

# G3VM-6□G□/61VY1

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

- Contact form: 1a (SPST-NO) or 1b (SPST-NC)
- Load voltage: 60 V

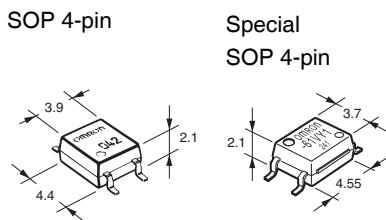


Note: The actual product is marked differently from the image shown here.

**RoHS Compliant**

SOP

### ■ Package (Unit : mm, Average)



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

### ■ Model Number Legend

G3VM-□ □ □ □ □  
1 2 3 4 5

- |   |                                    |                                      |
|---|------------------------------------|--------------------------------------|
| 1. Load voltage   | 2. Contact form                    | 3. Package                           |
| 6: 60 V   | 1: 1a (SPST-NO)<br>3: 1b (SPST-NC) | G: SOP 4-pin<br>V: Special SOP 4-pin |
| 4. Additional functions   |                                    |                                      |
| None: Dielectric strength between I/O 1500 V<br>Y: Dielectric strength between I/O 3750 V         |                                    |                                      |
| 5. Other informations<br>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	60 V	400 mA	G3VM-61G1	100 pcs.	G3VM-61G1(TR)	2500 pcs.
					G3VM-61G2		G3VM-61G2(TR)	
					G3VM-61G3		G3VM-61G3(TR)	
Special SOP 4-pin	1b (SPST-NC)			100 mA	G3VM-61VY1	150 pcs.	G3VM-61VY1(TR)	3000 pcs.
SOP4				500 mA	G3VM-63G	100 pcs.	G3VM-63G(TR05)	500 pcs.

\* 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)" or "(TR05)" to the end of the model number.

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

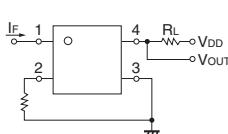
Item	Symbol	G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-63G	Unit	Measurement conditions
Input	LED forward current	I <sub>F</sub>	50		30	50	mA	
	LED forward current reduction rate	ΔI <sub>F</sub> /°C	-0.5		-0.3	-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>		5			V	
	Connection temperature	T <sub>J</sub>		125			°C	
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>		60			V	
	Continuous load current (AC peak/DC)	I <sub>O</sub>	400		100	500	mA	
	ON current reduction rate	ΔI <sub>O</sub> /°C	-4.0		-1.0	-5.0	mA/°C	Ta ≥ 25°C
	Pulse ON current	I <sub>OP</sub>	1200		300	1500	mA	t=100 ms, Duty=1/10
	Connection temperature	T <sub>J</sub>		125			°C	
	Dielectric strength between I/O (See note 1.)	V <sub>I-O</sub>	1500		3750	1500	Vrms	AC for 1 min
	Ambient operating temperature	T <sub>a</sub>	-40 to +85		-40 to +105	°C	With no icing or condensation	
	Ambient storage temperature	T <sub>Stg</sub>		-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.

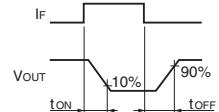
### ■Electrical Characteristics (Ta = 25°C)

Item	Symbol	G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-63G	Unit	Measurement conditions	
Input LED forward voltage	VF	Minimum	1.0		1.1	1.0	V	If=10 mA	
		Typical	1.15		1.27	1.15			
		Maximum	1.3		1.4	1.3			
Reverse current	IR	Maximum			10		μA	VR=5 V	
Capacitance between terminals	CT	Typical	30		50	30	pF	V=0, f=1 MHz	
Trigger LED forward current (See note 3)	IfT (Ifc)	Typical	1.6	0.4	–	0.2	0.6	mA	
		Maximum	3	1	0.2	1	3		
Release LED forward current (See note 3)	IfC (IfT)	Minimum	0.1		–	0.01	0.1	mA	
		Typical	–		0.001	–			
Output Maximum resistance with output ON	RON	Typical	1		25	1	Ω	G3VM-61G1 : If=5 mA, Io=400 mA G3VM-61G2 : If=2 mA, Io=400 mA G3VM-61G3 : If=0.5 mA, Io=400 mA, t<1s G3VM-61VY1 : If=2 mA, Io=100 mA, t<1s G3VM-63G : Io=500 mA	
		Maximum	2		50	2.5			
	I <sub>LEAK</sub>	Typical	–	1	–		nA	V <sub>OFF</sub> =60 V	
Capacitance between terminals	C <sub>OFF</sub>	Typical	130		10	100	pF	G3VM-61G1/61G2/61G3 : V=0, f=1 MHz G3VM-63G : V=0, f=1 MHz, If=5 mA	
			1000						
Capacitance between I/O terminals	C <sub>i-o</sub>	Typical	0.8				pF	f=1 MHz, Vs=0 V	
Insulation resistance between I/O terminals	R <sub>i-o</sub>	Minimum	1000				MΩ	Vi-o=500 VDC, RoH≤60%	
		Typical	10 <sup>8</sup>						
Turn-ON time	t <sub>ON</sub>	Typical	0.8	3	3.5	1	0.3	ms	G3VM-61G1/63G : If=5 mA, RL=200 Ω, Vdd=20 V (See note 2.)
		Maximum	2	8	10	5	1		G3VM-61G2 : If=2 mA, RL=200 Ω, Vdd=20 V (See note 2.)
Turn-OFF time	t <sub>OFF</sub>	Typical	0.1	1			0.7	ms	G3VM-61G3 : If=0.5 mA, RL=200 Ω, Vdd=20 V (See note 2.)
		Maximum	0.5	3	5		3		G3VM-61VY1 : If=2 mA, RL=200 Ω, Vdd=10 V (See note 2.)

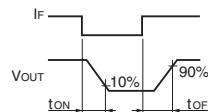
Note: 2. Turn-ON and Turn-OFF Times



G3VM-61G1/G2/G3/VY1



G3VM-63G



Note: 3. These values are for Relays with NC contacts

### ■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.

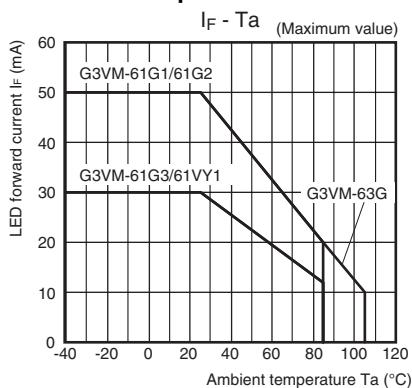
Item	Symbol	G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-63G	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	48				V
Operating LED forward current	If	Minimum	5	–	2	5	mA
		Typical	7.5	2	0.5	5	
		Maximum	25		15	25	
Continuous load current (AC peak/DC)	I <sub>O</sub>	Maximum	400	320	80	500	
Ambient operating temperature	Ta	Minimum	–20				°C
		Maximum	65		85		

### ■Spacing and Insulation

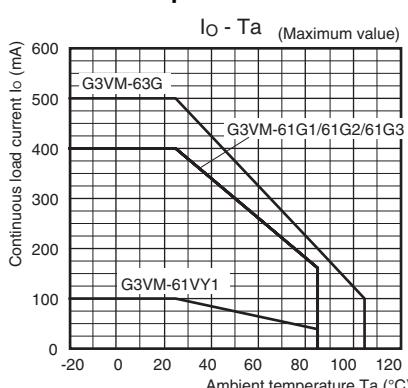
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

### ■Engineering Data

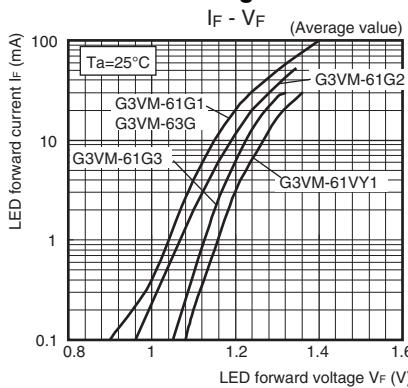
● LED forward current vs.  
Ambient temperature



● Continuous load current vs.  
Ambient temperature

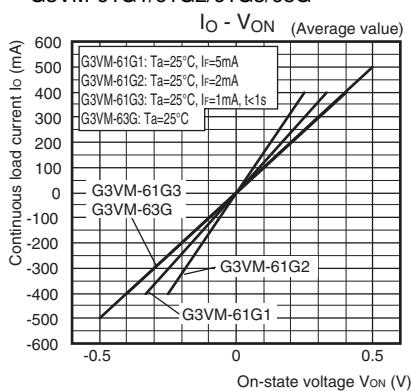


● LED forward current vs.  
LED forward voltage

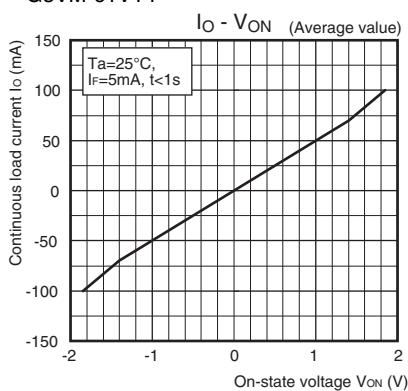


● Continuous load current vs.  
On-state voltage

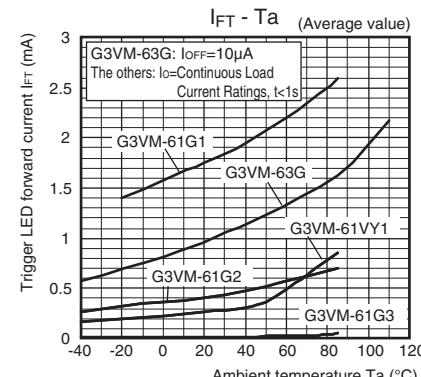
G3VM-61G1/61G2/61G3/63G



G3VM-61VY1

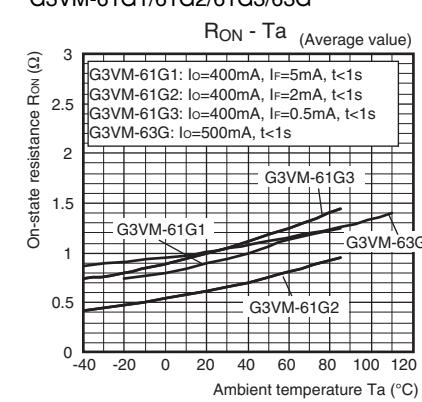


● Trigger LED forward current vs.  
Ambient temperature

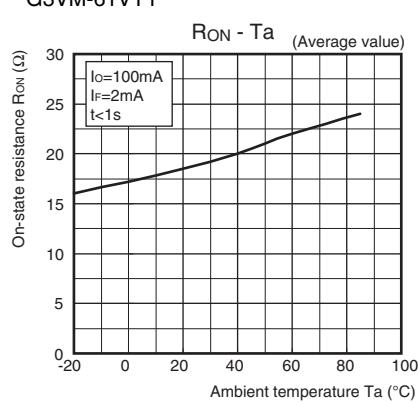


● On-state resistance vs.  
Ambient temperature

G3VM-61G1/61G2/61G3/63G

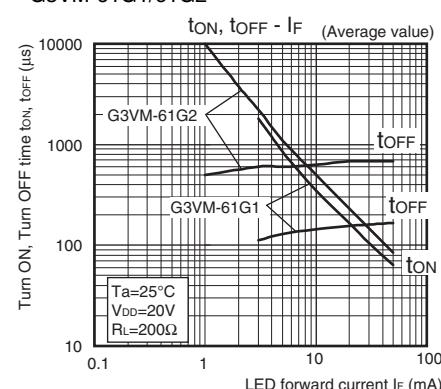


G3VM-61VY1

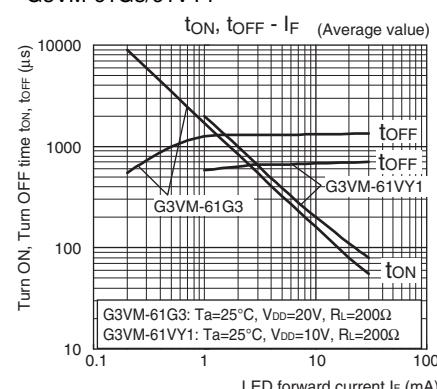


● Turn ON, Turn OFF time vs.  
LED forward current

G3VM-61G1/61G2



G3VM-61G3/61VY1

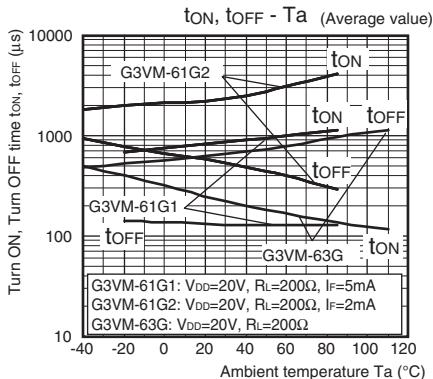


### ■Engineering Data

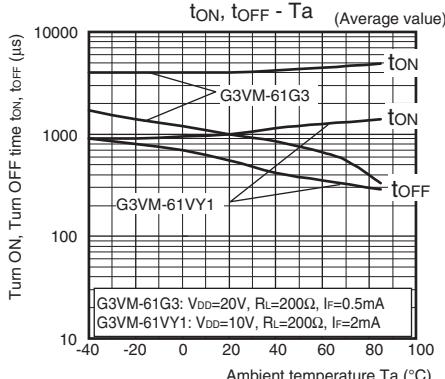
#### ● Turn ON, Turn OFF time vs.

##### Ambient temperature

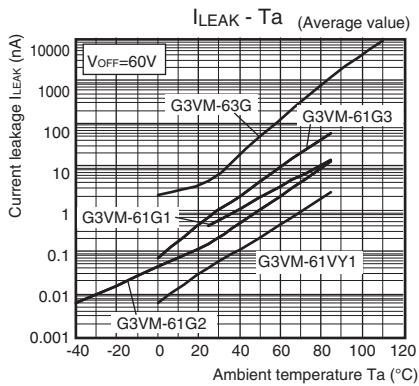
G3VM-61G1/61G2/63G



G3VM-61G3/61VY1

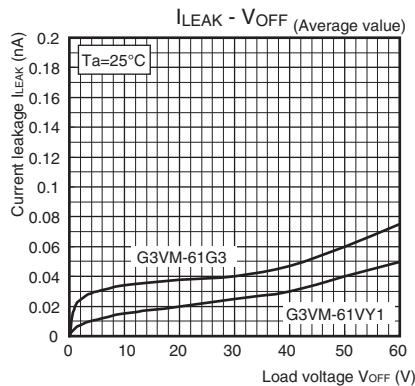


#### ● Current leakage vs. Ambient temperature



#### ● Current leakage vs. Load voltage

G3VM-61G3/61VY1

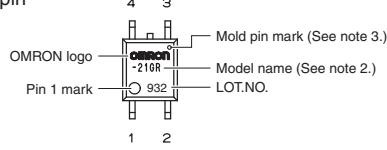


### ■Appearance/Terminal Arrangement/Internal Connections

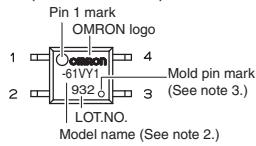
#### ●Appearance

##### SOP (Small Outline Package)

SOP 4-pin



##### Special SOP 4-pin (G3VM-61VY1)



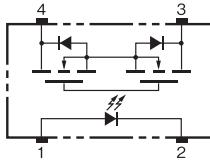
Note: 1. The actual product is marked differently from the image shown here.

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

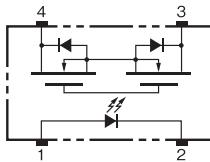
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

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

G3VM-61G1/61G2/61G3/61VY1



G3VM-63G



### ■Dimensions (Unit: mm)

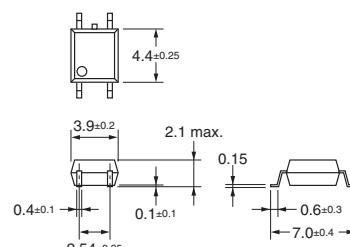
#### SOP (Small Outline Package)

SOP 4-pin



##### Surface-mounting Terminals

Weight: 0.1 g



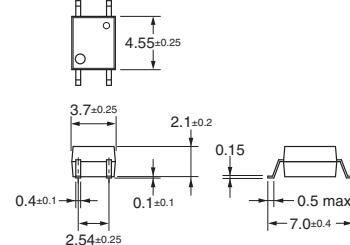
Note: The actual product is marked differently from the image shown here.

Special SOP 4-pin \*(G3VM-61VY1)



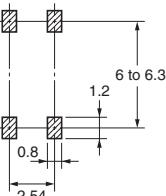
##### Surface-mounting Terminals

Weight: 0.1 g



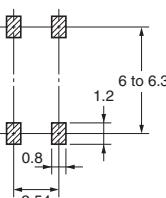
##### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



##### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



\* The external dimensions are different from those of the standard SOP 4-pin, but the mounting pad dimensions are the same.

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

### ■Approved Standards

UL recognized

Model	Approved Standards	Contact form	File No.
G3VM-61G1	UL recognized	1a (SPST-NO)	E80555
G3VM-61G2			
G3VM-61G3			
G3VM-61VY1			
G3VM-63G	UL certification is pending		

### ■Safety Precautions

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

- Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
- Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**

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