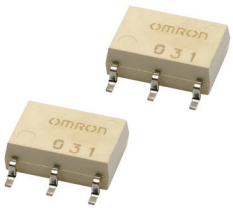
G3VM-□H□

MOS FET Relays SOP 6-pin, General-purpose Type

General-purpose MOS FET Relays in SOP 6-pin packages for a wide range of applications

- **Contact form: 1a (SPST-NO) or 1b (SPST-NC)**
- **Load voltage: 60 V, 200 V, 350 V, or 400 V**



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

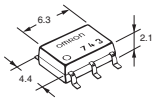
RoHS Compliant

■Application Examples

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

■Package (Unit : mm, Average)

SOP 6-pin



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

■Model Number Legend

G3VM-□□□□
1 2 3 4

1. Load Voltage
6 : 60 V
20 : 200 V
35 : 350 V
40 : 400 V

2. Contact form
1 : 1a (SPST-NO)
3 : 1b (SPST-NC)

3. Package
H : SOP 6-pin

4. 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	
				Connection A, B	Connection C	Model	Minimum package quantity	Model	Minimum package quantity
SOP6	1a (SPST-NO)	Surface-mounting Terminals	60 V	400 mA	800 mA	G3VM-61H1	75 pcs.	G3VM-61H1(TR)	2,500 pcs.
			200 V	200 mA	400 mA	G3VM-201H1		G3VM-201H1(TR)	
	1b (SPST-NC)		350 V	110 mA	220 mA	G3VM-351H		G3VM-351H(TR)	
				120 mA	240 mA	G3VM-353H		G3VM-353H(TR)	
	1a (SPST-NO)		400 V			G3VM-401H		G3VM-401H(TR)	

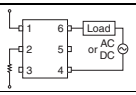
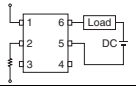
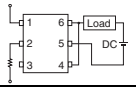
✻ The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

■Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	G3VM-61H1	G3VM-201H1	G3VM-351H	G3VM-353H	G3VM-401H	Unit	Measurement conditions
Input	LED forward current		IF	50					mA	
	LED forward current reduction rate		ΔIF/°C	-0.5					mA/°C	Ta ≥ 25°C
	LED reverse voltage		VR	5					V	
	Connection temperature		TJ	125					°C	
Output	Load voltage (AC peak/DC)		VOFF	60	200	350		400	V	
	Continuous load current	Connection A	IO	400	200	110	120		mA	Connection A: AC peak/DC Connection B and C: DC
		Connection B								
		Connection C		800	400	220	240			
	ON current reduction rate	Connection A	ΔIO/°C	-4.0	-2.0	-1.1	-1.2		mA/°C	Ta ≥ 25°C
		Connection B								
		Connection C		-8.0	-4.0	-2.2	-2.4			
	Pulse ON current		IOP	1200	600	330	360		mA	t=100 ms, Duty=1/10
	Connection temperature		TJ	125					°C	
Dielectric strength between I/O (See note 1.)			VI-O	1500					Vrms	AC for 1 min
Ambient operating temperature			Ta	-40 to +85					°C	With no icing or condensation
Ambient storage temperature			Tstg	-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.

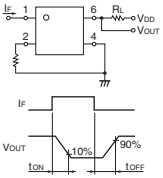
Connection Diagram

Connection A	
Connection B	
Connection C	

■Electrical Characteristics (Ta = 25°C)

Item			Symbol		G3VM-61H1	G3VM-201H1	G3VM-351H	G3VM-353H	G3VM-401H	Unit	Measurement conditions
Input	LED forward voltage		V_F	Minimum	1.0					V	I_F=10 mA
				Typical	1.15						
				Maximum	1.3						
	Reverse current		I_R	Maximum	10					μA	V_R=5 V
	Capacitance between terminals		C_T	Typical	30					pF	V=0, f=1 MHz
	Trigger LED forward current		I_{FT} (I_{FC}) (See note 3.)	Typical	1.6	1				mA	G3VM-61H1/201H1/351H/401H : I_O=Continuous load current ratings G3VM-353H : I_{OFF}=10 μA
				Maximum	3						
	Release LED forward current		I_{FC} (I_{FT}) (See note 3.)	Minimum	0.1					mA	G3VM-61H1/201H1/351H/401H : I_{OFF}=100 μA G3VM-353H : I_O=120 mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	Typical	1	5	35 (25)	15	17	Ω	G3VM-61H1/201H1/351H/401H : I_F=5 mA, I_O=Continuous load current ratings Values in parentheses are for t < 1 s. G3VM-353H : I_O=Continuous load current ratings
		Connection B			0.5	3	28	8	11		
		Connection C			0.25	1.5	14	4	6		
		Connection A		Maximum	2	8	50 (35)	25	35		
		Connection B			1	5	40	14	20		
		Connection C			–		20	–			
	Current leakage when the relay is open		I_{LEAK}	Maximum	1					μA	G3VM-61H1/201H1/351H/401H : V_{OFF}=Load voltage ratings G3VM-353H : V_{OFF}=350 V, I_F=5 mA
	Capacitance between terminals		C_{OFF}	Typical	130	100	30	65	70	pF	G3VM-61H1/201H1/351H/401H : V=0, f=1 MHz G3VM-353H : 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, RoH≤60%
				Typical	10^8						
Turn-ON time			t_{ON}	Typical	0.8	0.6	0.3	–	0.3	ms	I_F=5 mA, R_L=200 Ω, V_{DD}=20 V (See note 2.)
				Maximum	2	1.5	1				
Turn-OFF time			t_{OFF}	Typical	0.1		–	0.1			
				Maximum	0.5	1		3	1		

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-61H1	G3VM-201H1	G3VM-351H	G3VM-353H	G3VM-401H	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	48	160	280		320	V
Operating LED forward current	I_F	Minimum	5					mA
		Typical	7.5		10	–	7.5	
		Maximum	25					
Continuous load current (AC peak/DC)	I_O	Maximum	400	130	100	120		
Ambient operating temperature	Ta	Minimum	-20					°C
		Maximum	65	60	65			

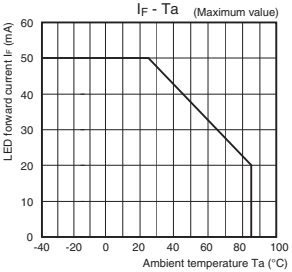
■Spacing and Insulation

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

G3VM-□H□

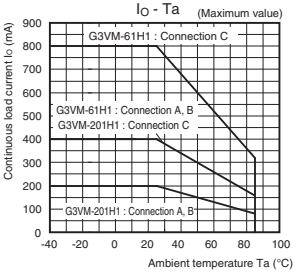
■Engineering Data

●LED forward current vs. Ambient temperature

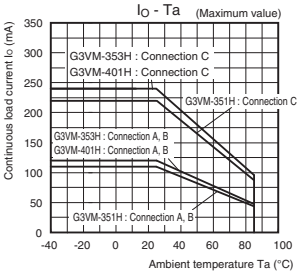


●Continuous load current vs. Ambient temperature

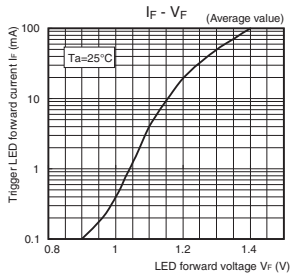
G3VM-61H1/201H1



G3VM-351H/353H/401H

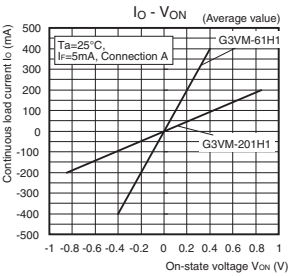


●LED forward current vs. LED forward voltage

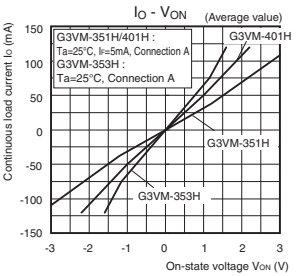


●Continuous load current vs. On-state voltage

G3VM-61H1/201H1

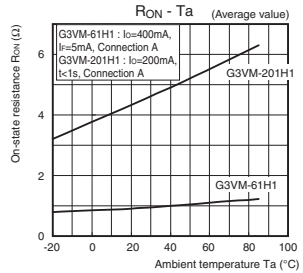


G3VM-351H/353H/401H

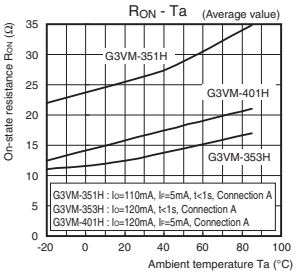


●On-state resistance vs. Ambient temperature

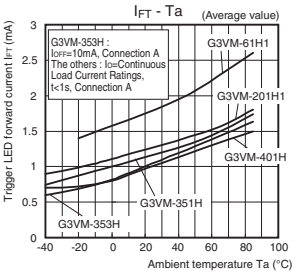
G3VM-61H1/201H1



G3VM-351H/353H/401H



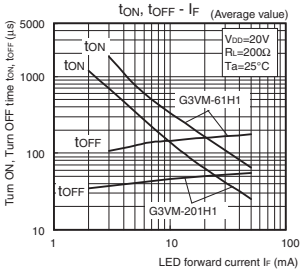
●Trigger LED forward current vs. Ambient temperature



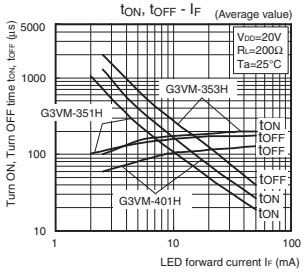
■Engineering Data

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

G3VM-61H1/201H1

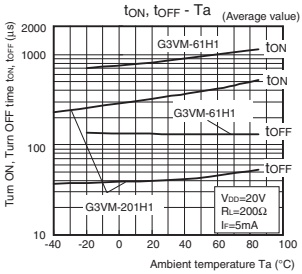


G3VM-351H/353H/401H

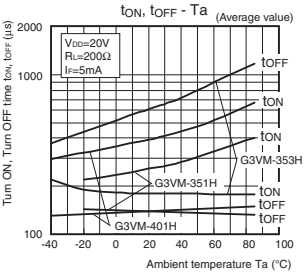


● **Turn ON, Turn OFF time vs. Ambient temperature**

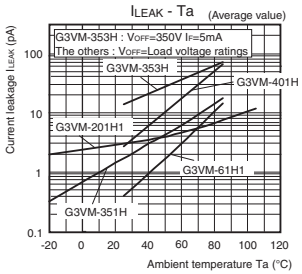
G3VM-61H1/201H1



G3VM-351H/353H/401H



● **Current leakage vs. Ambient temperature**



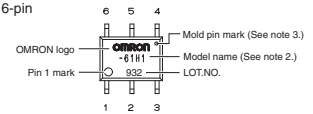
G3VM-□H□

■Appearance / Terminal Arrangement / Internal Connections

●Appearance

SOP (Small Outline Package)

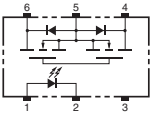
SOP 6-pin



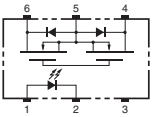
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections (Top View)

G3VM-61H1/201H1/351H/401H



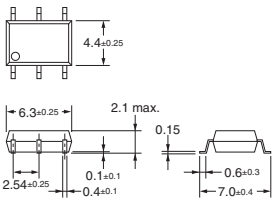
G3VM-353H



■Dimensions (Unit: mm)

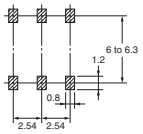
Surface-mounting Terminals

Weight: 0.13 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

Model	Approved Standards	Contact form	File No.
G3VM-61H1 G3VM-201H1 G3VM-351H	UL (recognized)	1a (SPST-NO)	E80555
G3VM-353H		1b (SPST-NC)	
G3VM-401H		1a (SPST-NO)	

Models Certified by BSI for EN/IEC Standards

Model	Approved Standards	Contact form	File No.
G3VM-401H	EN 60950/EN 60065 (BSI certified)	1a (SPST-NO)	8884 8885

■Safety Precautions

• Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.