

# G3VM-201G□/S5

MOS FET Relays SOP 4-pin, General-purpose Type

## General-purpose MOS FET Relays in SOP 4-pin packages for a wide range of applications

• Load voltage: 200 V



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

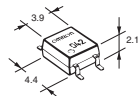
**RoHS Compliant**

### Application Examples

- Semiconductor test equipment
- Security equipment
- Amusement equipment
- Test & Measurement equipment
- Industrial equipment
- Power circuit
- Communication 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  
20 : 200 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.

**Note:** The model number legend for the G3VM-S5 is different from the above legend.

### 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	200 V	50 mA	G3VM-201G	100 pcs.	G3VM-201G(TR)	2,500 pcs.
				200 mA	G3VM-201G1		G3VM-201G1(TR)	
					G3VM-201G2		G3VM-201G2(TR)	
					G3VM-S5		G3VM-S5(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)

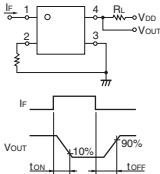
Item		Symbol	G3VM-201G	G3VM-201G1	G3VM-201G2	G3VM-S5	Unit	Measurement conditions	
Input	LED forward current	IF	50		30	50	mA		
	Repetitive peak LED forward current	IFP	1					A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔIf/°C	-0.5		-0.3	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR	5					V	
	Connection temperature	TJ	125					°C	
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>	200					V	
	Continuous load current (AC peak/DC)	Io	50	200				mA	
	ON current reduction rate	ΔIo/°C	-0.5		-2			mA/°C	Ta ≥ 25°C
	Pulse ON current	Iop	150	600				mA	t=100 ms, Duty=1/10
	Connection temperature	TJ	125					°C	
	Dielectric strength between I/O (See note 1.)	V <sub>IO</sub>	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-201G	G3VM-201G1	G3VM-201G2	G3VM-S5	Unit	Measurement conditions
LED forward voltage	V <sub>F</sub>	Minimum	1.0		1.1	1.0	V	I <sub>F</sub> =10 mA
		Typical	1.15		1.27	1.15		
		Maximum	1.3		1.4	1.3		
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	1	0.4	–	1	mA	G3VM-201G : I <sub>o</sub> =50 mA G3VM-201G1/201G2/S5 : I <sub>o</sub> =200 mA
		Maximum	3	1	0.2	3		
Release LED forward current	I <sub>FC</sub>	Minimum	0.1		–	0.1	mA	I <sub>OFF</sub> =100 μA
		Typical	–		0.001	–		
Maximum resistance with output ON	R <sub>ON</sub>	Typical	40	5			Ω	G3VM-201G/S5 : I <sub>F</sub> =5 mA, I <sub>o</sub> =Continuous load current ratings G3VM-201G1 : I <sub>F</sub> =2 mA, I <sub>o</sub> =200 mA G3VM-201G2 : I <sub>F</sub> =0.5 mA, I <sub>o</sub> =200 mA, t < 1s
		Maximum	50	8				
Current leakage when the relay is open	I <sub>LEAK</sub>	Typical	–	1		–	nA	G3VM-201G : V <sub>OFF</sub> =160 V G3VM-201G1/201G2/S5 : V <sub>OFF</sub> =200 V
		Maximum	1	1,000				
Capacitance between terminals	C <sub>OFF</sub>	Typical	15	90	100		pF	G3VM-201G : V=0, f=1 MHz, t < 10s G3VM-201G1/201G2/S5 : V=0, f=1 MHz
		Maximum	20		–			
Capacitance between I/O terminals	C <sub>I-O</sub>	Typical	0.8				pF	f=1 MHz, V <sub>s</sub> =0 V
Insulation resistance between I/O terminals	R <sub>I-O</sub>	Minimum	1000				MΩ	V <sub>I-O</sub> =500 VDC, RoHS=60%
		Typical	10 <sup>9</sup>					
Turn-ON time	t <sub>ON</sub>	Typical	–	3	3.5	0.6	ms	G3VM-201G/S5 : I <sub>F</sub> =5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.) G3VM-201G1 : I <sub>F</sub> =2 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.) G3VM-201G2 : I <sub>F</sub> =0.5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.)
		Maximum	0.5	8	10	1.5		
Turn-OFF time	t <sub>OFF</sub>	Typical	–	0.6	1	0.1		
		Maximum	0.2	3	5	1		

### 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-201G	G3VM-201G1	G3VM-201G2	G3VM-S5	Unit	
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	160				200	V
		Minimum	5		–	5		
Operating LED forward current	I <sub>F</sub>	Typical	7.5	2	0.5	7.5	mA	
		Maximum	15	25				
		Maximum	40		160	130		
Ambient operating temperature	T <sub>a</sub>	Minimum	-20				°C	
		Maximum	65					

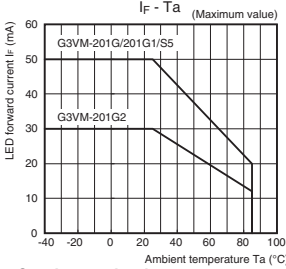
## ■Spacing and Insulation

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

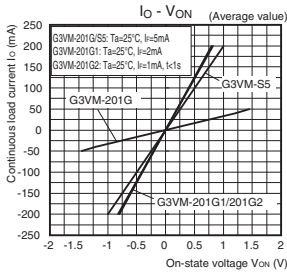
Introduction  
General purpose  
High-side-voltage  
Multi-contact pair  
Low-ON-resistance  
High-current and  
Small and high-  
High-dielectric-  
Current-limiting  
Low-voltage-resistance  
Small and High-  
Certified Models with  
Standard Derivation  
DIP  
SOP  
SSOP  
USOP  
VSON

## Engineering Data

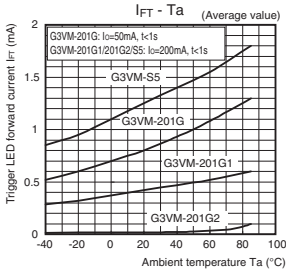
### LED forward current vs. Ambient temperature



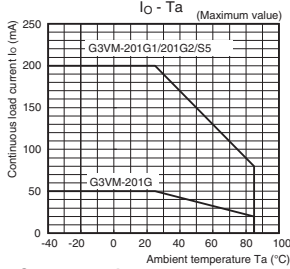
### Continuous load current vs. On-state voltage



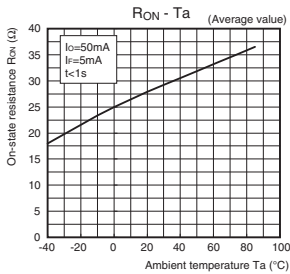
### Trigger LED forward current vs. Ambient temperature



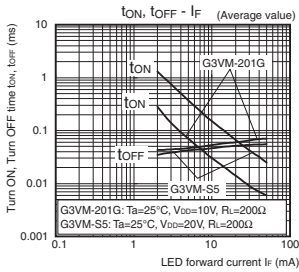
### Continuous load current vs. Ambient temperature



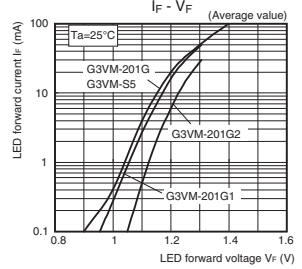
### On-state resistance vs. Ambient temperature



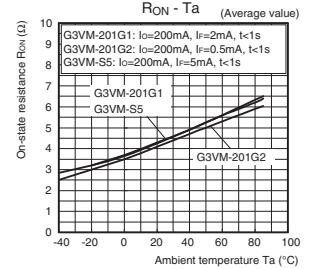
### Turn ON, Turn OFF time vs. LED forward current



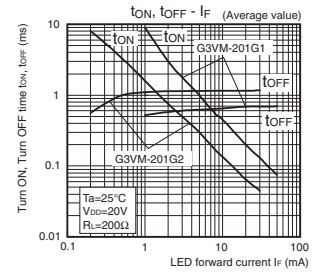
### LED forward current vs. LED forward voltage



### G3VM-201G1/201G2/S5

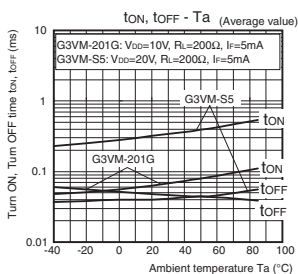


### G3VM-201G1/201G2

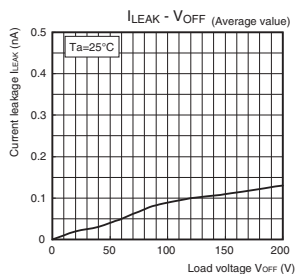


## Engineering Data

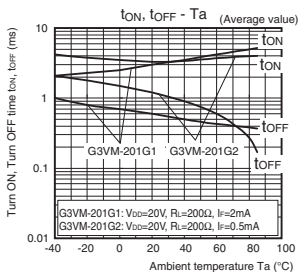
### Turn ON, Turn OFF time vs. Ambient temperature G3VM-201G/S5



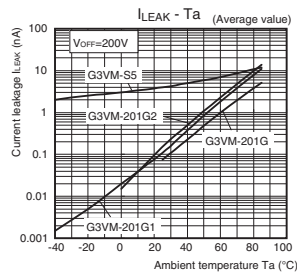
### Current leakage vs. Load voltage G3VM-201G2



### G3VM-201G1/201G2



### Current leakage vs. Ambient temperature

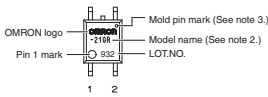


### ■ Appearance / Terminal Arrangement / Internal Connections

#### ● Appearance

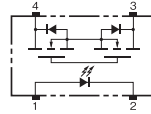
##### SOP (Small Outline Package)

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)

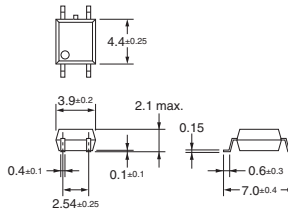


### ■ Dimensions (Unit: mm)



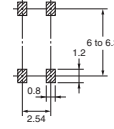
#### Surface-mounting Terminals

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.