

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

●Standard type, High sensitive type

| Item                              |                                      | Symbol              | G3VM-41AY1<br>G3VM-41DY1<br>G3VM-41AY<br>G3VM-41DY | G3VM-61AY1<br>G3VM-61DY1<br>G3VM-61AY<br>G3VM-61DY | G3VM-201AY1<br>G3VM-201DY1<br>G3VM-201AY<br>G3VM-201DY | G3VM-351AY1<br>G3VM-351DY1<br>G3VM-351AY<br>G3VM-351DY | G3VM-401AY1<br>G3VM-401DY1<br>G3VM-401AY<br>G3VM-401DY | G3VM-601AY1<br>G3VM-601DY1<br>G3VM-601AY<br>G3VM-601DY | Unit             | Measurement conditions        |
|-----------------------------------|--------------------------------------|---------------------|----------------------------------------------------|----------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------|-------------------------------|
| Input                             | LED forward current                  | I <sub>F</sub>      | 30                                                 |                                                    |                                                        |                                                        |                                                        |                                                        | mA               |                               |
|                                   | Repetitive peak LED forward current  | I <sub>FP</sub>     | 1                                                  |                                                    |                                                        |                                                        |                                                        |                                                        | A                | 100 μs pulses, 100 pps        |
|                                   | LED forward current reduction rate   | ΔI <sub>F</sub> /°C | -0.3                                               |                                                    |                                                        |                                                        |                                                        |                                                        | mA/°C            | Ta≥25°C                       |
|                                   | LED reverse voltage                  | V <sub>R</sub>      | 5                                                  |                                                    |                                                        |                                                        |                                                        |                                                        | V                |                               |
|                                   | Connection temperature               | T <sub>J</sub>      | 125                                                |                                                    |                                                        |                                                        |                                                        |                                                        | °C               |                               |
| Output                            | Load voltage (AC peak/DC)            | V <sub>OFF</sub>    | 40                                                 | 60                                                 | 200                                                    | 350                                                    | 400                                                    | 600                                                    | V                |                               |
|                                   | Continuous load current (AC peak/DC) | I <sub>O</sub>      | 2,000                                              | 500                                                | 250                                                    | 100                                                    | 120                                                    | 90                                                     | mA               |                               |
|                                   | ON current reduction rate            | ΔI <sub>O</sub> /°C | -20                                                | -5                                                 | -2.5                                                   | -1                                                     | -1.2                                                   | -0.9                                                   | mA/°C            | Ta≥25°C                       |
|                                   | Pulse ON current                     | I <sub>OP</sub>     | 6                                                  | 1.5                                                | 0.75                                                   | 0.3                                                    | 0.36                                                   | 0.27                                                   | A                | t=100ms, Duty=1/10            |
|                                   | Connection temperature               | T <sub>J</sub>      | 125                                                |                                                    |                                                        |                                                        |                                                        |                                                        | °C               |                               |
| Dielectric strength between I/O * |                                      | V <sub>I-O</sub>    | 5,000                                              |                                                    |                                                        |                                                        |                                                        |                                                        | V <sub>rms</sub> | AC for 1 min                  |
| Ambient operating temperature     |                                      | T <sub>a</sub>      | -40~+85                                            |                                                    |                                                        |                                                        |                                                        |                                                        | °C               | With no icing or condensation |
| Ambient storage temperature       |                                      | T <sub>stg</sub>    | -55~+125                                           |                                                    |                                                        |                                                        |                                                        |                                                        | °C               |                               |
| Soldering temperature             |                                      | —                   | 260                                                |                                                    |                                                        |                                                        |                                                        |                                                        | °C               | 10s                           |

\* 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.

DIP

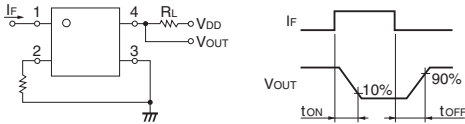
G3VM-I□AY□/□DY□

Electrical Characteristics (Ta = 25°C)

Standard type

| Item                                        |                                        |                   | Symbol  |                 | G3VM-41AY1<br>G3VM-41DY1 | G3VM-61AY1<br>G3VM-61DY1 | G3VM-201AY1<br>G3VM-201DY1 | G3VM-351AY1<br>G3VM-351DY1 | G3VM-401AY1<br>G3VM-401DY1 | G3VM-601AY1<br>G3VM-601DY1 | Unit                                                                                                                                                                                                                                                          | Measurement conditions                                                                             |
|---------------------------------------------|----------------------------------------|-------------------|---------|-----------------|--------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Input                                       | LED forward voltage                    | V <sub>F</sub>    | Minimum | 1.1             |                          |                          |                            |                            |                            |                            | V                                                                                                                                                                                                                                                             | I <sub>F</sub> =10mA                                                                               |
|                                             |                                        |                   | Typical | 1.27            |                          |                          |                            |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
|                                             |                                        |                   | Maximum | 1.4             |                          |                          |                            |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
|                                             | Reverse current                        | I <sub>R</sub>    | Maximum | 10              |                          |                          |                            |                            |                            |                            | μA                                                                                                                                                                                                                                                            | V <sub>R</sub> =5V                                                                                 |
|                                             | Capacity between terminals             | C <sub>T</sub>    | Typical | 50              |                          |                          |                            |                            |                            |                            | pF                                                                                                                                                                                                                                                            | V=0, f=1MHz                                                                                        |
|                                             | Trigger LED forward current            | I <sub>FT</sub>   | Minimum | 0.5             | 0.6                      |                          |                            |                            |                            | 0.5                        | mA                                                                                                                                                                                                                                                            | G3VM-41AY1/DY1 : I <sub>o</sub> =1A<br>Others : I <sub>o</sub> =Continuous load<br>current ratings |
| Maximum                                     |                                        |                   | 3       |                 |                          |                          |                            |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
| Release LED forward current                 | I <sub>FC</sub>                        | Minimum           | 0.1     |                 |                          |                          |                            |                            |                            | mA                         | I <sub>OFF</sub> =10μA                                                                                                                                                                                                                                        |                                                                                                    |
| Output                                      | Maximum resistance with output ON      | R <sub>ON</sub>   | Typical | 0.09(0.06)      | 0.6                      | 5                        | 35(25)                     | 22(17)                     | 45(30)                     | Ω                          | I <sub>F</sub> =5mA,<br>I <sub>o</sub> =Continuous load current<br>ratings<br>(value at t<1s)                                                                                                                                                                 |                                                                                                    |
|                                             |                                        |                   | Maximum | 0.15(0.10)      | 2                        | 8                        | 50(35)                     | 35(28)                     | 60(40)                     |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
|                                             | Current leakage when the relay is open | I <sub>LEAK</sub> | Maximum | 1               |                          |                          |                            |                            |                            |                            | μA                                                                                                                                                                                                                                                            | V <sub>OFF</sub> =Load voltage ratings                                                             |
|                                             | Capacity between terminals             | C <sub>OFF</sub>  | Typical | 300             | 130                      | 90                       | 30                         | 80                         | 75                         | pF                         | V=0, f=1MHz                                                                                                                                                                                                                                                   |                                                                                                    |
| Capacity between I/O terminals              |                                        | C <sub>I-O</sub>  | Typical | 0.8             |                          |                          |                            |                            |                            |                            | pF                                                                                                                                                                                                                                                            | f=1MHz, V <sub>S</sub> =0V                                                                         |
| Insulation resistance between I/O terminals |                                        | R <sub>I-O</sub>  | Minimum | 1000            |                          |                          |                            |                            |                            |                            | MΩ                                                                                                                                                                                                                                                            | V <sub>I-O</sub> =500VDC, R <sub>oH</sub> ≤60%                                                     |
|                                             |                                        |                   | Typical | 10 <sup>8</sup> |                          |                          |                            |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
| Turn-ON time                                | t <sub>ON</sub>                        | Typical           | 2.8     | 1               |                          |                          | 0.3                        | 0.6                        | 0.5                        | ms                         | G3VM-41AY1/DY1 :<br>R <sub>L</sub> =200Ω, I <sub>F</sub> =10mA, V <sub>DD</sub> =20V<br>G3VM-601AY1/DY1 :<br>R <sub>L</sub> =200Ω, I <sub>F</sub> =5mA, V <sub>DD</sub> =10V<br>Others :<br>R <sub>L</sub> =200Ω, I <sub>F</sub> =5mA, V <sub>DD</sub> =20V * |                                                                                                    |
|                                             |                                        | Maximum           | 5       | 3               |                          |                          | 2                          |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
| Turn-OFF time                               | t <sub>OFF</sub>                       | Typical           | 0.3     | 0.2             | 0.1                      |                          |                            | 0.2                        |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |
|                                             |                                        | Maximum           | 1       |                 |                          |                          |                            |                            |                            |                            |                                                                                                                                                                                                                                                               |                                                                                                    |

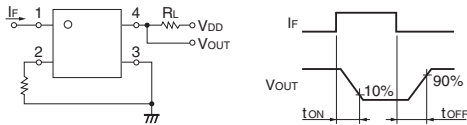
\* Turn-ON and Turn-OFF Times



High sensitive type

| Item                                        |                                        |                   | Symbol           | G3VM-41AY<br>G3VM-41DY | G3VM-61AY<br>G3VM-61DY | G3VM-201AY<br>G3VM-201DY | G3VM-351AY<br>G3VM-351DY | G3VM-401AY<br>G3VM-401DY | G3VM-601AY<br>G3VM-601DY | Unit                   | Measurement conditions                                                                                                                                                 |                                                |
|---------------------------------------------|----------------------------------------|-------------------|------------------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Input                                       | LED forward voltage                    | V <sub>F</sub>    | Minimum          | 1.45                   |                        |                          |                          |                          |                          | V                      | I <sub>F</sub> =10mA                                                                                                                                                   |                                                |
|                                             |                                        |                   | Typical          | 1.63                   |                        |                          |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
|                                             |                                        |                   | Maximum          | 1.75                   |                        |                          |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
|                                             | Reverse current                        | I <sub>R</sub>    | Maximum          | 10                     |                        |                          |                          |                          |                          | μA                     | V <sub>R</sub> =5V                                                                                                                                                     |                                                |
|                                             | Capacity between terminals             | C <sub>T</sub>    | Typical          | 40                     |                        |                          |                          |                          |                          | pF                     | V=0, f=1MHz                                                                                                                                                            |                                                |
|                                             | Trigger LED forward current            | I <sub>FT</sub>   | Minimum          | 0.3                    |                        |                          |                          |                          |                          | mA                     | G3VM-41AY/DY : I <sub>o</sub> =1A<br>Others : I <sub>o</sub> =Continuous load current ratings                                                                          |                                                |
| Maximum                                     |                                        |                   | 2                |                        |                        |                          |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
| Release LED forward current                 | I <sub>FC</sub>                        | Minimum           | 0.1              |                        |                        |                          |                          |                          | mA                       | I <sub>OFF</sub> =10μA |                                                                                                                                                                        |                                                |
| Output                                      | Maximum resistance with output ON      | R <sub>ON</sub>   | Typical          | 0.09(0.06)             | 0.6                    | 5                        | 35(25)                   | 22(17)                   | 45(30)                   | Ω                      | I <sub>F</sub> =5mA,<br>I <sub>o</sub> =Continuous load current ratings<br>(value at t<1s)                                                                             |                                                |
|                                             |                                        |                   | Maximum          | 0.15(0.10)             | 2                      | 8                        | 50(35)                   | 35(28)                   | 60(40)                   |                        |                                                                                                                                                                        |                                                |
|                                             | Current leakage when the relay is open | I <sub>LEAK</sub> | Maximum          | 1                      |                        |                          |                          |                          |                          | μA                     | V <sub>OFF</sub> =Load voltage ratings                                                                                                                                 |                                                |
|                                             | Capacity between terminals             | C <sub>OFF</sub>  | Typical          | 300                    | 130                    | 90                       | 30                       | 80                       | 75                       | pF                     | V=0, f=1MHz                                                                                                                                                            |                                                |
| Capacity between I/O terminals              |                                        |                   | C <sub>I-O</sub> | Typical                | 0.8                    |                          |                          |                          |                          |                        | pF                                                                                                                                                                     | f=1MHz, V <sub>S</sub> =0V                     |
| Insulation resistance between I/O terminals |                                        |                   | R <sub>I-O</sub> | Minimum                | 1000                   |                          |                          |                          |                          |                        | MΩ                                                                                                                                                                     | V <sub>I-O</sub> =500VDC, R <sub>oH</sub> ≤60% |
|                                             |                                        |                   |                  | Typical                | 10 <sup>8</sup>        |                          |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
| Turn-ON time                                |                                        |                   | t <sub>ON</sub>  | Typical                | 2                      | 0.5                      | 0.1                      | 0.2                      |                          | ms                     | G3VM-601AY/DY :<br>R <sub>L</sub> =200Ω, I <sub>F</sub> =5mA, V <sub>DD</sub> =10V<br>Others :<br>R <sub>L</sub> =200Ω, I <sub>F</sub> =5mA, V <sub>DD</sub> =20V<br>* |                                                |
|                                             |                                        |                   |                  | Maximum                | 5                      | 1                        |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
| Turn-OFF time                               |                                        |                   | t <sub>OFF</sub> | Typical                | 0.3                    | 0.2                      |                          |                          |                          |                        |                                                                                                                                                                        |                                                |
|                                             |                                        |                   |                  | Maximum                | 1                      |                          |                          |                          |                          |                        |                                                                                                                                                                        |                                                |

\* Turn-ON and Turn-OFF Times



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.

Standard type

| Item                                 | Symbol          |         | G3VM-41AY1<br>G3VM-41DY1 | G3VM-61AY1<br>G3VM-61DY1 | G3VM-201AY1<br>G3VM-201DY1 | G3VM-351AY1<br>G3VM-351DY1 | G3VM-401AY1<br>G3VM-401DY1 | G3VM-601AY1<br>G3VM-601DY1 | Unit |
|--------------------------------------|-----------------|---------|--------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------|
| Load voltage (AC peak/DC)            | V <sub>DD</sub> | Maximum | 32                       | 48                       | 160                        | 280                        | 320                        | 480                        | V    |
| Operating LED forward current        | I <sub>F</sub>  | Minimum | 5                        |                          |                            |                            |                            |                            | mA   |
|                                      |                 | Typical | 7.5                      |                          |                            |                            |                            |                            |      |
|                                      |                 | Maximum | 25                       |                          |                            |                            |                            |                            |      |
| Continuous load current (AC peak/DC) | I <sub>O</sub>  | Maximum | 2000                     | 500                      | 250                        | 100                        | 120                        | 90                         |      |
| Ambient operating temperature        | T <sub>a</sub>  | Minimum | -20                      |                          |                            |                            |                            |                            | °C   |
|                                      |                 | Maximum | 65                       |                          |                            |                            |                            |                            |      |

High sensitive type

| Item                                 | Symbol          |         | G3VM-41AY<br>G3VM-41DY | G3VM-61AY<br>G3VM-61DY | G3VM-201AY<br>G3VM-201DY | G3VM-351AY<br>G3VM-351DY | G3VM-401AY<br>G3VM-401DY | G3VM-601AY<br>G3VM-601DY | Unit |    |
|--------------------------------------|-----------------|---------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------|----|
| Load voltage (AC peak/DC)            | V <sub>DD</sub> | Maximum | 32                     | 48                     | 160                      | 280                      | 320                      | 480                      | V    |    |
| Operating LED forward current        | I <sub>F</sub>  | Minimum | 3                      |                        |                          |                          |                          |                          |      | mA |
|                                      |                 | Typical | 5                      |                        |                          |                          |                          |                          |      |    |
|                                      |                 | Maximum | 15                     |                        | 20                       |                          |                          |                          |      |    |
| Continuous load current (AC peak/DC) | I <sub>O</sub>  | Maximum | 2000                   | 500                    | 250                      | 100                      | 120                      | 90                       |      |    |
| Ambient operating temperature        | T <sub>a</sub>  | Minimum | -20                    |                        |                          |                          |                          |                          |      | °C |
|                                      |                 | Maximum | 65                     |                        |                          |                          |                          |                          |      |    |

Spacing and Insulation

Standard type and High sensitive type

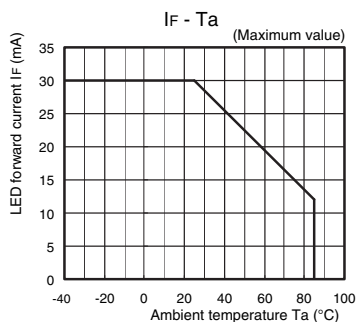
| Item                         |         | Standard | Unit |
|------------------------------|---------|----------|------|
| Creepage distances           | Minimum | 7.0      | mm   |
| Clearance distances          | Minimum | 7.0      |      |
| Internal isolation thickness | Minimum | 0.4      |   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

DIP

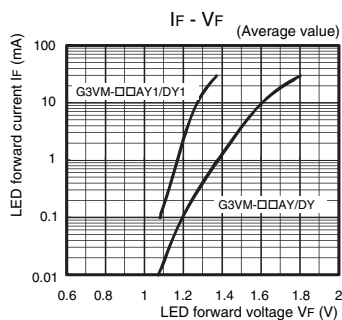
G3VM-AY/DY

## Engineering Data

●LED forward current vs.  
Ambient temperature

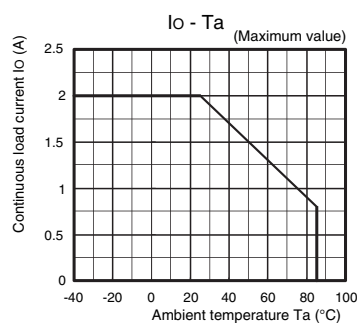
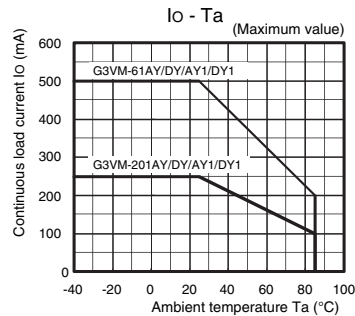
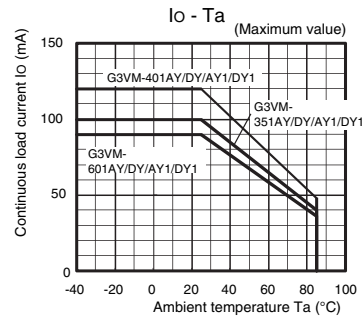


●LED forward current vs.  
LED forward voltage



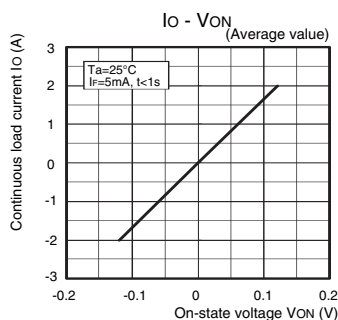
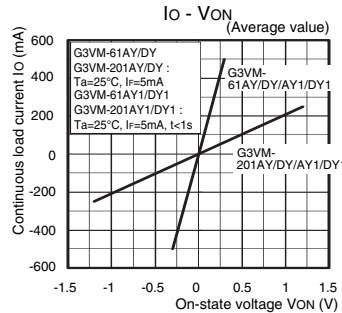
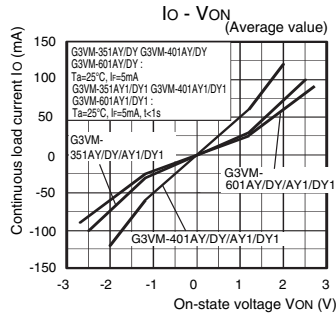
●Continuous load current vs.  
Ambient temperature

G3VM-41AY/DY/AY1/DY1

G3VM-61AY/DY/AY1/DY1  
G3VM-201AY/DY/AY1/DY1G3VM-351AY/DY/AY1/DY1  
G3VM-401AY/DY/AY1/DY1  
G3VM-601AY/DY/AY1/DY1

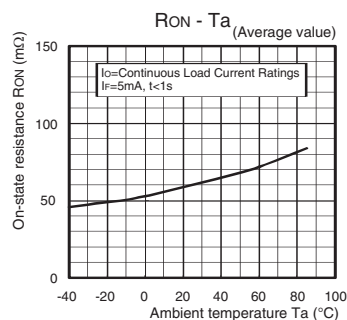
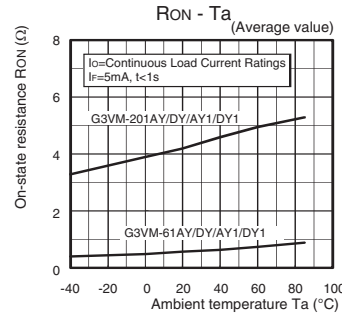
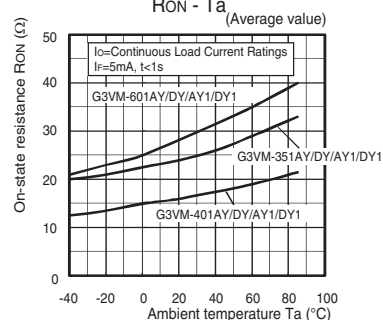
●Continuous load current vs.  
On-state voltage

G3VM-41AY/DY/AY1/DY1

G3VM-61AY/DY/AY1/DY1  
G3VM-201AY/DY/AY1/DY1G3VM-351AY/DY/AY1/DY1  
G3VM-401AY/DY/AY1/DY1  
G3VM-601AY/DY/AY1/DY1

●On-state resistance vs.  
Ambient temperature

G3VM-41AY/DY/AY1/DY1

G3VM-61AY/DY/AY1/DY1  
G3VM-201AY/DY/AY1/DY1G3VM-351AY/DY/AY1/DY1  
G3VM-401AY/DY/AY1/DY1  
G3VM-601AY/DY/AY1/DY1

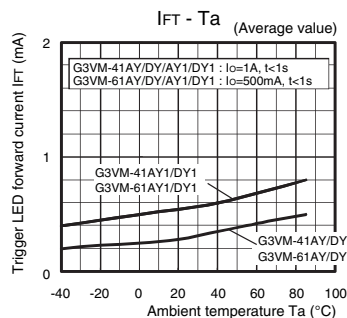
## Engineering Data

### Trigger LED forward current vs.

#### Ambient temperature

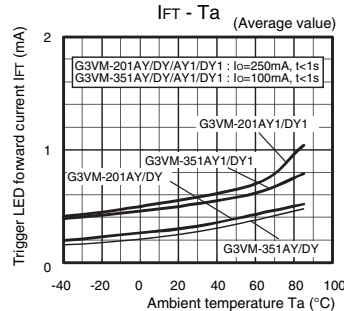
G3VM-41AY/DY/AY1/DY1

G3VM-61AY/DY/AY1/DY1



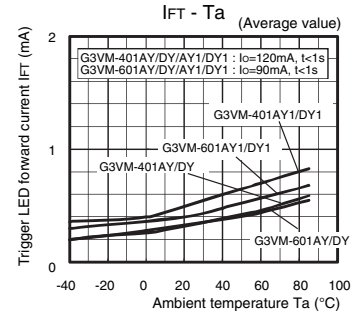
G3VM-201AY/DY/AY1/DY1

G3VM-351AY/DY/AY1/DY1



G3VM-401AY/DY/AY1/DY1

G3VM-601AY/DY/AY1/DY1

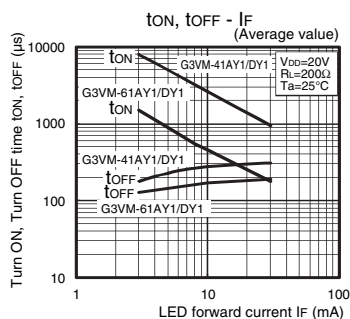


### Turn ON, Turn OFF time vs.

#### LED forward current

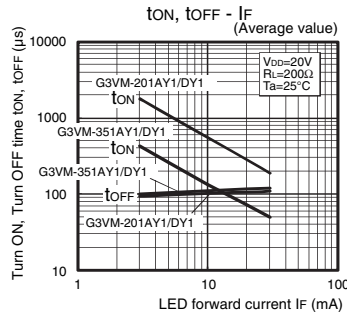
G3VM-41AY1/DY1

G3VM-61AY1/DY1



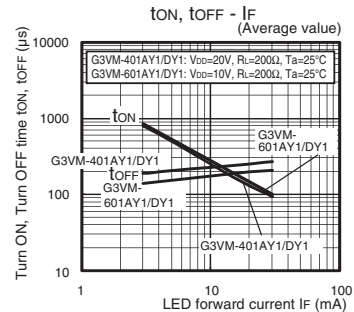
G3VM-201AY1/DY1

G3VM-351AY1/DY1



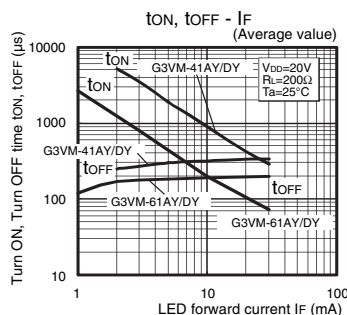
G3VM-401AY1/DY1

G3VM-601AY1/DY1



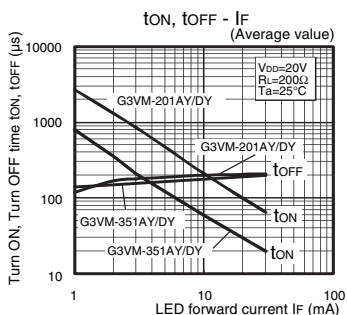
G3VM-41AY/DY

G3VM-61AY/DY



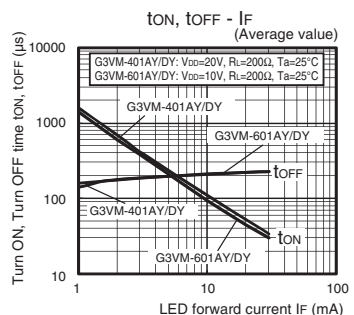
G3VM-201AY/DY

G3VM-351AY/DY



G3VM-401AY/DY

G3VM-601AY/DY

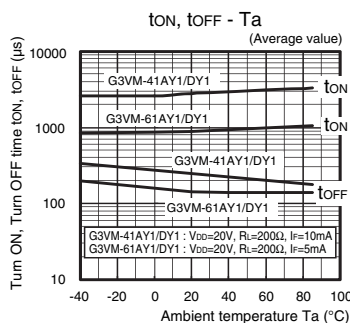


### Turn ON, Turn OFF time vs.

#### Ambient temperature

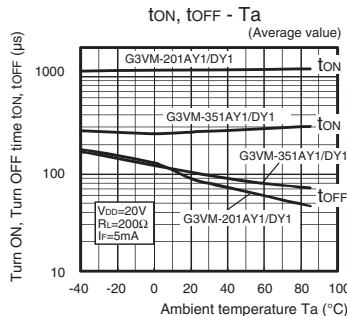
G3VM-41AY1/DY1

G3VM-61AY1/DY1



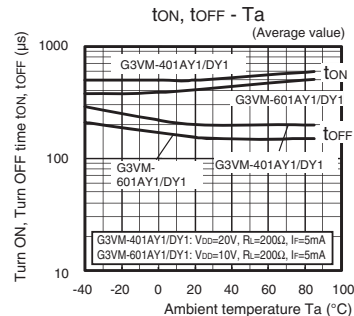
G3VM-201AY1/DY1

G3VM-351AY1/DY1



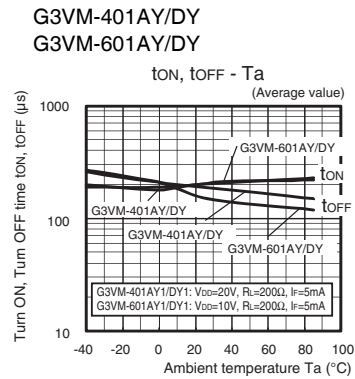
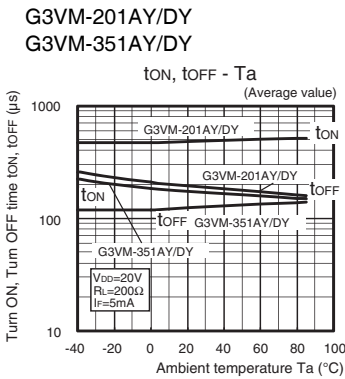
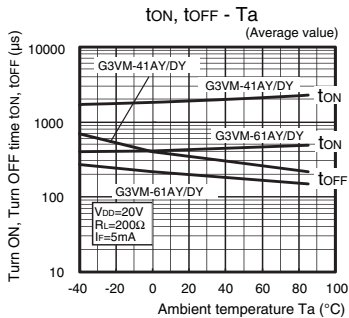
G3VM-401AY1/DY1

G3VM-601AY1/DY1

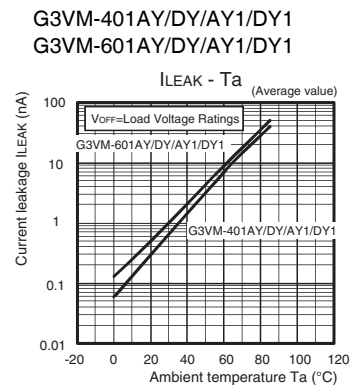
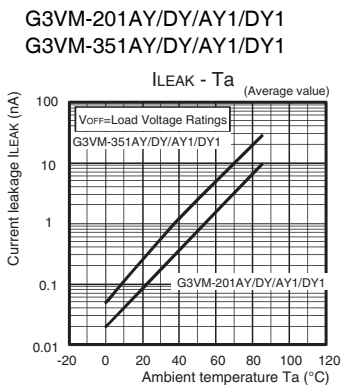
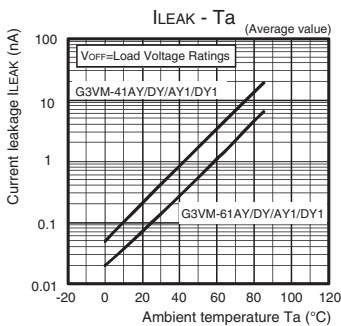


Engineering Data

Turn ON, Turn OFF time vs. Ambient temperature  
G3VM-41AY1/DY1  
G3VM-61AY1/DY1



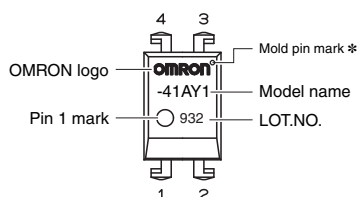
Current leakage vs. Ambient temperature  
G3VM-41AY/DY/AY1/DY1  
G3VM-61AY/DY/AY1/DY1



## ■Apperance/Terminal Arrangement/Internal Connections

### ■Apperance

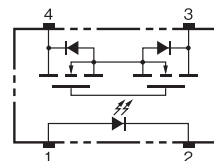
DIP (Dual Inline Package)  
DIP4



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

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

### ■ Terminal Arrangement/Internal Connections

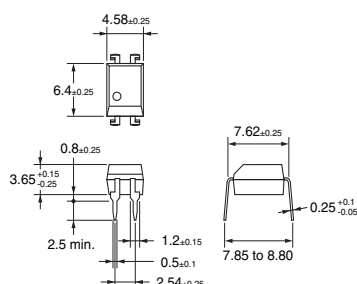


## ■Dimensions (Unit: mm)



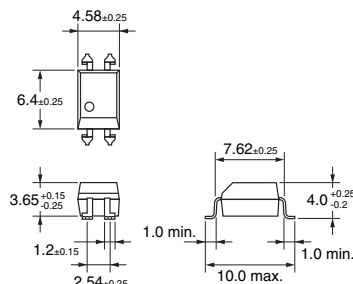
### PCB Terminals

Weight: 0.25 g

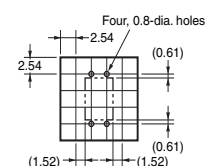


### Surface-mounting Terminals

Weight: 0.25 g

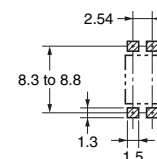


### PCB Dimensions (BOTTOM VIEW)



### Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

## ■Approved Standards

UL recognized

●Standard type and High sensitive type

| Approved Standards | Contact form    | File No. |
|--------------------|-----------------|----------|
| UL recognized      | 1a<br>(SPST-NO) | E80555   |

## ■Safety Precautions

• Refer to "Common Precautions" for all G3VM models.

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

## OMRON Corporation

Electronic and Mechanical Components Company

### Regional Contact

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In the interest of product improvement, specifications are subject to change without notice.

Cat. No. K275-E1-03

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