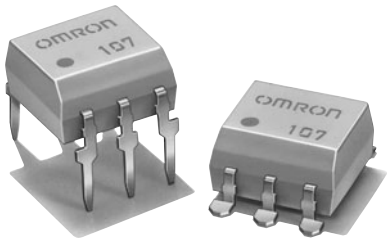
# G3VM-61BR/ER

MOS FET Relays

## New Analog-switching MOS FET Relays Featuring a High Capacity of 2.5 A.

- Switches minute analog signals.
- Low ON-resistance of 0.1 Ω max.
- Continuous load current of 2.5 A.

RoHS compliant

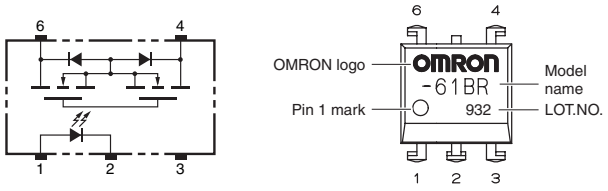



Note: The actual product is marked differently from the image shown here.

## ■ Application Examples

- Test & Measurement equipment
- Security equipment

## ■ Terminal Arrangement/Internal Connections

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## ■ List of Models

| Package type | Contact form | Terminals | Load voltage (peak value) ✻ | Model | Minimum package quantity | |
|---|---|---|---|---|---|---|
| | | | | | Number per tube | Number per tape and reel |
| DIP6 | 1a (SPST-NO) | PCB Terminals | 60 V | G3VM-61BR | 50 | - |
| | | Surface-mounting Terminals | | G3VM-61ER | | |
| | | | | G3VM-61ER(TR) | - | 1,500 |

✻ The AC peak and DC value are given for the load voltage.

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

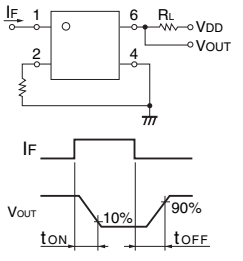
| | Item | Symbol | Rating | Unit | Measurement conditions |
|---|---|---|---|---|---|
| Input | LED forward current | $I_F$ | 30 | mA | |
| | LED forward current reduction rate | $\Delta I_F$/°C | −0.3 | mA/°C | Ta ≥ 25°C |
| | LED reverse voltage | $V_R$ | 5 | V | |
| | Connection temperature | $T_J$ | 125 | °C | |
| Output | Load voltage (AC peak/DC) | $V_{OFF}$ | 60 | V | |
| | Continuous load current (AC peak/DC) | $I_O$ | 2500 | mA | |
| | ON current reduction rate | $\Delta I_O$/°C | −22 | mA/°C | Ta ≥ 40°C |
| | Connection temperature | $T_J$ | 125 | °C | |
| Dielectric strength between I/O (See note 1.) | | $V_{I-O}$ | 2500 | Vrms | AC for 1 min |
| Ambient operating temperature | | Ta | −20 to +85 | °C | With no icing or condensation |
| Ambient storage temperature | | Tstg | −40 to +125 | °C | With no icing or condensation |
| 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 | Minimum | Typical | Maximum | Unit | Measurement conditions |
|---|---|---|---|---|---|---|---|
| Input | LED forward voltage | $V_F$ | 1.18 | 1.33 | 1.48 | V | $I_F$ = 10 mA |
| | Reverse current | $I_R$ | - | - | 10 | μA | $V_R$ = 5 V |
| | Capacity between terminals | $C_T$ | - | 70 | - | pF | V = 0, f = 1 MHz |
| | Trigger LED forward current | $I_{FT}$ | - | 1.0 | 3 | mA | $I_O$ = 1 A |
| Output | Maximum resistance with output ON | | - | 0.065 | 0.1 | Ω | $I_F$ = 10 mA, $I_O$ = 2 A, t = 10 ms |
| | Current leakage when the relay is open | $I_{LEAK}$ | - | 1.0 | 10 | nA | $V_{OFF}$ = 60 V |
| | Capacity between terminals | $C_{OFF}$ | - | 400 | 600 | pF | V = 0, f = 1 MHz |
| Capacity between I/O terminals | | $C_{I-O}$ | - | 0.8 | - | pF | f = 1 MHz, $V_S$ = 0 V |
| Insulation resistance between I/O terminals | | $R_{I-O}$ | 1000 | - | - | MΩ | $V_{I-O}$ = 500 VDC, RoH ≤ 60% |
| Turn-ON time | | $t_{ON}$ | - | 1.0 | 1.5 | ms | $I_F$ = 10 mA, $R_L$ = 200 Ω, $V_{DD}$ = 20 V(See note 2.) |
| Turn-OFF time | | $t_{OFF}$ | - | 0.2 | 0.4 | ms | |

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



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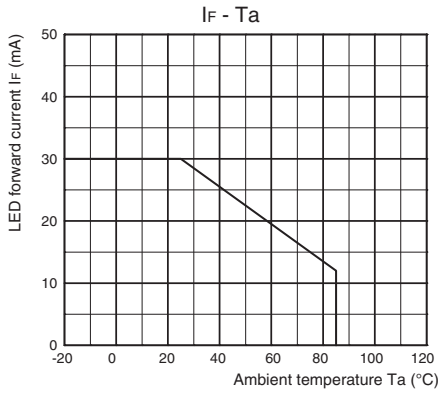
## ■ Recommended Operating Conditions

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

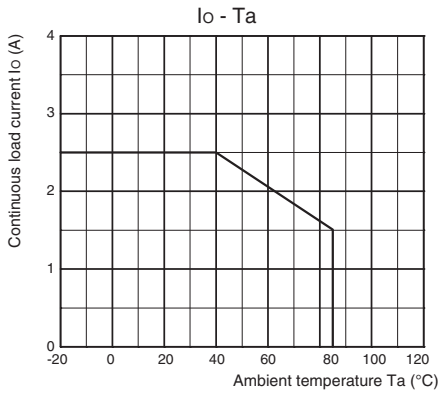
| Item | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Load voltage (AC peak/DC) | $V_{DD}$ | - | - | 48 | V |
| Operating LED forward current | $I_F$ | 10 | - | 20 | mA |
| Continuous load current (AC peak/DC) | $I_O$ | - | - | 2500 | mA |
| Ambient operating temperature | Ta | 25 | - | 60 | °C |

## ■ Engineering Data

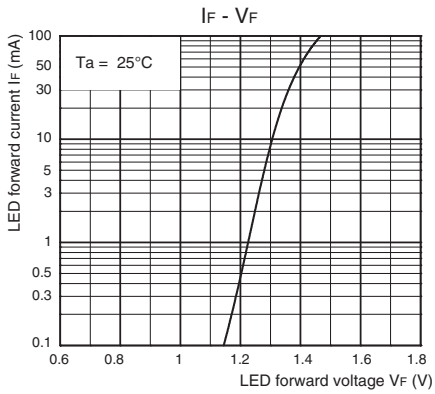
### LED forward current vs. Ambient temperature



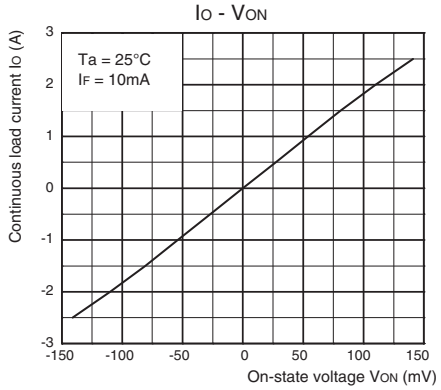

### Continuous load current vs. Ambient temperature



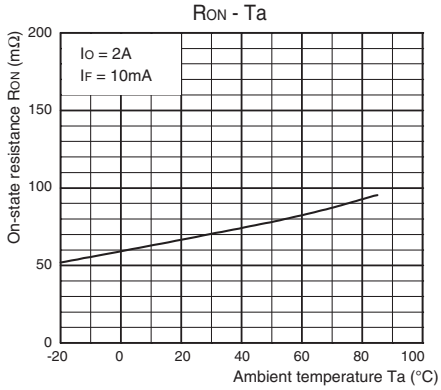

### LED forward current vs. LED forward voltage



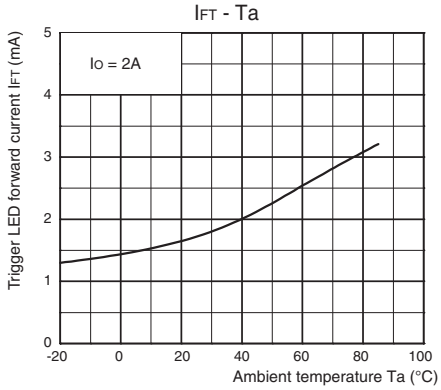

### Continuous load current vs. On-state voltage



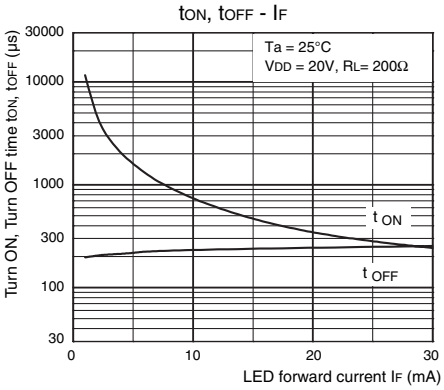

### On-state resistance vs. Ambient temperature



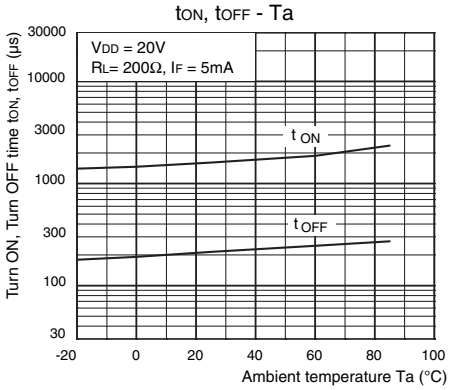

### Trigger LED forward current vs. Ambient temperature



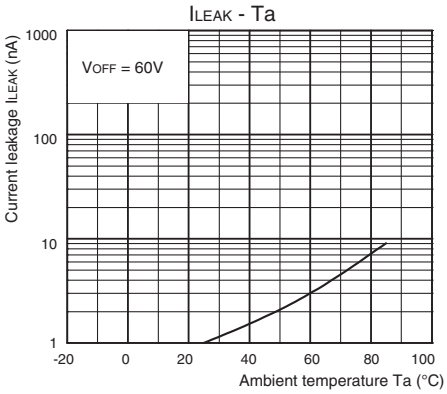

### Turn ON, Turn OFF time vs. LED forward current




### Turn ON, Turn OFF time vs. Ambient temperature




### Current leakage vs. Ambient temperature




## ■ Safety Precautions

- Refer to **"Common Precautions"** for all G3VM models.

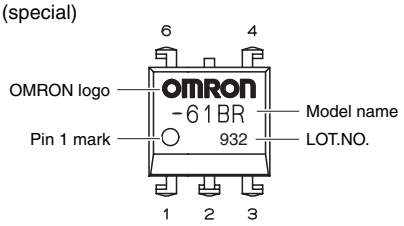
# Appearance/Dimensions

**DIP6 (special) type**

## ■ Appearance

**DIP (Dual Inline Package)**

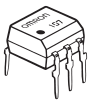
DIP6 (special)




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

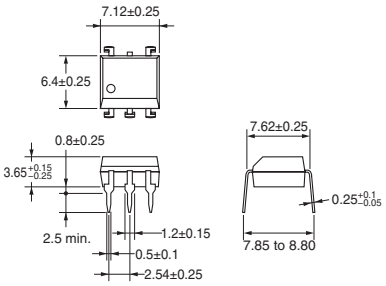
## ■ Dimensions

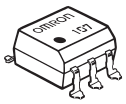
**(Unit:mm)**



### PCB Terminals

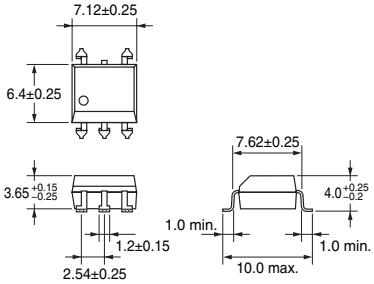
**Weight: 0.4 g**



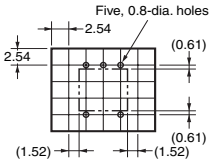



### Surface-mounting Terminals

**Weight: 0.4 g**

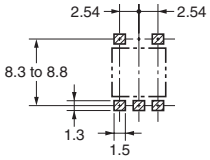



### PCB Dimensions (BOTTOM VIEW)




### Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)




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


- Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
- Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**



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