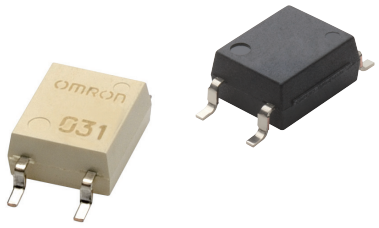
G3VM-41GR8/61GR□/61VR

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

MOS FET Relays in SOP4-pin that featuring the low ON resistance and high switching capacity as a mechanical relay.

- **Load voltage: 40 V or 60 V**
- **40-V Relay: Continuous load current of 1 A max.**
- **60-V Relay: Continuous load current of 1.7 A max.**

RoHS Compliant



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

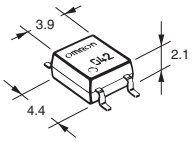
■Application Examples

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

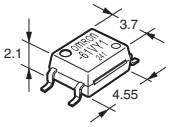
■Package

(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
4 : 40 V
6 : 60 V

2. Contact form
1 : 1a (SPST-NO)

3. Package
G : SOP 4-pin
V: Special SOP 4-pin

4. Additional function
R: Low ON resistance

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	40 V	1000 mA	G3VM-41GR8	100 pcs.	G3VM-41GR8(TR)	2,500 pcs.
					G3VM-61GR1		G3VM-61GR1(TR)	
			60 V	1400 mA	G3VM-61VR	125 pcs.	G3VM-61VR(TR05)	500 pcs.
							G3VM-61VR(TR)	3,000 pcs.
				1700 mA	G3VM-61GR2	100 pcs.	G3VM-61GR2(TR05)	2,500 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)

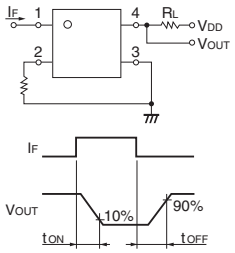
	Item	Symbol	G3VM-41GR8	G3VM-61GR1	G3VM-61VR	G3VM-61GR2	Unit	Measurement conditions
Input	LED forward current	IF	30	50		30	mA	
	LED forward current reduction rate	ΔIF/°C	-0.3	-0.5		-0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5		6	5	V	
	Connection temperature	TJ	125				°C	
Output	Load voltage (AC peak/DC)	VOFF	40	60			V	
	Continuous load current (AC peak/DC)	Io	1000		1400	1700	mA	
	ON current reduction rate	ΔIo/°C	-13.3		-14	-17	mA/°C	G3VM-41GR8/61GR1: Ta ≥ 50°C G3VM-61VR/61GR2: Ta ≥ 25°C
	Pulse ON current	Iop	2	3	4.2	5	A	t=100 ms, Duty=1/10
	Connection temperature	TJ	125				°C	
Dielectric strength between I/O ✻		VI-O	1500		3750	1500	Vrms	AC for 1 min
Ambient operating temperature		Ta	-40 to +85	-20 to +85	-40 to +110	-40 to +85	°C	With no icing or condensation
Ambient storage temperature		Tstg	-55 to +125	-40 to +125		-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-41GR8	G3VM-61GR1	G3VM-61VR	G3VM-61GR2	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.18	1.0	1.1	1.18	V	I_F=10 mA
			Typical	1.33	1.15	1.27	1.33		
			Maximum	1.48	1.3	1.4	1.48		
	Reverse current	I_R	Maximum	10				μA	V_R=5 V
	Capacitance between terminals	C_T	Typical	70	15	70		pF	V=0, f=1 MHz
	Trigger LED forward current	I_{FT}	Typical	1			0.6	mA	G3VM-41GR8/61GR1/61GR2: I_O=100 mA G3VM-61VR: I_O=1400 mA
			Maximum	3					
	Release LED forward current	I_{FC}	Minimum	0.1				mA	I_{OFF}=100 μA
Output	Maximum resistance with output ON	R_{ON}	Typical	0.1	0.25	0.13	0.08	Ω	G3VM-41GR8/61GR1/61VR: I_F=5mA, Io=Continuous load current ratings, G3VM-61GR2: I_F =5mA, Io=Continuous load current ratings, t<1s
			Maximum	0.13	0.7	0.25	0.13		
	Current leakage when the relay is open	I_{LEAK}	Typical	–	0.2	2	1	nA	G3VM-41GR8: V_{OFF}=30 V G3VM-61GR1/61VR/61GR2: V_{OFF}=60 V
			Maximum	1	100	1000	10		
	Capacitance between terminals	C_{OFF}	Typical	300	90	100	250	pF	V=0, f=1 MHz
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	1.2	1.4	2	0.7	ms	I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻
			Maximum	3					
Turn-OFF time		t_{OFF}	Typical	0.2	0.6	0.1	0.1		
			Maximum	0.5	1	1	0.5		

✻ 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.

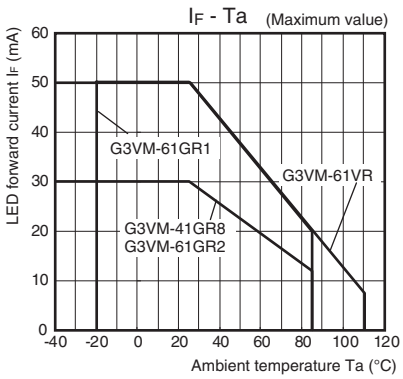
Item	Symbol		G3VM-41GR8	G3VM-61GR1	G3VM-61VR	G3VM-61GR2	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32	48			V
Operating LED forward current	I_F	Maximum	5				mA
		Typical	10		7.5	10	
		Maximum	20		25		
Continuous load current (AC peak/DC)	Io	Maximum	1000		1400	1300	
Ambient operating temperature	Ta	Minimum	-20				°C
		Maximum	60		100	65	

■Spacing and Insulation

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

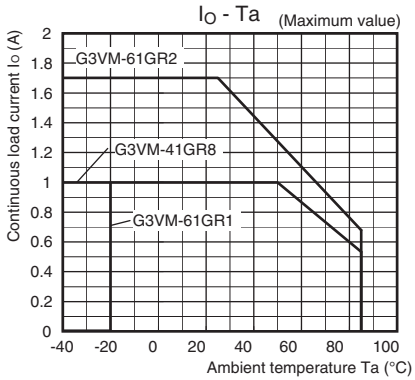
■Engineering Data

● **LED forward current vs. Ambient temperature**

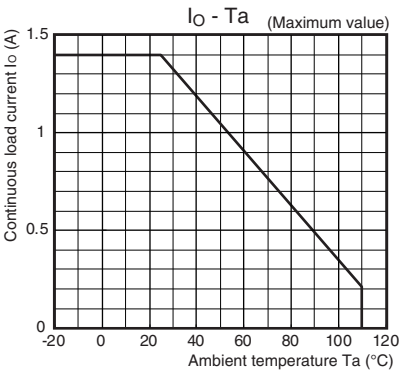


● **Continuous load current vs. Ambient temperature**

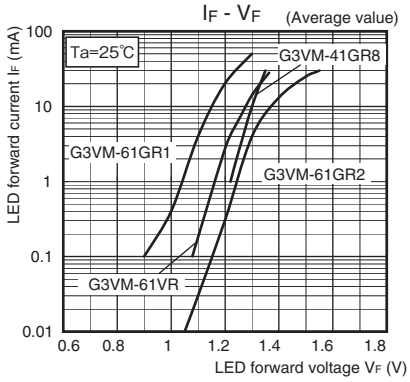
G3VM-41GR8/61GR1/61GR2



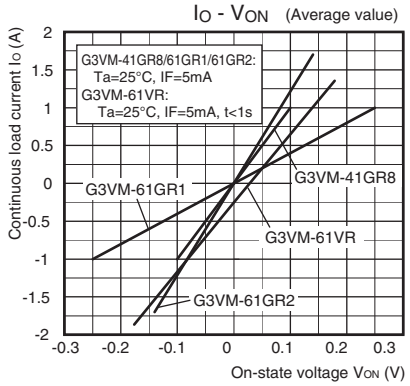
G3VM-61VR



● **LED forward current vs. LED forward voltage**

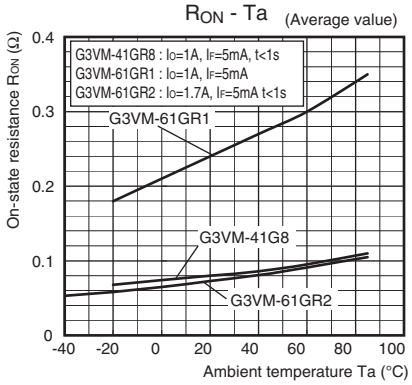


● **Continuous load current vs. On-state voltage**

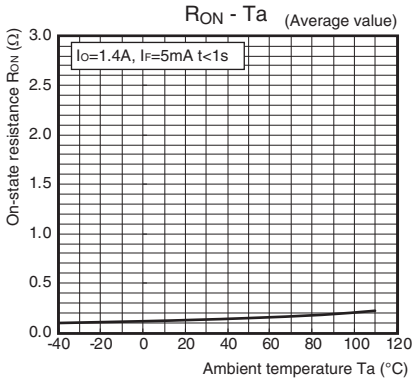


● **On-state resistance vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2

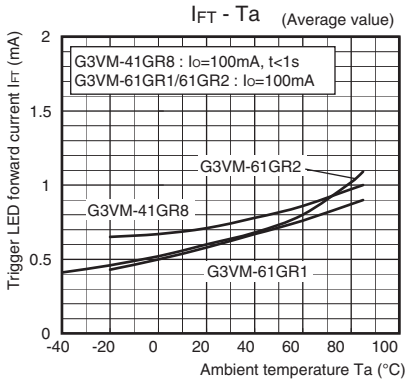


G3VM-61VR

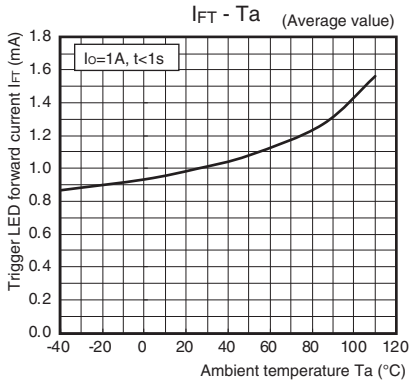


● **Trigger LED forward current vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2

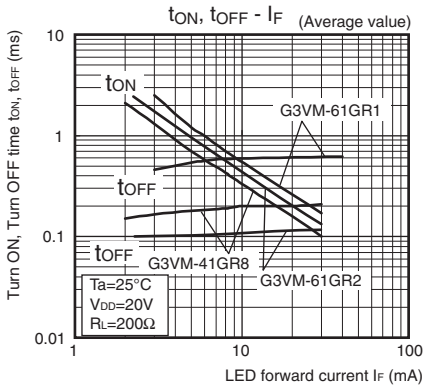


G3VM-61VR

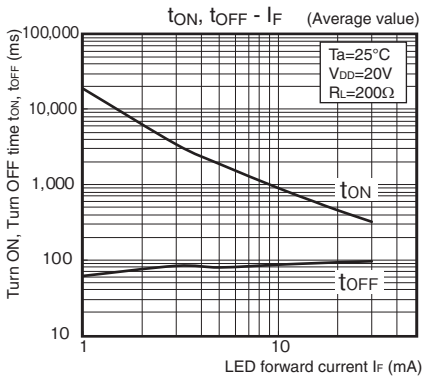


● **Turn ON, Turn OFF time vs. LED forward current**

G3VM-41GR8/61GR1/61GR2

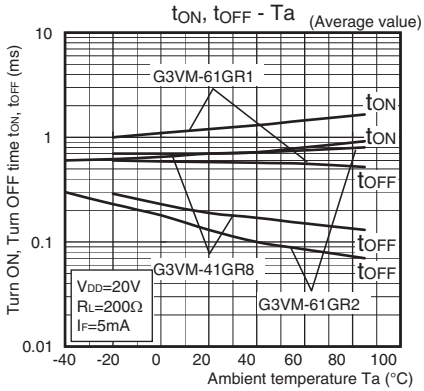


G3VM-61VR

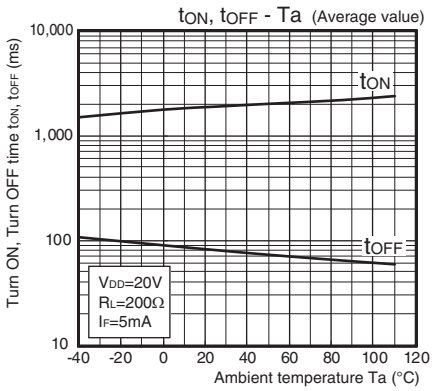


● **Turn ON, Turn OFF time vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2

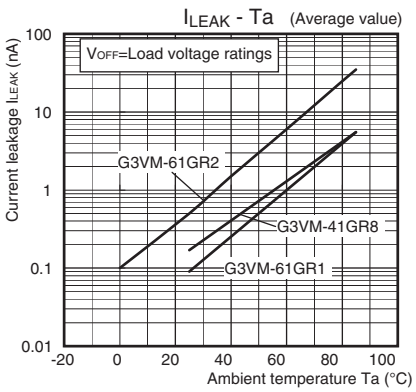


G3VM-61VR

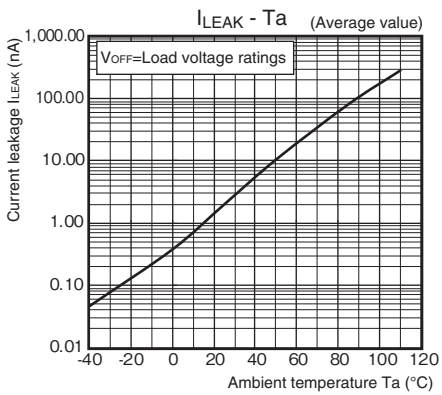


● **Current leakage vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2



G3VM-61VR

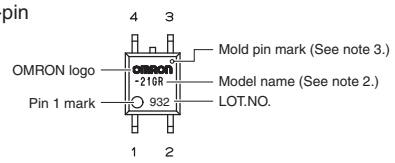


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

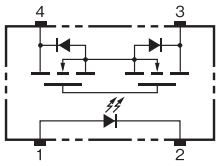
SOP (Small Outline Package)

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)



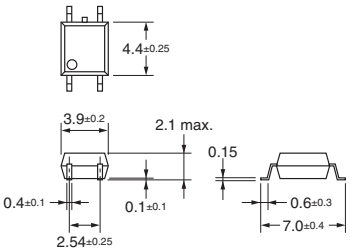
■Dimensions (Unit: mm)

SOP (Small Outline Package)

SOP 4-pin

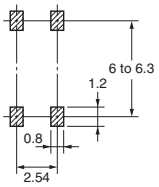
Surface-mounting Terminals

Weight: 0.1 g



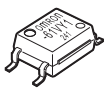
Actual Mounting Pad Dimensions

(Recommended Value, Top View)



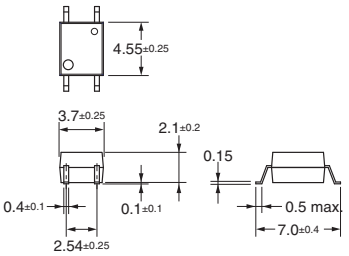
Note: The actual product is marked differently from the image shown here.

Special SOP 4-pin ✻ (G3VM-61VR)



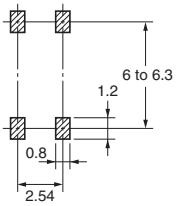
Surface-mounting Terminals

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-41GR8 G3VM-61GR1 G3VM-61GR2	UL (recognized)	1a (SPST-NO)	E80555
G3VM-61VR	In progress application for UL certification		

■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. K304-E1-01
0318(0318)(O)