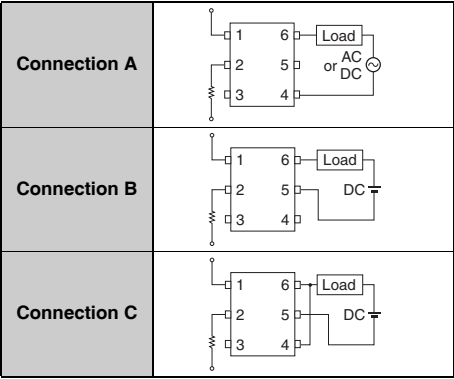


■Absolute Maximum Ratings (Ta = 25°C)

| Item                              |                                         |              | Symbol | G3VM-61A1<br>G3VM-61D1 | G3VM-61B1<br>G3VM-61E1 | G3VM-351A<br>G3VM-351D | G3VM-351B<br>G3VM-351E | G3VM-353A<br>G3VM-353D | G3VM-353B<br>G3VM-353E | G3VM-401A<br>G3VM-401D | G3VM-401B<br>G3VM-401E | Unit  | Measurement<br>conditions                          |
|-----------------------------------|-----------------------------------------|--------------|--------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------|----------------------------------------------------|
| Input                             | LED forward current                     |              | IF     | 50                     |                        |                        |                        |                        |                        |                        |                        | mA    |                                                    |
|                                   | Repetitive peak LED forward current     |              | IFP    | 1                      |                        |                        |                        |                        |                        |                        |                        | A     | 100 μs pulses,<br>100 pps                          |
|                                   | LED forward current reduction rate      |              | ΔIF/°C | -0.5                   |                        |                        |                        |                        |                        |                        |                        | mA/°C | Ta ≥ 25°C                                          |
|                                   | LED reverse voltage                     |              | VR     | 5                      |                        |                        |                        |                        |                        |                        |                        | V     |                                                    |
|                                   | Connection temperature                  |              | TJ     | 125                    |                        |                        |                        |                        |                        |                        |                        | °C    |                                                    |
| Output                            | Load voltage (AC peak/DC)               |              | VOFF   | 60                     |                        | 350                    |                        |                        |                        | 400                    |                        | V     |                                                    |
|                                   | Continuous load current<br>(AC peak/DC) | Connection A | Io     | 500                    |                        | 120                    |                        | 150                    |                        | 120                    |                        | mA    | Connection A: AC peak/DC<br>Connection B and C: DC |
|                                   |                                         | Connection B |        | —                      | 500                    | —                      | 120                    | —                      | 150                    | —                      | 120                    |       |                                                    |
|                                   |                                         | Connection C |        |                        | 1000                   |                        | 240                    |                        | 300                    |                        | 240                    |       |                                                    |
|                                   | ON current reduction rate               | Connection A | ΔIo/°C | -5                     |                        | -1.2                   |                        | -1.5                   |                        | -1.2                   |                        | mA/°C | Ta ≥ 25°C                                          |
|                                   |                                         | Connection B |        | —                      | -5                     | —                      | -1.2                   | —                      | -1.5                   | —                      | -1.2                   |       |                                                    |
|                                   |                                         | Connection C |        |                        | -10                    |                        | -2.4                   |                        | -3                     |                        | -2.4                   |       |                                                    |
|                                   | Pulse ON current                        |              | Iop    | 1.5                    |                        | 0.36                   |                        | 0.45                   |                        | 0.36                   |                        | A     | t=100 ms, Duty=1/10                                |
|                                   | Connection temperature                  |              | TJ     | 125                    |                        |                        |                        |                        |                        |                        |                        | °C    |                                                    |
| Dielectric strength between I/O * |                                         |              | VI-O   | 2,500                  |                        |                        |                        |                        |                        |                        |                        | Vrms  | AC for 1 min                                       |
| Ambient operating temperature     |                                         |              | Ta     | -40 to +85             |                        |                        |                        |                        |                        |                        |                        | °C    | With no icing or condensation                      |
| Ambient storage temperature       |                                         |              | Tstg   | -55 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 as a group on the LED side and all pins as a group on the light-receiving side.

Connection Diagram (DIP 6-pin Relays)



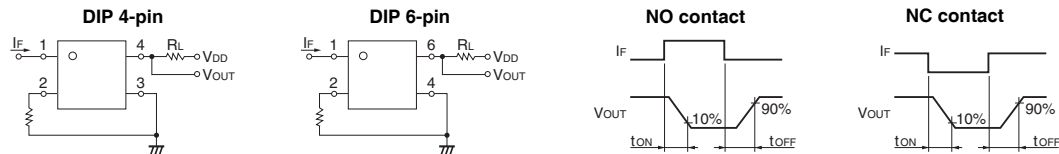
DIP

G3VM-□A□/□D□/□B□/□E□

## ■Electrical Characteristics (Ta = 25°C)

| Item                                                 |                                                 |                                             | Symbol  |                 | G3VM-61A1<br>G3VM-61D1 | G3VM-61B1<br>G3VM-61E1 | G3VM-351A<br>G3VM-351D | G3VM-351B<br>G3VM-351E | G3VM-353A<br>G3VM-353D | G3VM-353B<br>G3VM-353E | G3VM-401A<br>G3VM-401D | G3VM-401B<br>G3VM-401E | Unit                                                                                             | Measurement<br>conditions                                                                                                                                                                                                                                                                       |
|------------------------------------------------------|-------------------------------------------------|---------------------------------------------|---------|-----------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input                                                | LED forward<br>voltage                          | V <sub>F</sub>                              | Minimum |                 | 1.0                    |                        |                        |                        |                        |                        |                        |                        | V                                                                                                | I <sub>F</sub> =10 mA                                                                                                                                                                                                                                                                           |
|                                                      |                                                 |                                             | Typical |                 | 1.15                   |                        |                        |                        |                        |                        |                        |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 |                                             | Maximum |                 | 1.3                    |                        |                        |                        |                        |                        |                        |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      | Reverse<br>current                              | I <sub>R</sub>                              | Maximum |                 | 10                     |                        |                        |                        |                        |                        |                        |                        | μA                                                                                               | V <sub>R</sub> =5 V                                                                                                                                                                                                                                                                             |
|                                                      | Capacitance<br>between<br>terminals             | C <sub>T</sub>                              | Typical |                 | 30                     |                        |                        |                        |                        |                        |                        |                        | pF                                                                                               | V=0, f=1 MHz                                                                                                                                                                                                                                                                                    |
|                                                      | Trigger LED<br>forward<br>current               | I <sub>FT</sub><br>(I <sub>FC</sub> )<br>*2 | Typical |                 | 1.6                    |                        | 1                      |                        |                        |                        |                        |                        | mA                                                                                               | G3VM-353A/353D/<br>353B/353E :<br>I <sub>OFF</sub> =10 μA<br>Others :<br>I <sub>o</sub> =Continuous load<br>current ratings                                                                                                                                                                     |
| Maximum                                              |                                                 |                                             | 3       |                 |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
| Release<br>LED forward<br>current                    | I <sub>FC</sub><br>(I <sub>FT</sub> )<br>*2     | Minimum                                     |         | 0.1             |                        |                        |                        |                        |                        |                        |                        | mA                     | G3VM-353A/353D/<br>353B/353E :<br>I <sub>o</sub> =150 mA<br>Others :<br>I <sub>OFF</sub> =100 μA |                                                                                                                                                                                                                                                                                                 |
| Output                                               | Maximum<br>resistance<br>with output<br>ON      | R <sub>ON</sub>                             | Typical | Connection A    | 1                      |                        | 35<br>(25)             |                        | 15                     |                        | 18                     | 17                     | Ω                                                                                                | G3VM-61A1/61D1/61B1/<br>61E1/351A/351D/351B/<br>351E/401A/401D/401B/<br>401E : I <sub>F</sub> =5 mA,<br>I <sub>o</sub> =Continuous load<br>current ratings<br>Values in parentheses<br>are for t < 1 s.<br>G3VM-353A/353D/<br>353B/353E :<br>I <sub>o</sub> =Continuous load<br>current ratings |
|                                                      |                                                 |                                             |         | Connection B    | —                      | 0.5                    | —                      | 28                     | —                      | 8                      | —                      | 11                     |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 |                                             |         | Connection C    | —                      | 0.25                   | —                      | 14                     | —                      | 4                      | —                      | 6                      |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 |                                             | Maximum | Connection A    | 2                      |                        | 50<br>(35)             |                        | 25                     |                        | 35                     |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 |                                             |         | Connection B    | —                      | 1                      | —                      | 40                     | —                      | 14                     | —                      | 20                     |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 |                                             |         | Connection C    | —                      |                        |                        | —                      |                        | 20                     |                        | 7                      |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      | Current<br>leakage<br>when the<br>relay is open | I <sub>LEAK</sub>                           | Maximum |                 | 1                      |                        |                        |                        |                        |                        |                        |                        | μA                                                                                               | G3VM-353A/353D/<br>353B/353E :<br>I <sub>F</sub> =5mA,<br>V <sub>OFF</sub> =Load voltage ratings<br>Others :<br>V <sub>OFF</sub> =Load voltage ratings                                                                                                                                          |
|                                                      | Capacitance<br>between<br>terminals             | C <sub>OFF</sub>                            | Typical |                 | 130                    |                        | 30                     |                        | 85                     |                        | 40                     |                        | pF                                                                                               | V=0, f=1 MHz                                                                                                                                                                                                                                                                                    |
|                                                      | Capacitance<br>between I/O<br>terminals         | C <sub>I-O</sub>                            | Typical |                 | 0.8                    |                        |                        |                        |                        |                        |                        |                        | pF                                                                                               | f=1 MHz, V <sub>S</sub> =0 V                                                                                                                                                                                                                                                                    |
| Insulation<br>resistance<br>between I/O<br>terminals | R <sub>I-O</sub>                                | Minimum                                     |         | 1000            |                        |                        |                        |                        |                        |                        |                        | MΩ                     | V <sub>I-O</sub> =500 VDC,<br>R <sub>oH</sub> ≤60%                                               |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 | Typical                                     |         | 10 <sup>8</sup> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
| Turn-ON time                                         | t <sub>ON</sub>                                 | Typical                                     |         | 0.8             |                        | 0.3                    |                        | 0.1                    |                        | —                      |                        | 0.3                    | ms                                                                                               | I <sub>F</sub> =5 mA, R <sub>L</sub> =200 Ω,<br>V <sub>DD</sub> =10 V *1                                                                                                                                                                                                                        |
|                                                      |                                                 | Maximum                                     |         | 2               |                        | —                      |                        | 1                      |                        | —                      |                        | 0.1                    |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
| Turn-OFF time                                        | t <sub>OFF</sub>                                | Typical                                     |         | 0.1             |                        |                        |                        | 1                      |                        | —                      |                        | 0.1                    |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
|                                                      |                                                 | Maximum                                     |         | 0.5             |                        | 1                      |                        | 3                      |                        | 1                      |                        |                        |                                                                                                  |                                                                                                                                                                                                                                                                                                 |

\*1. Turn-ON and Turn-OFF Times



\*2. These values are for Relays with NC contacts

## ■Recommended Operating Conditions

For usage with high 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.

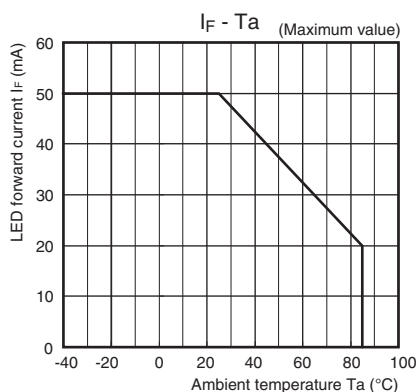
| Item                                    |                 |         | Symbol |  | G3VM-61A1<br>G3VM-61D1 | G3VM-61B1<br>G3VM-61E1 | G3VM-351A<br>G3VM-351D | G3VM-351B<br>G3VM-351E | G3VM-353A<br>G3VM-353D | G3VM-353B<br>G3VM-353E | G3VM-401A<br>G3VM-401D | G3VM-401B<br>G3VM-401E | Unit |    |
|-----------------------------------------|-----------------|---------|--------|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------|----|
| Load voltage<br>(AC peak/DC)            | V <sub>DD</sub> | Maximum | 48     |  |                        | 280                    |                        |                        |                        |                        |                        | 320                    |      | V  |
| Operating LED<br>forward current        | I <sub>F</sub>  | Minimum | 5      |  |                        |                        |                        |                        |                        |                        |                        |                        |      | mA |
|                                         |                 | Typical | 7.5    |  |                        | 10                     |                        | —                      |                        | 7.5                    |                        |                        |      |    |
|                                         |                 | Maximum | 25     |  |                        |                        |                        |                        |                        |                        |                        |                        |      |    |
| Continuous load<br>current (AC peak/DC) | I <sub>O</sub>  | Maximum | 500    |  |                        | 100                    |                        |                        | 150                    |                        |                        | 100                    | 120  | °C |
| Ambient operating<br>temperature        | T <sub>a</sub>  | Minimum | -20    |  |                        |                        |                        |                        |                        |                        |                        |                        |      |    |
|                                         |                 | Maximum | 65     |  |                        |                        |                        |                        |                        |                        |                        |                        |      |    |

## ■Spacing and Insulation

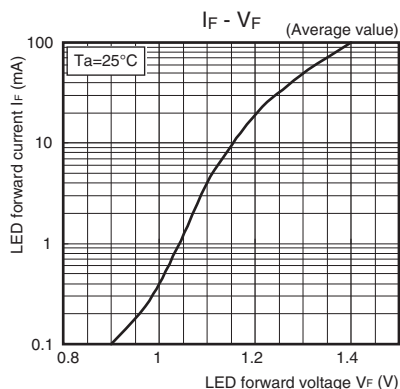
| Item                         | Minimum | Unit |
|------------------------------|---------|------|
| Creepage distances           | 7.0     | mm   |
| Clearance distances          | 7.0     |      |
| Internal isolation thickness | 0.4     |      |

## ■Engineering Data

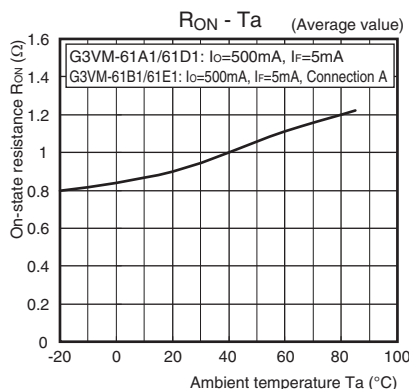
### ●LED forward current vs. Ambient temperature



### ●LED forward current vs. LED forward voltage

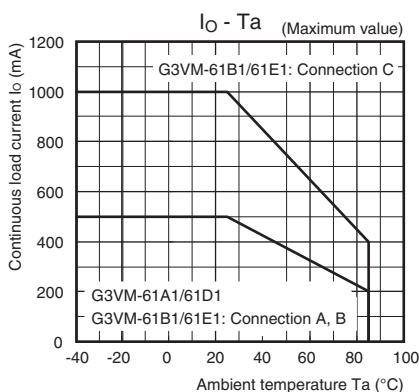


### ●On-state resistance vs. Ambient temperature



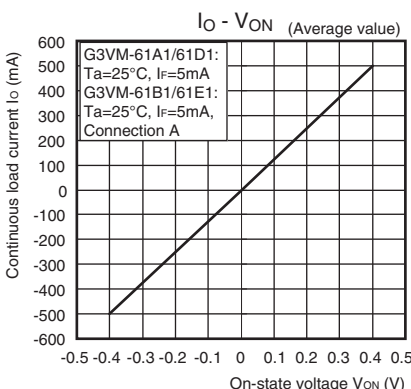
### ●Continuous load current vs. Ambient temperature

G3VM-61A1/61D1/61B1/61E1

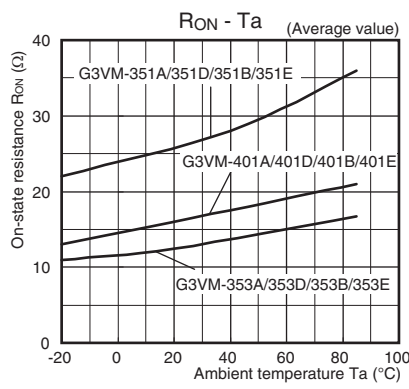


### ●Continuous load current vs. On-state voltage

G3VM-61A1/61D1/61B1/61E1

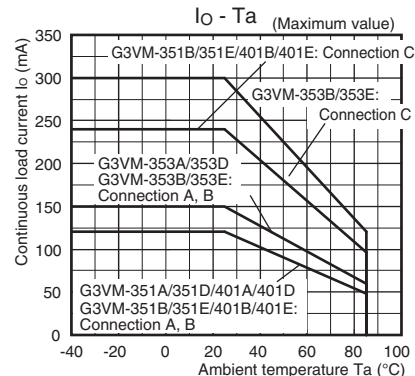


G3VM-351A/351D/351B/351E  
G3VM-353A/353D/353B/353E  
G3VM-401A/401D/401B/401E

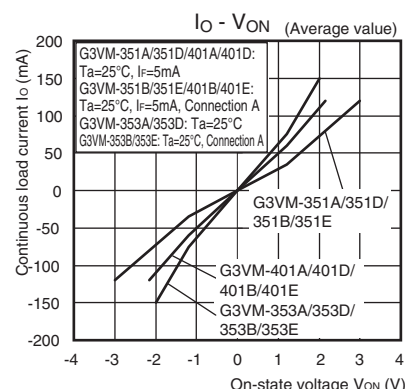


G3VM-351A/351D/401A/401D:  
Io=120mA, If=5mA, t<1s  
G3VM-351B/351E/401B/401E:  
Io=120mA, If=5mA, t<1s, Connection A  
G3VM-353A/353D: Io=150mA, t<1s  
G3VM-353B/353E: Io=150mA, t<1s, Connection A

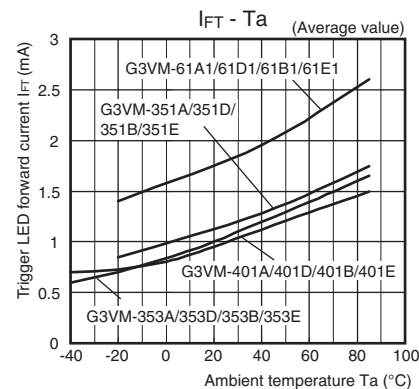
G3VM-351A/351D/351B/351E  
G3VM-353A/353D/353B/353E  
G3VM-401A/401D/401B/401E



G3VM-351A/351D/351B/351E  
G3VM-353A/353D/353B/353E  
G3VM-401A/401D/401B/401E



### ●Trigger LED forward current vs. Ambient temperature



G3VM-61A1/61D1/351A/351D/401A/401D:  
Io=Continuous Load Current Ratings, t<1s  
G3VM-61B1/61E1/351B/351E/401B/401E:  
Io=Continuous Load Current Ratings, t<1s, Connection A  
G3VM-353A/353D: Io=150mA, t<1s  
G3VM-353B/353E: Io=150mA, t<1s, Connection A

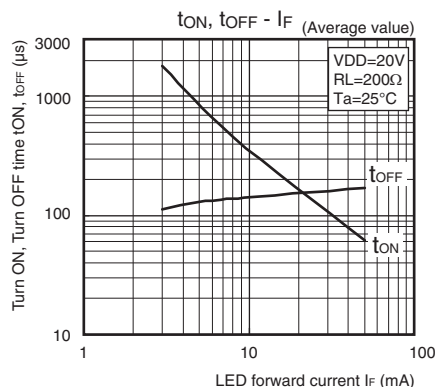
DIP

G3VM-□A□/□D□/□B□/□E□

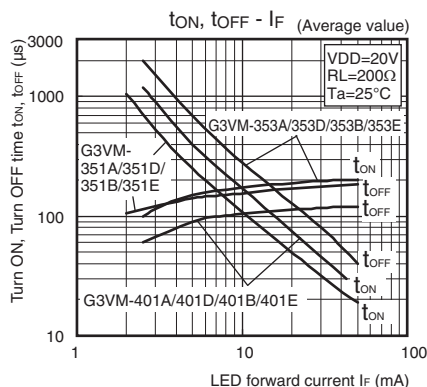
## Engineering Data

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

G3VM-61A1/61D1/61B1/61E1

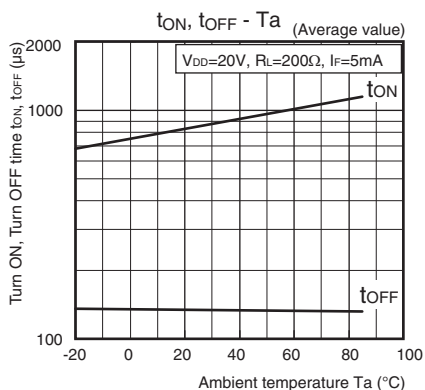


### G3VM-351A/351D/351B/351E G3VM-353A/353D/353B/353E G3VM-401A/401D/401B/401E

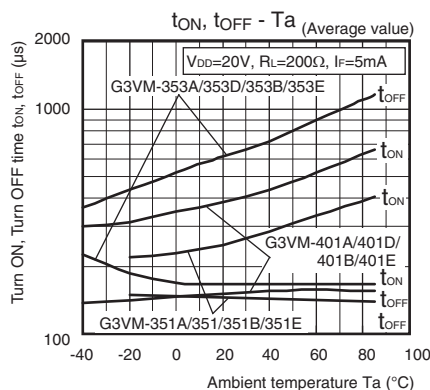


### ● Turn ON, Turn OFF time vs. Ambient temperature

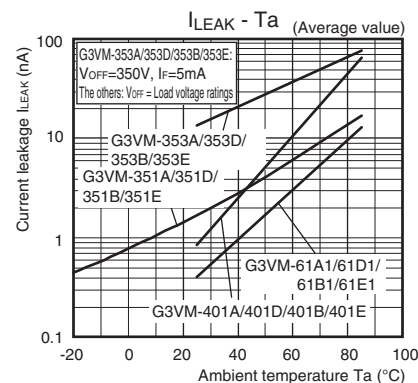
G3VM-61A1/61D1/61B1/61E1



### G3VM-351A/351D/351B/351E G3VM-353A/353D/353B/353E G3VM-401A/401D/401B/401E



### ● Current leakage vs. Ambient temperature

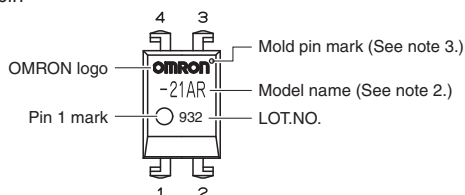


## Appearance / Terminal Arrangement / Internal Connections

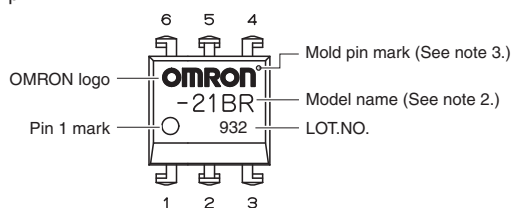
### ● Appearance

#### DIP (Dual Inline Package)

DIP 4-pin

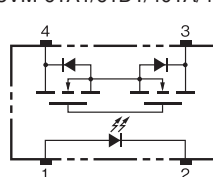


DIP 6-pin

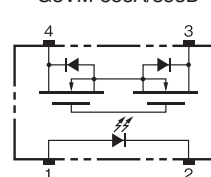


### ● Terminal Arrangement/Internal Connections (Top View)

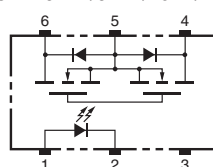
G3VM-61A1/61D1/401A/401D



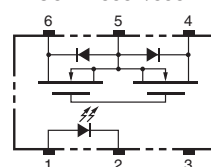
G3VM-353A/353D



G3VM-61B1/61E1/401B/401E



G3VM-353B/353E



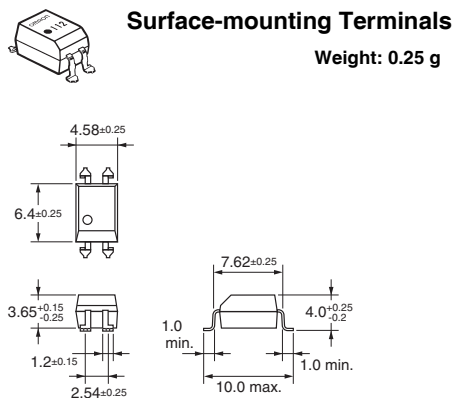
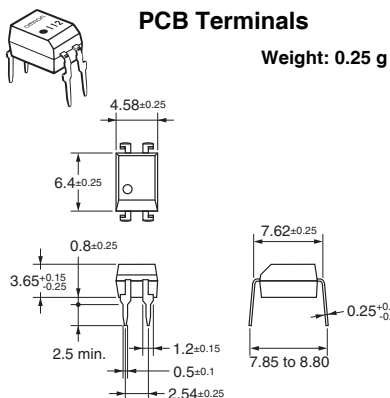
**Note:** 1. The actual product is marked differently from the image shown here.

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

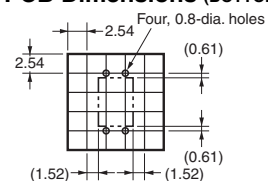
**Note:** 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

## ■Dimensions (Unit: mm)

### DIP4

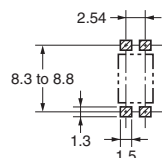


### PCB Dimensions (BOTTOM VIEW)



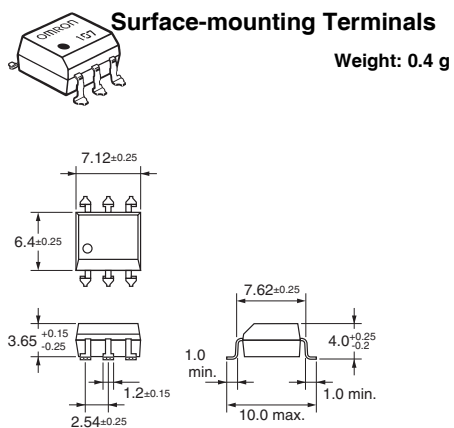
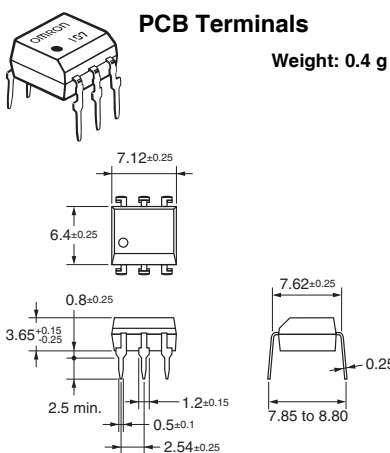
### Actual Mounting Pad Dimensions

(Recommended Value, Top View)

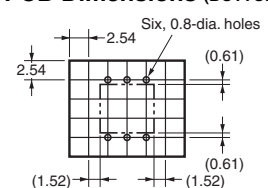


**Note:** The actual product is marked differently from the image shown here.

### DIP6

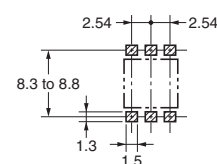


### PCB Dimensions (BOTTOM VIEW)



### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

## ■Approved Standards

UL recognized

| Model     |           |           |           | Approved Standards | Contact form | File No. |
|-----------|-----------|-----------|-----------|--------------------|--------------|----------|
| G3VM-61A1 | G3VM-61D1 | G3VM-61B1 | G3VM-61E1 | UL (recognized)    | 1a (SPST-NO) | E80555   |
| G3VM-351A | G3VM-351D | G3VM-351B | G3VM-351E |                    |              |          |
| G3VM-401A | G3VM-401D | G3VM-401B | G3VM-401E |                    |              |          |
| G3VM-353A | G3VM-353D | G3VM-353B | G3VM-353E |                    | 1b (SPST-NC) |          |

Models Certified by SEMKO for EN/IEC Standards

| Model                  |  | Approved Standards             | Contact form | File No.     |
|------------------------|--|--------------------------------|--------------|--------------|
| G3VM-351A<br>G3VM-351D |  | EN62368-1<br>(SEMKO certified) | 1a (SPST-NO) | SE-S-2001018 |

## ■Safety Precautions

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

DIP

G3VM-□A□/□D□/□B□/□E□

DIP

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**OMRON Corporation**  
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