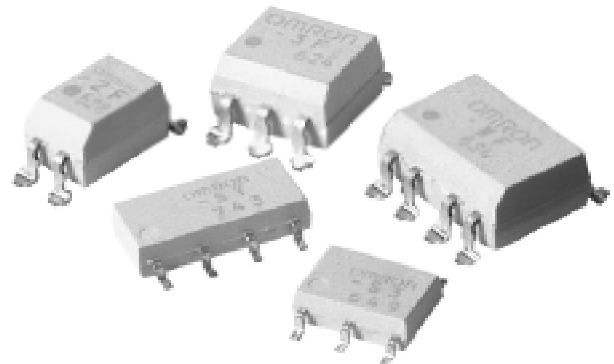


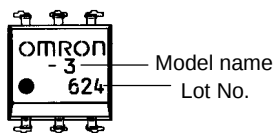
### MOS FET Relay Series

- Output voltage of 350–400 V
- High-dielectric, 5000 VAC version available
- Available in PCB through-hole, SMT gullwing, and SOP terminal packages
- Ideal for Telecom and Data Communications
- Current limiting option also available



### Ordering Information

Note: "G3VM" is not printed on the actual product



| Contact form          | Terminals     | Load voltage<br>(peak value) | Dielectric<br>strength<br>(1 minute) | Number of<br>terminals | Part Number | Ordering Part<br>Number |
|-----------------------|---------------|------------------------------|--------------------------------------|------------------------|-------------|-------------------------|
| 1 Form A<br>(SPST-NO) | PCB terminals | 350V                         | 2,500VAC                             | 4                      | G3VM-2      | G3VM-2-S                |
|                       |               |                              |                                      | 6                      | G3VM-3      | G3VM-3-S                |
|                       |               |                              |                                      | 6                      | G3VM-3L*    | G3VM-3L-S               |
|                       |               | 60V                          |                                      | 6                      | G3VM-V      | G3VM-V-S                |
|                       | SMT gullwing  | 400V                         | 5,000VAC                             | 6                      | G3VM-6      | G3VM-6-S                |
|                       |               | 350V                         | 2,500VAC                             | 4                      | G3VM-2F     | G3VM-2F-S               |
|                       |               |                              |                                      | 6                      | G3VM-3F     | G3VM-3F-S               |
|                       |               |                              |                                      | 6                      | G3VM-3FL*   | G3VM-3FL-S              |
|                       |               | 60V                          |                                      | 4                      | G3VM-VF     | G3VM-VF-S               |
|                       |               | 350V                         | 5,000VAC                             | 6                      | G3VM-6F     | G3VM-6F-S               |
|                       |               | 200V                         | 1,500VAC                             | 4                      | G3VM-S5     | G3VM-S5-S               |
|                       |               | 350V                         |                                      | 4                      | G3VM-S2     | G3VM-S2-S               |
|                       | SOP           |                              | 2,500VAC                             | 6                      | G3VM-S3     | G3VM-S3-S               |
|                       |               |                              |                                      |                        |             |                         |
| 2 Form A<br>(DPST-NO) | PCB terminals | 350V                         | 2,500VAC                             | 8                      | G3VM-W      | G3VM-W-S                |
|                       | SMT gullwing  | 350V                         | 2,500VAC                             | 8                      | G3VM-WF     | G3VM-WF-S               |
|                       | SOP           | 60V                          | 1,500VAC                             | 8                      | G3VM-SY     | G3VM-SY-S               |
|                       |               | 350V                         |                                      | 8                      | G3VM-SW     | G3VM-SW-S               |
|                       |               |                              |                                      |                        |             |                         |

Note: To order: specify the part number as shown under "Ordering part number"

Note: "\*" represents model with current limiting option. For more information contact your local Omron representative

# Specifications

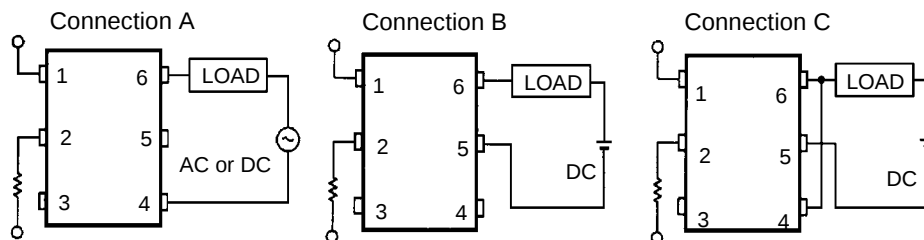
## ■ MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

G3VM-3/3F, G3VM-3L/3FL, G3VM-6/6F, G3VM-S3, G3VM-V/VF

Maximum ratings (at 23°C unless otherwise stated)

| Part number           |                                             |                         |                                  | G3VM-3/3F        | G3VM-3L/3FL      | G3VM-6/6F        | G3VM-S3         | G3VM-V/VF        |
|-----------------------|---------------------------------------------|-------------------------|----------------------------------|------------------|------------------|------------------|-----------------|------------------|
| Contact form          |                                             |                         |                                  | 1 Form A         | 1 Form A         | 1 Form A         | 1 Form A        | 1 Form A         |
| Parameter             |                                             | Comments and conditions |                                  |                  |                  |                  |                 |                  |
| Package type          |                                             |                         |                                  | 6 PIN<br>PCB/SMT | 6 PIN<br>PCB/SMT | 6 PIN<br>PCB/SMT | 6 PIN<br>SOP    | 6 PIN<br>PCB/SMT |
| Input (LED)           | LED forward current                         | ---                     |                                  | 50 mA            | 50 mA            | 50 mA            | 50 mA           | 50 mA            |
|                       | Peak forward current                        | 100μsec pulse           |                                  | 1A               | 1A               | 1A               | 1A              | 1A               |
|                       | LED reverse voltage                         | ---                     |                                  | 5V               | 5V               | 5V               | 5V              | 5V               |
| Output (Detector)     | Load voltage                                | Peak AC/DC              |                                  | 350V             | 350V             | 400V             | 350V            | 60V              |
|                       | Continuous load current (I <sub>max</sub> ) | see fig. 1              | Connection A (I <sub>max</sub> ) | 120mA            | 120mA            | 150mA            | 120mA           | 300mA            |
|                       |                                             |                         | Connection B (I <sub>max</sub> ) | 120mA            | ---              | 200mA            | 120mA           | 450mA            |
|                       |                                             |                         | Connection C (I <sub>max</sub> ) | 160mA            | ---              | 300mA            | 160mA           | 600mA            |
| I/O isolation voltage |                                             | AC for 1 minute         | min.                             | 2,500V           | 2,500V           | 5,000V           | 1,500V          | 2,500V           |
|                       |                                             | AC for 1 second         | typ.                             | 5,000V           | 5,000V           | 10,000V          | 3,000V          | 5,000V           |
|                       |                                             | DC for 1 minute         | typ.                             | 5,000V           | 5,000V           | 10,000V          | 3,000V          | 5,000V           |
| Temperature limits    | Operating temp. range                       |                         |                                  | -40°C to +85°C   | -40°C to +85°C   | -40°C to +85°C   | -40°C to +85°C  | -40°C to +85°C   |
|                       | Storage temp. range                         |                         |                                  | -55°C to +125°C  | -55°C to +125°C  | -55°C to +125°C  | -55°C to +125°C | -55°C to +125°C  |

Fig. 1 Circuit connections for G3VM-3/3F, G3VM-3L/3FL, G3VM-6/6F, G3VM-S3 and G3VM-V/VF

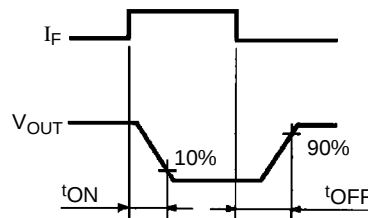
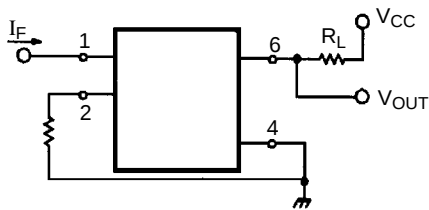


## Electrical characteristics (at 23°C unless otherwise stated)

| Part number               |                                                       |                                                 |                                                                     |       | G3VM-3/3F            | G3VM-3L/3FL          | G3VM-6/6F            | G3VM-S3              | G3VM-V/VF            |
|---------------------------|-------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------|-------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Parameter                 |                                                       | Comments and conditions                         |                                                                     |       |                      |                      |                      |                      |                      |
| Input (LED)               | Trigger LED current (LED operate current) (See Note.) | Typical                                         |                                                                     |       | 1.0mA                | 1.0mA                | 1.0mA                | 1.0mA                | 1.0mA                |
|                           |                                                       | Maximum                                         |                                                                     |       | 3.0mA                | 3.0mA                | 5.0mA                | 3.0mA                | 5.0mA                |
|                           | Forward voltage                                       | I <sub>F</sub> =10mA                            | min.                                                                | 1.0V  | 1.0V                 | 1.0V                 | 1.0V                 | 1.0V                 |                      |
|                           |                                                       |                                                 | typ.                                                                | 1.15V | 1.15V                | 1.15V                | 1.15V                | 1.15V                |                      |
|                           |                                                       |                                                 | max.                                                                | 1.3V  | 1.3V                 | 1.3V                 | 1.3V                 | 1.3V                 |                      |
| Input capacitance         | V=0, freq.=1MHZ                                       |                                                 |                                                                     | 30pF  | 30pF                 | 30pF                 | 30pF                 | 30pF                 |                      |
| Output (Detector)         | On resistance (See Note.)                             | Connection A                                    | I <sub>ON</sub> =I <sub>MAX</sub><br>I <sub>F</sub> =5mA            | typ.  | 22Ω                  | 22Ω                  | 8Ω                   | 22Ω                  | 1.4Ω                 |
|                           |                                                       |                                                 |                                                                     | max.  | 35Ω                  | 35Ω                  | 12Ω                  | 35Ω                  | 2Ω                   |
|                           |                                                       |                                                 | I <sub>ON</sub> =20mA<br>to I <sub>MAX</sub><br>I <sub>F</sub> =5mA | typ.  | 26Ω                  | 26Ω                  | —                    | 26Ω                  | —                    |
|                           |                                                       |                                                 |                                                                     | max.  | 40Ω                  | 40Ω                  | —                    | 40Ω                  | —                    |
|                           |                                                       | Connection B                                    | I <sub>ON</sub> =I <sub>MAX</sub><br>I <sub>F</sub> =5mA            | typ.  | 13Ω                  | 13Ω                  | 4.0Ω                 | —                    | 0.7Ω                 |
|                           |                                                       |                                                 |                                                                     | max.  | 23Ω                  | 23Ω                  | 6.0Ω                 | —                    | 1.0Ω                 |
|                           |                                                       | Connection C                                    | I <sub>ON</sub> =I <sub>MAX</sub><br>I <sub>F</sub> =5mA            | typ.  | 7.0Ω                 | 7.0Ω                 | 2.0Ω                 | —                    | 0.35Ω                |
|                           |                                                       |                                                 |                                                                     | max.  | 10Ω                  | 10Ω                  | 3.0Ω                 | —                    | 0.5Ω                 |
|                           | Output capacitance                                    | Typical                                         |                                                                     |       | 40pF                 | 40pF                 | 40pF                 | 40pF                 | 40pF                 |
| Off state leakage current | Maximum                                               |                                                 |                                                                     | 1.0μA | 1.0μA                | 1.0μA                | 1.0μA                | 1.0μA                |                      |
| Transfer characteristics  | Turn-on time                                          | See figure 2                                    |                                                                     | max.  | 1.0ms                | 1.0ms                | 1.0ms                | 1.0ms                | 2.0ms                |
|                           | max.                                                  |                                                 |                                                                     | 1.0ms | 1.0ms                | 1.0ms                | 1.0ms                | 2.0ms                |                      |
|                           | I/O capacitance                                       | Typical                                         |                                                                     |       | 0.8pF                | 0.8pF                | 0.8pF                | 0.8pF                | 0.8pF                |
|                           | Initial I/O insulation resistance                     | Minimum                                         |                                                                     |       | 5x10 <sup>10</sup> Ω | 5x10 <sup>10</sup> Ω | 5x10 <sup>10</sup> Ω | 5x10 <sup>10</sup> Ω | 5x10 <sup>10</sup> Ω |
|                           | Load current limiting                                 | I <sub>F</sub> =5mA, V <sub>DD</sub> =5V, t=5ms | min.                                                                | ---   | 150mA                | ---                  | ---                  | ---                  |                      |
|                           |                                                       |                                                 | max.                                                                | ---   | 300mA                | ---                  | ---                  | ---                  |                      |

Note:  $I_{ON}=120\text{mA}$  for G3VM-3/3F,  $I_{ON}=120\text{mA}$  for G3VM-3L/3FL,  $I_{ON}=150\text{mA}$  for G3VM-6/6F,  $I_{ON}=120\text{mA}$  for G3VM-S3,  $I_{ON}=300\text{mA}$  for G3VM-V/VF

Fig. 2 Timing test circuit for G3VM-3/3F, G3VM-3L/3FL, G3VM-6/6F, G3VM-S3 and G3VM-V/VF



Note:  $R_L=200\Omega$ ,  $V_{CC}=20\text{V}$ ,  $I_F=5\text{mA}$

# ■ MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (CONTINUED)

## G3VM-2/2F, G3VM-S2, G3VM-S5

Maximum ratings (at 23°C unless otherwise stated)

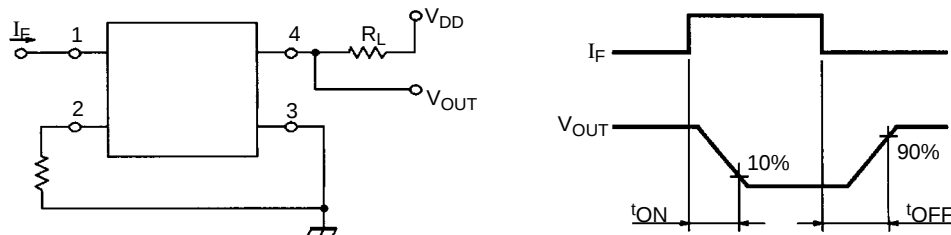
|                       |                         |                             |      |                 |                 |                 |
|-----------------------|-------------------------|-----------------------------|------|-----------------|-----------------|-----------------|
| Part number           |                         |                             |      | G3VM-2/2F       | G3VM-S2         | G3VM-S5         |
| Contact form          |                         |                             |      | 1 Form A        | 1 Form A        | 1 Form A        |
| Parameter             |                         | Comments and conditions     |      |                 |                 |                 |
| Package type          |                         |                             |      | 4 PIN PCB/SMT   | 4 PIN SOP       | 4 PIN SOP       |
| Input (LED)           | LED forward current     | ---                         |      | 50 mA           | 50 mA           | 50 mA           |
|                       | Peak forward current    | 100μsec pulse               |      | 1A              | 1A              | 1A              |
|                       | LED reverse voltage     | ---                         |      | 5V              | 5V              | 5V              |
| Output (Detector)     | Load voltage            | Peak AC/DC                  |      | 350V            | 350V            | 200V            |
|                       | Continuous load current | I <sub>MAX</sub>            |      | 120mA           | 120mA           | 150mA           |
| I/O isolation voltage |                         | AC for 1 minute             | min. | 2,500V          | 1,500V          | 1,500V          |
|                       |                         | AC for 1 second             | typ. | 5,000V          | 3,000V          | 3,000V          |
|                       |                         | DC for 1 minute             | typ. | 5,000V          | 3,000V          | 3,000V          |
| Temperature limits    | Operating temp. range   | No freezing or condensation |      | -40°C to +85°C  | -40°C to +85°C  | -40°C to +85°C  |
|                       | Storage temp. range     |                             |      | -55°C to +125°C | -55°C to +125°C | -55°C to +125°C |

Electrical characteristics (at 23°C unless otherwise stated)

| Part number              |                                                       |                                         | G3VM-2/2F                 | G3VM-S2                   | G3VM-S5                   |
|--------------------------|-------------------------------------------------------|-----------------------------------------|---------------------------|---------------------------|---------------------------|
| Parameter                | Comments and conditions                               |                                         |                           |                           |                           |
| Input (LED)              | Trigger LED current (LED operate current) (See Note.) | $I_{ON}=I_{MAX}$                        | typ.                      | 2.0mA                     | 1.0mA                     |
|                          |                                                       |                                         | max.                      | 3.0mA                     | 3.0mA                     |
|                          | Forward voltage                                       | $I_F=10mA$                              | min.                      | 1.0V                      | 1.0V                      |
|                          |                                                       |                                         | typ.                      | 1.15V                     | 1.15V                     |
|                          |                                                       |                                         | max.                      | 1.3V                      | 1.3V                      |
|                          | Input capacitance                                     | $V=0$ , freq.=1MHZ                      | 30pF                      | 30pF                      | 30pF                      |
| Output (Detector)        | On resistance (See Note.)                             | $I_{ON}=I_{MAX}$<br>$I_F=5mA$           | typ.                      | 22Ω                       | 5Ω                        |
|                          |                                                       |                                         | max.                      | 35Ω                       | 8Ω                        |
|                          |                                                       | $I_{ON}=20mA$ to $I_{MAX}$<br>$I_F=5mA$ | typ.                      | 26Ω                       | ---                       |
|                          |                                                       |                                         | max.                      | 40Ω                       | ---                       |
|                          | Output capacitance                                    | Typical                                 | 40pF                      | 40pF                      | 40pF                      |
|                          | Off state leakage current                             | Maximum                                 | 1.0μA                     | 1.0μA                     | 1.0μA                     |
| Transfer characteristics | Turn-on time                                          | See figure 3                            | max.                      | 1.0ms                     | 1.5ms                     |
|                          | Turn-off time                                         |                                         | max.                      | 1.0ms                     | 1.0ms                     |
|                          | I/O capacitance                                       | Typical                                 | 0.8pF                     | 0.8pF                     | 0.8pF                     |
|                          | Initial I/O insulation resistance                     | Minimum                                 | $5 \times 10^{10} \Omega$ | $5 \times 10^{10} \Omega$ | $5 \times 10^{10} \Omega$ |

Note:  $I_{ON}=120mA$  for G3VM-2/2F and G3VM-S2,  $I_{ON}=150mA$  for G3VM-S5

Fig. 3 Timing test circuit for G3VM-2/2F, G3VM-S2, and G3VM-S5



Note:  $R_L=200\Omega$ ,  $V_{DD}=20V$ ,  $I_F=5mA$

## ■ MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (CONTINUED)

### G3VM-W/WF, G3VM-SW, G3VM-SY

Maximum ratings (at 23°C unless otherwise stated)

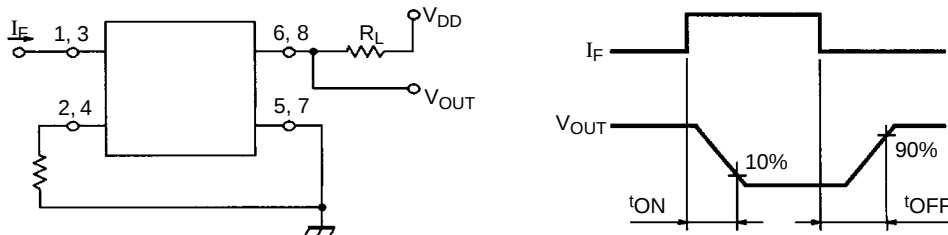
| Part number           |                                             |                             |      | G3VM-W/WF       | G3VM-SW         | G3VM-SY         |
|-----------------------|---------------------------------------------|-----------------------------|------|-----------------|-----------------|-----------------|
| Contact form          |                                             |                             |      | 2 Form A        | 2 Form A        | 2 Form A        |
| Parameter             |                                             | Comments and conditions     |      |                 |                 |                 |
| Package type          |                                             |                             |      | 8 PIN PCB/SMT   | 8 PIN SOP       | 8 PIN SOP       |
| Input (LED)           | LED forward current                         | ---                         |      | 50 mA           | 50 mA           | 50 mA           |
|                       | Peak forward current                        | 100μsec pulse               |      | 1A              | 1A              | 1A              |
|                       | LED reverse voltage                         | ---                         |      | 5V              | 5V              | 5V              |
| Output (Detector)     | Load voltage                                | Peak AC/DC                  |      | 350V            | 350V            | 60V             |
|                       | Continuous load current (I <sub>MAX</sub> ) | One channel                 |      | 120mA           | 120mA           | 300mA           |
|                       |                                             | Both channels               |      | 100mA           | 100mA           | 200mA           |
| I/O isolation voltage |                                             | AC for 1 minute             | min. | 2,500V          | 1,500V          | 1,500V          |
|                       |                                             | AC for 1 second             | typ. | 5,000V          | 3,000V          | 3,000V          |
|                       |                                             | DC for 1 minute             | typ. | 5,000V          | 3,000V          | 3,000V          |
| Temperature limits    | Operating temp. range                       | No freezing or condensation |      | -40°C to +85°C  | -40°C to +85°C  | -40°C to +85°C  |
|                       | Storage temp. range                         |                             |      | -55°C to +125°C | -55°C to +125°C | -55°C to +125°C |

Electrical characteristics (at 23°C unless otherwise stated)

| Part number              |                                                       |                                         | G3VM-W/WF                 | G3VM-SW                   | G3VM-SY                   |
|--------------------------|-------------------------------------------------------|-----------------------------------------|---------------------------|---------------------------|---------------------------|
| Parameter                | Comments and conditions                               |                                         |                           |                           |                           |
| Input (LED)              | Trigger LED current (LED operate current) (See Note.) | $I_{ON}=I_{MAX}$                        | typ.                      | 2.0mA                     | 1.0mA                     |
|                          |                                                       |                                         | max.                      | 3.0mA                     | 3.0mA                     |
|                          | Forward voltage                                       | $I_F=10mA$                              | min.                      | 1.0V                      | 1.0V                      |
|                          |                                                       |                                         | typ.                      | 1.15V                     | 1.15V                     |
|                          |                                                       |                                         | max.                      | 1.3V                      | 1.3V                      |
|                          | Input capacitance                                     | $V=0$ , freq.=1MHZ                      | 30pF                      | 30pF                      | 30pF                      |
| Output (Detector)        | On resistance (See Note.)                             | $I_{ON}=I_{MAX}$<br>$I_F=5mA$           | typ.                      | 22Ω                       | 22Ω                       |
|                          |                                                       |                                         | max.                      | 35Ω                       | 35Ω                       |
|                          |                                                       | $I_{ON}=20mA$ to $I_{MAX}$<br>$I_F=5mA$ | typ.                      | 26Ω                       | ---                       |
|                          |                                                       |                                         | max.                      | 40Ω                       | ---                       |
|                          | Output capacitance                                    | Typical                                 | 40pF                      | 40pF                      | 40pF                      |
|                          | Off state leakage current                             | Maximum                                 | 1.0μA                     | 1.0μA                     | 1.0μA                     |
| Transfer characteristics | Turn-on time                                          | See figure 4                            | max.                      | 1.0ms                     | 1.0ms                     |
|                          | Turn-off time                                         |                                         | max.                      | 1.0ms                     | 1.0ms                     |
|                          | I/O capacitance                                       | Typical                                 | 0.8pF                     | 0.8pF                     | 0.8pF                     |
|                          | Initial I/O insulation resistance                     | Minimum                                 | $5 \times 10^{10} \Omega$ | $5 \times 10^{10} \Omega$ | $5 \times 10^{10} \Omega$ |

Note:  $I_{ON}=120mA$  for G3VM-W/WF and G3VM-SW,  $I_{ON}=300mA$  for G3VM-SY

Fig. 4 Timing test circuit for G3VM-W/WF, G3VM-SW, and G3VM-SY



Note:  $R_L=200\Omega$ ,  $V_{DD}=20V$ ,  $I_F=5mA$

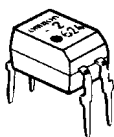
# Dimensions

Unit: mm (inch)

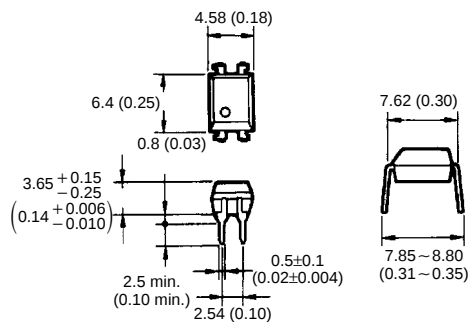
Tolerance is  $\pm 0.25$  (0.010) unless otherwise specified.

## RELAYS

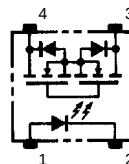
### G3VM-2



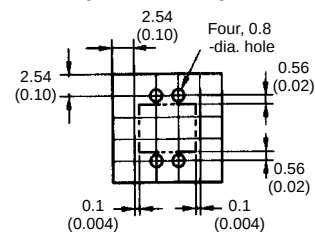
Note: "G3VM" is not printed on the actual product.



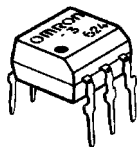
Terminal Arrangement/  
Internal Connections  
(Top View)



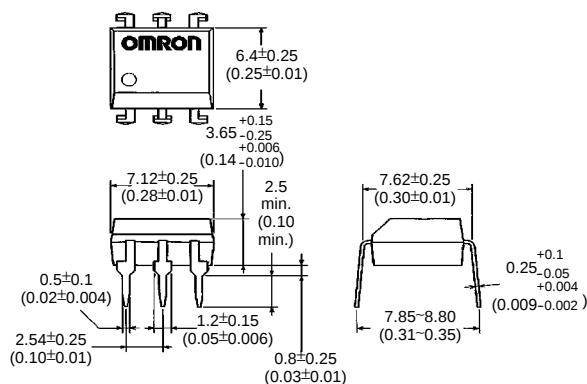
PCB Dimensions  
(Bottom View)



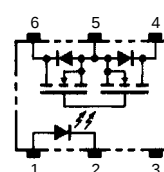
### G3VM-3, G3VM-3L, G3VM-V



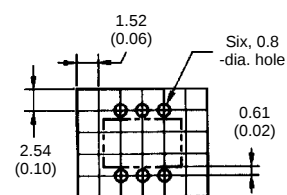
Note: "G3VM" is not printed on the actual product.



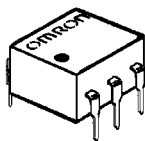
Terminal Arrangement/  
Internal Connections  
(Top View)



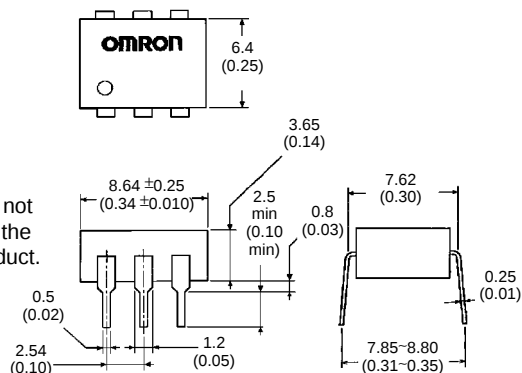
PCB Dimensions  
(Bottom View)



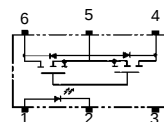
### G3VM-6



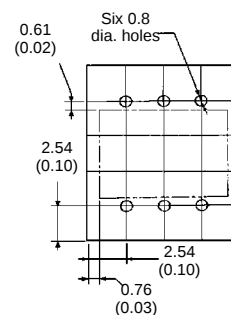
Note: "G3VM" is not printed on the actual product.



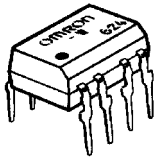
Terminal Arrangement/  
Internal Connections  
(Top View)



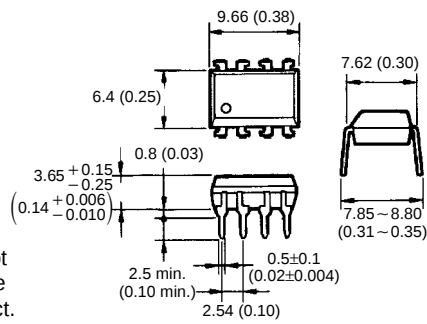
PCB Dimensions  
(Bottom View)



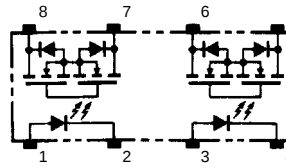
## G3VM-W



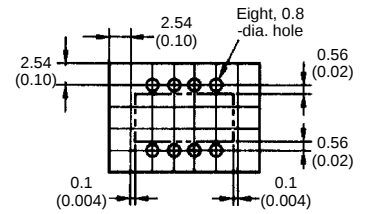
Note: "G3VM" is not printed on the actual product.



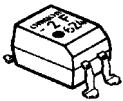
Terminal Arrangement/  
Internal Connections  
(Top View)



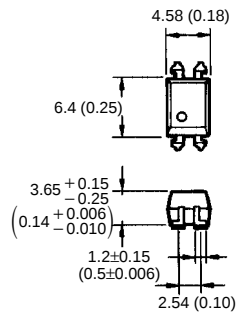
PCB Dimensions  
(Bottom View)



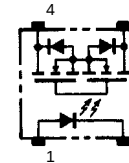
## G3VM-2F



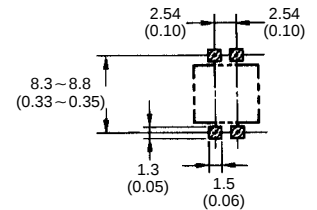
Note: "G3VM" is not printed on the actual product.



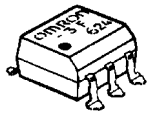
Terminal Arrangement/  
Internal Connections  
(Top View)



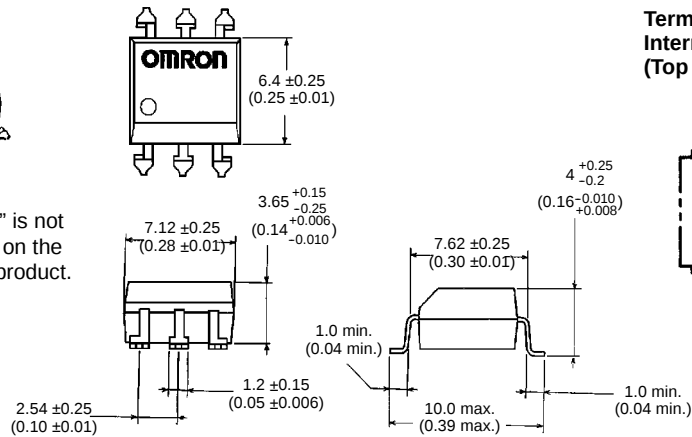
Actual Mounting Pad  
Dimensions (Recom-  
mended Value, Bottom  
View)



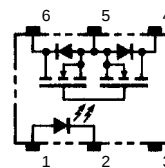
## G3VM-3F, G3VM-3FL, G3VM-VF



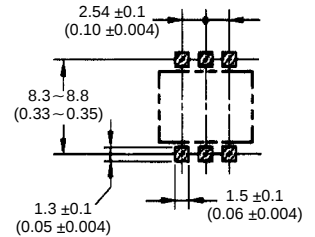
Note: "G3VM" is not printed on the actual product.



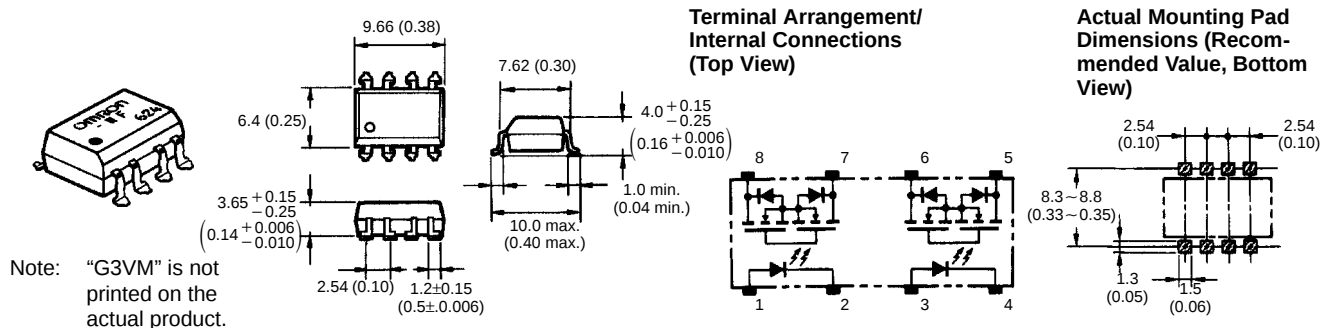
Terminal Arrangement/  
Internal Connections  
(Top View)



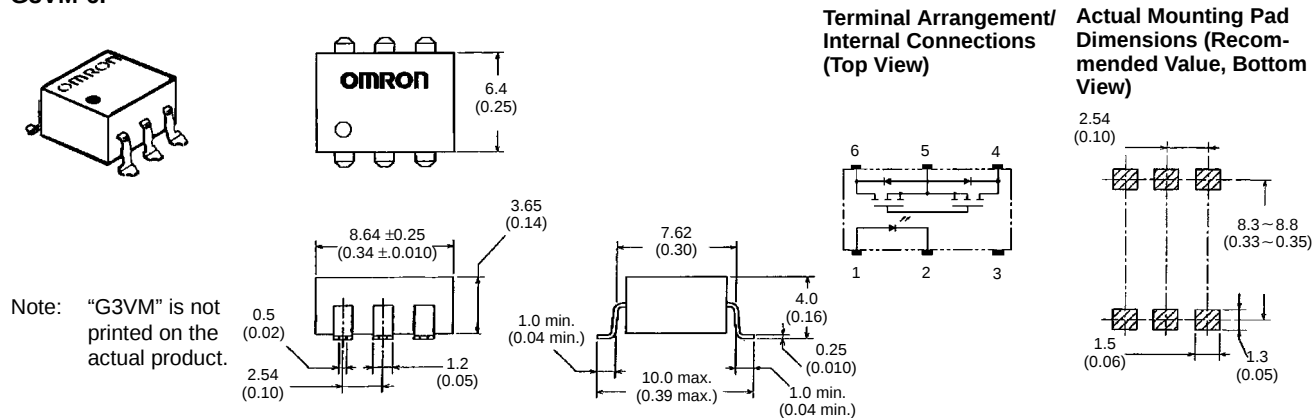
Actual Mounting Pad  
Dimensions (Recom-  
mended Value, Bottom  
View)



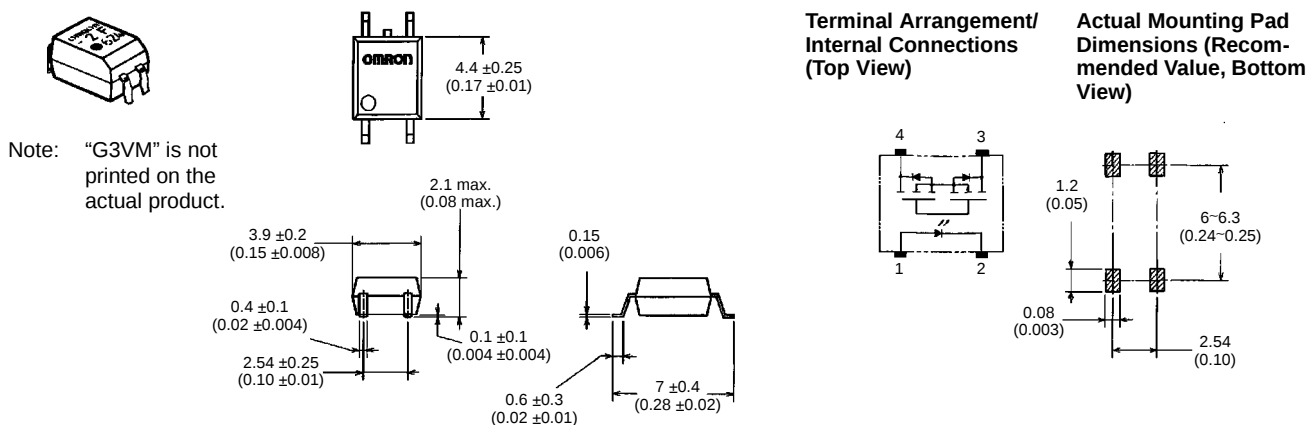
## G3VM-WF



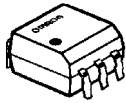
## G3VM-6F



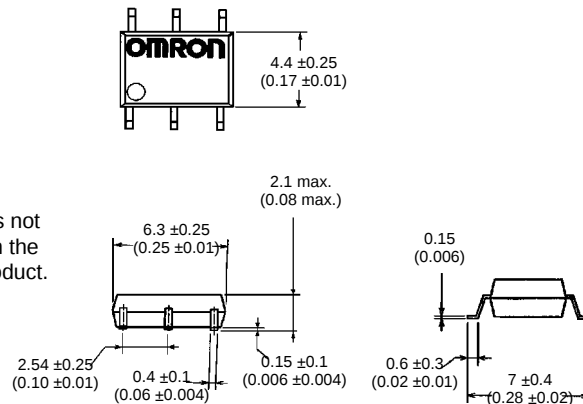
## G3VM-S2



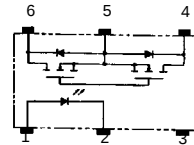
## G3VM-S3



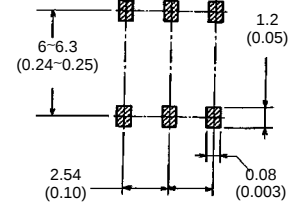
Note: "G3VM" is not printed on the actual product.



Terminal Arrangement/  
Internal Connections  
(Top View)



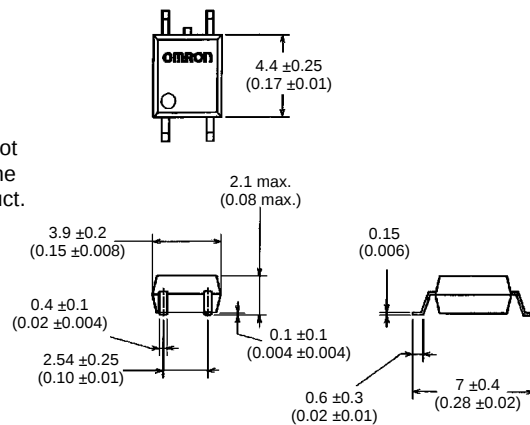
Actual Mounting Pad  
Dimensions  
(Recommended Value,  
Bottom View)



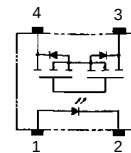
## G3VM-S5



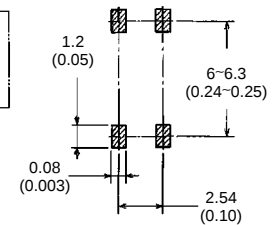
Note: "G3VM" is not printed on the actual product.



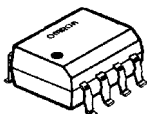
Terminal Arrangement/  
Internal Connections  
(Top View)



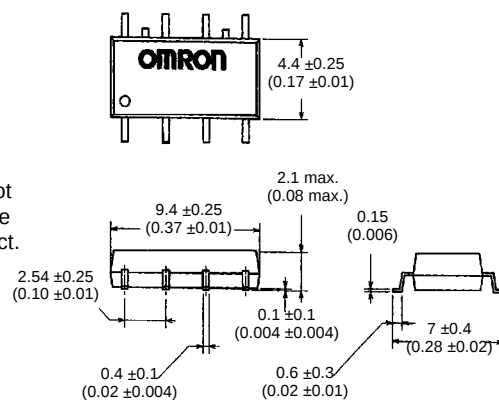
Actual Mounting Pad  
Dimensions (Recom-  
mended Value, Bottom  
View)



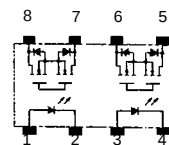
## G3VM-SW



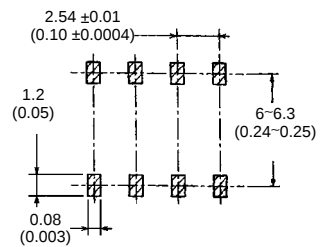
Note: "G3VM" is not printed on the actual product.



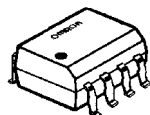
Terminal Arrangement/  
Internal Connections  
(Top View)



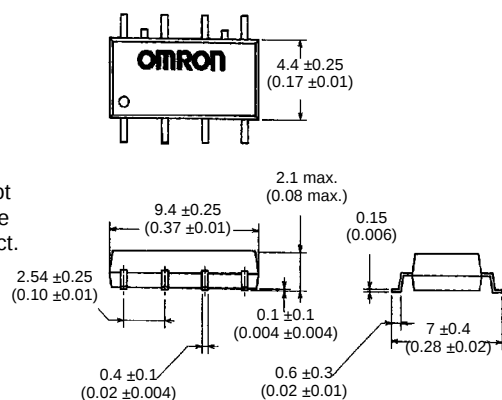
Actual Mounting Pad  
Dimensions (Recom-  
mended Value, Bottom  
View)



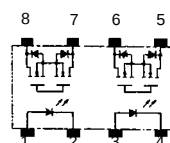
# G3VM-SY



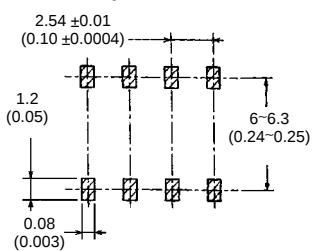
Note: "G3VM" is not printed on the actual product.



## Terminal Arrangement/ Internal Connections (Top View)



## Actual Mounting Pad Dimensions (Recommended Value, Bottom View)



## Accessories

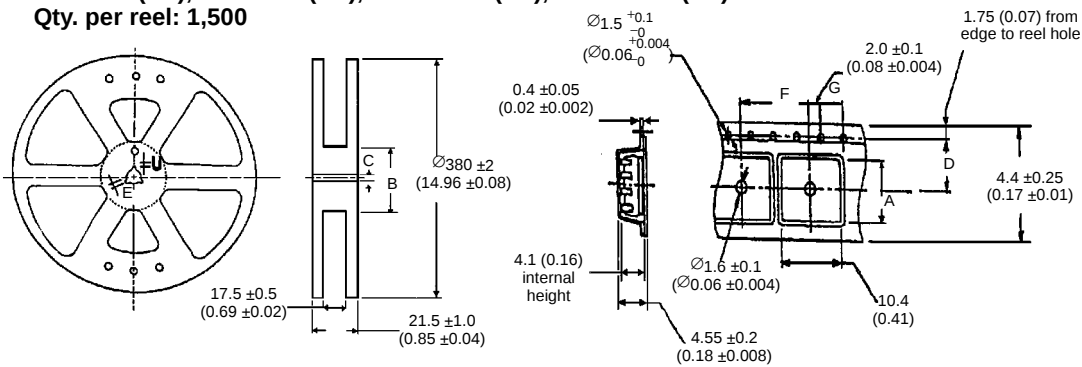
|              |                                                                                                                                                                |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tube packing | Standard nomenclature                                                                                                                                          |
| Tape packing | When ordering, add "(TR)" to the ordering number, (e.g., G3VM-3F(TR)-S). Note: (TR) is not part of the relay model number and will not be marked on the relay. |

| Part number  | Qty. per tube | Qty. per tape and reel | Ordering number |
|--------------|---------------|------------------------|-----------------|
| G3VM-2       | 50            | -                      | G3VM-2-S        |
| G3VM-2F      | 50            | -                      | G3VM-2F-S       |
| G3VM-2F(TR)  | -             | 1,500                  | G3VM-2F(TR)-S   |
| G3VM-3       | 50            | -                      | G3VM-3-S        |
| G3VM-3F      | 50            | -                      | G3VM-3F-S       |
| G3VM-3F(TR)  | -             | 1,500                  | G3VM-3F(TR)-S   |
| G3VM-3L      | 50            | -                      | G3VM-3L-S       |
| G3VM-3FL     | 50            | -                      | G3VM-3FL-S      |
| G3VM-3FL(TR) | -             | 1,500                  | G3VM-3FL(TR)-S  |
| G3VM-6       | 50            | -                      | G3VM-6-S        |
| G3VM-6F      | 50            | -                      | G3VM-6F-S       |
| G3VM-6F(TR)  | -             | 1,500                  | G3VM-6F(TR)-S   |
| G3VM-S2      | 100           | -                      | G3VM-S2-S       |
| G3VM-S2(TR)  | -             | 2,500                  | G3VM-S2(TR)-S   |
| G3VM-S3      | 75            | -                      | G3VM-S3-S       |
| G3VM-S3(TR)  | -             | 2,500                  | G3VM-S3(TR)-S   |
| G3VM-S5      | 100           | -                      | G3VM-S5-S       |
| G3VM-S5(TR)  | -             | 2,500                  | G3VM-S5(TR)-S   |
| G3VM-SW      | 50            | -                      | G3VM-SW-S       |
| G3VM-SW(TR)  | -             | 2,500                  | G3VM-SW(TR)-S   |
| G3VM-SY      | 50            | -                      | G3VM-SY-S       |
| G3VM-SY(TR)  | -             | 2,500                  | G3VM-SY(TR)-S   |
| G3VM-V       | 50            | -                      | G3VM-V-S        |
| G3VM-VF      | 50            | -                      | G3VM-VF-S       |
| G3VM-VF(TR)  | -             | 1,500                  | G3VM-VF(TR)-S   |
| G3VM-W       | 50            | -                      | G3VM-W-S        |
| G3VM-WF      | 50            | -                      | G3VM-WF-S       |
| G3VM-WF(TR)  | -             | 1,500                  | G3VM-WF(TR)-S   |

## ■ TAPE AND REEL DIMENSIONS

**G3VM-2F(TR), G3VM-3F(TR), G3VM-3FL(TR), G3VM-3VF(TR)**

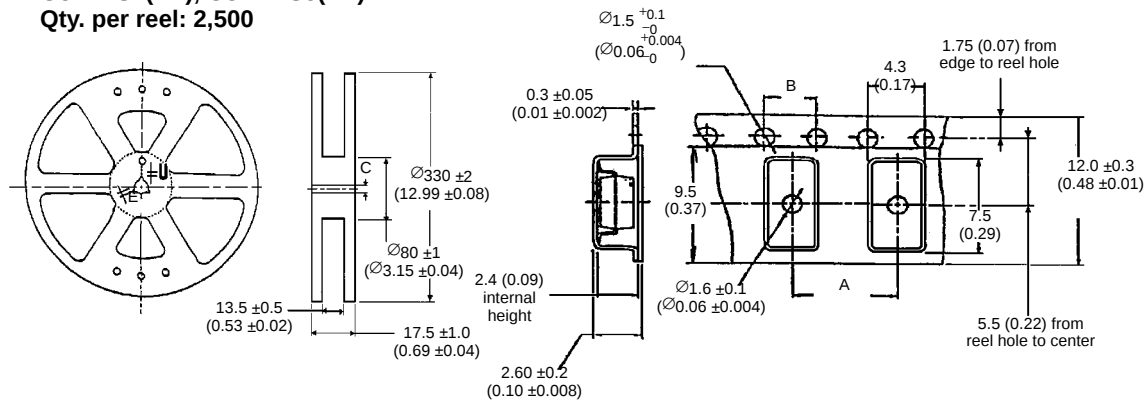
Qty. per reel: 1,500



| Symbol | Dimension              | Remarks                                   |
|--------|------------------------|-------------------------------------------|
| A      | 7.6 (0.30)             | ----                                      |
| B      | Ø80 ±1 (Ø3.15 ±0.04)   | ----                                      |
| C      | Ø13 ±0.5 (Ø0.51 ±0.02) | ----                                      |
| D      | 7.5 (0.30)             | From reel hole to center                  |
| E      | 2.0 ±0.5 (0.08 ±0.02)  | ----                                      |
| F      | 12.0 (0.47)            | Total tolerance: +0.1/10, -0.3/10 pitches |
| G      | 4.0 (0.16)             | Total tolerance: +0.1/10, -0.3/10 pitches |
| U      | 4.0 ±0.5 (0.16 ±0.02)  | ----                                      |

**G3VM-S2(TR), G3VM-S5(TR)**

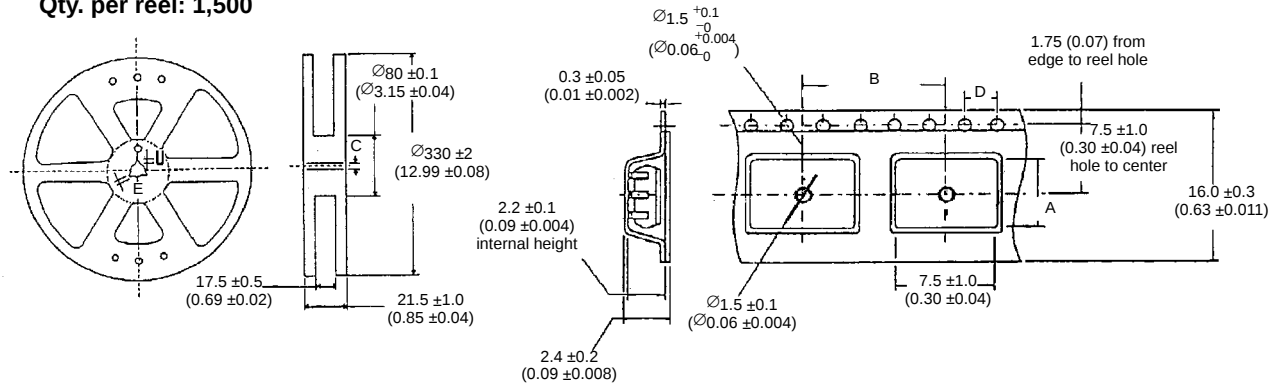
Qty. per reel: 2,500



| Symbol | Dimension                                                | Remarks                                   |
|--------|----------------------------------------------------------|-------------------------------------------|
| A      | 8.0 (0.31)                                               | Total tolerance: +0.1/10, -0.3/10 pitches |
| B      | 4.0 (0.16)                                               | Total tolerance: +0.1/10, -0.3/10 pitches |
| C      | $\varnothing 13 \pm 0.5$ ( $\varnothing 0.51 \pm 0.02$ ) | ----                                      |
| E      | $2.0 \pm 0.5$ ( $0.08 \pm 0.02$ )                        | ----                                      |
| U      | $4.0 \pm 0.5$ ( $0.16 \pm 0.02$ )                        | ----                                      |

**G3VM-S3(TR)**

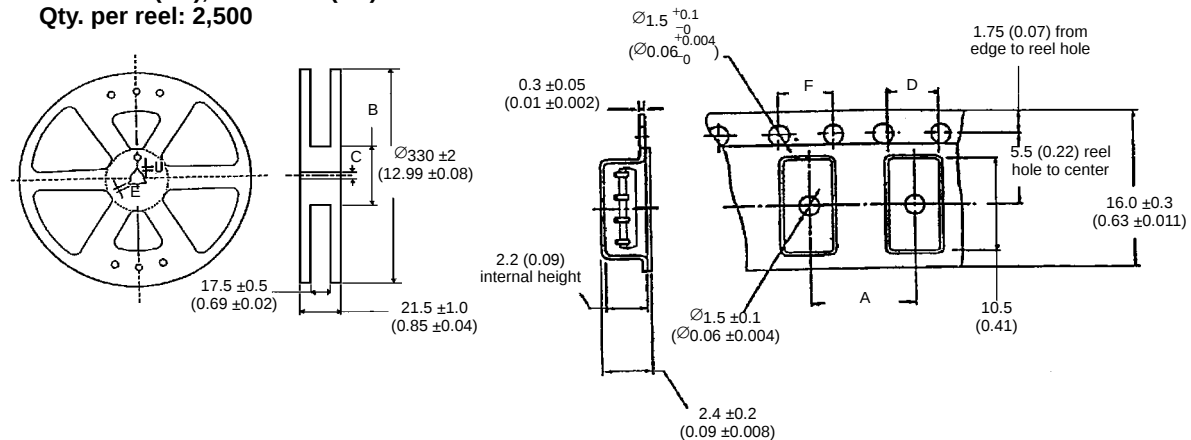
Qty. per reel: 1,500



| Symbol | Dimension                                                | Remarks                                   |
|--------|----------------------------------------------------------|-------------------------------------------|
| A      | $6.7 \pm 0.1$ (0.26 $\pm$ 0.04)                          | ----                                      |
| B      | $12.0 \pm 0.1$ (0.47 $\pm$ 0.04)                         | Total tolerance: +0.1/10, -0.3/10 pitches |
| C      | $\varnothing 13 \pm 0.5$ ( $\varnothing 0.51 \pm 0.02$ ) | ----                                      |
| D      | $4.0 \pm 0.1$ (0.16 $\pm$ 0.04)                          | Total tolerance: +0.1/10, -0.3/10 pitches |
| E      | $2.0 \pm 0.5$ (0.08 $\pm$ 0.02)                          | ----                                      |
| U      | $4.0 \pm 0.5$ (0.16 $\pm$ 0.02)                          | ----                                      |

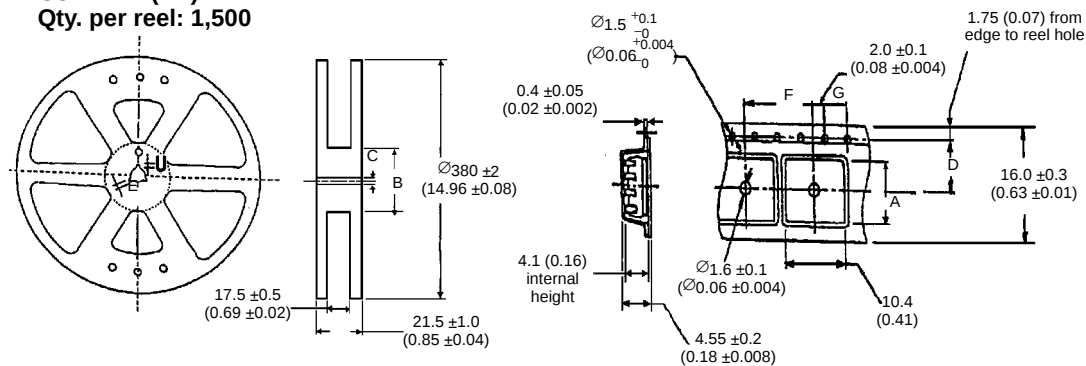
**G3VM-SW(TR), G3VM-SY (TR)**

Qty. per reel: 2,500



| Symbol | Dimension                                                | Remarks                                   |
|--------|----------------------------------------------------------|-------------------------------------------|
| A      | $12.0$ (0.47)                                            | Total tolerance: +0.1/10, -0.3/10 pitches |
| B      | $\varnothing 80 \pm 1$ ( $\varnothing 3.14 \pm 0.04$ )   | ----                                      |
| C      | $\varnothing 13 \pm 0.5$ ( $\varnothing 0.51 \pm 0.02$ ) | ----                                      |
| D      | $7.5$ (0.30)                                             | ----                                      |
| E      | $2.0 \pm 0.5$ (0.08 $\pm$ 0.02)                          | ----                                      |
| F      | $4.0$ (0.16)                                             | Total tolerance: +0.1/10, -0.3/10 pitches |
| U      | $4.0 \pm 0.5$ (0.16 $\pm$ 0.02)                          | ----                                      |

**G3VM-WF(TR)**  
Qty. per reel: 1,500



| Symbol | Dimension                                                | Remarks                                   |
|--------|----------------------------------------------------------|-------------------------------------------|
| A      | 7.6 (0.30)                                               | ----                                      |
| B      | $\varnothing 80 \pm 1$ ( $\varnothing 3.15 \pm 0.04$ )   | ----                                      |
| C      | $\varnothing 13 \pm 0.5$ ( $\varnothing 0.51 \pm 0.02$ ) | ----                                      |
| D      | 7.5 (0.30)                                               | From reel hole to center                  |
| E      | $2.0 \pm 0.5$ (0.08 $\pm$ 0.02)                          | ----                                      |
| F      | 12.0 (0.47)                                              | Total tolerance: +0.1/10, -0.3/10 pitches |
| G      | 4.0 (0.16)                                               | Total tolerance: +0.1/10, -0.3/10 pitches |
| U      | $4.0 \pm 0.5$ (0.16 $\pm$ 0.02)                          | ----                                      |

## Precautions



### WARNING

Always turn the power off before wiring, otherwise an electric shock may occur.

Do not touch the SSR terminal section (the recharge section) while the power supply is connected. Contact with the recharge section will result in an electric shock.



### Caution

Do not use excess voltage or current in the SSR input or output circuits. Otherwise, damage to the SSR or a fire will result.

Conduct wiring and soldering correctly according to soldering conditions. If the product is used with incomplete wiring, overheating will occur and may result in a fire.

## ■ OPTIMUM OPERATING CONDITIONS

| Part number           | G3VM-2/2F, G3VM-3/3F, G3VM-3L/3FL,<br>G3VM-S2, G3VM-S3, G3VM-SW,<br>G3VM-W/WF |       |       | G3VM-6/6F |      |       |
|-----------------------|-------------------------------------------------------------------------------|-------|-------|-----------|------|-------|
|                       | Min.                                                                          | Typ.  | Max.  | Min.      | Typ. | Max.  |
| Supply voltage        | ---                                                                           | ---   | 280V  | ---       | ---  | 280V  |
| LED Forward current   | 5.0mA                                                                         | 7.5mA | 25mA  | 10mA      | 15mA | 25mA  |
| Output current        | ---                                                                           | ---   | 100mA | ---       | ---  | 120mA |
| Operating temperature | -20°C                                                                         | ---   | 65°C  | -20°C     | ---  | 80°C  |

| Part number           | G3VM-V/VF, G3VM-SY |      |       | G3VM-S5 |       |       |
|-----------------------|--------------------|------|-------|---------|-------|-------|
|                       | Min.               | Typ. | Max.  | Min.    | Typ.  | Max.  |
| Supply voltage        | ---                | ---  | 48V   | ---     | 150V  | 200V  |
| LED Forward current   | 7.5mA              | 15mA | 25mA  | 5.0mA   | 7.5mA | 25mA  |
| Output current        | ---                | ---  | 300mA | ---     | ---   | 120mA |
| Operating temperature | -20°C              | ---  | 80°C  | -20°C   | ---   | 65°C  |

## ■ TEMPERATURE DERATINGS

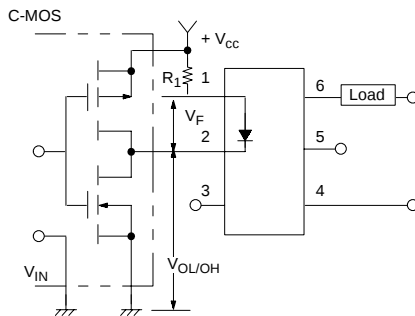
| Part number                      | G3VM-2/2F, G3VM-S2 | G3VM-S5   | G3VM-SY   |
|----------------------------------|--------------------|-----------|-----------|
| LED forward current derating     | -0.5mA/°C          | -0.5mA/°C | -0.5mA/°C |
| Continuous load current derating | -1.2mA/°C          | -1.5mA/°C | -3.0mA/°C |

| Part number                      |              | G3VM-3/3F, G3VM-3L/3FL,<br>G3VM-S3 | G3VM-6/6F | G3VM-V/VF |
|----------------------------------|--------------|------------------------------------|-----------|-----------|
| LED forward current derating     |              | -0.5mA/°C                          | -0.3mA/°C | -0.5mA/°C |
| Continuous load current derating | Connection A | -1.2mA/°C                          | -1.5mA/°C | -3.0mA/°C |
|                                  | Connection B | -1.2mA/°C                          | -2.0mA/°C | -4.5mA/°C |
|                                  | Connection C | -1.6mA/°C                          | -3.0mA/°C | -6.0mA/°C |

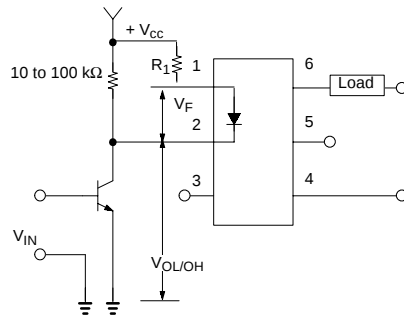
| Part number                      |               | G3VM-SW, G3VM-W/WF |
|----------------------------------|---------------|--------------------|
| LED forward current derating     |               | -0.5mA/°C          |
| Continuous load current derating | One channel   | -1.2mA/°C          |
|                                  | Both channels | -1.0mA/°C          |

## ■ TYPICAL RELAY DRIVING CIRCUIT EXAMPLES

### C-MOS



### Transistor



Use the following formula to obtain the LED current limiting resistance value to assure that the Relay operates accurately.

$$R_1 = \frac{V_{CC} - V_{OL} - V_F(ON)}{5 \text{ to } 20 \text{ mA}}$$

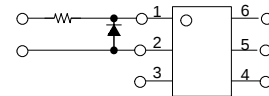
Use the following formula to obtain the LED forward voltage value to assure that the Relay releases accurately.

$$V_F(ON) = V_{CC} - V_{OH} < 0.8 \text{ V}$$

## ■ PROTECTION FROM SURGE VOLTAGE ON THE INPUT TERMINALS

If any reversed surge voltage is imposed on the input terminals, insert a diode in parallel to the input terminals as shown in the following circuit diagram and do not impose a reversed voltage value of 3 V or more.

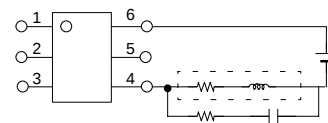
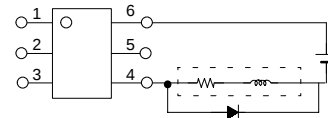
### Surge Voltage Protection Circuit Example



## ■ PROTECTION FROM SPIKE VOLTAGE ON THE OUTPUT TERMINALS

If a spike voltage exceeding the absolute maximum rated value is generated between the output terminals, insert a C-R snubber or clamping diode in parallel to the load as shown in the following circuit diagram to limit the spike voltage.

### Spike Voltage Protection Circuit Example

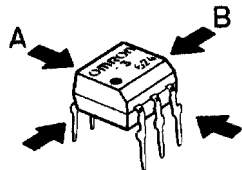


## ■ UNUSED TERMINALS

Terminal 3 is connected to the internal circuit. Do not connect anything to terminal 3 externally.

## ■ RELAY HOLDING FORCE FOR AUTOMATIC MOUNTING

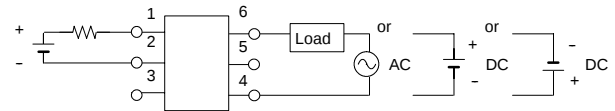
A Relay must not be imposed with a force exceeding 200 gf (1.96 N) in the A or B direction shown in the following illustration when the Relay is mounted automatically, otherwise the characteristics of the Relay may change.



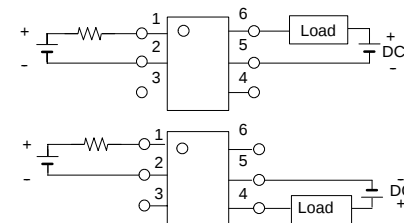
## ■ LOAD CONNECTION

Do not short-circuit the input and output terminals while the Relay is operating or the Relay may malfunction.

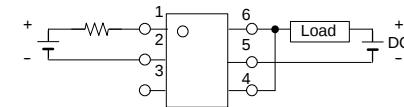
### AC Connection



### DC Single Connection



### DC Parallel Connection



You must allow sufficient leeway in ratings and performance and provide proper fail-safe and other safety measures when using the G3VM in any of the following applications. Be sure also to consult with your OMRON representative before actually attempting any of these applications.

1. Applications under conditions or environments not specified in user manuals.
2. Applications for nuclear reactor control, train facilities, aviation facilities, motorized vehicles, furnaces, medical equipment, amusement equipment, and safety equipment.
3. Applications strongly related to human life or property, particularly those requiring safety.

**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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