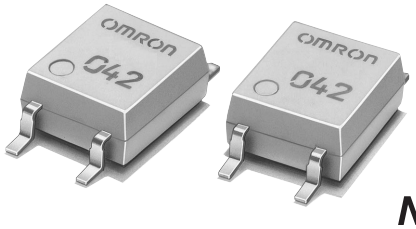
OMRON

# MOS FET Relays

## G3VM-81G1

### New Relay Incorporating a MOS FET Optically Coupled with an Infrared LED Has a 4-pin SOP Package and 80-V Load Voltage

- Continuous load current of 350 mA.
- Dielectric strength of 1,500 Vrms between I/O.

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

## ■ Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines

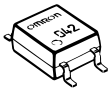
## ■ List of Models

| Contact form | Terminals | Load voltage (peak value) | Model | Number per stick | Number per tape |
|---|---|---|---|---|---|
| SPST-NO | Surface-mounting terminals | 80 VAC | G3VM-81G1 | 100 | --- |
| | | | G3VM-81G1(TR) | --- | 2,500 |

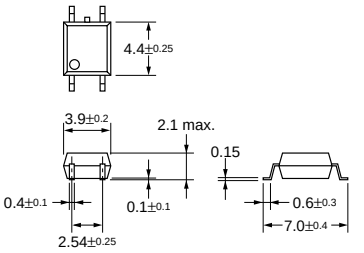
## ■ Dimensions

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

**G3VM-81G1**



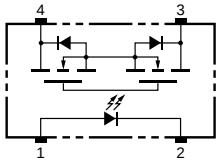

**Note:** The actual product is marked differently from the image shown here.




Weight: 0.1 g

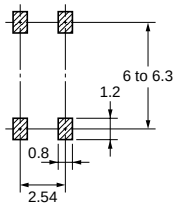
## ■ Terminal Arrangement/Internal Connections (Top View)

**G3VM-81G1**




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

**G3VM-81G1**



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

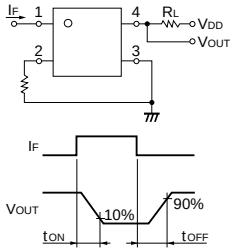
| Item | | Symbol | Rating | Unit | Measurement Conditions |
|---|---|---|---|---|---|
| Input | LED forward current | $I_F$ | 50 | mA | |
| | Repetitive peak LED forward current | $I_{FP}$ | 1 | A | 100 μs pulses, 100 pps |
| | LED forward current reduction rate | $\Delta I_F$/°C | −0.5 | mA/°C | Ta ≥ 25°C |
| | LED reverse voltage | $V_R$ | 5 | V | |
| | Connection temperature | $T_j$ | 125 | °C | |
| Output | Output dielectric strength | $V_{OFF}$ | 80 | V | |
| | Continuous load current | $I_O$ | 350 | mA | |
| | ON current reduction rate | $\Delta I_{ON}$/°C | −3.5 | mA/°C | Ta ≥ 25°C |
| | Connection temperature | $T_j$ | 125 | °C | |
| Dielectric strength between input and output (See note 1.) | | $V_{I-O}$ | 1,500 | Vrms | AC for 1 min |
| Operating temperature | | $T_a$ | −40 to +85 | °C | With no icing or condensation |
| Storage temperature | | $T_{stg}$ | −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 | $V_F$ | 1.0 | 1.15 | 1.3 | V | $I_F$ = 10 mA |
| | Reverse current | $I_R$ | --- | --- | 10 | μA | $V_R$ = 5 V |
| | Capacity between terminals | $C_T$ | --- | 15 | --- | pF | V = 0, f = 1 MHz |
| | Trigger LED forward current | $I_{FT}$ | --- | 1.0 | 4.0 | mA | $I_O$ = 350 mA |
| Output | Maximum resistance with output ON | $R_{ON}$ | --- | 1.0 | 1.2 | Ω | $I_F$ = 5 mA, $I_O$ = 350 mA |
| | Current leakage when the relay is open | $I_{LEAK}$ | --- | 0.2 | 1.0 | nA | $V_{OFF}$ = 30 V, Ta = 50°C |
| Capacity between I/O terminals | | $C_{I-O}$ | --- | 0.8 | --- | pF | f = 1 MHz, Vs = 0 V |
| Insulation resistance | | $R_{I-O}$ | 1,000 | --- | --- | MΩ | $V_{I-O}$ = 500 VDC, RoH ≤ 60% |
| Turn-ON time | | tON | --- | 0.3 | 0.5 | ms | $I_F$ = 5 mA, $R_L$ = 200 Ω, $V_{DD}$ = 20 V (See note 2.) |
| Turn-OFF time | | tOFF | --- | 0.3 | 0.5 | ms | |

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




## ■ Recommended Operating Conditions

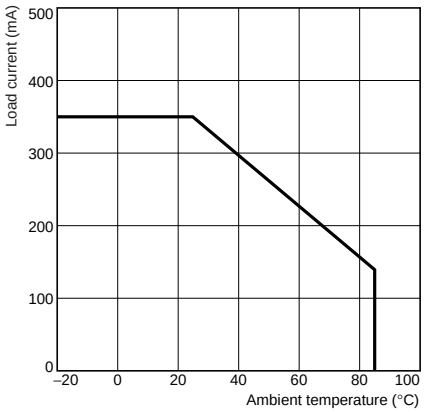
Use the G3VM under the following conditions so that the Relay will operate properly.

| Item | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Output dielectric strength | $V_{DD}$ | --- | --- | 64 | V |
| Operating LED forward current | $I_F$ | 5 | --- | 30 | mA |
| Continuous load current | $I_O$ | --- | --- | 350 | mA |
| Operating temperature | $T_a$ | 25 | --- | 60 | °C |

## ■ Engineering Data

### Load Current vs. Ambient Temperature

**G3VM-81G1**




## ■ Safety Precautions

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