

OMRON

MOS FET Relays

G3VM-41GR5

New MOS FET Relay with Low Output Capacitance and ON Resistance ( $C \times R = 10\text{pF} \cdot \Omega$ ) in a 40-V Load Voltage Model

- ON resistance of  $1\ \Omega$  (typical) suppresses output signal attenuation.
- Leakage current of  $1.0\ \text{nA}$  max. when output relay is open.

Application Examples

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

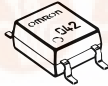
List of Models

| Contact form | Terminals                  | Load voltage (peak value) | Model          | Number per stick | Number per tape |
|--------------|----------------------------|---------------------------|----------------|------------------|-----------------|
| SPST-NO      | Surface-mounting terminals | 40 VAC                    | G3VM-41GR5     | 100              | ---             |
|              |                            |                           | G3VM-41GR5(TR) | ---              | 2,500           |

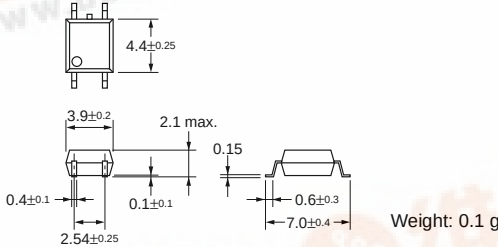
Dimensions

Note: All units are in millimeters unless otherwise indicated.

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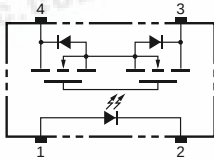


Note: The actual product is marked differently from the image shown here.



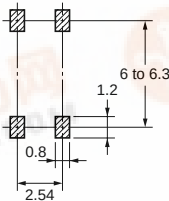
Terminal Arrangement/Internal Connections (Top View)

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Actual Mounting Pad Dimensions (Recommended Value, Top View)

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

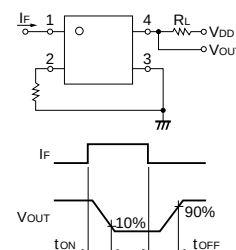
| Item                                                       |                                     | Symbol                | Rating      | Unit             | Measurement Conditions        |
|------------------------------------------------------------|-------------------------------------|-----------------------|-------------|------------------|-------------------------------|
| 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            | T <sub>a</sub> ≥ 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>      | 40          | V                |                               |
|                                                            | Continuous load current             | I <sub>O</sub>        | 300         | mA               |                               |
|                                                            | ON current reduction rate           | Δ I <sub>ON</sub> /°C | −3.0        | mA/°C            | T <sub>a</sub> ≥ 25°C         |
|                                                            | Connection temperature              | T <sub>J</sub>        | 125         | °C               |                               |
| Dielectric strength between input and output (See note 1.) |                                     | V <sub>I-O</sub>      | 1,500       | V <sub>rms</sub> | AC for 1 min                  |
| Operating temperature                                      |                                     | T <sub>a</sub>        | −20 to +85  | °C               | With no icing or condensation |
| Storage temperature                                        |                                     | T <sub>stg</sub>      | −40 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                      |
|                                | Reverse current                        | I <sub>R</sub>    | ---     | ---     | 10   | μA                     |
|                                | Capacity between terminals             | C <sub>T</sub>    | ---     | 15      | ---  | pF                     |
|                                | Trigger LED forward current            | I <sub>FT</sub>   | ---     | ---     | 4    | mA                     |
| Output                         | Maximum resistance with output ON      | R <sub>ON</sub>   | ---     | 1.0     | 1.5  | Ω                      |
|                                | Current leakage when the relay is open | I <sub>LEAK</sub> | ---     | ---     | 1.0  | nA                     |
|                                | Capacity between terminals             | C <sub>OFF</sub>  | ---     | 10.0    | 14.0 | pF                     |
| Capacity between I/O terminals |                                        | C <sub>I-O</sub>  | ---     | 0.8     | ---  | pF                     |
| Insulation resistance          |                                        | R <sub>I-O</sub>  | 1,000   | ---     | ---  | MΩ                     |
| Turn-ON time                   |                                        | t <sub>ON</sub>   | ---     | ---     | 0.5  | ms                     |
| Turn-OFF time                  |                                        | t <sub>OFF</sub>  | ---     | ---     | 0.5  | ms                     |

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



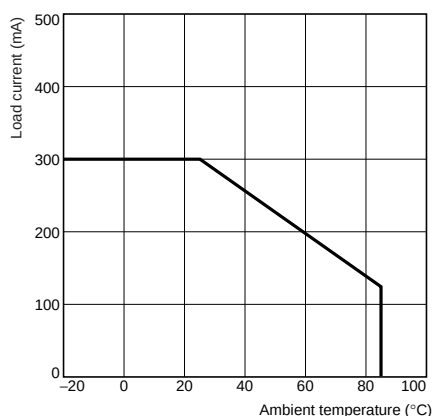
## Recommended Operating Conditions

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

| Item                          | Symbol          | Minimum | Typical | Maximum | Unit |
|-------------------------------|-----------------|---------|---------|---------|------|
| Output dielectric strength    | V <sub>OD</sub> | ---     | ---     | 32      | V    |
| Operating LED forward current | I <sub>F</sub>  | 10      | ---     | 30      | mA   |
| Continuous load current       | I <sub>O</sub>  | ---     | ---     | 300     | mA   |
| Operating temperature         | T <sub>a</sub>  | 25      | ---     | 60      | °C   |

## Engineering Data

### Load Current vs. Ambient Temperature G3VM-41GR5



## Safety Precautions

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