G3VM-□L/□FL/□GL

MOS FET Relays Current-limiting Type

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

- **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

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

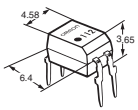
■Application Examples

- **Communication equipment**
- **Industrial equipment**
- **Test & Measurement equipment**

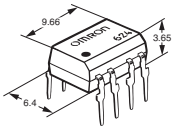
■Package

(Unit : mm, Average)

DIP 4-pin
PCB Terminals

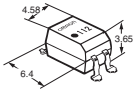


DIP 8-pin
PCB Terminals

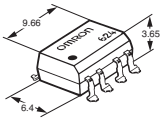


SOP 4-pin

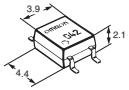
Surface-mounting Terminals



Surface-mounting Terminals



Surface-mounting Terminals



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.

■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	I_F	50			mA	
	Repetitive peak LED forward current	I_{FP}	1			A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	-0.5			mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	6		5	V	
	Connection temperature	T_J	125			°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	350			V	
	Continuous load current (AC peak/DC)	I_O	120			mA	
	ON current reduction rate	ΔI_O/°C	-1.2			mA/°C	Ta ≥ 25°C
	Connection temperature	T_J	125			°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	2500		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.

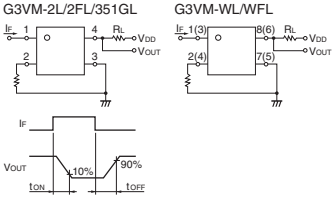
G3VM-□L/□FL/□GL

■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				
	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
Output	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
Limit current		I_{LIM}	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, RoH≤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

G3VM-2L/2FL/351GL G3VM-WL/WFL



■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.

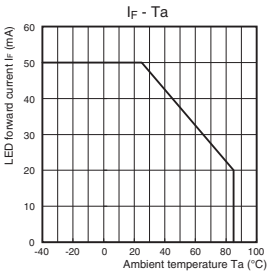
Item	Symbol		G3VM-2L G3VM-2FL	G3VM-WL G3VM-WFL	G3VM-351GL	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	280			V
Operating LED forward current	I_F	Minimum	5			mA
		Typical	7.5			
		Maximum	25			
Continuous load current (AC peak/DC)	I_O	Maximum	100			A
Ambient operating temperature	Ta	Minimum	-20			°C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

■Spacing and Insulation

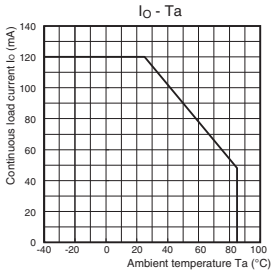
Item	Minimum		Unit
	G3VM-□L/□FL	G3VM-□GL	
Creepage distances	7.0	2.5	mm
Clearance distances	7.0	2.5	
Internal isolation thickness	0.4	0.1	

■Engineering Data

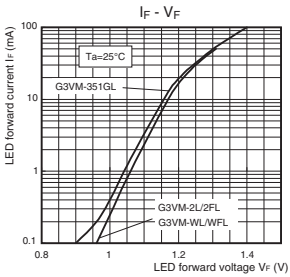
● **LED forward current vs. Ambient temperature**



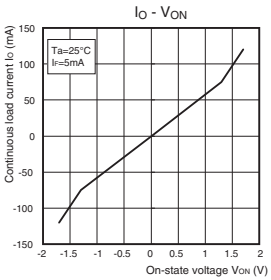
● **Continuous load current vs. Ambient temperature**



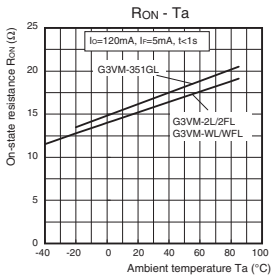
● **LED forward current vs. LED forward voltage**



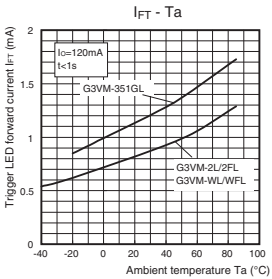
● **Continuous load current vs. On-state voltage**



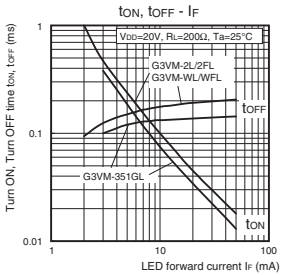
● **On-state resistance vs. Ambient temperature**



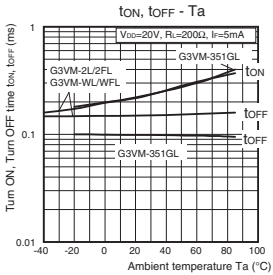
● **Trigger LED forward current vs. Ambient temperature**



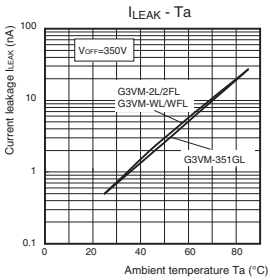
● **Turn ON, Turn OFF time vs. LED forward current**



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



● **Current leakage vs. Ambient temperature**



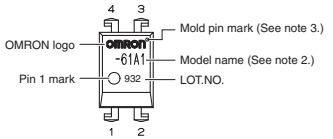
G3VM-□L/□FL/□GL

■Appearance / Terminal Arrangement / Internal Connections

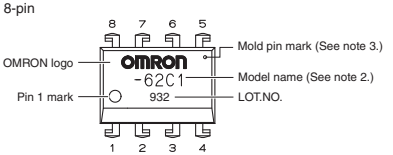
●Appearance

DIP (Dual Inline Package)

DIP 4-pin

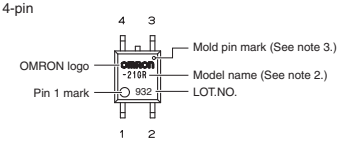


DIP 8-pin

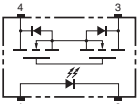


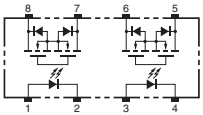
SOP (Small Outline Package)

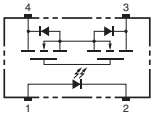
SOP 4-pin



●Terminal Arrangement/Internal Connections (Top View)







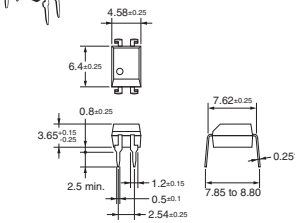
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

■Dimensions (Unit: mm)

G3VM-2L

PCB Terminals

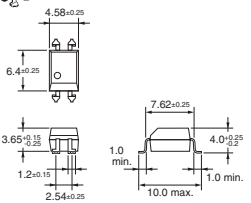
Weight: 0.4 g



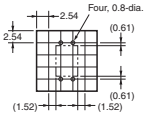
G3VM-2FL

Surface-mounting Terminals

Weight: 0.4 g

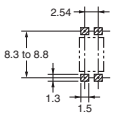


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)

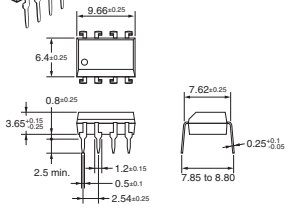


Note: The actual product is marked differently from the image shown here.

G3VM-WL

PCB Terminals

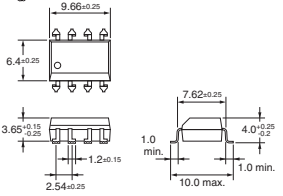
Weight: 0.54 g



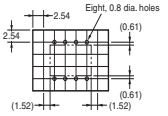
G3VM-WFL

Surface-mounting Terminals

Weight: 0.54 g

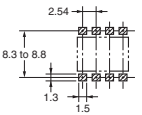


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



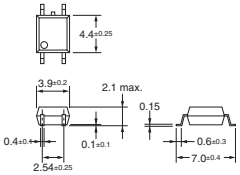
Note: The actual product is marked differently from the image shown here.

■Dimensions (Unit: mm)

G3VM-351GL

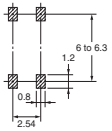
Surface-mounting Terminals

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.