

# MOS FET Relays

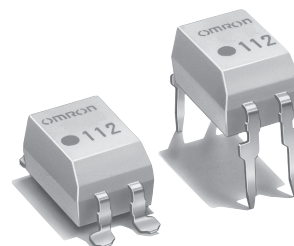
## G3VM-61A1/D1

**Compact, General-purpose, Analog-switching MOS FET Relay, with Dielectric Strength of 2.5 kVAC between I/O Using Optical Isolation**

- Upgraded G3VM-61 A/D Series.
- Switches minute analog signals.
- RoHS Compliant.

### ■ Application Examples

- Measurement devices
- Security systems
- Amusement machines



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

### ■ List of Models

| Contact form | Terminals                  | Load voltage (peak value) | Model         | Number per stick | Number per tape |
|--------------|----------------------------|---------------------------|---------------|------------------|-----------------|
| SPST-NO      | PCB terminals              | 60 VAC                    | G3VM-61A1     | 100              | ---             |
|              | Surface-mounting terminals |                           | G3VM-61D1     |                  |                 |
|              |                            |                           | G3VM-61D1(TR) | ---              | 1,500           |

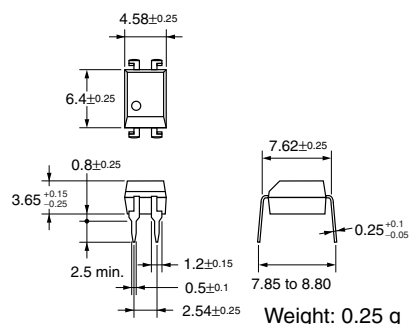
### ■ Dimensions

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

#### G3VM-61A1



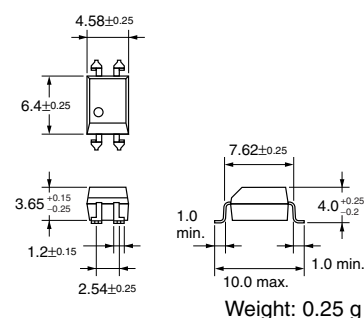
**Note:** The actual product is marked differently from the image shown here.



#### G3VM-61D1

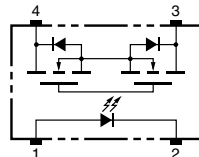


**Note:** The actual product is marked differently from the image shown here.

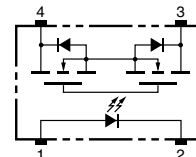


### ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-61A1

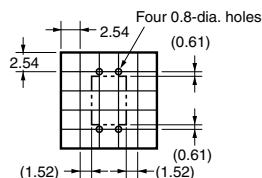


#### G3VM-61D1



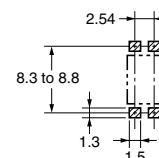
### ■ PCB Dimensions (Bottom View)

#### G3VM-61A1



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

#### G3VM-61D1



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

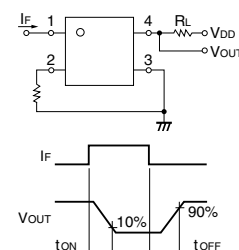
| Item                                                       | Symbol                              | Rating                         | Unit        | Measurement conditions |
|------------------------------------------------------------|-------------------------------------|--------------------------------|-------------|------------------------|
| Input                                                      | LED forward current                 | $I_F$                          | 50          | mA                     |
|                                                            | Repetitive peak LED forward current | $I_{FP}$                       | 1           | A                      |
|                                                            | LED forward current reduction rate  | $\Delta I_F/^\circ\text{C}$    | -0.5        | mA/°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             | $I_O$                          | 500         | mA                     |
|                                                            | ON current reduction rate           | $\Delta I_{ON}/^\circ\text{C}$ | -5.0        | mA/°C                  |
|                                                            | Connection temperature              | $T_j$                          | 125         | °C                     |
| Dielectric strength between input and output (See note 1.) |                                     | $V_{I-O}$                      | 2,500       | $V_{rms}$              |
| Operating temperature                                      |                                     | $T_a$                          | -40 to +85  | °C                     |
| Storage temperature                                        |                                     | $T_{slg}$                      | -55 to +125 | °C                     |
| Soldering temperature (10 s)                               |                                     | ---                            | 260         | °C                     |

**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                      |
|                                | Reverse current                        | $I_R$      | ---     | ---     | 10   | $\mu\text{A}$          |
|                                | Capacity between terminals             | $C_T$      | ---     | 30      | ---  | pF                     |
|                                | Trigger LED forward current            | $I_{FT}$   | ---     | 1.6     | 3    | mA                     |
| Output                         | Maximum resistance with output ON      | $R_{ON}$   | ---     | 1       | 2    | $\Omega$               |
|                                | Current leakage when the relay is open | $I_{LEAK}$ | ---     | 0.001   | 1.0  | $\mu\text{A}$          |
|                                | Capacity between terminals             | $C_{OFF}$  | ---     | 130     | ---  | pF                     |
| Capacity between I/O terminals |                                        | $C_{I-O}$  | ---     | 0.8     | ---  | pF                     |
| Insulation resistance          |                                        | $R_{I-O}$  | 1,000   | ---     | ---  | M $\Omega$             |
| Turn-ON time                   |                                        | $t_{ON}$   | ---     | 0.8     | 2.0  | ms                     |
| Turn-OFF time                  |                                        | $t_{OFF}$  | ---     | 0.1     | 0.5  | ms                     |

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



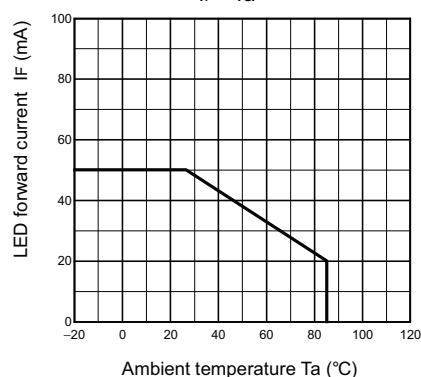
## Recommended Operating Conditions

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

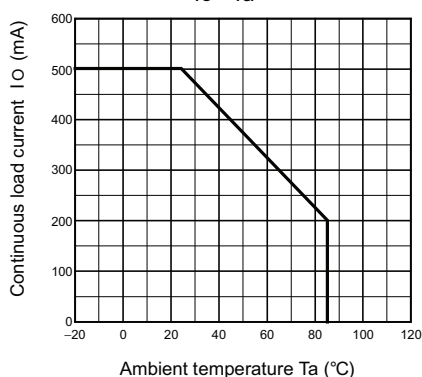
| Item                                 | Symbol   | Minimum | Typical | Maximum | Unit |
|--------------------------------------|----------|---------|---------|---------|------|
| Load voltage (AC peak/DC)            | $V_{DD}$ | ---     | ---     | 48      | V    |
| Operating LED forward current        | $I_F$    | 5       | 7.5     | 25      | mA   |
| Continuous load current (AC peak/DC) | $I_O$    | ---     | ---     | 500     | mA   |
| Operating temperature                | $T_a$    | -20     | ---     | 65      | °C   |

# Engineering Data

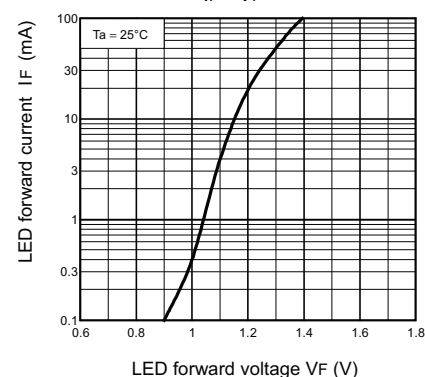
**LED forward current vs. Ambient temperature**  
IF - Ta



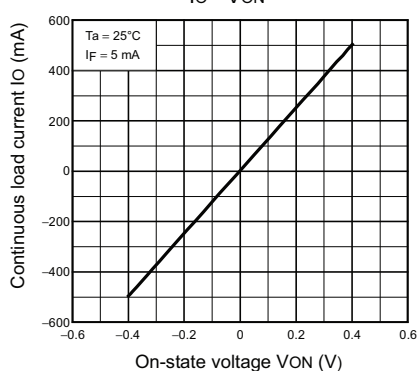
**Continuous load current vs. Ambient temperature**  
IO - Ta



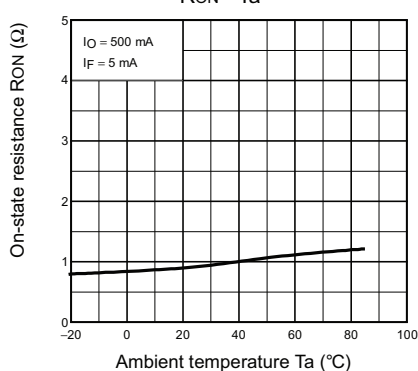
**LED forward current vs. LED forward voltage**  
IF - VF



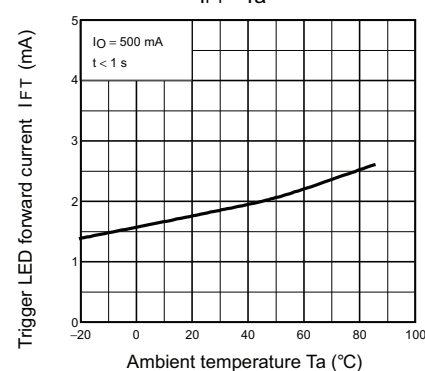
**Continuous load current vs. On-state voltage**  
IO - VON



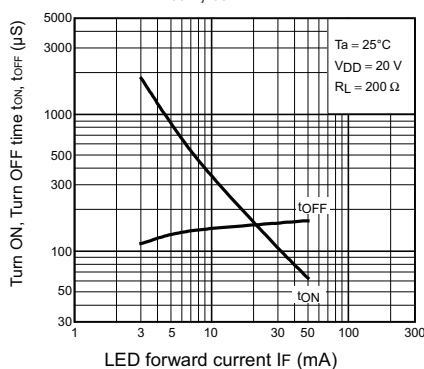
**On-state resistance vs. Ambient temperature**  
RON - Ta



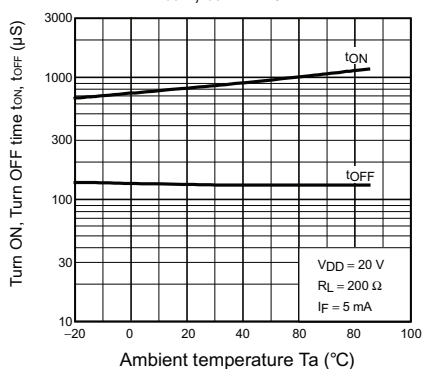
**Trigger LED forward current vs. Ambient temperature**  
IFT - Ta



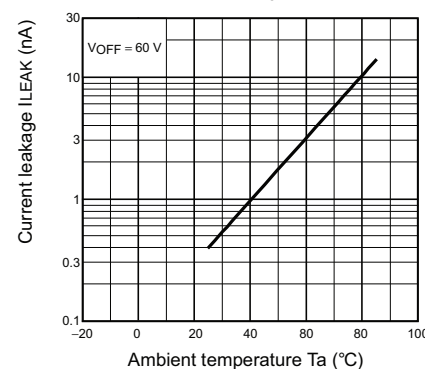
**Turn ON, Turn OFF time vs. LED forward current**  
tON, tOFF - IF



**Turn ON, Turn OFF time vs. Ambient temperature**  
tON, tOFF - Ta



**Current leakage vs. Ambient temperature**  
I LEAK - Ta



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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55 E. Commerce Drive, Suite B  
Schaumburg, IL 60173

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