

Introduction
General-purpose
High-voltage
Multi-voltage (2A, 2L, and 1A1)
High-current and low-ohmic resistance
Small and high-inductive strength
High-dielectric strength
Current-limiting
Low-voltage and low-ohmic resistance
Small and high-load voltage
Certified models with standards certification

G3VM-□L/□FL/□GL

MOS FET Relays Current-limiting Type

MOS FET Relays that protect themselves from overcurrents with a current-limiting protection function



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

- Package: DIP 4-pin, DIP 8-pin or SOP 4-pin
- Contact form: 1a (SPST-NO) or 2a (DPST-NO)
- Load voltage: 350 V
- Current limit: 150 to 300 mA

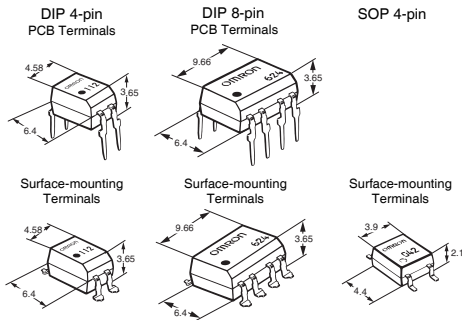
RoHS Compliant

Application Examples

- Communication equipment
- Industrial equipment
- Test & Measurement equipment

Package

(Unit : mm, Average)



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

Model Number Legend

G3VM-□□□□
1 2 3 4

1. Load Voltage
35 : 350 V
2. Contact form
1 : 1a (SPST-NO)
3. Package
G : SOP 4-pin with surface-mounting terminals
4. Additional functions
L : Current limiting

Note: The model number legend for the G3VM-2L/2FL/WL/WFL is different from the above legend.

Ordering Information

Package	Contact form	Load voltage (peak value) *	Continuous load current (peak value) *	Stick packaging			Tape packaging	
				Model		Minimum package quantity	Model	Minimum package quantity
				PCB Terminals	Surface-mounting Terminals		Surface-mounting Terminals	
DIP4	1a (SPST-NO)	350 V	120 mA	G3VM-2L	G3VM-2FL	100 pcs.	G3VM-2FL(TR)	1,500 pcs.
DIP8	2a (DPST-NO)			G3VM-WL	G3VM-WFL	50 pcs.	G3VM-WFL(TR)	1,500 pcs.
SOP4	1a (SPST-NO)			—	G3VM-351GL	100 pcs.	G3VM-351GL(TR)	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)" to the end of the model number.

Introduction
General purpose
High-side-voltage
Multi-contact pair
(2a, 2b, and 1a/1b)
High-current and
dielectric-strength
Small and high-
dielectric-strength
Current-limiting
Low-voltage-impedance
and low-threshold
Small and high-
voltage
Certified Models with
Standards Certification
DIP
SOP
SSOP
USOP
VSON
G3VM-□L/□FL/□GL

G3VM-□L/□FL/□GL

MOS FET Relays

■Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	G3VM-2L G3VM-2FL	G3VM-WL G3VM-WFL	G3VM-351GL	Unit	Measurement conditions
Input	LED forward current	IF	50			mA	
	Repetitive peak LED forward current	IFP	1			A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔIF/°C	-0.5			mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	6		5	V	
Output	Connection temperature	TJ	125			°C	
	Load voltage (AC peak/DC)	VOFF	350			V	
	Continuous load current (AC peak/DC)	IO	120			mA	
	ON current reduction rate	ΔIO/°C	-1.2			mA/°C	Ta ≥ 25°C
	Connection temperature	TJ	125			°C	
	Dielectric strength between I/O (See note 1.)	VI-O	2500		1500	Vrms	AC for 1 min
	Ambient operating temperature	Ta	-40 to +85			°C	With no icing or
Ambient storage temperature		Tstg	-55 to +125			°C	condensation
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.

Introduction

General-purpose

High-side-voltage

Multi-voltage (2A, 2A, and 1A)

Low-on-resistance

Small and high

High-electric

Current-limiting

Low-on-resistance and low-ON-voltage

Small and high

Standard models with

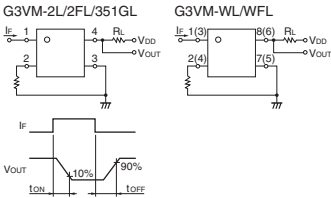
USON

G3VM-□L/□FL/□GL

■Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-2L G3VM-2FL	G3VM-WL G3VM-WFL	G3VM-351GL	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	G3VM-2L/2FL/WL/WFL : V _R =6 V G3VM-351GL : V _R =5 V
	Capacitance between terminals	C _T	Typical	30		pF	V=0, f=1 MHz
	Trigger LED forward current	I _{FT}	Typical	1		mA	I _O =120 mA
Maximum			3				
Output	Release LED forward current	I _{FC}	Minimum	0.1		mA	G3VM-2L/2FL/WL/WFL : I _{OFF} =10 μA G3VM-351GL : I _{OFF} =100 μA
	Maximum resistance with output ON	R _{ON}	Typical	22	15	Ω	I _F =5 mA, I _O =120 mA
			Maximum	35			
	Current leakage when the relay is open	I _{LEAK}	Maximum	1.0		μA	V _{OFF} =350 V
	Capacitance between terminals	C _{OFF}	Typical	40	70	pF	V=0, f=1 MHz
			Maximum	150			
	Limit current	I _{LM}	Minimum	150		mA	I _F =5 mA, V _{DD} =5 V, t=5 ms
	Maximum	300					
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	—	0.3	ms	I _F =5 mA, R _L =200 Ω, V _{DD} =2 V (See note 2.)	
		Maximum	1.0				
Turn-OFF time	t _{OFF}	Typical	—	0.1			
		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.

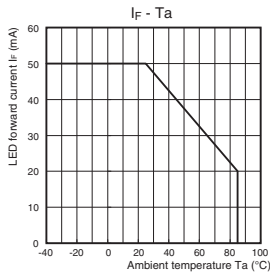
Item	Symbol		G3VM-2L G3VM-2FL	G3VM-WL G3VM-WFL	G3VM-351GL	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	280			V
Operating LED forward current	I _F	Minimum	5			mA
		Typical	7.5			
		Maximum	25			
Continuous load current (AC peak/DC)	I _O	Maximum	100			A
Ambient operating temperature	T _a	Minimum	-20			°C
		Maximum	65			

■Spacing and Insulation

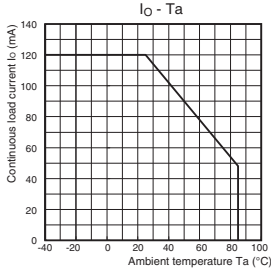
Item	Minimum		Unit
	G3VM-□L/□FL	G3VM-□GL	
Creepage distances	7.0	2.5	mm
Clearance distances	7.0	2.5	
Internal isolation thickness	0.4	0.1	

Engineering Data

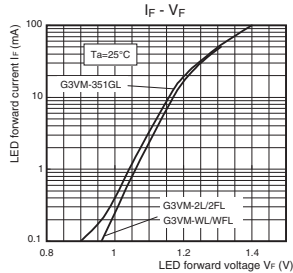
LED forward current vs. Ambient temperature



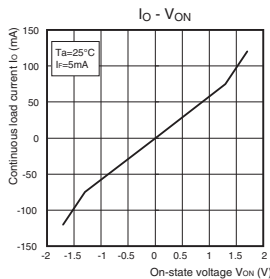
Continuous load current vs. Ambient temperature



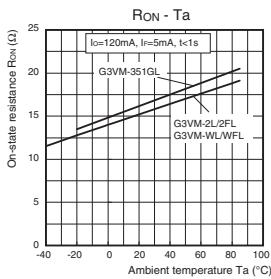
LED forward current vs. LED forward voltage



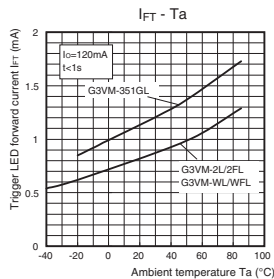
Continuous load current vs. On-state voltage



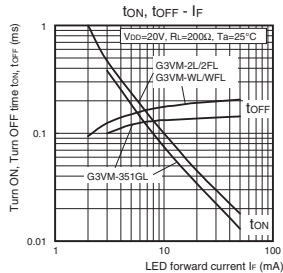
On-state resistance vs. Ambient temperature



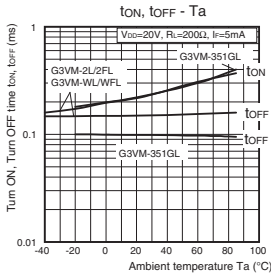
Trigger LED forward current vs. Ambient temperature



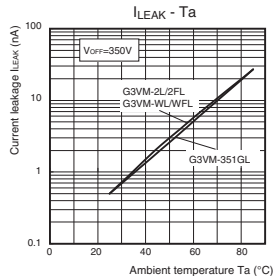
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



G3VM-□L/□FL/□GL

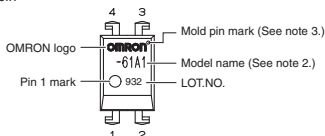
MOS FET Relays

■Appearance / Terminal Arrangement / Internal Connections

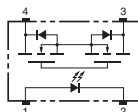
●Appearance

DIP (Dual Inline Package)

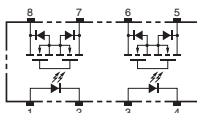
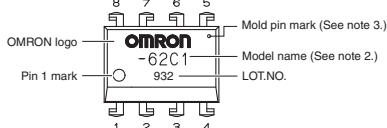
DIP 4-pin



●Terminal Arrangement/Internal Connections (Top View)

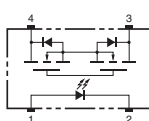
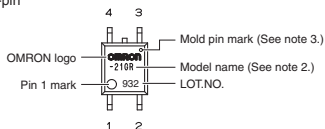


DIP 8-pin



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.

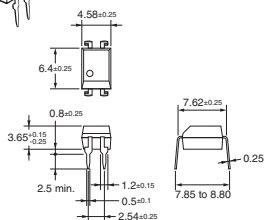
■Dimensions (Unit: mm)

G3VM-2L



PCB Terminals

Weight: 0.4 g

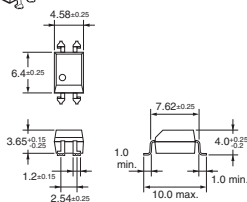


G3VM-2FL

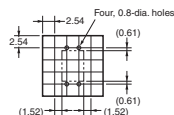


Surface-mounting Terminals

Weight: 0.4 g

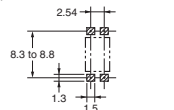


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



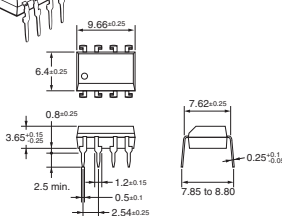
Note: The actual product is marked differently from the image shown here.

G3VM-WL



PCB Terminals

Weight: 0.54 g

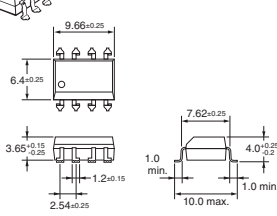


G3VM-WFL

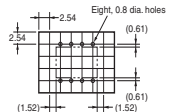


Surface-mounting Terminals

Weight: 0.54 g

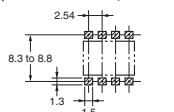


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

G3VM-□L/□FL/□GL

MOS FET Relays

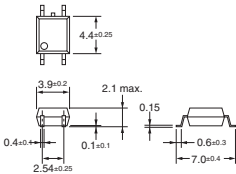
■Dimensions (Unit: mm)

G3VM-351GL

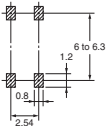


Surface-mounting Terminals

Weight: 0.1 g




Actual Mounting Pad Dimensions (Recommended Value, TOP VIEW)



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

■Approved Standards

UL recognized 

Model	Approved Standards	Contact form	File No.
G3VM-2L G3VM-2FL	UL (recognized)	1a (SPST-NO)	E80555
G3VM-WL G3VM-WFL		2a (DPST-NO)	

■Safety Precautions

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