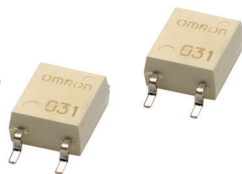


# G3VM-41GR8/61GR1

MOS FET Relays SOP 4-pin, High-current and Low-ON-resistance Type

## MOS FET Relays in SOP 4-pin packages that achieve the low ON resistance and high switching capacitance of a mechanical relay



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

- Load voltage: 40 V or 60 V
- 40-V Relay: Continuous load current of 1 A max.
- 60-V Relay: Continuous load current of 1 A max.

RoHS Compliant

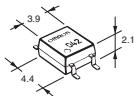
### Application Examples

- Semiconductor test equipment
- Security equipment
- Amusement equipment
- Test & Measurement equipment
- Industrial equipment
- Communication equipment
- Power circuit

### 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 5

- Load Voltage
  - Contact form
  - Package
  - Additional function
  - Other informations
- 4 : 40 V  
6 : 60 V
- 1 : 1a (SPST-NO)  
G : SOP 4-pin
- R: Low ON resistance

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	40 V	1000 mA	G3VM-41GR8	100 pcs.	G3VM-41GR8(TR)	2,500 pcs.
			60 V		G3VM-61GR1		G3VM-61GR1(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)

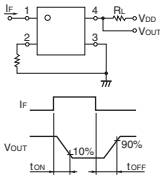
Item	Symbol	G3VM-41GR8	G3VM-61GR1	Unit	Measurement conditions
Input	LED forward current	IF	30	mA	
	LED forward current reduction rate	$\Delta I_f / ^\circ C$	-0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V <sub>R</sub>	5	V	
	Connection temperature	T <sub>J</sub>	125	°C	
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>	40	V	
	Continuous load current (AC peak/DC)	I <sub>O</sub>	1000	mA	
	ON current reduction rate	$\Delta I_o / ^\circ C$	-13.3	mA/°C	Ta ≥ 50°C
	Pulse ON current	I <sub>OP</sub>	2	A	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	V <sub>rms</sub>	AC for 1 min
	Ambient operating temperature	T <sub>a</sub>	-40 to +85	°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-41GR8	G3VM-61GR1	Unit	Measurement conditions
Input	LED forward voltage	V <sub>F</sub>	Minimum	1.18	1.0	V I <sub>F</sub> =10 mA
			Typical	1.33	1.15	
			Maximum	1.48	1.3	
Input	Reverse current	I <sub>R</sub>	Maximum		10	μA V <sub>R</sub> =5 V
Input	Capacitance between terminals	C <sub>T</sub>	70	15	pF	V=0, f=1 MHz
Output	Trigger LED forward current	I <sub>FT</sub>	Typical		1	mA I <sub>O</sub> =100 mA
			Maximum		3	
	Release LED forward current	I <sub>FC</sub>	Minimum		0.1	mA I <sub>OFF</sub> =100 μA
			Typical		0.1	
Output	Maximum resistance with output ON	R <sub>ON</sub>	Typical		0.1	Ω I <sub>F</sub> =5 mA, I <sub>O</sub> =1 A
			Maximum		0.13	
	Current leakage when the relay is open	I <sub>LEAK</sub>	Typical		-	nA G3VM-41GR8 : V <sub>OFF</sub> =30 V G3VM-61GR1 : V <sub>OFF</sub> =60 V
		Maximum		1		
	Capacitance between terminals	C <sub>OFF</sub>	Typical		300	pF V=0, f=1 MHz
	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, R <sub>O</sub> H≤60%
			Typical		10 <sup>3</sup>	
	Turn-ON time	t <sub>ON</sub>	Typical		1.2	ms I <sub>F</sub> =5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.)
			Maximum		3	
	Turn-OFF time	t <sub>OFF</sub>	Typical		0.2	
			Maximum		0.5	

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.

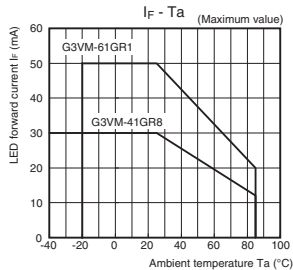
Item	Symbol		G3VM-41GR8	G3VM-61GR1	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	32	48	V
Operating LED forward current	I <sub>F</sub>	Maximum	5		mA
		Typical	10		
		Maximum	20		
Continuous load current (AC peak/DC)	I <sub>O</sub>	Maximum	1000		
Ambient operating temperature	T <sub>a</sub>	Minimum	-20		°C
		Maximum	60		

### Spacing and Insulation

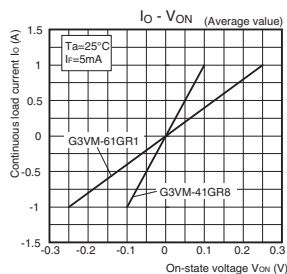
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

## Engineering Data

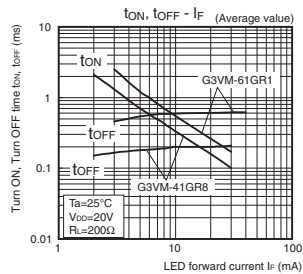
### LED forward current vs. Ambient temperature



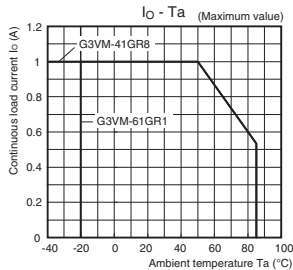
### Continuous load current vs. On-state voltage



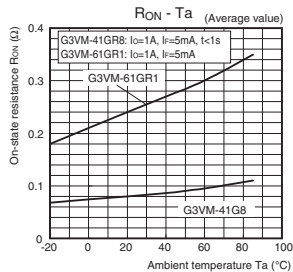
### Turn ON, Turn OFF time vs. LED forward current



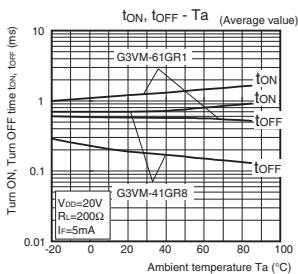
### Continuous load current vs. Ambient temperature



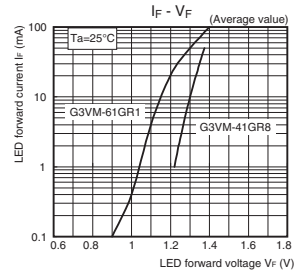
### On-state resistance vs. Ambient temperature



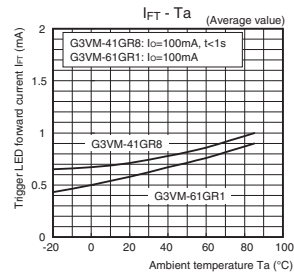
### Turn ON, Turn OFF time vs. Ambient temperature



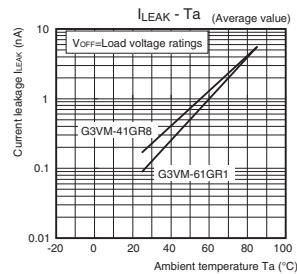
### LED forward current vs. LED forward voltage



### Trigger LED forward current vs. Ambient temperature



### Current leakage vs. Ambient temperature

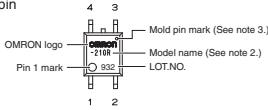


### Appearance / Terminal Arrangement / Internal Connections

#### ● Appearance

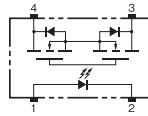
##### SOP (Small Outline Package)

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)

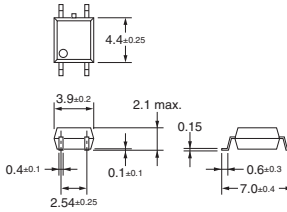


### Dimensions (Unit: mm)

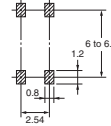


#### Surface-mounting Terminals

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.