### ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-62J1



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

#### G3VM-62J1



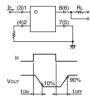
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA.	
	Repetitive peak LED forward current	IFP	1	А	100 μs pulses, 100 pps
	LED forward current reduc- tion rate	ΔIFFC	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	Voff	60	V	
	Continuous load current	lo	400	mA	
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-4.0	mA/°C	Ta ≥ 25°C
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng 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	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	IR	***	-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>FT</sub>		1.6	3	mA.	I <sub>O</sub> = 400 mA
Output	Maximum resistance with output ON	RON		1.0	2.0	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 400 mA
	Current leakage when the relay is open	LEAK	-	177.	1.0	μА	V <sub>OFF</sub> = 60 V
Capacity	between I/O terminals	CI-O		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>I-O</sub>	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON	***	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF		0.1	0.5	ms	V <sub>DD</sub> = 20 V (See note 2.

# Note: 2. Tum-ON and Turn-OFF Times JE. (3)1 8(6) BL



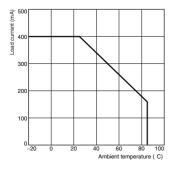
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			48	٧
Operating LED forward current	I <sub>F</sub>	5	7.5	25	mA
Continuous load current	lo			400	mA
Operating temperature	Ta	- 20		65	°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.



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	200 VAC	G3VM-202J1	50	
	terminals	National Control of Co	G3VM-202J1(TR)		2,500

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-202J1



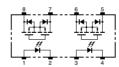
Note: The actual product is marked differently from the image shown here.





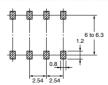
#### ■Terminal Arrangement/Internal Connections (Top View)

#### G3VM-202J1



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

#### G3VM-202J1



	Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	l <sub>F</sub>	50	mA		
	Repetitive peak LED forward current	lpp	1	A	100 μs pulses, 100 pps	
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR	5	٧		
	Connection temperature	Tj	125	°C	2	
Output	Output dielectric strength	V <sub>OFF</sub>	200	v		
	Continuous load current	lo.	200	mA		
	ON current reduction rate	∆ I <sub>ON</sub> /°C	-2.0	mA/°C	Ta ≥ 25°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min	
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation	
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation	
Solderin	ng temperature (10 s)	-	260	°C	10 s	

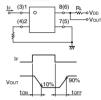
 The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	777		10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	l <sub>ET</sub>		1	3	mA	I <sub>O</sub> = 200 mA
Output	Maximum resistance with output ON	Ron	-	5	8	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 200 mA
	Current leakage when the relay is open	LEAK	-		1.0	μА	V <sub>OFF</sub> = 200 V
Capacity	between I/O terminals	CI-O	-	0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Rio	1,000	-	-	MΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON		0.6	1.5	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω,
Turn-OFF time		tOFF		0.1	1	ms	V <sub>DD</sub> = 20 V (See note 2

# Note: 2. Turn-ON and Turn-OFF Times 8(6) B



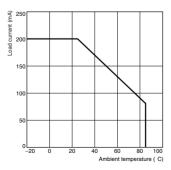
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>		150	200	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	l <sub>O</sub>	-		130	mA
Operating temperature	Ta	- 20		65	°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.

# omnon 7 4 3 NEW 91

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	350 VAC	G3VM-352J	50	
	terminals		G3VM-352J(TR)		2,500

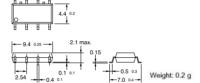
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-352J

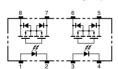


Note: The actual product is marked differently from the image shown here.



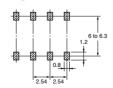
#### ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-352J



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

G3VM-352J



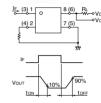
Ű.	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	1 <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	IFP	1	Α	100 μs pulses, 100 pps
	LED forward current reduc- tion rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo:	110	mA	
	ON current reduction rate	Δ1 <sub>ON</sub> /°C	-1.1	mA/°C	Ta≥25°C
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stq</sub>	-55 to +125	"C	With no icing or condensation
Solderin	ng 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)

ltem		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>	_		10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT		1	3	mA	I <sub>O</sub> = 110 mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	-	25	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA, t < 1 s
				35	50	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 110 mA
	Current leakage when the relay is open	LEAK	-		1.0	μА	V <sub>OFF</sub> = 350 V
Capacity	between I/O terminals	CHO	***	0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		Rio	1,000	-	-	МΩ	V <sub>I-O</sub> = 500 VDC. RoH ≤ 60%
Turn-ON time		tON		0.3	1	ms	$I_F$ = 5 mA, $R_L$ = 200 $Ω$ ,
Tum-OF	Turn-OFF time			0.1	1	ms	V <sub>DD</sub> = 20 V (See note 2.

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



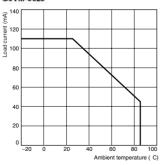
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>			280	V
Operating LED forward current	I <sub>F</sub>	5	10	25	mA
Continuous load current	Io Io			100	mA
Operating temperature	Ta	- 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

- New models with SPST-NC contacts and an 8-pin SOP package now included in 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.

# OMRON 743 NEW 91

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-NC	Surface-mounting	350 VAC	G3VM-354J	50	
	terminals		G3VM-354J(TR)	***	2,500

#### ■ Dimensions

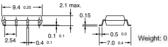
Note: All units are in millimeters unless otherwise indicated.

G3VM-354J



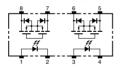
Note: The actual product is marked differently from the image shown here.





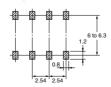
#### ■ Terminal Arrangement/Internal Connections (Top View)

G3VM-354J



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

G3VM-354J



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	А	100 µs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	T <sub>i</sub>	125	°C	7
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo	120	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>i</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA
	Reverse current	I <sub>R</sub>		-	10	μА	V <sub>R</sub> = 5 V
	Capacity between terminals	CT		30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I <sub>FT</sub>	-	1	3	mA	I <sub>OFF</sub> = 10 μA
Output	Maximum resistance with output ON	RoN	-	15	25	Ω	I <sub>O</sub> = 120 mA
	Current leakage when the relay is open	I <sub>LEAK</sub>		-	1.0	μА	V <sub>OFF</sub> = 350 V, I <sub>F</sub> = 5 mA
Capacity	y between I/O terminals	CIO		0.8		pF	f = 1 MHz, Vs = 0 V
Insulation resistance		R <sub>FO</sub>	1,000			МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%
Turn-ON time		tON			1.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$
Turn-OFF time		tOFF	***	***	3.0	ms	V <sub>DO</sub> = 20 V (See note 2.)

#### 

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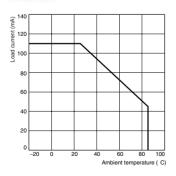
#### ■ Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	V <sub>DD</sub>	***	***	280	V
Operating LED forward current	1 <sub>F</sub>	5		25	mA
Continuous load current	l <sub>O</sub>			120	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

### Load Current vs. Ambient Temperature G3VM-354J



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

- SPST-NO/SPST-NC models with an 8-pin SOP package now available in the 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.



#### ■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
	Surface-mounting	350 VAC	G3VM-355J	50	
SPST-NC	terminals		G3VM-355J(TR)		2,500

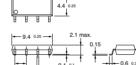
#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-355J



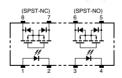
Note: The actual product is marked differently from the image shown here.



Weight: 0.2 g

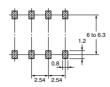
#### ■Terminal Arrangement/Internal Connections (Top View)

G3VM-355J



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

G3VM-355.I



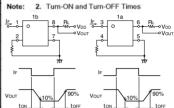
	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	Ipp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	350	V	
	Continuous load current	lo	90	mA	
	ON current reduction rate	∆ l <sub>ON</sub> /°C	-0.9	mA/°C	Ta ≥ 25°C
	Connection temperature	T <sub>j</sub>	125	°C	
	ic strength between input and See note 1.)	V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operati	ng temperature	Ta	-40 to +85	°C	With no icing or condensation
Storage	temperature	T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Solderin	ng temperature (10 s)		260	°C	10 s

 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.

Note:

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

	Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward	voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current		I <sub>R</sub>			10	μА	V <sub>R</sub> = 5 V	
nals	Capacity between	veen termi-	CT	77727	30	1000	pF	V = 0, f = 1 MHz	
	Trigger LED f	orward cur-	FT	FT 1 3	3	mA	SPST-NO: I <sub>O</sub> = 90 mA		
			I <sub>FC</sub>					SPST-NC: I <sub>OFF</sub> = 10 µA	
Out- put	Maximum res output ON	istance with	RON	(CS)	30	35	Ω	Ω	SPST-NO: I <sub>F</sub> = 5 mA, I <sub>O</sub> = 90 mA
					40	50	1	SPST-NC: I <sub>F</sub> = 0 mA, I <sub>O</sub> = 90 mA	
	Current leaks relay is open	ge when the	LEAK	-	-	1.0	μА	V <sub>OFF</sub> = 350 V	
Capa	city between I/C	terminals	CHO	***	0.8		pF	f = 1 MHz, Vs = 0 V	
Insula	tion resistance		R <sub>FO</sub>	1,000	-		МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Tum-(	ON time	SPST- NO	tON		0.25	1.0	ms	I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω, V <sub>DD</sub> = 20 V (See note 2.)	
		SPST- NC		***	0.3	1.0	ms		
NO SPS		SPST- NO	tOFF	<u></u>	0.5	1.0	ms	1	
		SPST- NC		1770	0.15	1.0	ms	1	



#### ■ 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 <sub>DD</sub>			280	V
Operating LED forward current	l <sub>F</sub>	5	10	25	mA
Continuous load current	lo .	1000	-	90	mA
Operating temperature	Ta	- 20		65	°C

#### **■**Engineering Data

### Load Current vs. Ambient Temperature G3VM-355J

(v) 140 (v) 14

#### 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.

#### ■Application Examples

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

# OMRON 743 NEW 91

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	400 VAC	G3VM-402J	50	
	terminals		G3VM-402J(TR)		2,500

#### ■ Dimensions

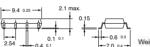
Note: All units are in millimeters unless otherwise indicated.

#### G3VM-402J



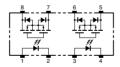
Note: The actual product is marked differently from the image shown here.





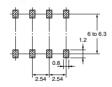
#### ■Terminal Arrangement/Internal Connections (Top View)

#### G3VM-402J



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

G3VM-402J



	Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	l <sub>F</sub>	50	mA	
	Repetitive peak LED forward current	lpp	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I <sub>F</sub> /°C	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5	V	
	Connection temperature	Tj	125	°C	
Output	Output dielectric strength	V <sub>OFF</sub>	400	V	
	Continuous load current	I <sub>O</sub>	120	mA	
	ON current reduction rate	ΔI <sub>ON</sub> PC	-1.2	mA/°C	Ta ≥ 25°C
Dielectric strength between input and output (See note 1.)		V <sub>I-O</sub>	1,500	Vrms	AC for 1 min
Operating temperature		Ta	-40 to +85	-40 to +85 °C With no icing	
Storage temperature		T <sub>stg</sub>	-55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)			260	°C	10 s

 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.

Note:

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

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	VF	1.0	1.15	1.3	V	I <sub>F</sub> = 10 mA	
	Reverse current	IR	_		10	μА	V <sub>R</sub> = 5 V V = 0, f = 1 MHz	
	Capacity between terminals	CT		30		pF		
	Trigger LED forward current	IFT	-	1	3	mA	I <sub>O</sub> = 120 mA	
Output	Maximum resistance with output ON	RON	-	17	35	Ω	I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA	
	Current leakage when the relay is open	LEAK	-	***	1.0	μΑ	V <sub>OFF</sub> = 400 V	
Capacity between I/O terminals		C <sub>I-O</sub>	-	0.8	-	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R <sub>I-O</sub>	1,000	***	-	МΩ	V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%	
Turn-ON time		tON	-	0.3	1	ms	I <sub>F</sub> = 10 mA, R <sub>L</sub> = 200 g V <sub>DD</sub> = 20 V (See note 2	
Turn-OFF time		tOFF		0.1	1	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 <sub>DD</sub>	-		320	V
Operating LED forward current	1 <sub>F</sub>	5	7.5	25	mA
Continuous load current	l <sub>o</sub>	-	-	120	mA
Operating temperature	Ta	- 20		65	°C

#### ■ Engineering Data

# Load Current vs. Ambient Temperature G3VM-402J

