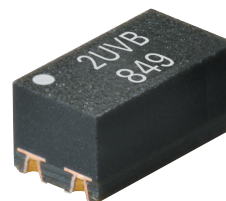


# G3VM-21UV11/51UV/61UV

MOS FET Relays VSON(R), Voltage Driving Type

## Very Small Outline Non-Leaded Package with Voltage Driving Type; VSON(R) MOS FET relay with current limiting internal resistor on the input side

- Operating input forward voltage: Recommendation 5V (Typical)
- Load voltage: 20 V, 50 V, 60 V
  - 20-V Relay: Continuous load current of 1 A max.  
Low  $C \times R = 7.2 \text{ pF} \cdot \Omega$ ,  $C_{\text{OFF}}$  (Typical) = 40 pF,  $R_{\text{ON}}$  (Typical) = 0.18  $\Omega$
  - 50-V Relay: Continuous load current of 0.3 A max.  
Low  $C \times R = 12 \text{ pF} \cdot \Omega$ ,  $C_{\text{OFF}}$  (Typical) = 12 pF,  $R_{\text{ON}}$  (Typical) = 1  $\Omega$
  - 60-V Relay: Continuous load current of 0.4 A max.
- High Ambient operating temperature: -40°C to +110°C



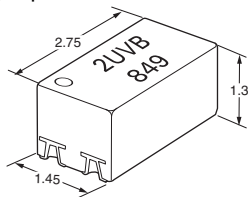
Note: The actual product is marked differently from the image shown here.

## Application Examples

- Semiconductor test equipment
- Communication equipment
- Test & measurement equipment
- Data loggers

## Package (Unit : mm, Average)

VSON(R) 4-pin



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

## Model Number Legend

G3VM-□□□□□  
1 2 3 4 5

### 1. Load Voltage

2: 20 V  
5: 50 V  
6: 60 V

### 2. Contact form

1: 1a (SPST-NO)

### 3. Package

U: VSON(R) 4-pin

### 4. Additional functions

V: Voltage Driving Type

### 5. Other information

When specifications overlap, serial code is added in the recorded order.

## Ordering Information

| Package  | Contact form    | Terminals                     | Load voltage<br>(peak value) * | Continuous<br>load current<br>(peak value) * | Tape cut packaging |                                | Tape packaging     |                                |
|----------|-----------------|-------------------------------|--------------------------------|----------------------------------------------|--------------------|--------------------------------|--------------------|--------------------------------|
|          |                 |                               |                                |                                              | Model              | Minimum<br>package<br>quantity | Model              | Minimum<br>package<br>quantity |
| VSON(R)4 | 1a<br>(SPST-NO) | Surface-mounting<br>Terminals | 20 V                           | 1,000 mA                                     | G3VM-21UV11        | 1 pc.                          | G3VM-21UV11 (TR05) | 500 pcs.                       |
|          |                 |                               | 50 V                           | 300 mA                                       | G3VM-51UV          |                                | G3VM-51UV (TR05)   |                                |
|          |                 |                               | 60 V                           | 400 mA                                       | G3VM-61UV          |                                | G3VM-61UV (TR05)   |                                |

Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR05)" to the end of the model number.

Tape-cut VSON(R)s are packaged without humidity resistance. Use manual soldering to mount them.

Refer to common precautions.

\* The AC peak and DC value are given for the load voltage and continuous load current.

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

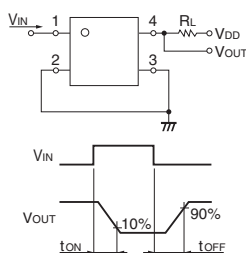
| Item                              |                                      | Symbol              | G3VM-21UV11 | G3VM-51UV | G3VM-61UV | Unit             | Measurement conditions        |
|-----------------------------------|--------------------------------------|---------------------|-------------|-----------|-----------|------------------|-------------------------------|
| Input                             | Input forward voltage                | V <sub>IN</sub>     | 6           |           |           | V                |                               |
|                                   | Input reverse voltage                | V <sub>RIN</sub>    | 5           |           |           | V                |                               |
|                                   | Connection temperature               | T <sub>J</sub>      | 125         |           |           | °C               |                               |
| Output                            | Load voltage (AC peak/DC)            | V <sub>OFF</sub>    | 20          | 50        | 60        | V                |                               |
|                                   | Continuous load current (AC peak/DC) | I <sub>O</sub>      | 1,000       | 300       | 400       | mA               |                               |
|                                   | ON current reduction rate            | ΔI <sub>O</sub> /°C | -10         | -3        | -4        | mA/°C            | Ta≥25°C                       |
|                                   | Pulse ON current                     | I <sub>OP</sub>     | 3,000       | 900       | 1,200     | mA               | t=100 ms, Duty=1/10           |
|                                   | Connection temperature               | T <sub>J</sub>      | 125         |           |           | °C               |                               |
| Dielectric strength between I/O * |                                      | V <sub>I-O</sub>    | 500         |           |           | V <sub>rms</sub> | AC for 1 min                  |
| Ambient operating temperature     |                                      | T <sub>a</sub>      | -40 to +110 |           |           | °C               | With no icing or condensation |
| Ambient storage temperature       |                                      | T <sub>stg</sub>    | -40 to +125 |           |           | °C               |                               |
| Soldering temperature             |                                      | —                   | 260         |           |           | °C               | 10 s                          |

\* The dielectric strength between the input and output was checked by applying voltage between all pins on the LED side and all pins on the light-receiving side.

## Electrical Characteristics (Ta = 25°C)

| Item                                        |                                        | Symbol                       |         | G3VM-21UV11     | G3VM-51UV | G3VM-61UV | Unit | Measurement conditions                                                                                                               |
|---------------------------------------------|----------------------------------------|------------------------------|---------|-----------------|-----------|-----------|------|--------------------------------------------------------------------------------------------------------------------------------------|
| Input                                       | Reverse current                        | I <sub>R</sub>               | Maximum | 10              |           |           | μA   | V <sub>R</sub> =5 V                                                                                                                  |
|                                             | Capacity between terminals             | C <sub>T</sub>               | Typical | 30              |           |           | pF   | V=0, f=1 MHz                                                                                                                         |
|                                             | Input forward current                  | I <sub>F</sub>               | Typical | 6.3             |           |           | mA   | V <sub>IN</sub> =5 V                                                                                                                 |
|                                             | Operate voltage                        | V <sub>FO<sub>N</sub></sub>  | Typical | 1.8             |           |           | V    | I <sub>ON</sub> =100 mA                                                                                                              |
|                                             |                                        |                              | Maximum | 3               |           |           |      |                                                                                                                                      |
|                                             | Release voltage                        | V <sub>FO<sub>FF</sub></sub> | Minimum | 0.8             |           |           | V    | I <sub>OFF</sub> =10 μA                                                                                                              |
| Typical                                     |                                        |                              | 1.8     |                 |           |           |      |                                                                                                                                      |
| Output                                      | Maximum resistance with output ON      | R <sub>ON</sub>              | Typical | 0.18            | 1         |           | Ω    | V <sub>IN</sub> =5 V, t<1 s,<br>I <sub>O</sub> =Continuous load current ratings                                                      |
|                                             |                                        |                              | Maximum | 0.22            | 1.5       |           |      |                                                                                                                                      |
|                                             | Current leakage when the relay is open | I <sub>LEAK</sub>            | Maximum | 1               |           |           | nA   | V <sub>OFF</sub> =Load voltage ratings                                                                                               |
|                                             | Capacity between terminals             | C <sub>off</sub>             | Typical | 40              | 12        | 20        | pF   | V=0, f=100 MHz, t<1 s                                                                                                                |
| Maximum                                     |                                        |                              | —       | 20              | —         |           |      |                                                                                                                                      |
| Capacity between I/O terminals              |                                        | C <sub>I-O</sub>             | Typical | 1               |           |           | pF   | f=1 MHz, V <sub>S</sub> =0V                                                                                                          |
| Insulation resistance between I/O terminals |                                        | R <sub>I-O</sub>             | Typical | 10 <sup>8</sup> |           |           | MΩ   | V <sub>I-O</sub> =500 VDC, RoH≤60%                                                                                                   |
| Turn-ON time                                |                                        | t <sub>ON</sub>              | Maximum | 2               | 0.5       |           | ms   | V <sub>IN</sub> =5 V, R <sub>L</sub> =200 Ω,<br>V <sub>DD</sub> =10 V (G3VM-21UV11)<br>V <sub>DD</sub> =20 V (G3VM-51UV, -61UV)<br>* |
| Turn-OFF time                               |                                        | t <sub>OFF</sub>             | Maximum | 1               | 0.4       | 0.5       |      |                                                                                                                                      |

\* Turn-ON and Turn-OFF Times



## Recommended Operating Conditions

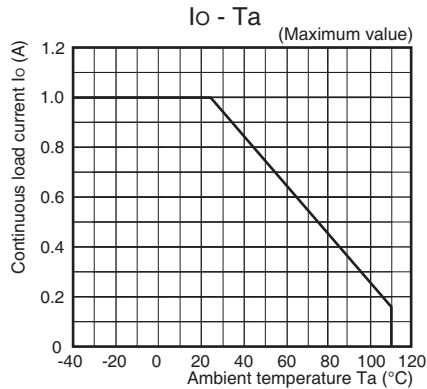
To ensure highest reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

Each item on this list is an independent condition, so it is not simultaneously satisfy several conditions.

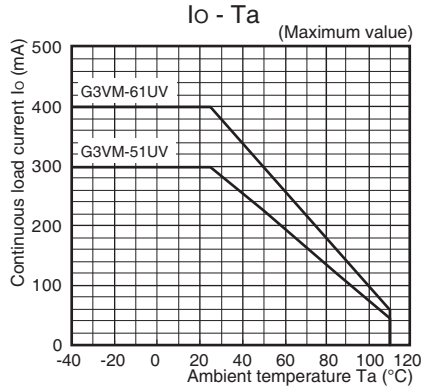
| Item                                 | Symbol          |         | G3VM-21UV11 | G3VM-51UV | G3VM-61UV | Unit |
|--------------------------------------|-----------------|---------|-------------|-----------|-----------|------|
| Load voltage (AC peak/DC)            | V <sub>DD</sub> | Maximum | 16          | 40        | 48        | V    |
| Operating input forward voltage      | V <sub>IN</sub> | Minimum | 4           |           |           | V    |
|                                      |                 | Typical | 5           |           |           |      |
|                                      |                 | Maximum | 6           |           |           |      |
| Continuous load current (AC peak/DC) | I <sub>O</sub>  | Maximum | 1000        | 300       | 400       | mA   |
| Ambient operating temperature        | T <sub>a</sub>  | Minimum | -20         |           |           | °C   |
|                                      |                 | Maximum | 85          |           |           |      |

## Engineering Data

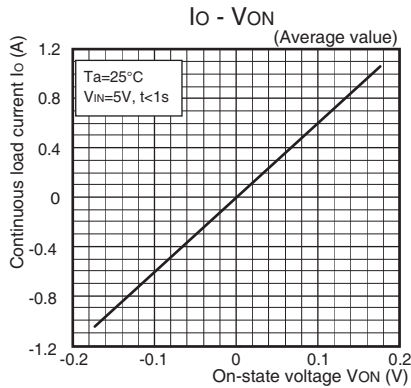
### Continuous load current vs. Ambient temperature G3VM-21UV11



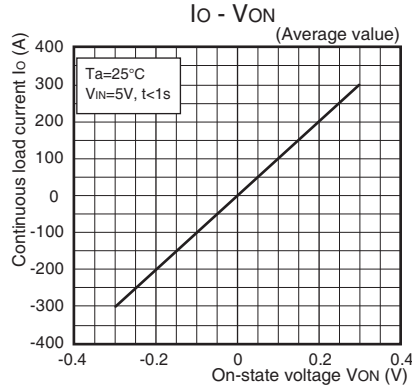
### G3VM-51UV/61UV



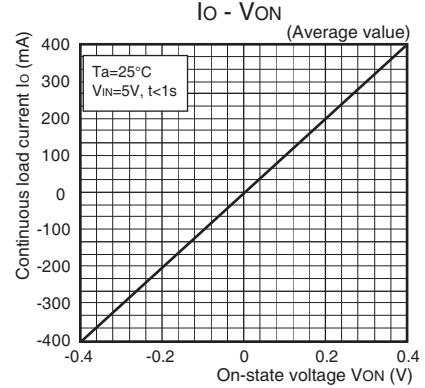
### Continuous load current vs. On-state voltage G3VM-21UV11



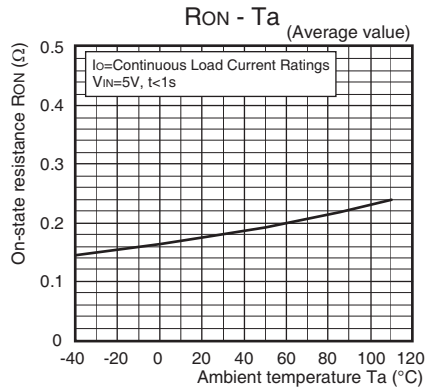
### G3VM-51UV



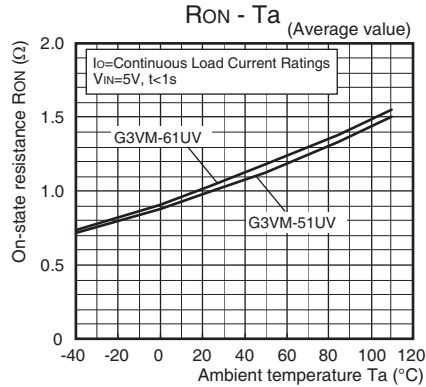
### G3VM-61UV



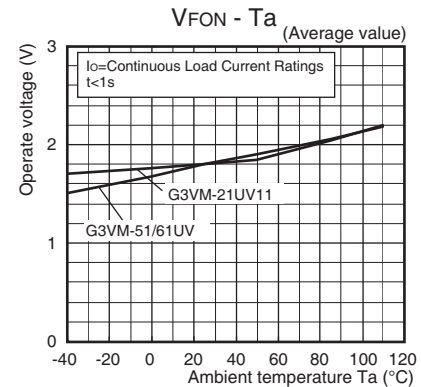
### On-state resistance vs. Ambient temperature G3VM-21UV11



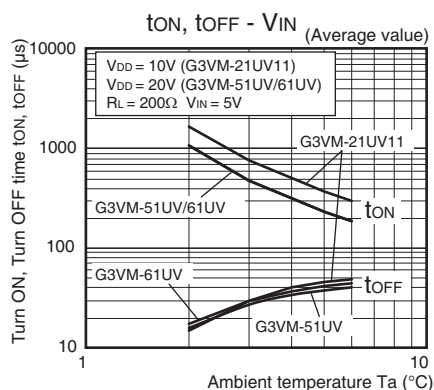
### G3VM-51UV/61UV



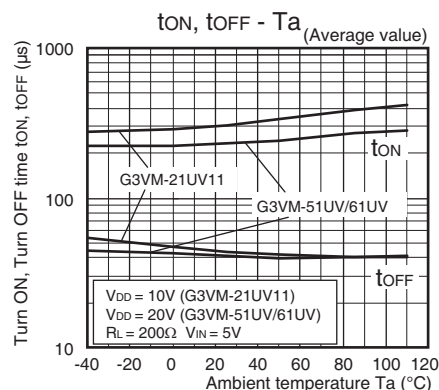
### Operate voltage vs. Ambient temperature G3VM-21UV11/51UV/61UV



### Turn ON, Turn OFF time vs. Input forward voltage



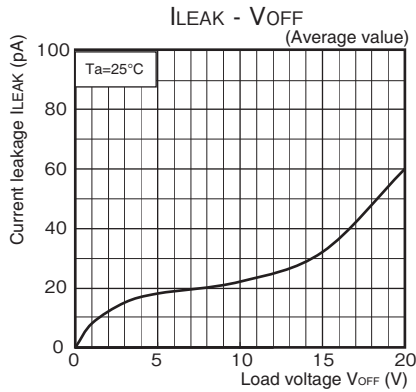
### Turn ON, Turn OFF time vs. Ambient temperature



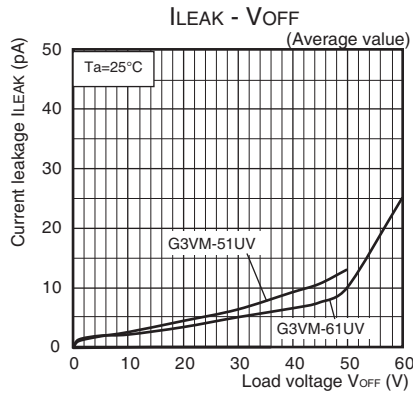
### Engineering Data

#### Current leakage vs. Load voltage

G3VM-21UV11

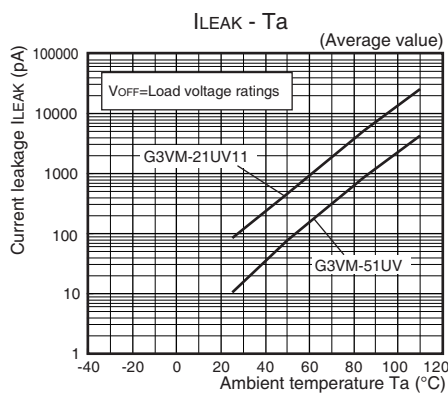


G3VM-51UV/61UV

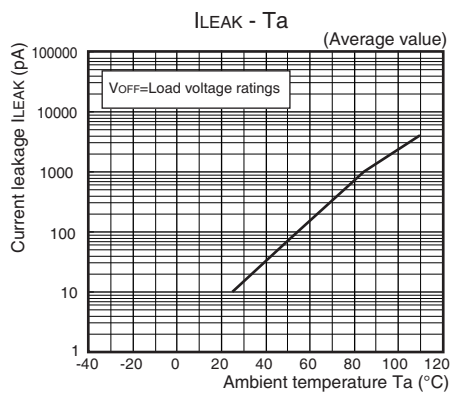


#### Current leakage vs. Ambient temperature

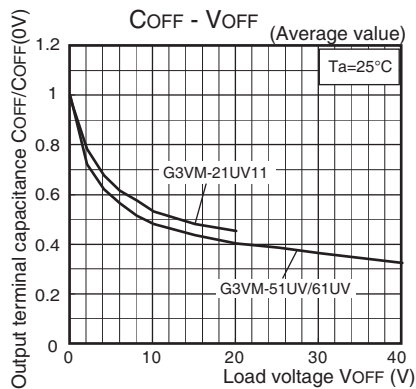
G3VM-21UV/51UV



G3VM-61UV



#### Output terminal capacitance vs. Load voltage

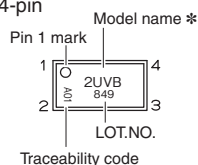


## ■ Appearance / Terminal Arrangement / Internal Connections

### ● Appearance

VSON(R) (Very Small Outline Non-leaded with Resistance)

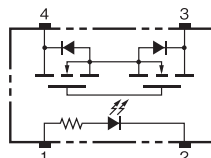
VSON(R) 4-pin



\* Actual model name marking for each model

| Model       | Marking |
|-------------|---------|
| G3VM-21UV11 | 2UVB    |
| G3VM-51UV   | 5UV0    |
| G3VM-61UV   | 6UV0    |

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



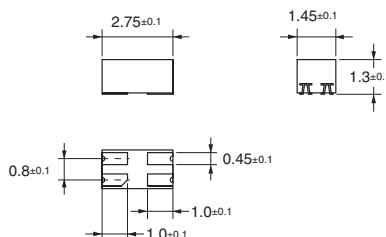
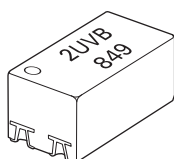
**Note: 1.** The actual product is marked differently from the image shown here.

**Note: 2.** "G3VM" does not appear in the model number on the Relay.

## ■ Dimensions (Unit: mm)

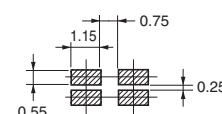
### Surface-mounting Terminals

Weight: 0.01 g



### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



Unless otherwise specified, the dimensional tolerance is  $\pm 0.1$  mm.

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

## ■ Safety Precautions

- Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.

Please check each region's Terms & Conditions by region website.

**OMRON Corporation**  
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