

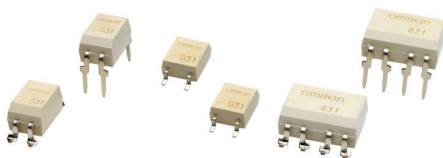
G3VM-□L/□FL/□GL

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



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

RoHS Compliant

Application Examples

- Communication equipment
- Industrial equipment
- Test & Measurement equipment

Package

(Unit : mm, Average)

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

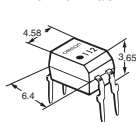
surface-mounting terminals

4. Additional functions

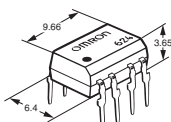
L: Current limiting

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

DIP 4-pin
PCB Terminals



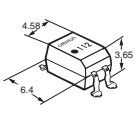
DIP 8-pin
PCB Terminals



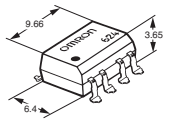
SOP 4-pin



Surface-mounting
Terminals



Surface-mounting
Terminals



Surface-mounting
Terminals

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

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 | | | |
| 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)

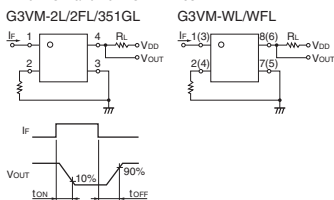
| Item | | Symbol | G3VM-2L G3VM-2FL | G3VM-WL G3VM-WFL | G3VM-351GL | Unit | Measurement conditions |
|---|-------------------------------------|--------|---------------------|---------------------|------------|-------|-------------------------------|
| Input | LED forward current | IF | 50 | | | mA | |
| | 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 | |
| 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 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.

■Electrical Characteristics (Ta = 25°C)

| Item | Symbol | | G3VM-2L | G3VM-WL | G3VM-351GL | Unit | Measurement conditions |
|---|-------------------|---------|-----------------|----------|------------|---|------------------------|
| | | | G3VM-2FL | G3VM-WFL | | | |
| 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 | |
| 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 _{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, RoH±60% | |
| | | Typical | 10 ⁸ | | | | |
| Turn-ON time | t _{ON} | Typical | - | | 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 | - | | ms | I _F =5 mA, R _L =200 Ω, V _{DD} =2 V (See note 2.) | |
| | | 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.

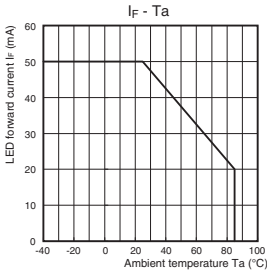
| Item | Symbol | | G3VM-2L | G3VM-WL | G3VM-351GL | Unit |
|--------------------------------------|-----------------|---------|----------|----------|------------|------|
| | | | G3VM-2FL | G3VM-WFL | | |
| Load voltage (AC peak/DC) | V _{DD} | Maximum | 280 | | V | |
| | | Minimum | 5 | | | |
| Operating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

■Spacing and Insulation

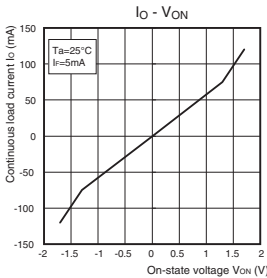
| Item | Minimum | | Unit |
|------------------------------|-------------|----------|------|
| | G3VM-□L/□FL | G3VM-□GL | |
| Creepage distances | 7.0 | 2.5 | mm |
| Clearance distances | 7.0 | 2.5 | |
| Internal isolation thickness | 0.4 | 0.1 | |

Engineering Data

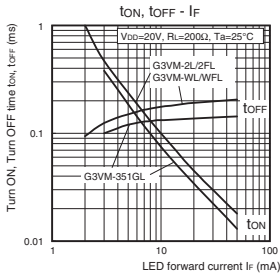
LED forward current vs. Ambient temperature



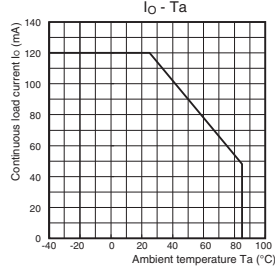
Continuous load current vs. On-state voltage



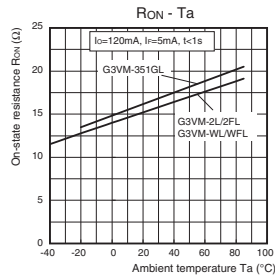
Turn ON, Turn OFF time vs. LED forward current



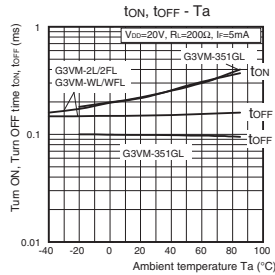
Continuous load current vs. Ambient temperature



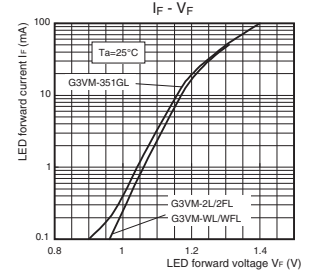
On-state resistance vs. Ambient temperature



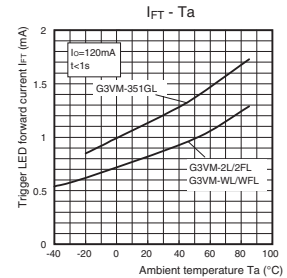
Turn ON, Turn OFF time vs. Ambient temperature



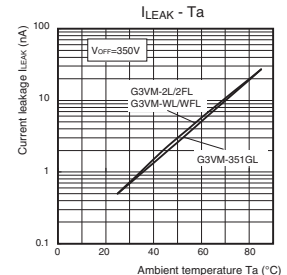
LED forward current vs. LED forward voltage



Trigger LED forward current vs. Ambient temperature



Current leakage vs. Ambient temperature



Introduction
General purpose
High-side-voltage
Multi-contact pair
High-current and
Low-ON-resistance
Small and High
High-dielectric
strength
Current-limiting
Low-on-state-resistance
and Low-off-resistance
Small lead and High-
strength
Certified Models with
Statistical Derivation
DIP
SOP
SSOP
USOP
VSON

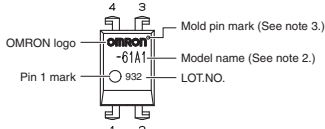
G3VM-□L/□FL/□GL

■ Appearance / Terminal Arrangement / Internal Connections

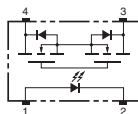
● Appearance

DIP (Dual In-line Package)

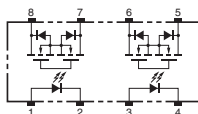
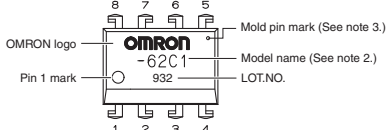
DIP 4-pin



● Terminal Arrangement/Internal Connections (Top View)

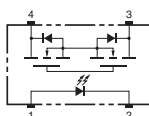
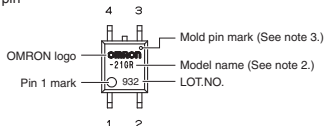


DIP 8-pin



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.

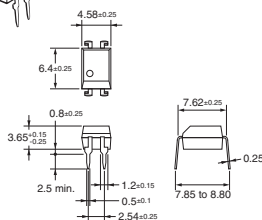
■ Dimensions (Unit: mm)

G3VM-2L



PCB Terminals

Weight: 0.4 g

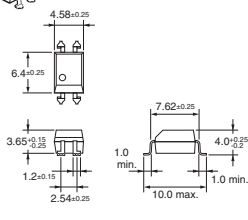


G3VM-2FL

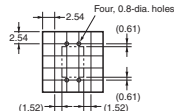


Surface-mounting Terminals

Weight: 0.4 g

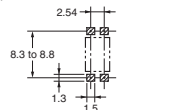


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



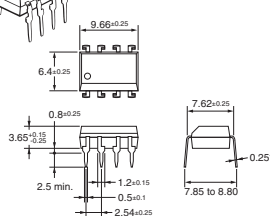
Note: The actual product is marked differently from the image shown here.

G3VM-WL



PCB Terminals

Weight: 0.54 g

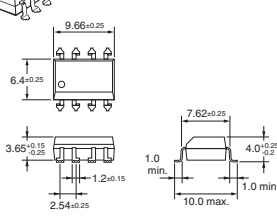


G3VM-WFL

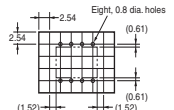


Surface-mounting Terminals

Weight: 0.54 g

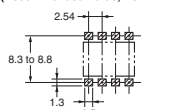


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

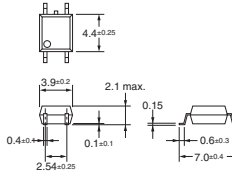
■Dimensions (Unit: mm)

G3VM-351GL

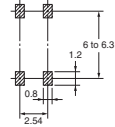


Surface-mounting Terminals

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.