

## MOS FET Relays

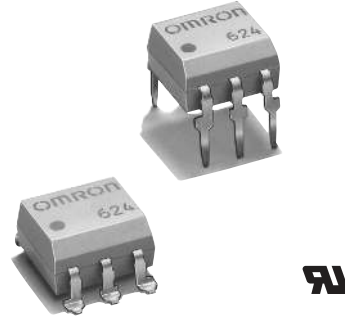
G3VM-3(F)L

### Analog-switching MOS FET Relay with 350-V Load Voltage and Current Limit.

- Approved standards: UL1577 (File No. E80555)

#### ■ Application Examples

- Electronic automatic exchange systems
- Multi-functional telephones
- Cordless telephones
- Measuring devices



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

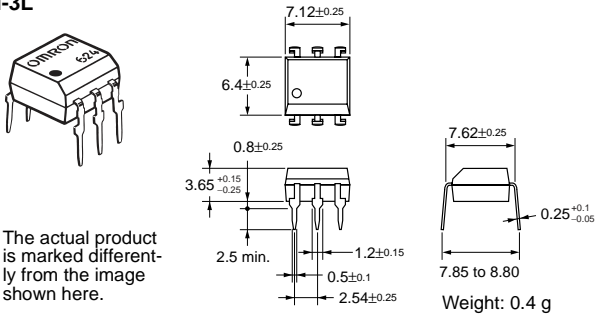
#### ■ List of Models

| Contact form | Terminals                  | Load voltage (peak value) | Model        | Current limit | Number per stick | Number per tape |
|--------------|----------------------------|---------------------------|--------------|---------------|------------------|-----------------|
| SPST-NO      | PCB terminals              | 350 VAC                   | G3VM-3L      | Yes           | 50               | ---             |
|              | Surface-mounting terminals |                           | G3VM-3FL     |               |                  |                 |
|              |                            |                           | G3VM-3FL(TR) |               |                  |                 |

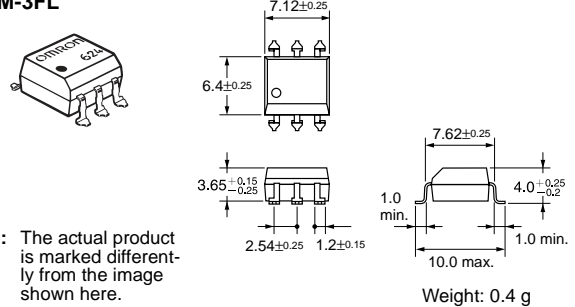
#### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

##### G3VM-3L

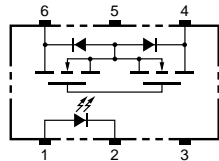


##### G3VM-3FL

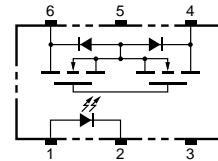


#### ■ Terminal Arrangement/Internal Connections (Top View)

##### G3VM-3L

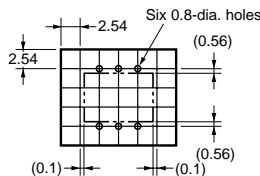


##### G3VM-3FL



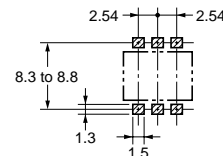
#### ■ PCB Dimensions (Bottom View)

##### G3VM-3L



#### ■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

##### G3VM-3FL



## Absolute Maximum Ratings (Ta = 25°C)

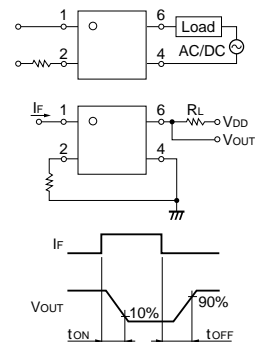
| Item   | Symbol                              | Rating                | Unit | Measurement Conditions        |                        |
|--|-------------------------------------|-----------------------|------|-------------------------------|------------------------|
| Input  | LED forward current                 | I <sub>F</sub>        | 50   | mA                            |                        |
|  | Repetitive peak LED forward current | I <sub>FP</sub>       | 1    | A                             | 100 μs pulses, 100 pps |
|  | LED forward current reduction rate  | Δ I <sub>F</sub> /°C  | -0.5 | mA/°C                         | Ta ≥ 25°C              |
|  | LED reverse voltage                 | V <sub>R</sub>        | 5    | V                             |                        |
|  | Connection temperature              | T <sub>j</sub>        | 125  | °C                            |                        |
| Output   | Output dielectric strength          | V <sub>OFF</sub>      | 350  | V                             |                        |
|  | Continuous load current             | I <sub>O</sub>        | 120  | mA                            |                        |
|  | ON current reduction rate           | Δ I <sub>ON</sub> /°C | -1.2 | mA/°C                         | Ta ≥ 25°C              |
|  | Connection temperature              | T <sub>j</sub>        | 125  | °C                            |                        |
| Dielectric strength between input and output (See note 1.) | V <sub>I-O</sub>                    | 2,500                 | Vrms | AC for 1 min                  |                        |
| Operating temperature                                      | T <sub>a</sub>                      | -40 to +85            | °C   | With no icing or condensation |                        |
| Storage temperature  | T <sub>stg</sub>                    | -55 to +125           | °C   | With no icing or condensation |                        |
| Soldering temperature (10 s)                               | ---                                 | 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                                 | Minimum           | Typical | Maximum | Unit | Measurement conditions  |  |
|--------------------------------|--|-------------------|---------|---------|------|---|--|
| Input                          | LED forward voltage                    | V <sub>F</sub>    | 1.0     | 1.15    | 1.3  | V   | I <sub>F</sub> = 10 mA                         |
|                                | Reverse current                        | I <sub>R</sub>    | ---     | ---     | 10   | μA  | V <sub>R</sub> = 5 V                           |
|                                | Capacity between terminals             | C <sub>T</sub>    | ---     | 30      | ---  | pF  | V = 0, f = 1 MHz                               |
|                                | Trigger LED forward current            | I <sub>FT</sub>   | ---     | ---     | 3    | mA  | I <sub>O</sub> = 120 mA                        |
| Output                         | Maximum resistance with output ON      | R <sub>ON</sub>   | ---     | 22      | 35   | Ω   | I <sub>F</sub> = 5 mA, I <sub>O</sub> = 120 mA |
|                                | Current leakage when the relay is open | I <sub>LEAK</sub> | ---     | ---     | 1.0  | μA  | V <sub>OFF</sub> = 350 V                       |
| Limit current                  | I <sub>LIM</sub>                       | 150               | ---     | 300     | mA   | I <sub>F</sub> = 5 mA, V <sub>DD</sub> = 5 V, t = 5 ms                              |  |
| Capacity between I/O terminals | C <sub>I-O</sub>                       | ---               | 0.8     | ---     | pF   | f = 1 MHz, V <sub>s</sub> = 0 V   |  |
| Insulation resistance          | R <sub>I-O</sub>                       | 1,000             | ---     | ---     | MΩ   | V <sub>I-O</sub> = 500 VDC, RoH ≤ 60%   |  |
| Turn-ON time                   | t <sub>ON</sub>                        | ---               | ---     | 1.0     | ms   | I <sub>F</sub> = 5 mA, R <sub>L</sub> = 200 Ω, V <sub>DD</sub> = 20 V (See note 2.) |  |
| Turn-OFF time                  | t <sub>OFF</sub>                       | ---               | ---     | 1.0     | ms   |   |  |

**Note:** 2. Turn-ON and Turn-OFF Times



## Recommended Operating Conditions

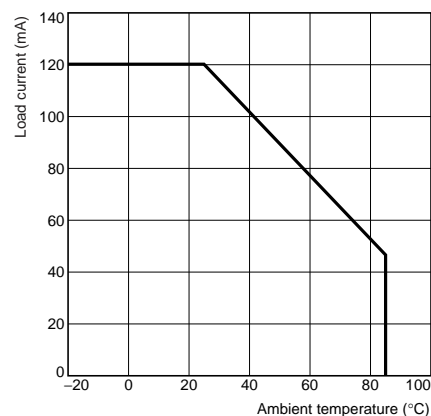
Use the G3VM under the following conditions so that the Relay will operate properly.

| Item                          | Symbol          | Minimum | Typical | Maximum | Unit |
|-------------------------------|-----------------|---------|---------|---------|------|
| Output dielectric strength    | V <sub>DD</sub> | ---     | ---     | 280     | V    |
| Operating LED forward current | I <sub>F</sub>  | 5       | 7.5     | 25      | mA   |
| Continuous load current       | I <sub>O</sub>  | ---     | ---     | 120     | mA   |
| Operating temperature         | T <sub>a</sub>  | -20     | ---     | 65      | °C   |

## Engineering Data

### Load Current vs. Ambient Temperature

#### G3VM-3(F)L



## Safety Precautions

Refer to page 6 for precautions common to all G3VM models.