

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.



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

RoHS Compliant

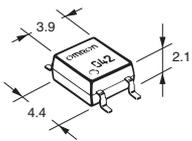
Application Examples

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

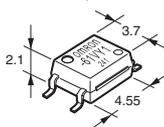
Package

(Unit : mm, Average)

SOP 4-pin



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

- Load Voltage**
4 : 40 V
6 : 60 V
- Contact form**
1 : 1a (SPST-NO)
- Package**
G : SOP 4-pin
V : Special SOP 4-pin
- 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.
			60 V		G3VM-61GR1		G3VM-61GR1(TR)	
				60 V	1400 mA	G3VM-61VR	125 pcs.	G3VM-61VR(TR05)
			60 V			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	30	mA	Ta ≥ 25°C	
	LED forward current reduction rate	ΔIf/°C	-0.3	-0.5	-0.3	-0.3	mA/°C		
	LED reverse voltage	VR	5			6	5		V
	Connection temperature	TJ	125				°C		
Output	Load voltage (AC peak/DC)	Voff	40	60		60	V	G3VM-41GR8/61GR1: Ta ≥ 50°C G3VM-61VR/61GR2: Ta ≥ 25°C	
	Continuous load current (AC peak/DC)	Io	1000		1400	1700	mA		
	ON current reduction rate	ΔIo/°C	-13.3		-14	-17	mA/°C		
	Pulse ON current	Iop	2	3	4.2	5	A		
	Connection temperature	TJ	125				°C		
	Dielectric strength between I/O *	VI-O	1500			3750	1500		Vrms
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.

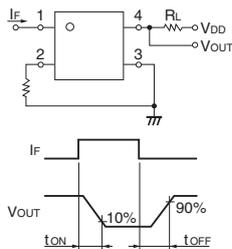
SOP

G3VM-41GR8/61GR□/61VR

Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-41GR8	G3VM-61GR1	G3VM-61VR	G3VM-61GR2	Unit	Measurement conditions	
Input	LED forward voltage	VF	Minimum	1.18	1.0	1.1	1.18	V	IF=10 mA
			Typical	1.33	1.15	1.27	1.33		
			Maximum	1.48	1.3	1.4	1.48		
	Reverse current	IR	Maximum	10				μA	VR=5 V
	Capacitance between terminals	CT	Typical	70	15	70		pF	V=0, f=1 MHz
Output	Trigger LED forward current	IFT	Typical	1			0.6	mA	G3VM-41GR8/61GR1/61GR2: Io=100 mA G3VM-61VR: Io=1400 mA
			Maximum	3					
	Release LED forward current	IFC	Minimum	0.1				mA	IOFF=100 μA
			Typical	0.1	0.25	0.13	0.08		
Maximum resistance with output ON	RON	Maximum	0.13	0.7	0.25	0.13	Ω	G3VM-41GR8/61GR1/61VR: IF=5mA, Io=Continuous load current ratings, G3VM-61GR2: IF=5mA, Io=Continuous load current ratings, t<1s	
Current leakage when the relay is open	I _{LEAK}	Maximum	1	100	1000	10	nA	G3VM-41GR8: V _{OFF} =30 V G3VM-61GR1/61VR/61GR2: V _{OFF} =60 V	
Capacitance between terminals	COFF	Typical	300	90	100	250	pF	V=0, f=1 MHz	
Capacitance between I/O terminals	CI-O	Typical	0.8				pF	f=1 MHz, VS=0 V	
Insulation resistance between I/O terminals	RI-O	Minimum	1000				MΩ	VI-O=500 VDC, RoH≤60%	
		Typical	10 ⁸						
Turn-ON time	ton	Typical	1.2	1.4	2	0.7	ms	IF=5 mA, RL=200 Ω, VDD=20 V *	
		Maximum	3						
Turn-OFF time	toff	Typical	0.2	0.6	0.1	0.1	ms	IF=5 mA, RL=200 Ω, VDD=20 V *	
		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.

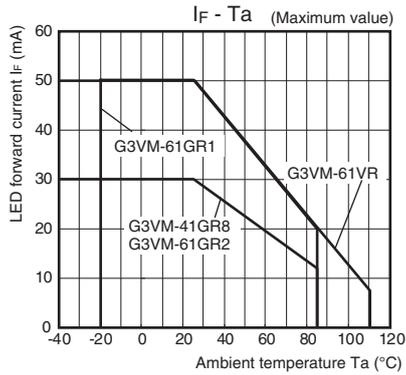
Item	Symbol	G3VM-41GR8	G3VM-61GR1	G3VM-61VR	G3VM-61GR2	Unit
Load voltage (AC peak/DC)	VDD	Maximum	32	48		V
Operating LED forward current	IF	Maximum	5			mA
		Typical	10	7.5	10	
		Maximum	20	25		
Continuous load current (AC peak/DC)	Io	Maximum	1000	1400	1300	
Ambient operating temperature	Ta	Minimum	-20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

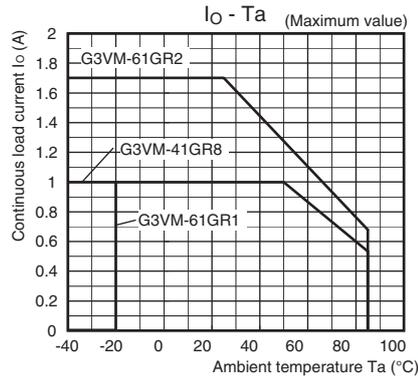
Engineering Data

LED forward current vs. Ambient temperature

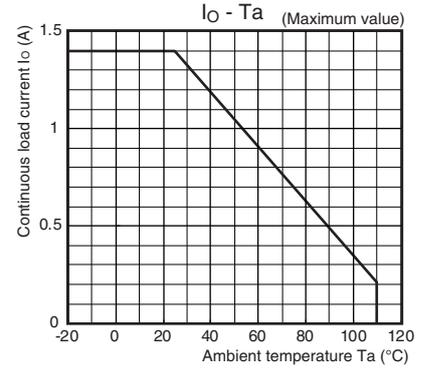


Continuous load current vs. Ambient temperature

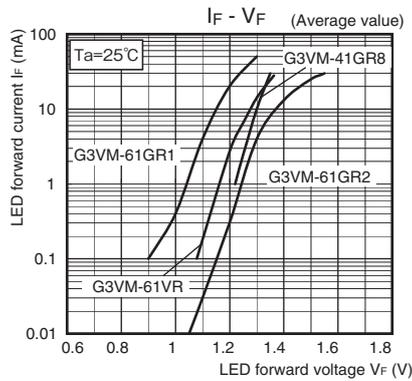
G3VM-41GR8/61GR1/61GR2



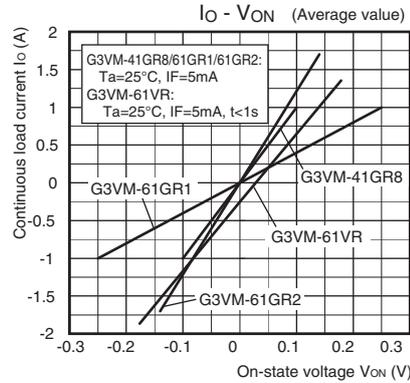
G3VM-61VR



LED forward current vs. LED forward voltage

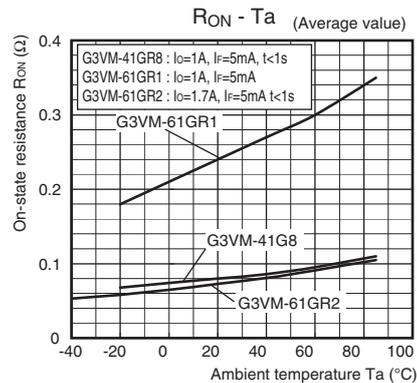


Continuous load current vs. On-state voltage

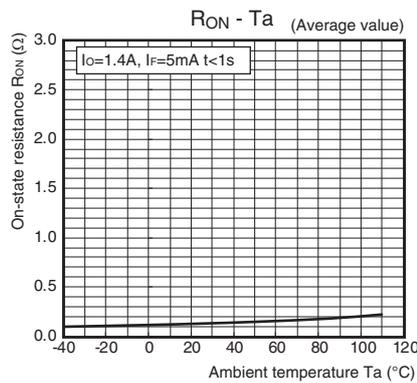


On-state resistance vs. Ambient temperature

G3VM-41GR8/61GR1/61GR2

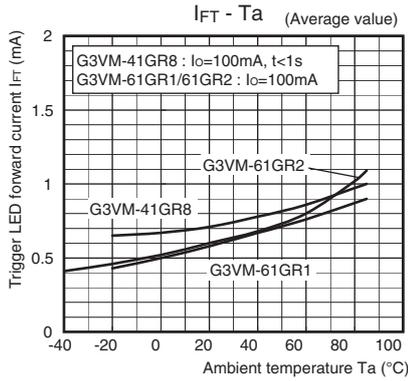


G3VM-61VR

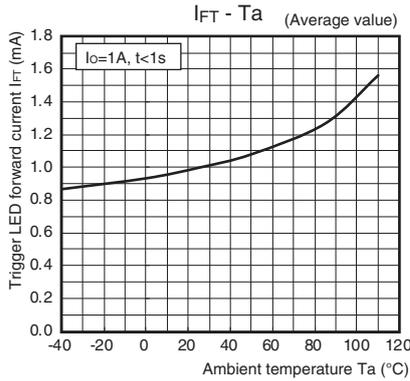


● **Trigger LED forward current vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2

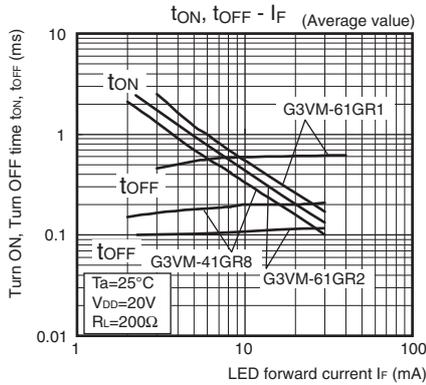


G3VM-61VR

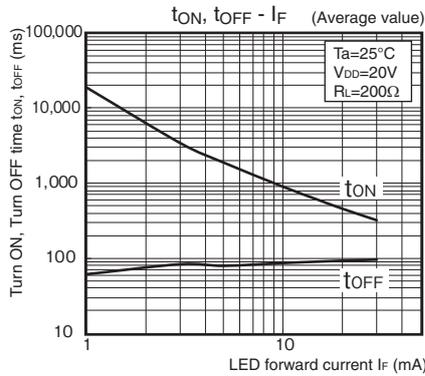


● **Turn ON, Turn OFF time vs. LED forward current**

G3VM-41GR8/61GR1/61GR2

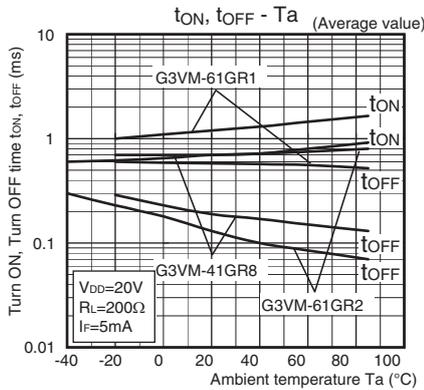


G3VM-61VR

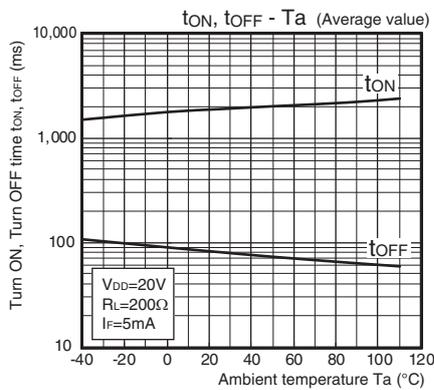


● **Turn ON, Turn OFF time vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2

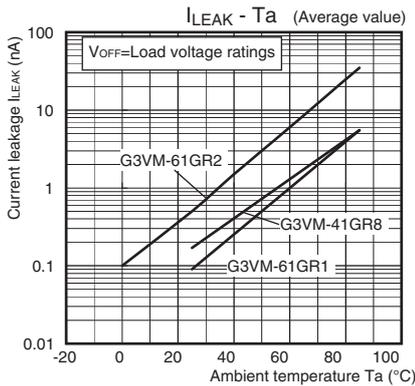


G3VM-61VR

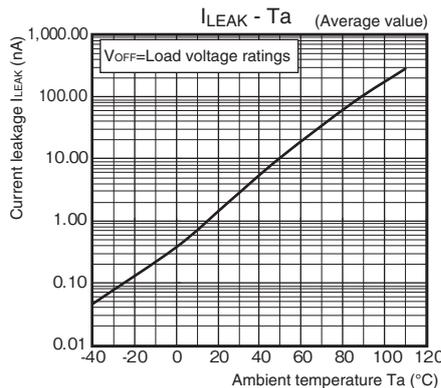


● **Current leakage vs. Ambient temperature**

G3VM-41GR8/61GR1/61GR2



G3VM-61VR

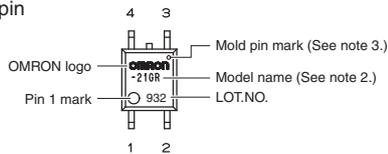


■ Appearance / Terminal Arrangement / Internal Connections

● Appearance

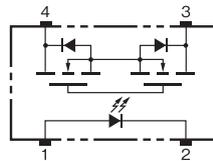
SOP (Small Outline Package)

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)

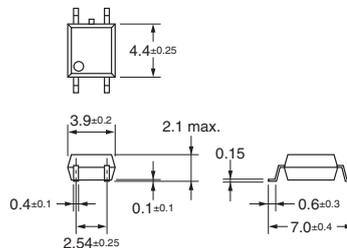
SOP (Small Outline Package)

SOP 4-pin



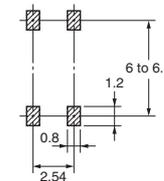
Surface-mounting Terminals

Weight: 0.1 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



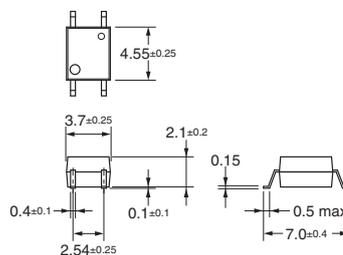
Note: The actual product is marked differently from the image shown here.

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



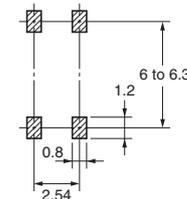
Surface-mounting Terminals

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.

• 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.

OMRON Corporation
Electronic and Mechanical Components Company

Contact: www.omron.com/ecb

Cat. No. K304-E1-01
0318(0318)(O)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Omron:

[G3VM-61VR\(TR\)](#) [G3VM-61VR\(TR05\)](#)