

**G3VM-2F(TR), -2FL(TR), -351D(TR)****Maximum Rating**

| Parameter                     |                                | Comments and conditions               |         | G3VM-2F,<br>G3VM-2F(TR)               | G3VM-2FL,<br>G3VM-2FL(TR)             | G3VM-351D,<br>G3VM-351D(TR)           |
|-------------------------------|--------------------------------|---------------------------------------|---------|---------------------------------------|---------------------------------------|---------------------------------------|
| Contact form/no. of terminals |                                | —                                     |         | 1 Form A/4 pins                       | 1 Form A/4 pins                       | 1 Form A/4 pins                       |
| Input (LED)                   | LED forward current            | $I_F$                                 | Typical | 50 mA                                 | 50 mA                                 | 50 mA                                 |
|                               |                                | $I_{FP}$ (100 $\mu$ s pulse, 100 pps) | Max.    | 1 A                                   | 1 A                                   | 1 A                                   |
|                               | Forward current derating       | $T_a \geq 25^\circ\text{C}$           |         | -0.5 mA/ $^\circ\text{C}$             | -0.5 mA/ $^\circ\text{C}$             | -0.5 mA/ $^\circ\text{C}$             |
|                               | Reverse voltage                | $V_R$                                 | Max.    | 5 V                                   | 6 V                                   | 5 V                                   |
|                               | Junction temperature ( $T_J$ ) |                                       |         | 125 $^\circ\text{C}$                  | 125 $^\circ\text{C}$                  | 125 $^\circ\text{C}$                  |
| Output (Detector)             | Output voltage strength        | $V_{OFF}$                             |         | 350 V                                 | 350 V                                 | 350 V                                 |
|                               | Continuous load current        | $I_O$                                 |         | 120 mA                                | 120 mA                                | 120 mA                                |
|                               | ON-state current derating      | $T_a \geq 25^\circ\text{C}$           |         | -1.2 mA/ $^\circ\text{C}$             | -1.2 mA/ $^\circ\text{C}$             | -1.2 mA/ $^\circ\text{C}$             |
|                               | Junction temperature ( $T_J$ ) |                                       |         | 125 $^\circ\text{C}$                  | 125 $^\circ\text{C}$                  | 125 $^\circ\text{C}$                  |
| Dielectric strength           |                                | $V_{I/O}$ for 1 minute min.           |         | 2500 VAC                              | 2500 VAC                              | 2500 VAC                              |
| Temperature                   | Ambient                        | $T_a$ with no icing                   |         | -20 $^\circ$ to +85 $^\circ\text{C}$  | -40 $^\circ$ to +85 $^\circ\text{C}$  | -40 $^\circ$ to +85 $^\circ\text{C}$  |
|                               | Storage                        | $T_{stg}$ with no icing               |         | -55 $^\circ$ to +100 $^\circ\text{C}$ | -55 $^\circ$ to +125 $^\circ\text{C}$ | -55 $^\circ$ to +100 $^\circ\text{C}$ |

**Electrical Characteristics**

| Parameter                |                                                | Comments and conditions                                   |                                | G3VM-2F,<br>G3VM-2F(TR)        | G3VM-2FL,<br>G3VM-2FL(TR)      | G3VM-351D,<br>G3VM-351D(TR)    |
|--------------------------|------------------------------------------------|-----------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Input                    | LED forward voltage (V <sub>F</sub> )          | I <sub>F</sub> =10 mA                                     | Min.                           | 1.0 V                          | 1.0 V                          | 1.0 V                          |
|                          |                                                |                                                           | Typical                        | 1.15 V                         | 1.15 V                         | 1.15 V                         |
|                          |                                                |                                                           | Max.                           | 1.3 V                          | 1.3 V                          | 1.3 V                          |
|                          | Reverse current                                | I <sub>R</sub>                                            | Max.                           | 10 μA                          | 10 μA                          | 10 μA                          |
|                          | Reverse voltage                                | V <sub>R</sub>                                            | Max.                           | 5 V                            | 6 V                            | 5 V                            |
|                          | Capacitance (C <sub>T</sub> )                  | V = 0;<br>freq. = 1 MHz                                   | Typical                        | 30 pF                          | 30 pF                          | 30 pF                          |
|                          | Keep ON LED current (I <sub>FT</sub> )         | At I <sub>O</sub>                                         | Typical                        | 2 mA (I <sub>O</sub> = 100 mA) | 1 mA (I <sub>O</sub> = 120 mA) | 1 mA (I <sub>O</sub> = 120 mA) |
| Max.                     |                                                |                                                           | 3 mA (I <sub>O</sub> = 100 mA) | 3 mA (I <sub>O</sub> = 120 mA) | 3 mA (I <sub>O</sub> = 120 mA) |                                |
| Output                   | ON-resistance (R <sub>ON</sub> )               | I <sub>ON</sub> =120 mA<br>I <sub>F</sub> =5 mA           | Typical                        | 22 Ω                           | 22 Ω                           | 35 Ω (25 Ω, t< 1s)             |
|                          |                                                |                                                           | Max.                           | 35 Ω                           | 35 Ω                           | 50 Ω (35 Ω, t< 1s)             |
|                          | OFF-state leakage current (I <sub>LEAK</sub> ) | V <sub>OFF</sub> = 350 V                                  | Max.                           | 1.0 μA                         | 1.0 μA                         | 1.0 μA                         |
|                          | Limit current (I <sub>LIM</sub> )              | I <sub>F</sub> = 5 mA, V <sub>DD</sub> = 5 V,<br>t = 5 ms | Min.                           | —                              | 150 mA                         | —                              |
| Max.                     |                                                |                                                           | —                              | 300 mA                         | —                              |                                |
| Transfer characteristics | I/O capacitance                                | (C <sub>I/O</sub> )                                       | Typical                        | 0.8 pF                         | 0.8 pF                         | 0.8 pF                         |
|                          | I/O resistance                                 | (R <sub>I/O</sub> )                                       | Min.                           | 1000 MΩ                        | 1000 MΩ                        | 1000 MΩ                        |
|                          | Operate time                                   | (t <sub>ON</sub> )                                        | Max.                           | 1.0 ms                         | 1.0 ms                         | 1.0 ms                         |
|                          | Release time                                   | (t <sub>OFF</sub> )                                       | Max.                           | 1.0 ms                         | 1.0 ms                         | 1.0 ms                         |

## Optimum Operating Conditions

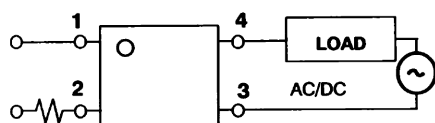
| Parameter                   | Comments and conditions |         | G3VM-2F,<br>G3VM-2F(TR) | G3VM-2FL,<br>G3VM-2FL(TR) | G3VM-351D,<br>G3VM-351D(TR) |
|-----------------------------|-------------------------|---------|-------------------------|---------------------------|-----------------------------|
| Output voltage strength     | $V_{DD}$                | Max.    | 280 V                   | 280 V                     | 280 V                       |
| Operate LED forward current | $I_F$                   | Min.    | 5 mA                    | 5 mA                      | 5 mA                        |
|                             |                         | Typical | 7.5 mA                  | 7.5 mA                    | 7.5 mA                      |
|                             |                         | Max.    | 25 mA                   | 25 mA                     | 25 mA                       |
| Continuous load current     | $I_O$                   | Max.    | 100 mA                  | 100 mA                    | 100 mA                      |
| Ambient temperature         | $T_A$                   |         | -20° to 65°C            | -20° to 65°C              | -20° to 65°C                |

## Dimensions

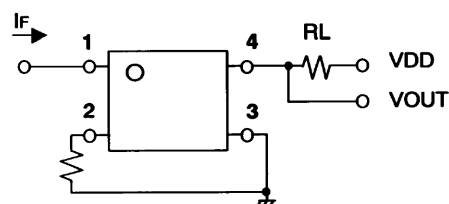
| Item       | G3VM-2F,<br>G3VM-2F(TR) | G3VM-2FL,<br>G3VM-2FL(TR) | G3VM-351D,<br>G3VM-351D(TR) |
|------------|-------------------------|---------------------------|-----------------------------|
| Dimensions | See pages 94, 98        | See pages 94, 98          | See pages 94, 98            |

## Connections

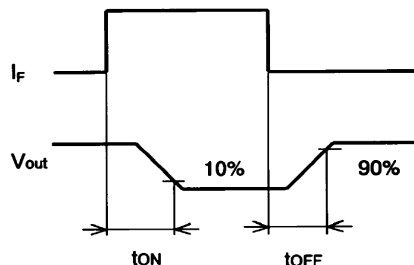
G3VM-2F, -2F(TR), -2FL, -2FL(TR)



G3VM-2F, -2F(TR), -2FL, -2FL(TR), -351D, -351D(TR)



## Timing Chart



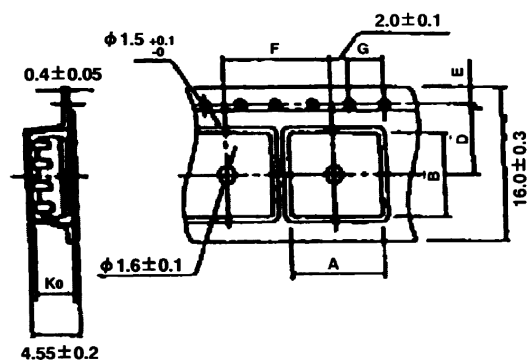
# Tape-and-Reel Dimensions

Unit: mm

## ■ Surface Mount (SMT) Models

G3VM-2F(TR), G3VM-2FL(TR), G3VM-351D(TR), G3VM-353D(TR), G3VM-401D(TR), G3VM-61D(TR), G3VM-61D1(TR)

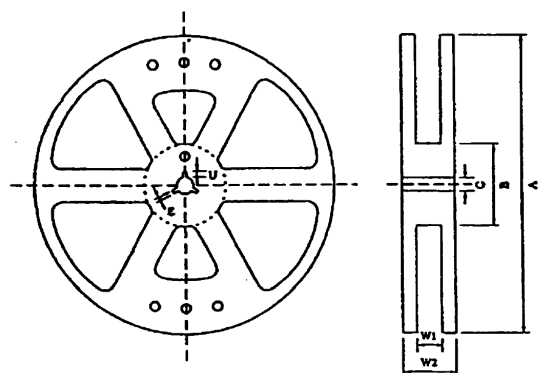
Type Figuration

(Unit: mm)  
Tolerance:  $\pm 0.1$ 

| Symbol | Dimension | Remarks                                                                        |
|--------|-----------|--------------------------------------------------------------------------------|
| A      | 10.4      | —                                                                              |
| B      | 7.6       | —                                                                              |
| K0     | 4.1       | Internal                                                                       |
| F      | 12.0      | Total Height $\begin{smallmatrix} +0.1 \\ -0.3 \end{smallmatrix}$ / 10 pitches |
| G      | 4.0       | Total Height $\begin{smallmatrix} +0.1 \\ -0.3 \end{smallmatrix}$ / 10 pitches |
| E      | 1.75      | From the edge to reel hole                                                     |
| D      | 12.0      | From reel hole to center                                                       |

Reel Figuration

(Unit: mm)



| Symbol | Dimension          |
|--------|--------------------|
| A      | $\phi 380 \pm 2.0$ |
| W1     | $17.5 \pm 0.5$     |
| W2     | $21.5 \pm 1.0$     |
| B      | $\phi 80 \pm 1.0$  |
| C      | $\phi 13 \pm 0.5$  |
| E      | $2.0 \pm 0.5$      |
| U      | $4.0 \pm 0.5$      |