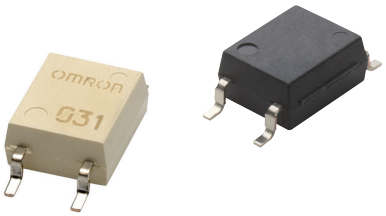
G3VM-6□G□/61VY□

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



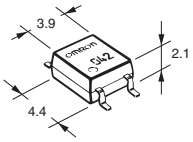
Note: The actual product is marked differently from the image shown here.

■Application Examples

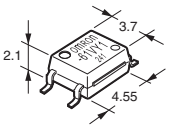
- **Semiconductor test equipment**
- **Test & Measurement equipment**
- **Communication equipment**
- **Security equipment**
- **Industrial equipment**
- **Power circuit**
- **Amusement equipment**

■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.
					G3VM-61G2		**G3VM-61G2(TR)**	
					G3VM-61G3		**G3VM-61G3(TR)**	
Special SOP 4-pin				100 mA	**G3VM-61VY1**	125 pcs.	**G3VM-61VY1(TR)**	3000 pcs.
				500 mA	**G3VM-61VY2**		**G3VM-61VY2(TR05)**	500 pcs.
							G3VM-61VY2(TR)	3000 pcs.
				700 mA	**G3VM-61VY3**		**G3VM-61VY3(TR05)**	500 pcs.
							G3VM-61VY3(TR)	3000 pcs.
SOP4	1b (SPST-NC)			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)

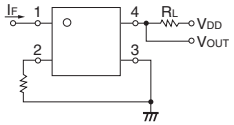
	Item	Symbol	G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-61VY2	G3VM-61VY3	G3VM-63G	Unit	Measurement conditions
Input	LED forward current	I_F	50		30				50	mA	
	LED forward current reduction rate	ΔI_F/°C	−0.5		−0.3				−0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5				6		5	V	
	Connection temperature	T_J	125							°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	60							V	
	Continuous load current (AC peak/DC)	I_O	400			100	500	700	500	mA	
	ON current reduction rate	ΔI_O/°C	−4.0			−1.0	−5.0	−7.0	−5.0	mA/°C	Ta ≥ 25°C
	Pulse ON current	Iop	1200			300	1500	2100	1500	mA	t=100 ms, Duty=1/10
	Connection temperature	T_J	125							°C	
Dielectric strength between I/O ✻		V_{I-O}	1500			3750			1500	Vrms	AC for 1 min
Ambient operating temperature		Ta	-40 to +85			-40 to +110			-40 to +105	°C	With no icing or condensation
Ambient storage temperature		Tstg	-55 to +125							°C	
Soldering temperature		–	260							°C	10 s

✻ 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.

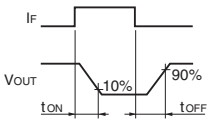
■Electrical Characteristics (Ta = 25°C)

Item		Symbol		G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-61VY2	G3VM-61VY3	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}) ✻2	Typical	1.6	0.4	–	0.2	1	1	0.6	mA	G3VM-61G1/61G2/61G3: I_O=400 mA G3VM-61VY1: I_O=100 mA G3VM-61VY2: I_O=500 mA G3VM-61VY3: I_O=700 mA G3VM-63G : I_{OFF}=10 μA
			Maximum	3	1	0.2	1	3				
	Release LED forward current	I_{FC} (I_{FT}) ✻2	Minimum	0.1		–	0.01	0.1			mA	G3VM-61G1/61G2/61G3/61VY1/61VY2/61VY3: I_{OFF}=100 μA G3VM-63G: I_O=500 mA
			Typical	–		0.001	–	0.5	–			
Output	Maximum resistance with output ON	R_{ON}	Typical	1			25	1	0.15	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-61VY2 :I_F=5 mA, I_O=500 mA G3VM-61VY3 :I_F=5 mA, I_O=700 mA G3VM-63G: I_O=500 mA
			Maximum	2			50	2		2.5		
	Current leakage when the relay is open	I_{LEAK}	Typical	–	1		–		2	–	nA	V_{OFF}=60 V
			Maximum	1000								
	Capacitance between terminals	C_{OFF}	Typical	130			10	20	100		pF	G3VM-61G1/61G2/61G3/61VY1/61VY2/61VY3: V=0, f=1 MHz G3VM-63G: V=0, f=1 MHz, IF=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, RoH≤60%
			Typical	10^8								
Turn-ON time		t_{ON}	Typical	0.8	3	3.5	1	0.6	2	0.3	ms	G3VM-61G1/63G:I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1 G3VM-61G2 :I_F=2 mA, R_L=200 Ω, V_{DD}=20 V ✻1 G3VM-61G3 :I_F=0.5 mA, R_L=200 Ω, V_{DD}=20 V ✻1 G3VM-61VY1:I_F=2 mA, R_L=200 Ω, V_{DD}=10 V ✻1 G3VM-61VY2/61VY3:I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1
			Maximum	2	8	10	5	2	3	1		
Turn-OFF time		t_{OFF}	Typical	0.1	1			0.1	0.1	0.7		
			Maximum	0.5	3	5		0.5	0.5	3		

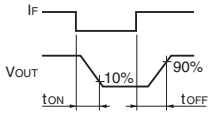
✻1. Turn-ON and Turn-OFF Times



G3VM-61G1/G2/G3/VY1/VY2



G3VM-63G



✻2. 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.

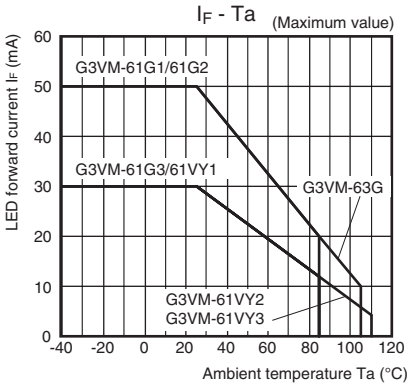
Item	Symbol		G3VM-61G1	G3VM-61G2	G3VM-61G3	G3VM-61VY1	G3VM-61VY2	G3VM-61VY3	G3VM-63G	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	48							V
Operating LED forward current	I_F	Minimum	5	–		2	5			mA
		Typical	7.5	2	0.5	5	7.5		–	
		Maximum	25			15	25			
Continuous load current (AC peak/DC)	I_O	Maximum	400	320		80	500	700	500	
Ambient operating temperature	Ta	Minimum	–20							°C
		Maximum	65				100		85	

■Spacing and Insulation

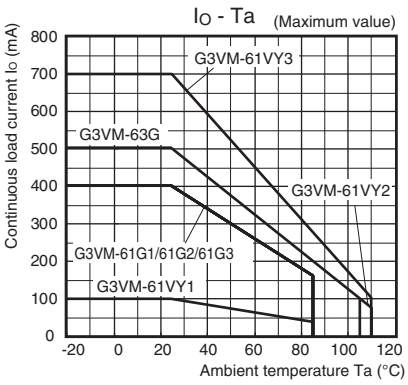
Item	G3VM-6□G□	G3VM-61VY□	Unit
	Minimum		
Creepage distances	4.0	5.0	mm
Clearance distances	4.0	5.0	
Internal isolation thickness	0.1	0.2	

■Engineering Data

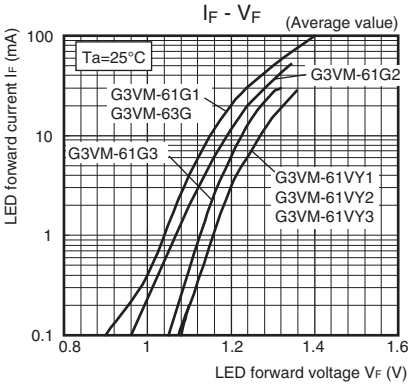
●LED forward current vs. Ambient temperature



●Continuous load current vs. Ambient temperature

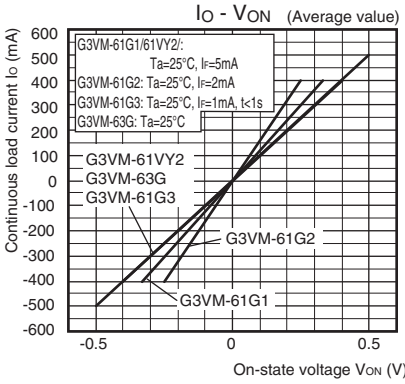


●LED forward current vs. LED forward voltage

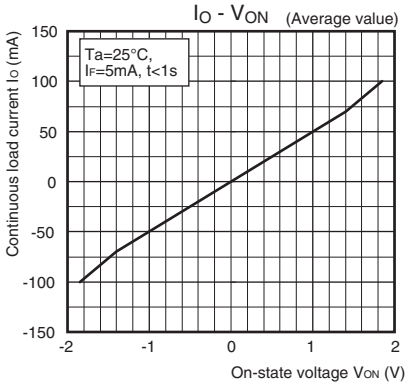


●Continuous load current vs. On-state voltage

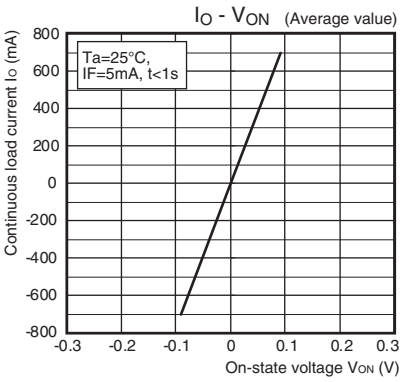
G3VM-61G1/61G2/61G3/61VY2/63G



G3VM-61VY1

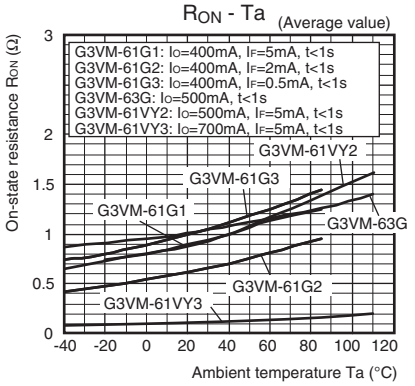


G3VM-61VY3

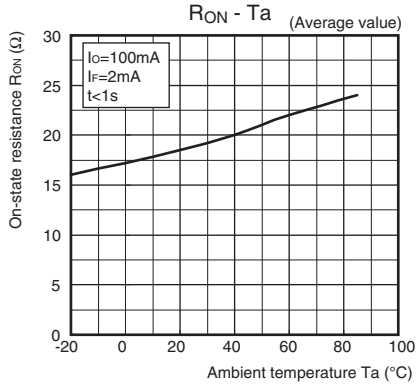


●On-state resistance vs. Ambient temperature

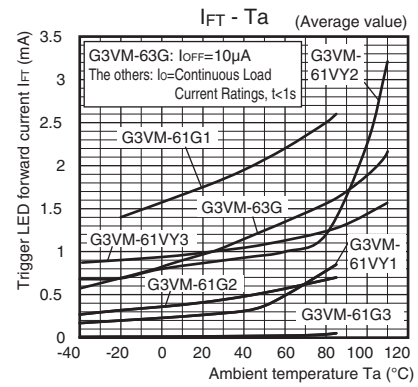
G3VM-61G1/61G2/61G3/61VY2/61VY3/63G



G3VM-61VY1

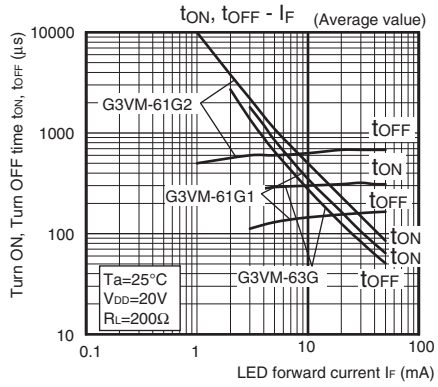


●Trigger LED forward current vs. Ambient temperature

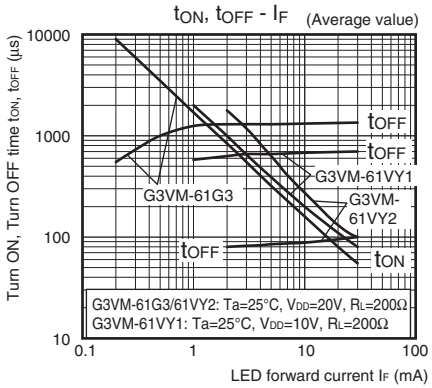


●Turn ON, Turn OFF time vs. LED forward current

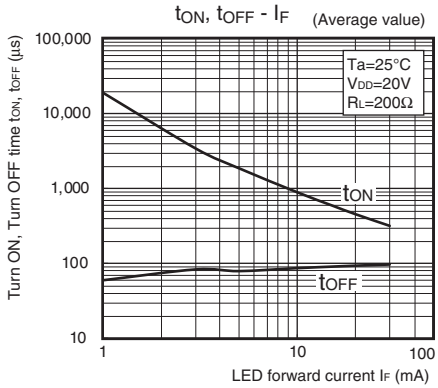
G3VM-61G1/61G2/63G



G3VM-61G3/61VY1/61VY2



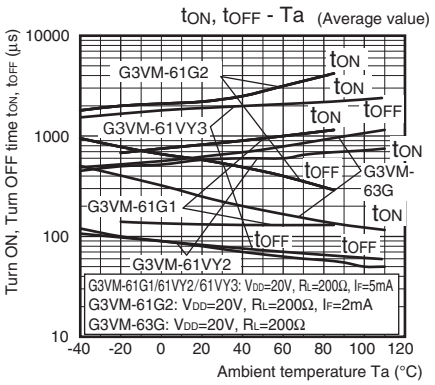
G3VM-61VY3



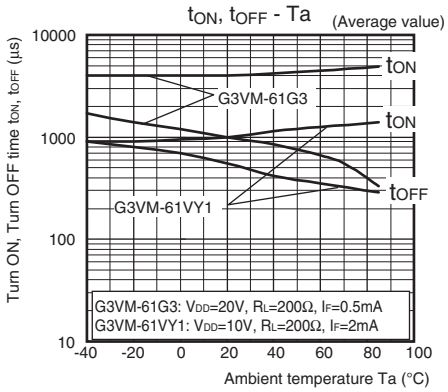
■Engineering Data

●Turn ON, Turn OFF time vs. Ambient temperature

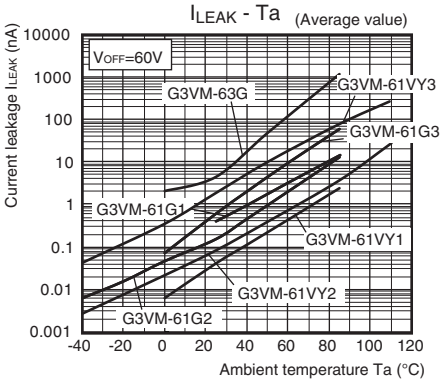
G3VM-61G1/61G2/63G/61VY2/61VY3



G3VM-61G3/61VY1

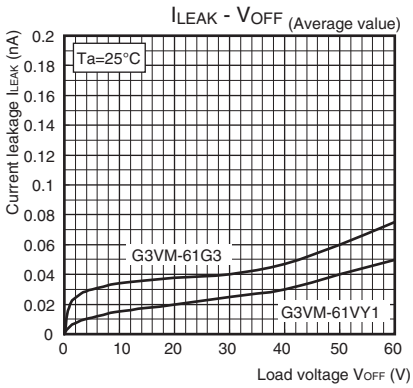


●Current leakage vs. Ambient temperature

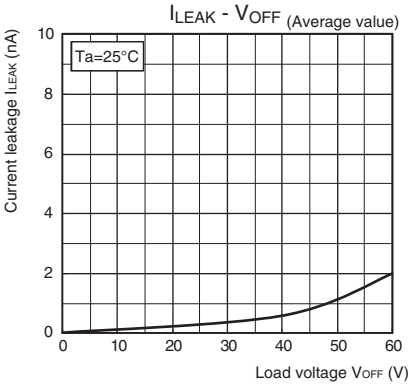


●Current leakage vs. Load voltage

G3VM-61G3/61VY1



G3VM-61VY3

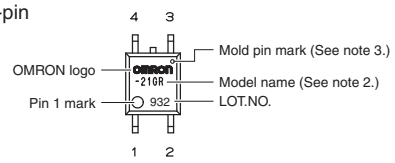


■Appearance/Terminal Arrangement/Internal Connections

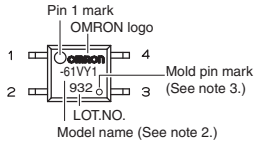
●Appearance

SOP (Small Outline Package)

SOP 4-pin



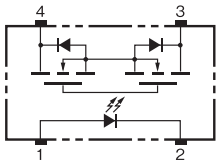
Special SOP 4-pin (G3VM-61VY1/61VY2/61VY3)



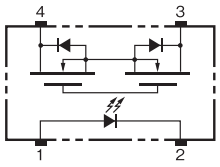
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections (Top View)

G3VM-61G1/61G2/61G3/61VY1/61VY2/61VY3



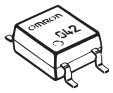
G3VM-63G



■Dimensions (Unit: mm)

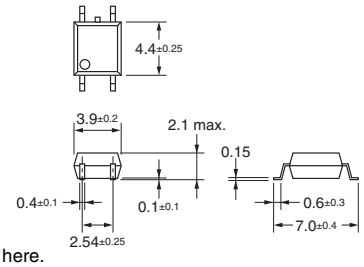
SOP (Small Outline Package)

SOP 4-pin



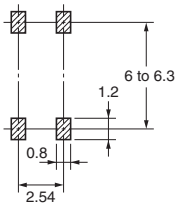
Surface-mounting Terminals

Weight: 0.1 g



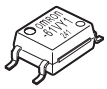
Actual Mounting Pad Dimensions

(Recommended Value, Top View)



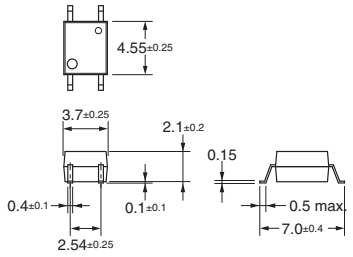
Note: The actual product is marked differently from the image shown here.

Special SOP 4-pin *(G3VM-61VY1/61VY2/61VY3)



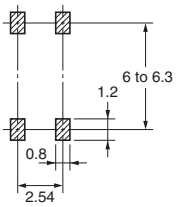
Surface-mounting Terminals

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 G3VM-61VY2 G3VM-61VY3	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.

OMRON Corporation
Electronic and Mechanical Components Company

Contact: www.omron.com/ecb

Cat. No. K282-E1-03
0318(0216)(O)