

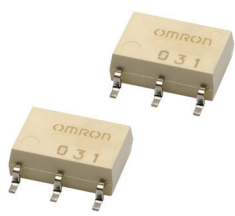
Introduction
General purpose
High-side voltage
Multi-voltage (2A, 2A, and 1A)
High-current and Low-ON-resistance
Small and high-impedance strength
High-dielectric strength
Current-limiting
Low-ON-resistance and low-ON-voltage
Small and high-impedance strength
Standard models with certified verification

G3VM-□□HR

MOS FET Relays SOP 6-pin, High-current and Low-ON-resistance Type

MOS FET Relays in SOP 6-pin packages that achieve the low ON resistance and high switching capacitance of a mechanical relay

- Load voltage: 20 V, 40 V, 60 V, 80 V, or 100 V
 - 20-V Relay: Continuous load current of 2.5 A (5 A) max.*
 - 40-V Relay: Continuous load current of 2.5 A (5 A) max.*
 - 60-V Relay: Continuous load current of 2.3 A (4.6 A) max.*
 - 80-V Relay: Continuous load current of 1.25 A (2.5 A) max.*
 - 100-V Relay: Continuous load current of 1.4 A (2.8 A) max.*
- * Values in parentheses are for connection C.



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

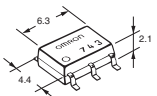
RoHS Compliant

Application Examples

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

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 5

- 1. Load Voltage
2 : 20 V
4 : 40 V
6 : 60 V
8 : 80 V
10 : 100 V
- 2. Contact form
1 : 1a (SPST-NO)
- 3. Package
H : SOP 6-pin
- 4. Additional functions
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	
				Connection A, B	Connection C	Model	Minimum package quantity	Model	Minimum package quantity
SOP6	1a (SPST-NO)	Surface-mounting Terminals	20 V	2.5 A	5 A	G3VM-21HR	75 pcs.	G3VM-21HR(TR)	2,500 pcs.
			40 V			G3VM-41HR		G3VM-41HR(TR)	
			60 V	2.3 A	4.6 A	G3VM-61HR		G3VM-61HR(TR)	
			80 V	1.25 A	2.5 A	G3VM-81HR		G3VM-81HR(TR)	
			100 V	1.4 A	2.8 A	G3VM-101HR		G3VM-101HR(TR)	

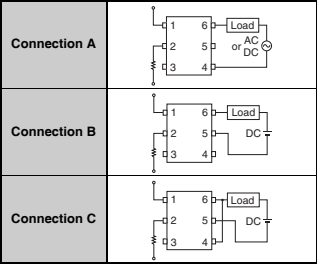
* The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

■Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	G3VM-21HR	G3VM-41HR	G3VM-61HR	G3VM-81HR	G3VM-101HR	Unit	Measurement conditions
Input	LED forward current	IF	30			50	30	mA	
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.3			-0.5	-0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	5						V
	Connection temperature	TJ	125						°C
Output	Load voltage (AC peak/DC)	VOFF	20	40	60	80	100	V	
	Continuous load current	Connection A	2500			1250	1400	mA	Connection A: AC peak/DC Connection B and C: DC
		Connection B	5000			2500	2800		
	ON current reduction rate	Connection A	-33.3			-12.5	-18.7	mA/°C	G3VM-81HR : Ta ≥ 25°C Others : Ta ≥ 50°C
		Connection B	-66.6			-25.0	-37.3		
		Connection C	-66.7			-25.0	-37.3		
	Pulse ON current	lop	7.5			3.75	4	A	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			-20 to +85	-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

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



Introduction

General purpose

High-side-voltage

Multi-channel-relay (2A, 2B, and 1A1)

High-voltage and Low-ON-resistance

Small and high-impedance strength

High-impedance strength

Current-limiting

Low-voltage-capacitance and low-ON-resistance

Small and high-impedance strength

Certified models with Standards certification

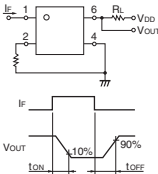
G3VM-□HR

MOS FET Relays

■Electrical Characteristics (Ta = 25°C)

Item			Symbol	G3VM-21HR		G3VM-41HR	G3VM-61HR	G3VM-81HR	G3VM-101HR	Unit	Measurement conditions
Input	LED forward voltage		V _F	Minimum	1.18			1.0	1.18	V	I _F =10 mA
				Typical	1.33			1.15	1.33		
				Maximum	1.48			1.3	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	—	0.4		2	0.4	mA	G3VM-21HR/41HR/61HR/101HR : I _o =100 mA G3VM-81HR : I _o =1250 mA
Maximum				3			5	3			
Release LED forward current			I _{FC}	Minimum	0.1			0.2	0.1	mA	I _{OFF} =10 μA
Output	Maximum resistance with output ON	Connection A	R _{ON}	Typical	0.02	0.03	0.04	0.11	0.1	Ω	G3VM-21HR/41HR/61HR : I _F =5 mA, I _o =2 A (A or B connections) I _o =4 A (C connections), t < 1 s G3VM-81HR : I _F =5 mA, I _o =Continuous load current ratings G3VM-101HR : I _F =5 mA, I _o =Continuous load current ratings, t < 1 s
		Connection B			0.01	0.015	0.02	0.06	0.05		
		Connection C			0.005	0.008	0.01	0.03	0.025		
		Connection A		Maximum	0.05	0.06	0.07	0.15	0.2		
		Connection B			0.025	0.03	0.04	0.08	0.1		
		Connection C			—		0.04		—		
Current leakage when the relay is open			I _{LEAK}	Typical	—			1.2	—	nA	G3VM-21HR/41HR/61HR/101HR : V _{OFF} =Load voltage ratings G3VM-81HR : V _{OFF} =20 V, T _a =50°C
				Maximum	10			1.5	10		
Capacitance between terminals			C _{OFF}	Typical	1000			460	1000	pF	G3VM-21HR/41HR/61HR/101HR : V=0, f=1 MHz G3VM-81HR : V=0, f=100 MHz
				Maximum	—			1000	—		
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	1.5	1.0		2.0	1.0	ms	G3VM-21HR : I _F =5 mA, R _L =200 Ω, V _{DD} =10 V (See note 2.) G3VM-41HR/61HR/81HR/101HR : I _F =5 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.)
				Maximum	5.0			3.0	5.0		
Turn-OFF time			t _{OFF}	Typical	0.1	0.15		0.7	0.15		
				Maximum	1.0						

Note: 2. 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.

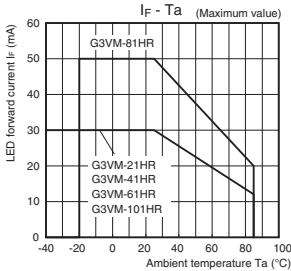
Item	Symbol		G3VM-21HR	G3VM-41HR	G3VM-61HR	G3VM-81HR	G3VM-101HR	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum	20	40	60	64	100	V	
		Minimum	5						
Operating LED forward current	I _F	Typical	10	7.5			—	7.5	mA
		Maximum	20			30	20		
Continuous load current (AC peak/DC)	I _O	Maximum	2000			1800	1250	1100	
		Minimum	-20						
Ambient operating temperature	T _a	Maximum	65			60	65	°C	

■Spacing and Insulation

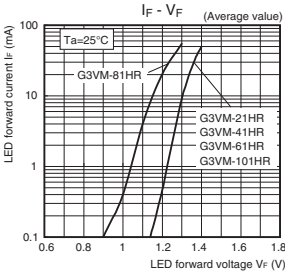
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

Engineering Data

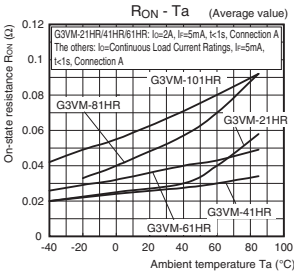
LED forward current vs. Ambient temperature



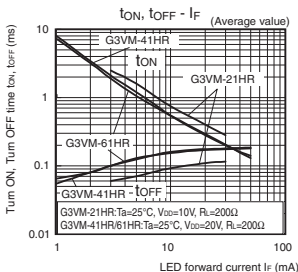
LED forward current vs. LED forward voltage



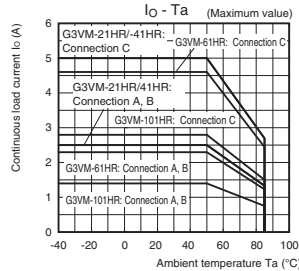
On-state resistance vs. Ambient temperature



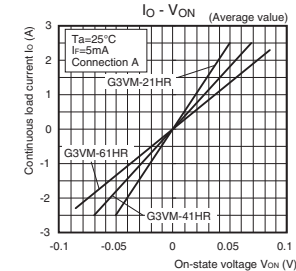
Turn ON, Turn OFF time vs. LED forward current



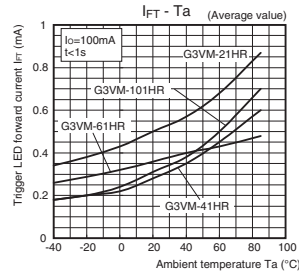
Continuous load current vs. Ambient temperature



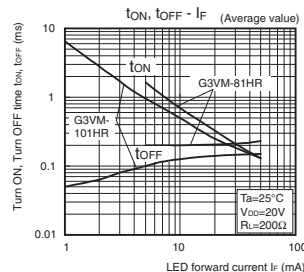
Continuous load current vs. On-state voltage



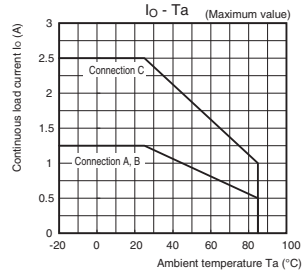
Trigger LED forward current vs. Ambient temperature



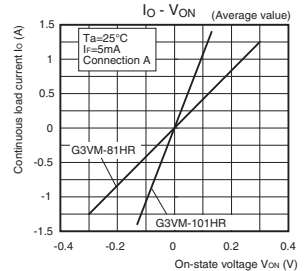
G3VM-81HR/101HR



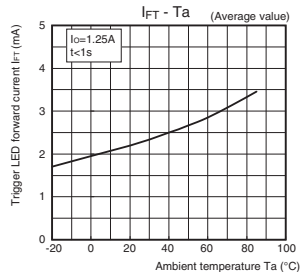
G3VM-81HR



G3VM-81HR/101HR



G3VM-81HR



Introduction
General purpose
High-side-voltage
Multi-contact pair
(2a, 2b, and 1a1)
High-current and low-ON-resistance
Small and high-inductive strength
High-dielectric strength
Current-limiting
Low-voltage-resistance and low-ON-resistance
Small and High-voltage
Certified Models with Standards Certification
DIP
SOP
SSOP
USOP
VSON

G3VM-□HR

G3VM- $\square$ HR

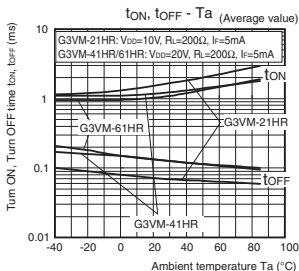
MOS FET Relays

Engineering Data

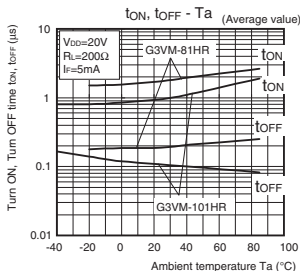
● Turn ON, Turn OFF time vs.

Ambient temperature

G3VM-21HR/41HR/61HR

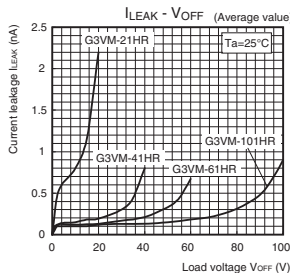


G3VM-81HR/101HR



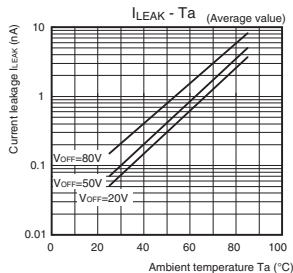
● Current leakage vs. Load voltage

G3VM-21HR/41HR/61HR/101HR



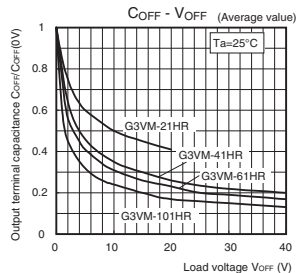
● Current leakage vs. Ambient temperature

G3VM-81HR



● Output terminal capacitance vs. Load voltage

G3VM-21HR/41HR/61HR/101HR

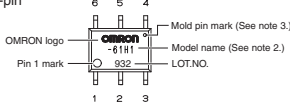


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

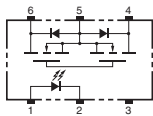
SOP (Small Outline Package)

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)

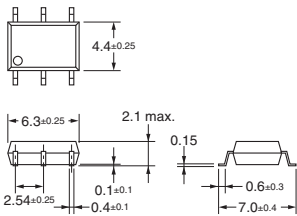


■Dimensions (Unit: mm)



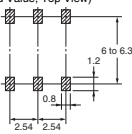
Surface-mounting Terminals

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 

Approved Standards	Contact form	File No.
UL (recognized)	1a (SPST-NO)	E80555

■Safety Precautions

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