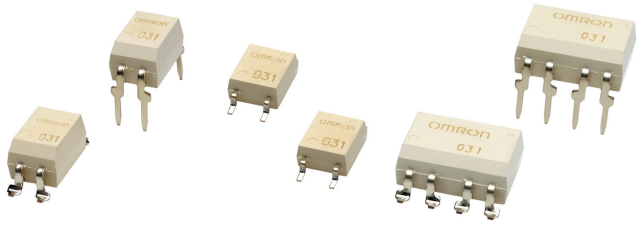
# G3VM-□L/□FL/□GL

**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.

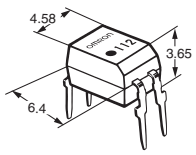
## ■Application Examples

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

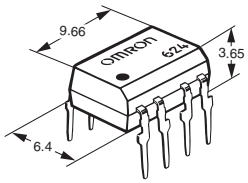
## ■Package

**(Unit : mm, Average)**

DIP 4-pin
PCB Terminals

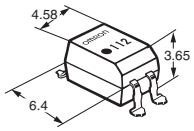



DIP 8-pin
PCB Terminals

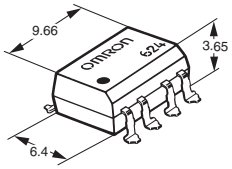



SOP 4-pin

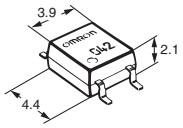
Surface-mounting Terminals




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 | $\Delta I_F$/°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 | $\Delta I_O$/°C | -1.2 | | | mA/°C | Ta ≥ 25°C |
| | Connection temperature | $T_J$ | 125 | | | °C | |
| Dielectric strength between I/O ✻ | | $V_{I-O}$ | 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 |

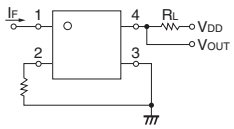
✻ The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

## ■Electrical Characteristics (Ta = 25°C)

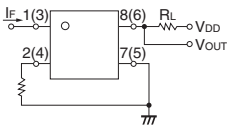
| Item | | Symbol | | G3VM-2L G3VM-2FL | G3VM-WL G3VM-WFL | G3VM-351GL | Unit | Measurement conditions |
|---|---|---|---|---|---|---|---|---|
| Input | LED forward voltage | $V_F$ | Minimum | 1.0 | | | V | $I_F$=10 mA |
| | | | Typical | 1.15 | | | | |
| | | | Maximum | 1.3 | | | | |
| | Reverse current | $I_R$ | Maximum | 10 | | | μA | G3VM-2L/2FL/WL/WFL : $V_R$=6 V<br>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<br>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 ✻ |
| | | | Maximum | 1.0 | | | | |
| Turn-OFF time | | $t_{OFF}$ | Typical | – | | 0.1 | | |
| | | | Maximum | 1.0 | | | | |

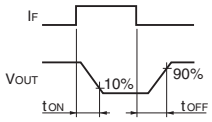
✻ Turn-ON and Turn-OFF Times

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.

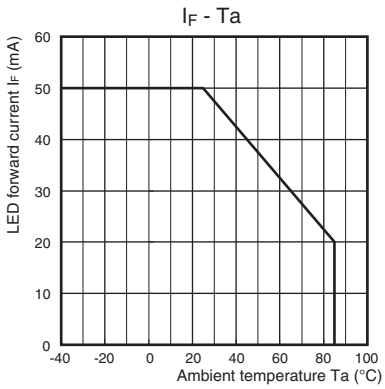
| Item | Symbol | | G3VM-2L G3VM-2FL | G3VM-WL G3VM-WFL | G3VM-351GL | Unit |
|---|---|---|---|---|---|---|
| Load voltage (AC peak/DC) | $V_{DD}$ | Maximum | 280 | | | V |
| Operating LED forward current | $I_F$ | Minimum | 5 | | | mA |
| | | Typical | 7.5 | | | |
| | | Maximum | 25 | | | |
| Continuous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

## ■Spacing and Insulation

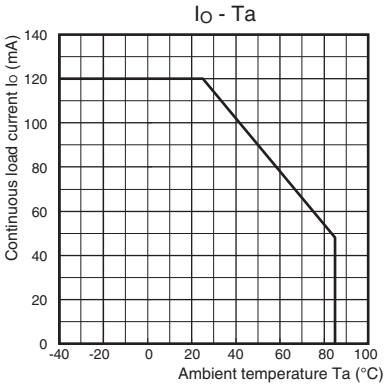
| Item | Minimum | | Unit |
|---|---|---|---|
| | G3VM-□L/□FL | G3VM-□GL | |
| Creepage distances | 7.0 | 2.5 | mm |
| Clearance distances | 7.0 | 2.5 | |
| Internal isolation thickness | 0.4 | 0.1 | |

## ■Engineering Data

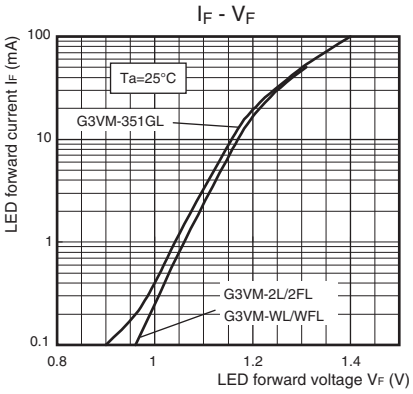
● **LED forward current vs. Ambient temperature**



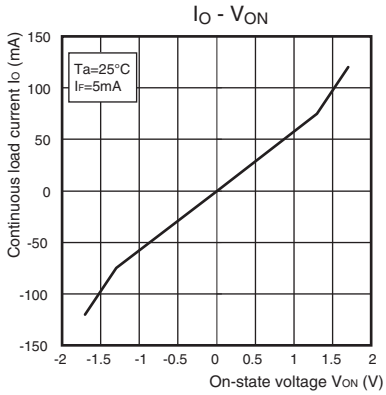

● **Continuous load current vs. Ambient temperature**



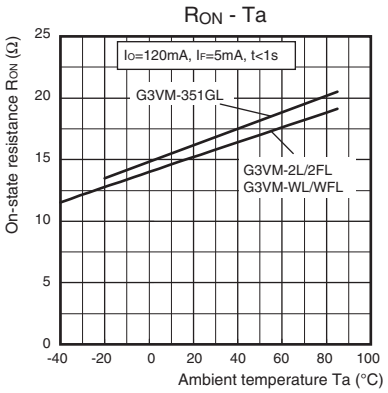

● **LED forward current vs. LED forward voltage**



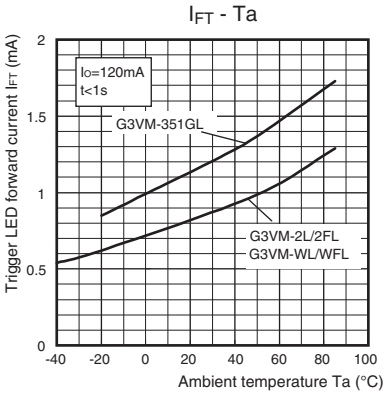

● **Continuous load current vs. On-state voltage**



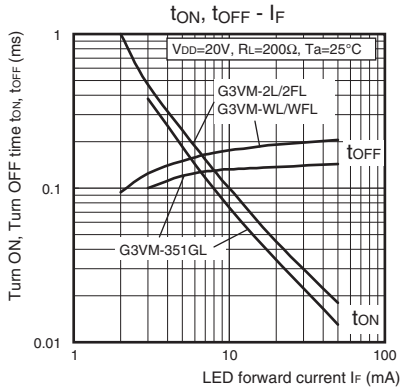

● **On-state resistance vs. Ambient temperature**



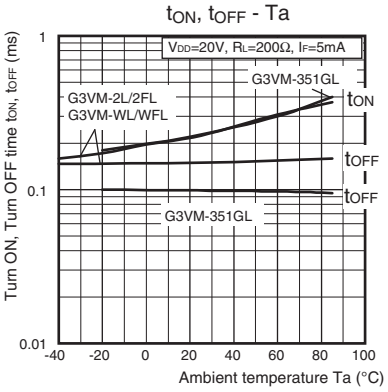

● **Trigger LED forward current vs. Ambient temperature**



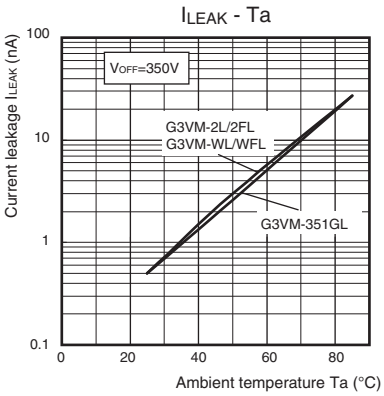

● **Turn ON, Turn OFF time vs. LED forward current**




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




● **Current leakage vs. Ambient temperature**

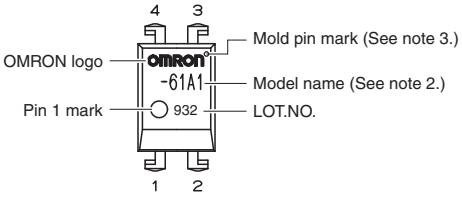


## ■Appearance / Terminal Arrangement / Internal Connections

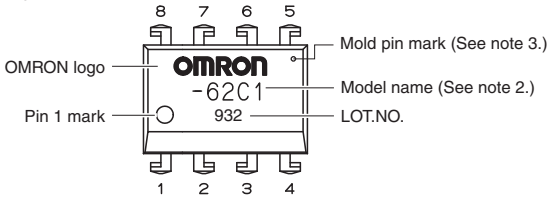
### ●Appearance

#### DIP (Dual Inline Package)

DIP 4-pin

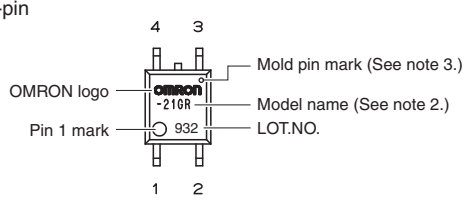



DIP 8-pin

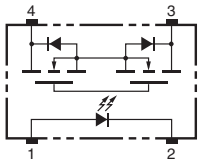


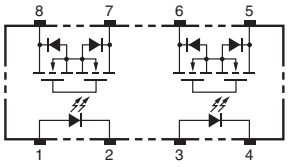

#### SOP (Small Outline Package)

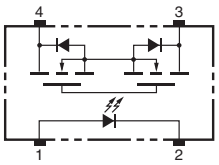
SOP 4-pin




### ●Terminal Arrangement/Internal Connections (Top View)



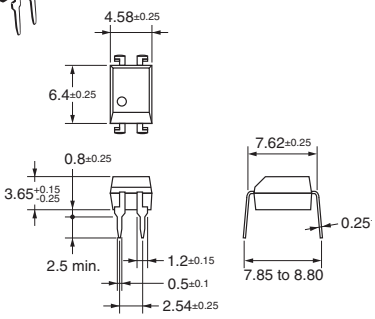

**Note: 1.** The actual product is marked differently from the image shown here.
**Note: 2.** "G3VM" does not appear in the model number on the Relay.
**Note: 3.** The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

## ■Dimensions (Unit: mm)

G3VM-2L

**PCB Terminals**

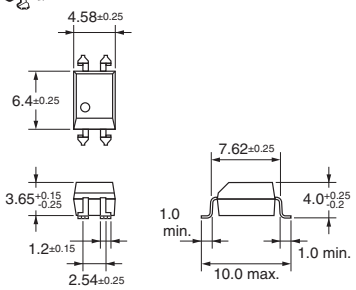
**Weight: 0.4 g**



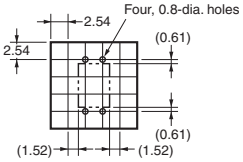

G3VM-2FL

**Surface-mounting Terminals**

**Weight: 0.4 g**

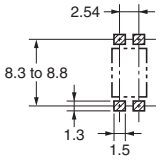



**PCB Dimensions (BOTTOM VIEW)**



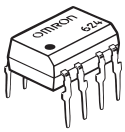

**Actual Mounting Pad Dimensions**

**(Recommended Value, TOP VIEW)**



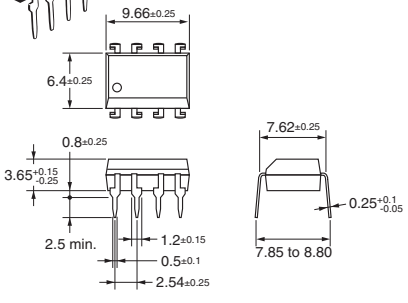

**Note:** The actual product is marked differently from the image shown here.

G3VM-WL

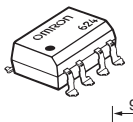


**PCB Terminals**

**Weight: 0.54 g**

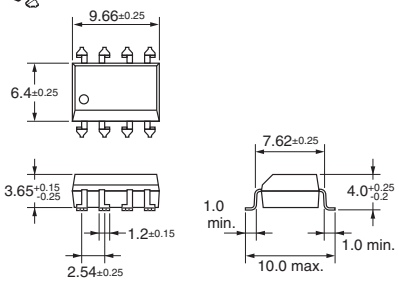



G3VM-WFL

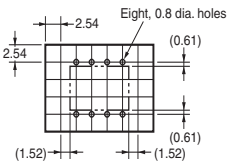


**Surface-mounting Terminals**

**Weight: 0.54 g**

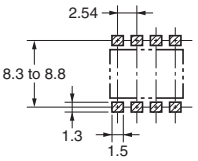



**PCB Dimensions (BOTTOM VIEW)**




**Actual Mounting Pad Dimensions**

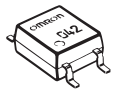
**(Recommended Value, TOP VIEW)**




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

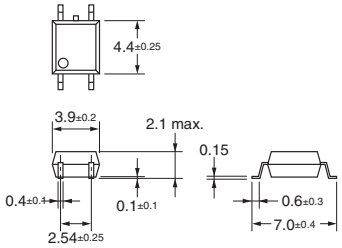
## ■Dimensions (Unit: mm)

G3VM-351GL



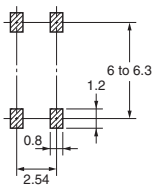
**Surface-mounting Terminals**

**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<br>G3VM-2FL | UL (recognized) | 1a (SPST-NO) | E80555 |
| G3VM-WL<br>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.

Please check each region's Terms & Conditions by region website.

**OMRON Corporation**
**Device & Module Solutions Company**

**Regional Contact**

**Americas**
https://components.omron.com/us

**Europe**
https://components.omron.com/eu

**Asia-Pacific**
https://components.omron.com/ap

**China**
https://components.omron.com.cn

**Korea**
https://components.omron.com/kr

**Japan**
https://components.omron.com/jp

© OMRON Corporation 2018-2022 All Rights Reserved.
In the interest of product improvement, specifications are subject to change without notice.

**Cat. No. K306-E1-02**
1122 (0318)