

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

RoHS Compliant

Application Examples

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

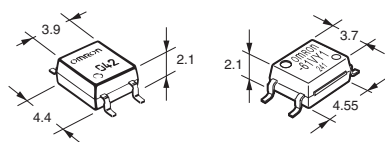


Note: The actual product is marked differently from the image shown here.

Package (Unit : mm, Average)

SOP 4-pin

Special
SOP 4-pin



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load voltage

6: 60 V

2. Contact form

- 1: 1a (SPST-NO)
- 3: 1b (SPST-NC)

3. Package

- G: SOP 4-pin
- V: Special SOP 4-pin

4. Additional functions

- None: Dielectric strength between I/O 1500 V
- Y: Dielectric strength between I/O 3750 V

5. 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	60 V	400 mA	G3VM-61G1	100 pcs.	G3VM-61G1(TR)	2500 pcs.
Special SOP 4-pin				100 mA	G3VM-61G2		G3VM-61G2(TR)	
SOP4	1b (SPST-NC)			500 mA	G3VM-61G3		G3VM-61G3(TR)	
					G3VM-61VY1	150 pcs.	G3VM-61VY1(TR)	3000 pcs.
					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)

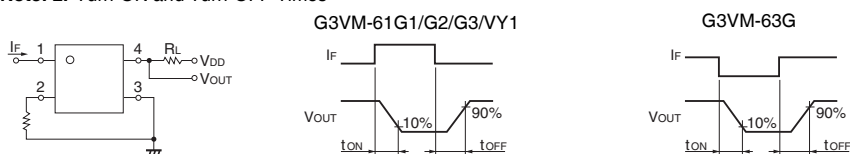
Item		Symbol	G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-63G	Unit	Measurement conditions
Input	LED forward current	IF	50		30		50	mA	
	LED forward current reduction rate	$\Delta I_F / ^\circ\text{C}$	-0.5		-0.3		-0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR			5			V	
	Connection temperature	TJ			125			°C	
Output	Load voltage (AC peak/DC)	V _{OFF}			60			V	
	Continuous load current (AC peak/DC)	Io	400			100	500	mA	
	ON current reduction rate	$\Delta I_O / ^\circ\text{C}$	-4.0			-1.0	-5.0	mA/°C	Ta ≥ 25°C
	Pulse ON current	I _{OP}	1200			300	1500	mA	t=100 ms, Duty=1/10
	Connection temperature	TJ			125			°C	
	Dielectric strength between I/O (See note 1.)	V _{I-O}	1500			3750	1500	V _{rms}	AC for 1 min
	Ambient operating temperature	Ta		-40 to +85			-40 to +105	°C	With no icing or condensation
	Ambient storage temperature	T _{stg}		-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	V _F	Minimum	1.0		1.1		1.0	V	I _F =10 mA
			Typical	1.15		1.27		1.15		
			Maximum	1.3		1.4		1.3		
	Reverse current	I _R	Maximum	10					μA	V _R =5 V
	Capacitance between terminals	C _T	Typical	30			50	30	pF	V=0, f=1 MHz
	Trigger LED forward current	I _{FT} (I _{FC}) (See note 3)	Typical	1.6	0.4	—	0.2	0.6	mA	G3VM-61G1/61G2/61G3 : I _O =400 mA G3VM-61VY1: I _O =100 mA G3VM-63G : I _{OFF} =10 μA
Maximum			3	1	0.2	1	3			
Release LED forward current	I _{FC} (I _{FT}) (See note 3)	Minimum	0.1		—	0.01	0.1	mA	G3VM-61G1/61G2/61G3 : I _{OFF} =100 μA G3VM-63G: I _O =500 mA	
		Typical	—		0.001	—				
Output	Maximum resistance with output ON	R _{ON}	Typical	1			25	1	Ω	G3VM-61G1 : I _F =5 mA, I _O =400 mA G3VM-61G2 : I _F =2 mA, I _O =400 mA G3VM-61G3 : I _F =0.5 mA, I _O =400 mA, t<1s G3VM-61VY1 : I _F =2 mA, I _O =100 mA, t<1s G3VM-63G: I _O =500 mA
			Maximum	2			50	2.5		
	Current leakage when the relay is open	I _{LEAK}	Typical	—	1		—		nA	V _{OFF} =60 V
			Maximum	1000						
	Capacitance between terminals	C _{OFF}	Typical	130			10	100	pF	G3VM-61G1/61G2/61G3: V=0, f=1 MHz G3VM-63G: V=0, f=1 MHz, I _F =5 mA
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, R _{oH} ≤60%	
		Typical	10 ⁸							
Turn-ON time	t _{ON}	Typical	0.8	3	3.5	1	0.3	ms	G3VM-61G1/63G:I _F =5 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.) G3VM-61G2 :I _F =2 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.) G3VM-61G3 :I _F =0.5 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.) G3VM-61VY1 :I _F =2 mA, R _L =200 Ω, V _{DD} =10 V (See note 2.)	
		Maximum	2	8	10	5	1			
Turn-OFF time	t _{OFF}	Typical	0.1	1			0.7			
		Maximum	0.5	3	5		3			

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



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.

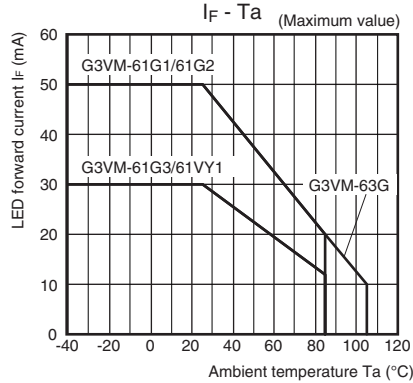
Item	Symbol		G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-63G	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	48					V
Operating LED forward current	I _F	Minimum	5	—		2	5	mA
		Typical	7.5	2	0.5	5	—	
		Maximum	25			15	25	
Continuous load current (AC peak/DC)	I _O	Maximum	400	320		80	500	
Ambient operating temperature	T _a	Minimum	−20					°C
		Maximum	65				85	

■Spacing and Insulation

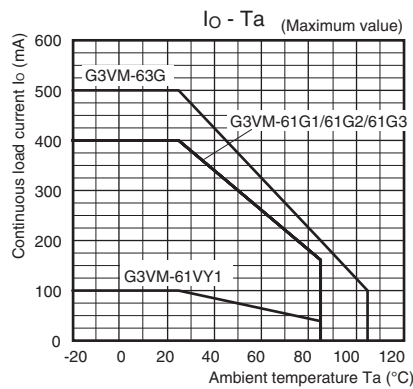
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

Engineering Data

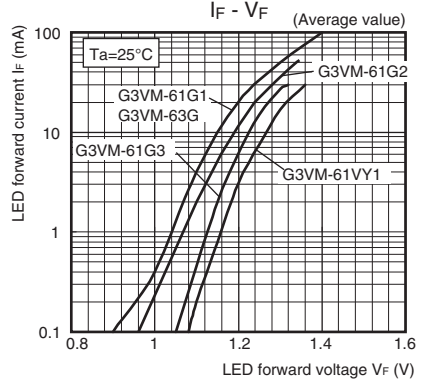
LED forward current vs. Ambient temperature



Continuous load current vs. Ambient temperature

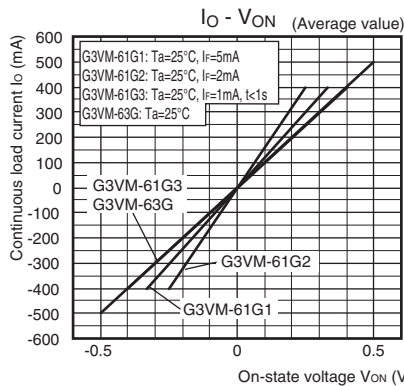


LED forward current vs. LED forward voltage

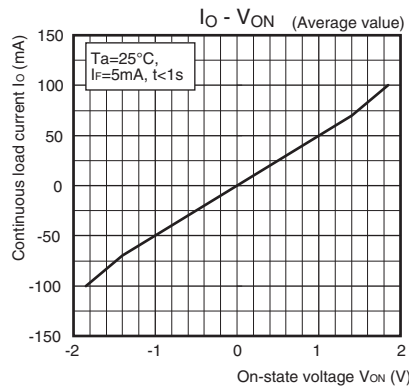


Continuous load current vs. On-state voltage

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

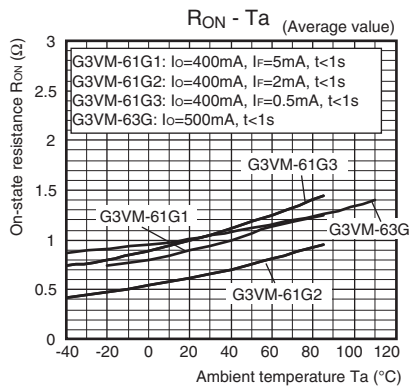


G3VM-61VY1

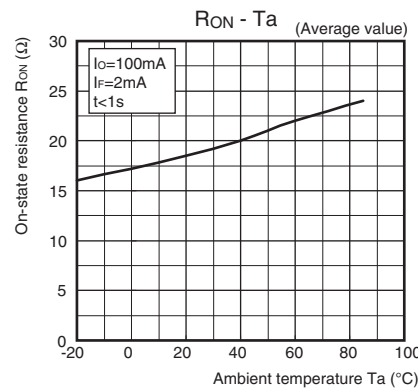


On-state resistance vs. Ambient temperature

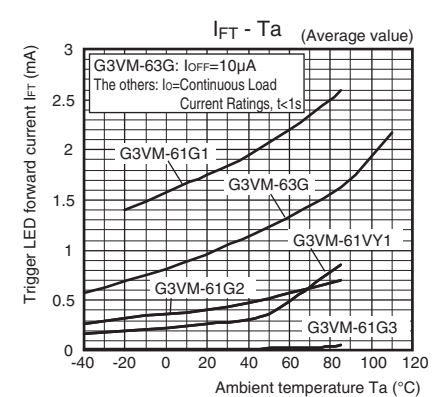
G3VM-61G1/61G2/61G3/63G



G3VM-61VY1

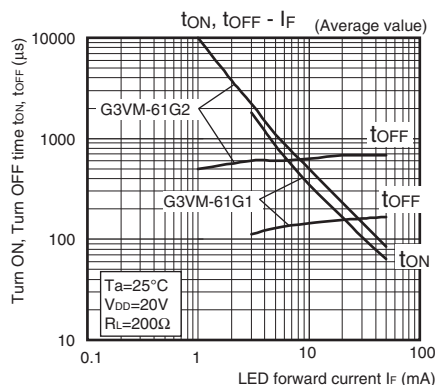


Trigger LED forward current vs. Ambient temperature

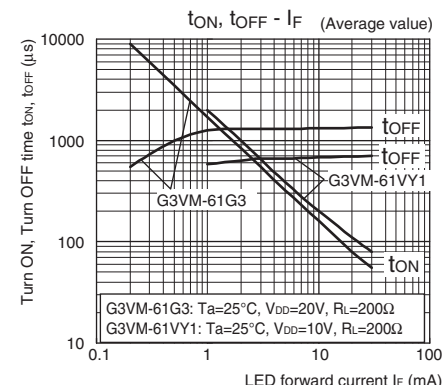


Turn ON, Turn OFF time vs. LED forward current

G3VM-61G1/61G2

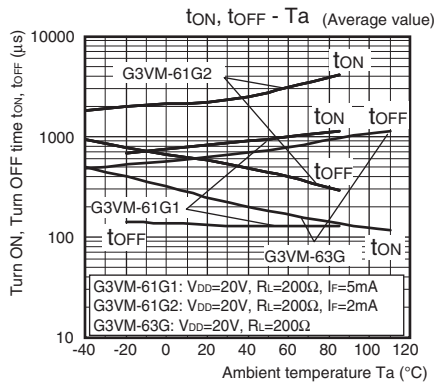


G3VM-61G3/61VY1

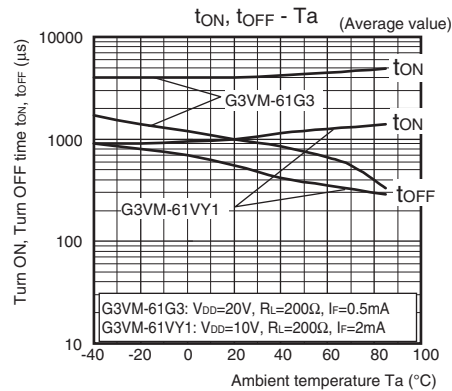


Engineering Data

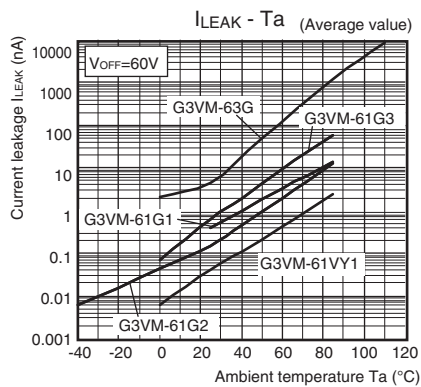
● Turn ON, Turn OFF time vs. Ambient temperature G3VM-61G1/61G2/63G



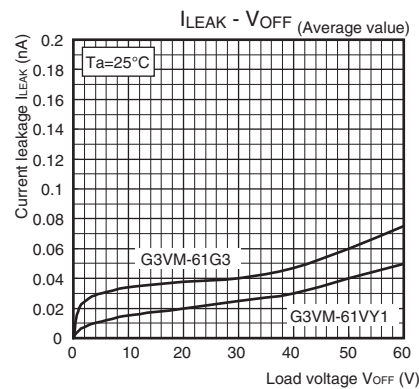
G3VM-61G3/61VY1



● Current leakage vs. Ambient temperature



● Current leakage vs. Load voltage G3VM-61G3/61VY1

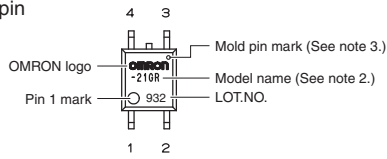


■Appearance/Terminal Arrangement/Internal Connections

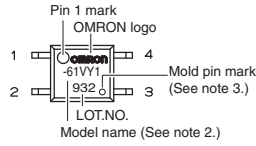
●Appearance

SOP (Small Outline Package)

SOP 4-pin



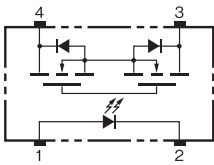
Special SOP 4-pin (G3VM-61VY1)



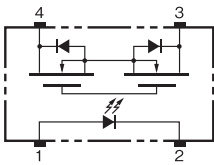
- Note:** 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections
(Top View)

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



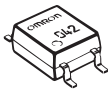
G3VM-63G



■Dimensions (Unit: mm)

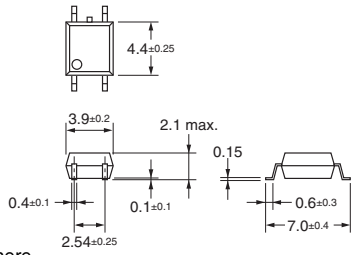
SOP (Small Outline Package)

SOP 4-pin



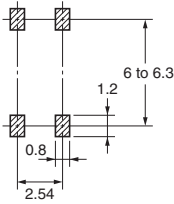
Surface-mounting Terminals

Weight: 0.1 g



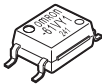
Actual Mounting Pad Dimensions

(Recommended Value, Top View)



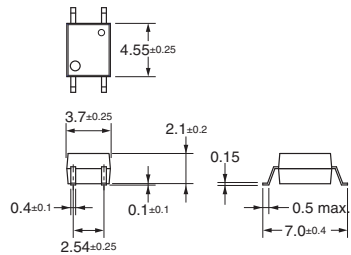
Note: The actual product is marked differently from the image shown here.

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



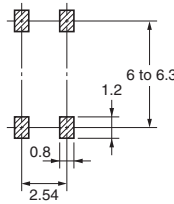
Surface-mounting Terminals

Weight: 0.1 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



* 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 G3VM-61G2 G3VM-61G3 G3VM-61VY1	UL recognized	1a (SPST-NO)	E80555
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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