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

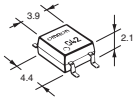
■Application Examples

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

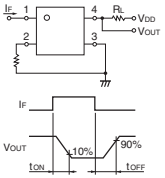
	Item	Symbol	G3VM-601G1	G3VM-601G	Unit	Measurement conditions
Input	LED forward current	I_F	30	50	mA	
	Repetitive peak LED forward current	I_{FP}	1		A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	-0.3	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5		V	
	Connection temperature	T_J	125		°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	600		V	
	Continuous load current (AC peak/DC)	I_O	70	90	mA	
	ON current reduction rate	ΔI_O/°C	-0.7	-0.9	mA/°C	Ta ≥ 25°C
	Pulse ON current	I_{OP}	210	270	mA	t=100 ms, Duty=1/10
	Connection temperature	T_J	125		°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	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
Input	LED forward voltage	V_F	Minimum	1.1	1.0	V	I_F=10 mA
			Typical	1.27	1.15		
			Maximum	1.4	1.3		
	Reverse current	I_R	Maximum	10		μA	V_R=5 V
	Capacitance between terminals	C_T	Typical	30		pF	V=0, f=1 MHz
	Trigger LED forward current	I_{FT}	Typical	–	0.4	mA	G3VM-601G1 : I_O=70 mA G3VM-601G : I_O=90 mA
			Maximum	0.2	1		
	Release LED forward current	I_{FC}	Minimum	–	0.1	mA	I_{OFF}=100 μA
			Typical	0.001	–		
Output	Maximum resistance with output ON	R_{ON}	Typical	35	45	Ω	G3VM-601G1 : I_F=0.5 mA, I_O=70 mA, t < 1 s G3VM-601G : I_F=2 mA, I_O=90 mA
			Maximum	60			
	Current leakage when the relay is open	I_{LEAK}	Typical	1	–	nA	V_{OFF}=600 V
			Maximum	1,000			
	Capacitance between terminals	C_{OFF}	Typical	75		pF	V=0, f=1 MHz
Capacitance between I/O terminals		C_{I-O}	Typical	0.8		pF	f=1 MHz, V_S=0 V
Insulation resistance between I/O terminals		R_{I-O}	Minimum	1000		MΩ	V_{I-O}=500 VDC, RoH≤60%
			Typical	10^8			
Turn-ON time		t_{ON}	Typical	2		ms	G3VM-601G1 : I_F=0.5 mA, R_L=200 Ω, V_{DD}=10 V (See note 2.) G3VM-601G : I_F=2 mA, R_L=200 Ω, V_{DD}=10 V (See note 2.)
			Maximum	10	8		
Turn-OFF time		t_{OFF}	Typical	1	0.5		
			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.

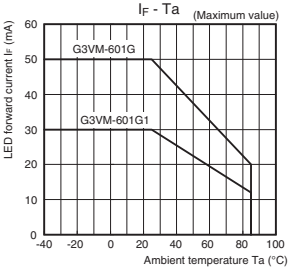
Item	Symbol		G3VM-601G1	G3VM-601G	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	480		V
Operating LED forward current	I_F	Typical	0.5	2	mA
		Maximum	25		
Continuous load current (AC peak/DC)	I_O	Maximum	60	70	
Ambient operating temperature	Ta	Minimum	-20		°C
		Maximum	65		

■Spacing and Insulation

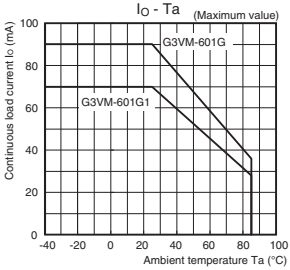
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

■Engineering Data

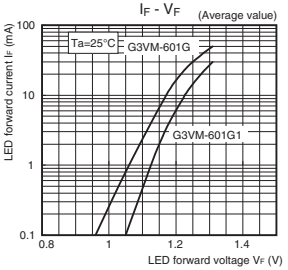
● **LED forward current vs. Ambient temperature**



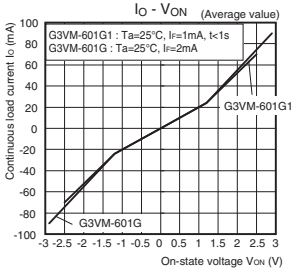
● **Continuous load current vs. Ambient temperature**



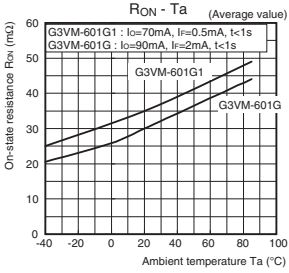
● **LED forward current vs. LED forward voltage**



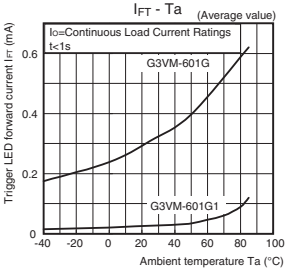
● **Continuous load current vs. On-state voltage**



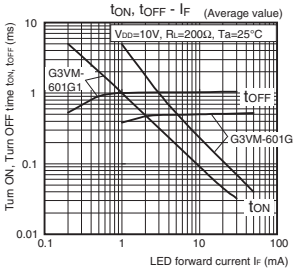
● **On-state resistance vs. Ambient temperature**



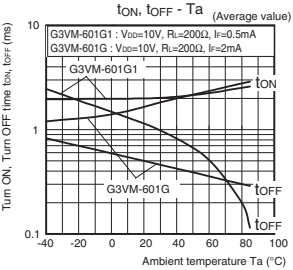
● **Trigger LED forward current vs. Ambient temperature**



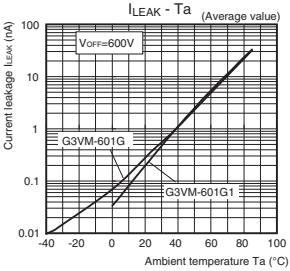
● **Turn ON, Turn OFF time vs. LED forward current**



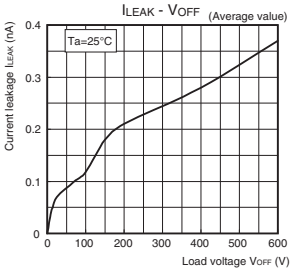
● **Turn ON, Turn OFF time vs. Ambient temperature**



● **Current leakage vs. Ambient temperature**



● **Current leakage vs. Load voltage**
G3VM-601G1



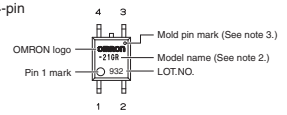
G3VM-601G□

■Appearance / Terminal Arrangement / Internal Connections

●Appearance

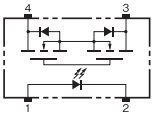
SOP (Small Outline Package)

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.

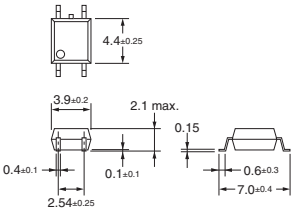
●Terminal Arrangement/Internal Connections (Top View)



■Dimensions (Unit: mm)

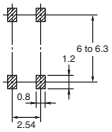
Surface-mounting Terminals

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.