

# MOS FET Relays

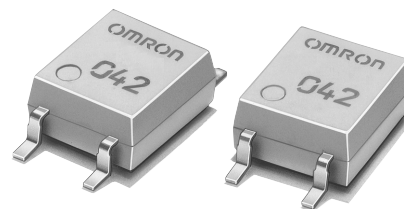
## G3VM-353G/G1

### Analog-switching MOS FET Relay with SPST-NC Contacts. General Purpose version added.

- New models with SPST-NC contacts and a 4-pin SOP package included in 350-V load voltage series.
- Continuous load current of 120 mA.
- Dielectric strength of 1,500 Vrms between I/O.
- General-purpose series (with high ON resistance) added.
- RoHS Compliant.

### Application Examples

- Broadband systems
- Measurement devices and Data loggers
- Amusement machines



**NEW** 

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

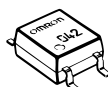
### List of Models

| Contact form | Terminals                  | Load voltage (peak value) | Model          | Number per stick | Number per tape |
|--------------|----------------------------|---------------------------|----------------|------------------|-----------------|
| SPST-NC      | Surface-mounting terminals | 350 VAC                   | G3VM-353G      | 100              | ---             |
|              |                            |                           | G3VM-353G1     |                  |                 |
|              |                            |                           | G3VM-353G(TR)  | ---              | 2,500           |
|              |                            |                           | G3VM-353G1(TR) |                  |                 |

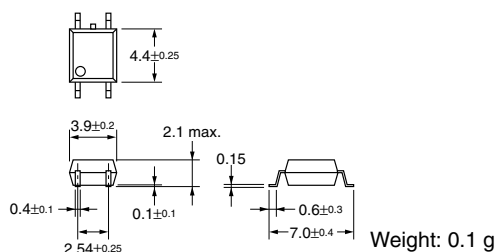
### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-353G/G1

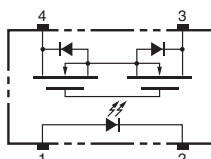


**Note:** The actual product is marked differently from the image shown here.



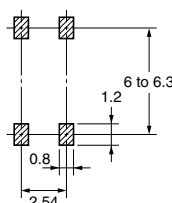
### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-353G/G1



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

#### G3VM-353G/G1



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

| Item                                                       | Symbol                               | Rating                         | Unit        | Measurement conditions |
|------------------------------------------------------------|--------------------------------------|--------------------------------|-------------|------------------------|
| Input                                                      | LED forward current                  | $I_F$                          | 50          | mA                     |
|                                                            | Repetitive peak LED forward current  | $I_{FP}$                       | 1           | A                      |
|                                                            | LED forward current reduction rate   | $\Delta I_F/^\circ\text{C}$    | -0.5        | mA/°C                  |
|                                                            | LED reverse voltage                  | $V_R$                          | 5           | V                      |
|                                                            | Connection temperature               | $T_j$                          | 125         | °C                     |
| Output                                                     | Load voltage (AC peak/DC)            | $V_{OFF}$                      | 350         | V                      |
|                                                            | Continuous load current (AC peak/DC) | $I_O$                          | 120 (90)    | mA                     |
|                                                            | ON current reduction rate            | $\Delta I_{ON}/^\circ\text{C}$ | -1.2 (-0.9) | mA/°C                  |
| Dielectric strength between input and output (See note 1.) |                                      | $V_{I-O}$                      | 1,500       | $V_{rms}$              |
| Operating temperature                                      |                                      | $T_a$                          | -40 to +85  | °C                     |
| Storage temperature                                        |                                      | $T_{stg}$                      | -55 to +125 | °C                     |
| Soldering temperature (10 s)                               |                                      | ---                            | 260         | °C                     |

**Note:** 1. 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.

Values in parentheses are for the G3VM-353G1

## Electrical Characteristics (Ta = 25°C)

| Item                           | Symbol                                 | Minimum    | Typical | Maximum        | Unit    | Measurement conditions |
|--------------------------------|----------------------------------------|------------|---------|----------------|---------|------------------------|
| Input                          | LED forward voltage                    | $V_F$      | 1.0     | 1.15           | 1.3     | V                      |
|                                | Reverse current                        | $I_R$      | ---     | ---            | 10      | $\mu\text{A}$          |
|                                | Capacity between terminals             | $C_T$      | ---     | 30             | ---     | pF                     |
|                                | Trigger LED forward current            | $I_{FT}$   | ---     | 1              | 3       | mA                     |
| Output                         | Maximum resistance with output ON      | $R_{ON}$   | ---     | 15 (30)        | 25 (50) | $\Omega$               |
|                                | Current leakage when the relay is open | $I_{LEAK}$ | ---     | 0.0105 (0.003) | 1.0     | $\mu\text{A}$          |
|                                | Capacity between terminals             | $C_{OFF}$  | ---     | 65 (30)        | ---     | pF                     |
| Capacity between I/O terminals |                                        | $C_{I-O}$  | ---     | 0.8            | ---     | pF                     |
| Insulation resistance          |                                        | $R_{I-O}$  | 1,000   | ---            | ---     | M $\Omega$             |
| Turn-ON time                   |                                        | $t_{ON}$   | ---     | 0.15 (0.25)    | 1.0 (1) | ms                     |
| Turn-OFF time                  |                                        | $t_{OFF}$  | ---     | 0.7 (0.5)      | 3.0 (1) | ms                     |

Values in parentheses are for the G3VM-353G1

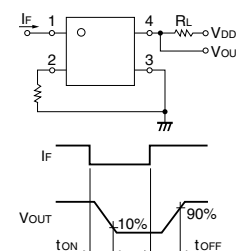
## Recommended Operating Conditions

Use the G3VM under the following conditions so that the Relay will operate properly.

| Item                                 | Symbol   | Minimum | Typical | Maximum  | Unit |
|--------------------------------------|----------|---------|---------|----------|------|
| Load voltage (AC peak/DC)            | $V_{DD}$ | ---     | ---     | 280      | V    |
| Operating LED forward current        | $I_F$    | 5       | ---     | 25       | mA   |
| Continuous load current (AC peak/DC) | $I_O$    | ---     | ---     | 120 (90) | mA   |
| Operating temperature                | $T_a$    | -20     | ---     | 65       | °C   |

Values in parentheses are for the G3VM-353G1

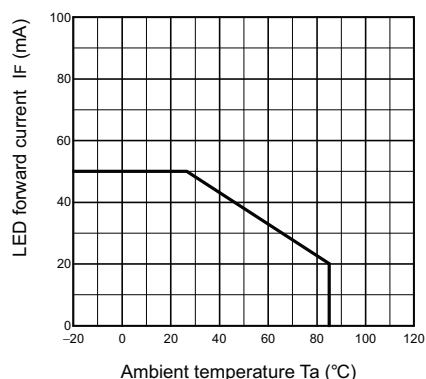
**Note:** 2. Turn-ON and Turn-OFF Times



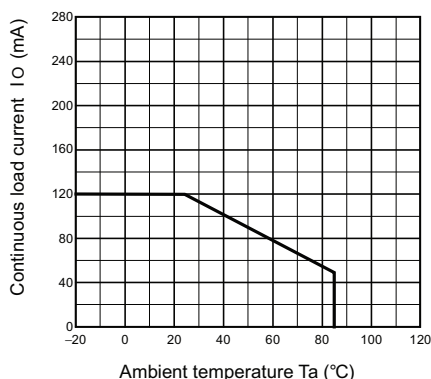
# Engineering Data

G3VM-353G

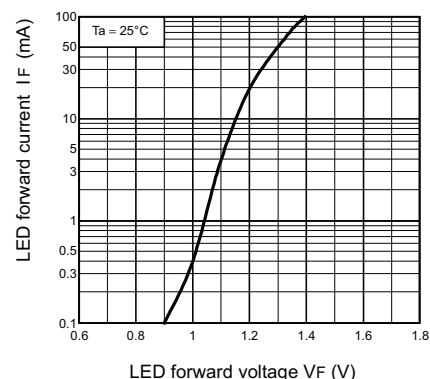
LED forward current vs.  
Ambient temperature  
 $I_F - T_a$



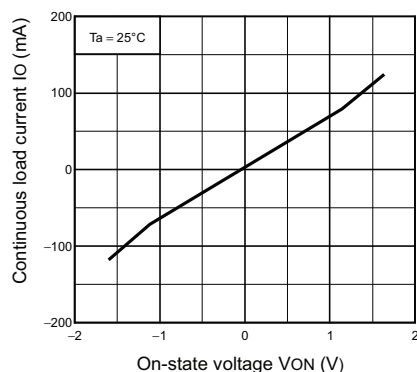
Continuous load current vs.  
Ambient temperature  
 $I_O - T_a$



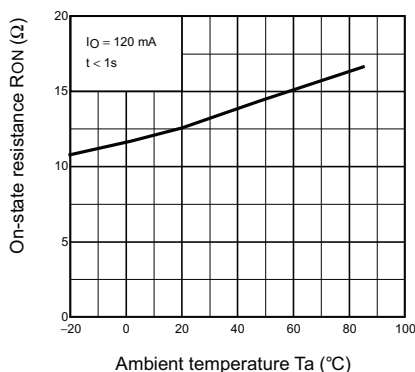
LED forward current vs.  
LED forward voltage  
 $I_F - V_F$



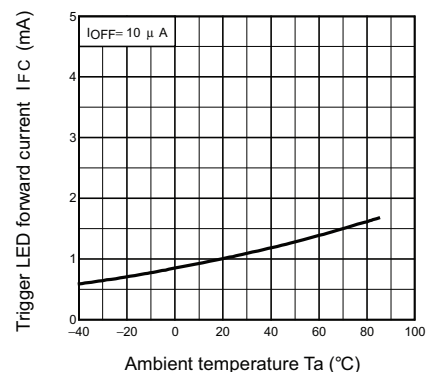
Continuous load current vs.  
On-state voltage  
 $I_O - V_{ON}$



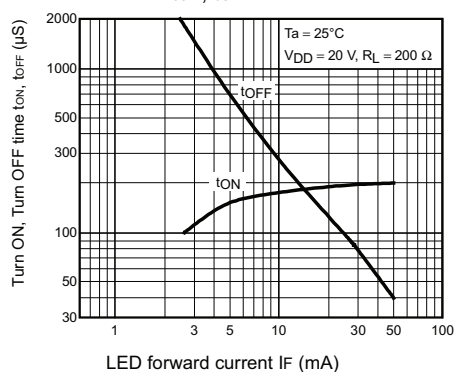
On-state resistance vs.  
Ambient temperature  
 $R_{ON} - T_a$



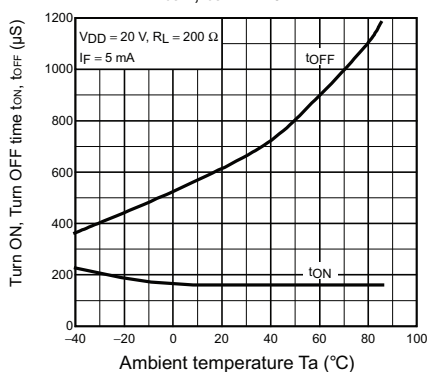
Trigger LED forward current vs.  
Ambient temperature  
 $I_{FC} - T_a$



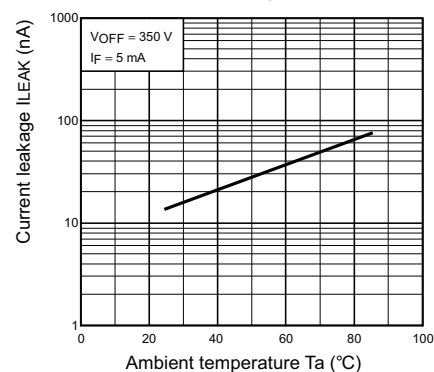
Turn ON, Turn OFF time vs.  
LED forward current  
 $t_{ON}, t_{OFF} - I_F$



Turn ON, Turn OFF time vs.  
Ambient temperature  
 $t_{ON}, t_{OFF} - T_a$



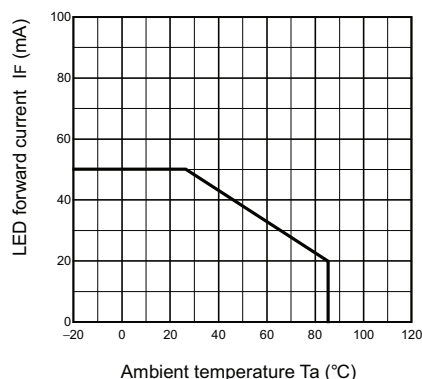
Current leakage vs.  
Ambient temperature  
 $I_{LEAK} - T_a$



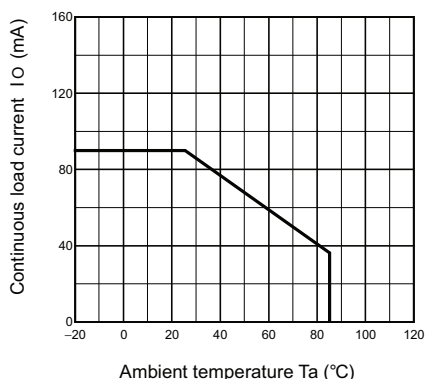
■ Engineering Data

G3VM-353G1

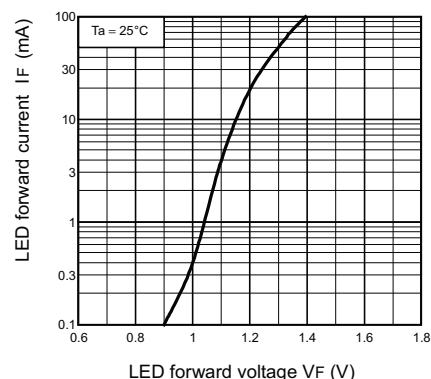
LED forward current vs.  
Ambient temperature  
 $I_F - T_a$



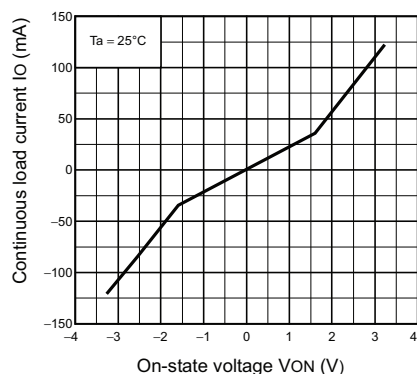
Continuous load current vs.  
Ambient temperature  
 $I_O - T_a$



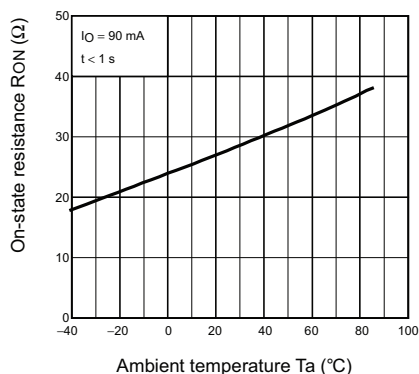
LED forward current vs.  
LED forward voltage  
 $I_F - V_F$



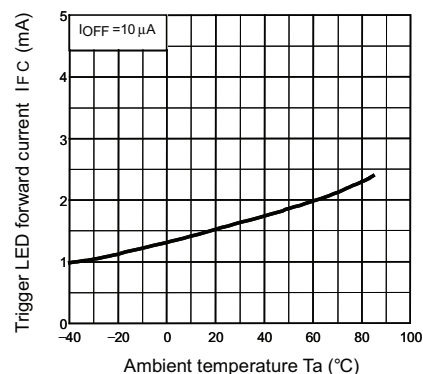
Continuous load current vs.  
On-state voltage  
 $I_O - V_{ON}$



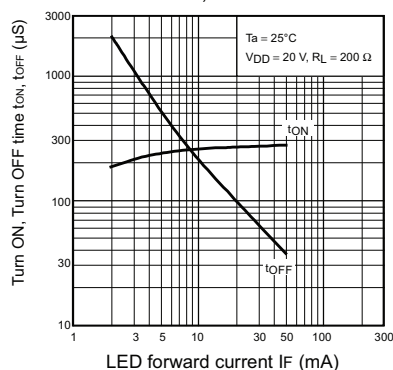
On-state resistance vs.  
Ambient temperature  
 $R_{ON} - T_a$



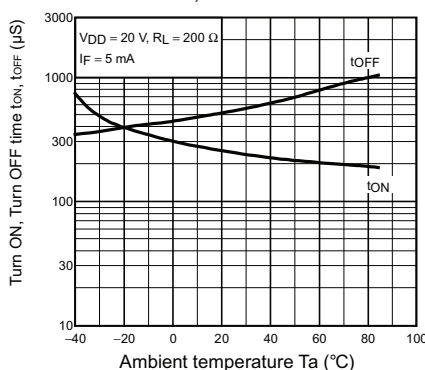
Trigger LED forward current vs.  
Ambient temperature  
 $I_{FC} - T_a$



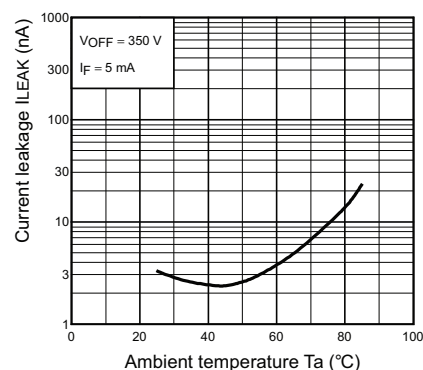
Turn ON, Turn OFF time vs.  
LED forward current  
 $t_{ON}, t_{OFF} - I_F$



Turn ON, Turn OFF time vs.  
Ambient temperature  
 $t_{ON}, t_{OFF} - T_a$



Current leakage vs.  
Ambient temperature  
 $I_{LEAK} - T_a$





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55 E. Commerce Drive, Suite B  
Schaumburg, IL 60173

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