

# G3VM-601G

MOS FET Relays SOP 4-pin, High-load-voltage Type

## MOS FET Relays in SOP 4-pin packages for high load voltages

- Load voltage: 600 V



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

**RoHS Compliant**

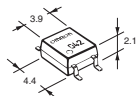
### Application Examples

- Semiconductor test equipment
- Various battery-driven devices
- Power circuit
- Test & Measurement equipment
- Security equipment
- Amusement equipment
- Communication equipment
- Industrial equipment

### Package

(Unit : mm, Average)

SOP 4-pin



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

### Model Number Legend

G3VM-□□□□  
1 2 3 4

1. Load Voltage  
60 : 600 V
2. Contact form  
1 : 1a (SPST-NO)
3. Package  
G : SOP 4-pin

#### 4. Other informations

When specifications overlap, serial code is added in the recorded order.

### Ordering Information

Package	Contact form	Terminals	Load voltage (peak value) *	Continuous load current (peak value) *	Stick packaging		Tape packaging	
					Model	Minimum package quantity	Model	Minimum package quantity
SOP4	1a (SPST-NO)	Surface-mounting Terminals	600 V	70 mA	G3VM-601G1	100 pcs.	G3VM-601G1(TR)	2,500 pcs.
				90 mA	G3VM-601G		G3VM-601G(TR)	

\* The AC peak and DC value are given for the load voltage and continuous load current.  
**Note:** To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

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

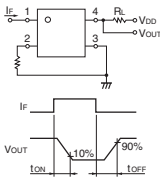
	Item	Symbol	G3VM-601G1	G3VM-601G	Unit	Measurement conditions
Input	LED forward current	IF	30	50	mA	
	Repetitive peak LED forward current	IFP		1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔIf/°C	-0.3	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR		5	V	
	Connection temperature	TJ		125	°C	
Output	Load voltage (AC peak/DC)	VOFF		600	V	
	Continuous load current (AC peak/DC)	Io	70	90	mA	
	ON current reduction rate	ΔIo/°C	-0.7	-0.9	mA/°C	Ta ≥ 25°C
	Pulse ON current	Iop	210	270	mA	t=100 ms, Duty=1/10
	Connection temperature	TJ		125	°C	
	Dielectric strength between I/O (See note 1.)	V-i		1500	Vrms	AC for 1 min
	Ambient operating temperature	Ta		-40 to +85	°C	With no icing or condensation
	Ambient storage temperature	Tstg		-55 to +125	°C	
Soldering temperature	-		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	G3VM-601G1		G3VM-601G	Unit	Measurement conditions
			Minimum	Typical	Maximum		
Input	LED forward voltage	V <sub>F</sub>	Minimum	1.1	1.0	V	I <sub>F</sub> =10 mA
			Typical	1.27	1.15		
			Maximum	1.4	1.3		
Input	Reverse current	I <sub>R</sub>	Maximum	10		μA	V <sub>R</sub> =5 V
	Capacitance between terminals	C <sub>T</sub>	Typical	30		pF	V=0, f=1 MHz
	Trigger LED forward current	I <sub>FT</sub>	Typical	–	0.4	mA	G3VM-601G1 : I <sub>o</sub> =70 mA G3VM-601G : I <sub>o</sub> =90 mA
			Maximum	0.2	1		
	Release LED forward current	I <sub>FC</sub>	Minimum	–	0.1	mA	I <sub>OFF</sub> =100 μA
Typical			0.001	–			
Output	Maximum resistance with output ON	R <sub>ON</sub>	Typical	35	45	Ω	G3VM-601G1 : I <sub>F</sub> =0.5 mA, I <sub>o</sub> =70 mA, t < 1 s G3VM-601G : I <sub>F</sub> =2 mA, I <sub>o</sub> =90 mA
			Maximum	60			
Output	Current leakage when the relay is open	I <sub>LEAK</sub>	Typical	1	–	nA	V <sub>OFF</sub> =600 V
			Maximum	1,000			
Output	Capacitance between terminals	C <sub>OFF</sub>	Typical	75		pF	V=0, f=1 MHz
			Capacitance between I/O terminals	C <sub>I-O</sub>	Typical		
Output	Insulation resistance between I/O terminals	R <sub>I-O</sub>	Minimum	1000		MΩ	V <sub>I-O</sub> =500 VDC, RoH±60%
			Typical	10 <sup>8</sup>			
Output	Turn-ON time	t <sub>ON</sub>	Typical	2		ms	G3VM-601G1 : I <sub>F</sub> =0.5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =10 V (See note 2.) G3VM-601G : I <sub>F</sub> =2 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =10 V (See note 2.)
			Maximum	10	8		
Output	Turn-OFF time	t <sub>OFF</sub>	Typical	1	0.5	ms	G3VM-601G1 : I <sub>F</sub> =0.5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =10 V (See note 2.) G3VM-601G : I <sub>F</sub> =2 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =10 V (See note 2.)
			Maximum	5	3		

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



## ■Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

Each item on this list is an independent condition, so it is not simultaneously satisfy several conditions.

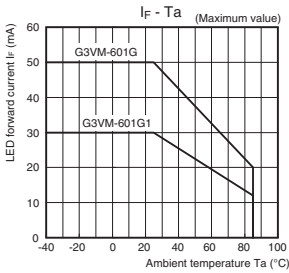
Item	Symbol		G3VM-601G1	G3VM-601G	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	480		V
Operating LED forward current	I <sub>F</sub>	Typical	0.5	2	mA
		Maximum	25		
Continuous load current (AC peak/DC)	I <sub>o</sub>	Maximum	60	70	mA
Ambient operating temperature	T <sub>a</sub>	Minimum	-20		
		Maximum	65		°C

## ■Spacing and Insulation

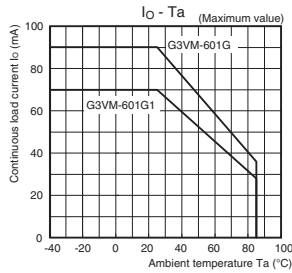
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

## Engineering Data

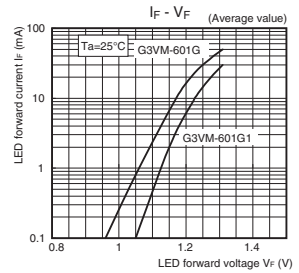
### LED forward current vs. Ambient temperature



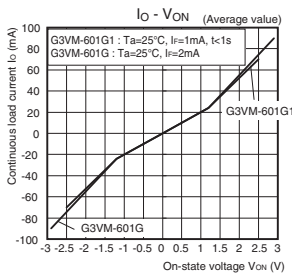
### Continuous load current vs. Ambient temperature



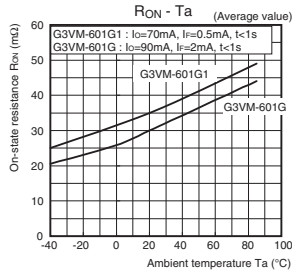
### LED forward current vs. LED forward voltage



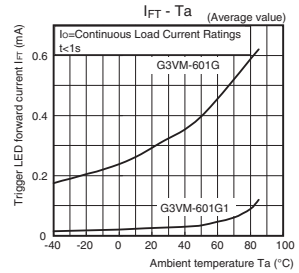
### Continuous load current vs. On-state voltage



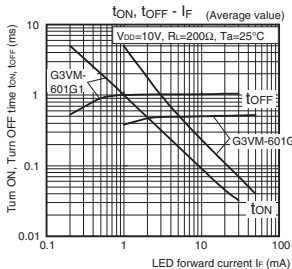
### On-state resistance vs. Ambient temperature



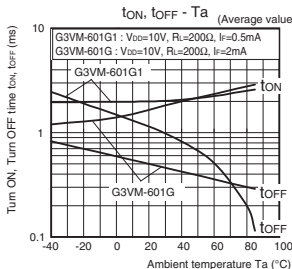
### Trigger LED forward current vs. Ambient temperature



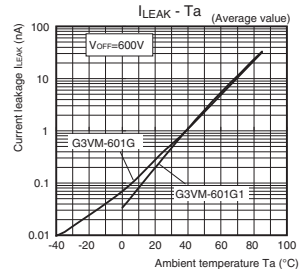
### Turn ON, Turn OFF time vs. LED forward current



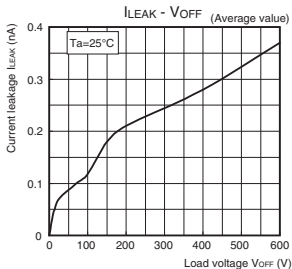
### Turn ON, Turn OFF time vs. Ambient temperature



### Current leakage vs. Ambient temperature



### Current leakage vs. Load voltage G3VM-601G1



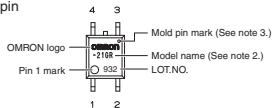
Introduction  
General-purpose  
High-voltage  
Multi-contact pair  
High-current and  
Low-V<sub>ON</sub> resistance  
Small and high-  
dielectric-  
strength  
High-dielectric-  
strength  
Current-limiting  
Low-voltage-resistance  
and Low-V<sub>ON</sub> resistance  
Small and High-  
voltage  
Certified Models with  
Statistical Derivation  
DIP  
SOP  
SSOP  
USOP  
VSON  
G3VM-601G□

## ■ Appearance / Terminal Arrangement / Internal Connections

### ● Appearance

#### SOP (Small Outline Package)

SOP 4-pin

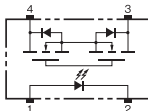


**Note 1.** The actual product is marked differently from the image shown here.

**Note 2.** "G3VM" does not appear in the model number on the Relay.

**Note 3.** The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

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

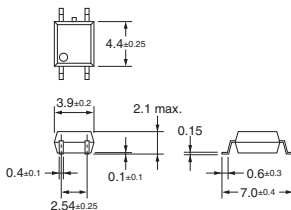


## ■ Dimensions (Unit: mm)



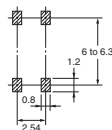
### Surface-mounting Terminals

Weight: 0.1 g




### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

## ■ Approved Standards

UL recognized 

Approved Standards	Contact form	File No.
UL (recognized)	1a (SPST-NO)	E80555

## ■ Safety Precautions

- Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.