

MOS FET Relays

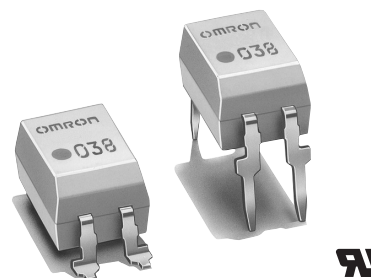
G3VM-353A/A1/D/D1

Analog-switching MOS FET Relays with SPST-NC Contact. General-purpose Models Added.

- Switches AC and DC minute analog signals.
- General-purpose models (high ON resistance) added.
- RoHS compliant

Application Examples

- Electronic automatic exchange systems
- Security systems
- Datacom (modem) systems
- FA systems and Measurement devices



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

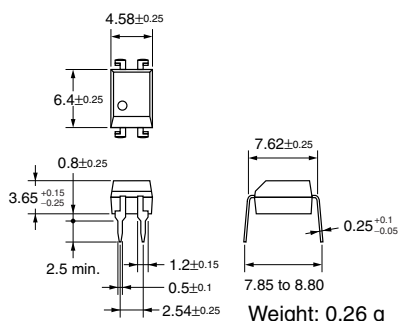
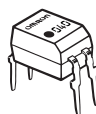
List of Models

| Contact form | Terminals | Load voltage (peak value) | Model | Number per stick | Number per tape |
|--------------|----------------------------|---------------------------|----------------|------------------|-----------------|
| SPST-NC | PCB terminals | 350 VAC | G3VM-353A | 100 | --- |
| | | | G3VM-353A1 | | |
| | | | G3VM-353D | | |
| | | | G3VM-353D1 | | |
| | Surface-mounting terminals | | G3VM-353D(TR) | --- | |
| | | | G3VM-353D1(TR) | 1,500 | |

Dimensions

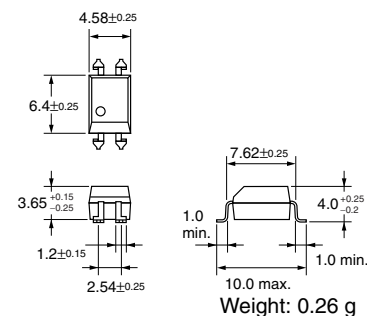
Note: All units are in millimeters unless otherwise indicated.

G3VM-353A/A1



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

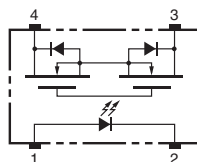
G3VM-353D/D1



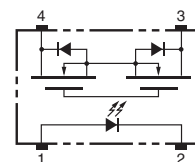
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Terminal Arrangement/Internal Connections (Top View)

G3VM-353A/A1

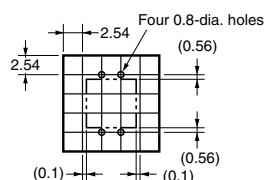


G3VM-353D/D1



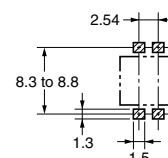
PCB Dimensions (Bottom View)

G3VM-353A/A1



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-353D/D1



■ 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 | 100 μ s pulses, 100 pps |
| | LED forward current reduction rate | $\Delta I_F/^\circ\text{C}$ | -0.5 | mA/ $^\circ\text{C}$ | $t_a \geq 25^\circ\text{C}$ |
| | LED reverse voltage | V_R | 5V | | |
| | Connection temperature | T_j | 125 | $^\circ\text{C}$ | |
| Output | Load voltage (AC peak/DC) | V_{OFF} | 350 | V | |
| | Continuous load current (AC peak/DC) | I_O | 150 (100) | mA | |
| | ON current reduction rate | $\Delta I_{ON}/^\circ\text{C}$ | -1.5 (-1) | mA/ $^\circ\text{C}$ | $t_a \geq 25^\circ\text{C}$ |
| | Connection temperature | T_j | 125 | $^\circ\text{C}$ | |
| Dielectric strength between input and output (See note 1.) | | V_{I-O} | 2,500 | V_{rms} | AC for 1 min |
| Operating temperature | | T_a | -40 to +85 | $^\circ\text{C}$ | With no icing or condensation |
| Storage temperature | | T_{stg} | -55 to +125 | $^\circ\text{C}$ | With no icing or condensation |
| Soldering temperature (10 s) | | --- | 260 | $^\circ\text{C}$ | 10 s |

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-353A1/D1.

■ 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 | $I_F = 10 \text{ mA}$ |
| | Reverse current | I_R | --- | --- | 10 | μA | $V_R = 5 \text{ V}$ |
| | Capacity between terminals | C_T | --- | 30 | --- | pF | $V = 0, f = 1 \text{ MHz}$ |
| | Trigger LED forward current | I_{FT} | --- | 1 | 3 | mA | $I_{OFF} = 10 \mu\text{A}$ |
| Output | Maximum resistance with output ON | R_{ON} | --- | 15 (30) | 25 (50) | Ω | $I_O = 150 \text{ mA (100 mA)}$ |
| | Current leakage when the relay is open | I_{LEAK} | --- | 0.0105 (0.003) | 1.0 | μA | $I_F = 5 \text{ mA}, V_{OFF} = 350 \text{ V}$ |
| | Capacity between terminals | C_{OFF} | --- | 85 (30) | --- | pF | $V = 0, f = 1 \text{ MHz}, I_F = 5 \text{ mA}$ |
| Capacity between I/O terminals | | C_{I-O} | --- | 0.8 | --- | pF | $f = 1 \text{ MHz}, V_s = 0 \text{ V}$ |
| Insulation resistance | | R_{I-O} | 1,000 | --- | --- | $\text{M}\Omega$ | $V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$ |
| Turn-ON time | | t_{ON} | --- | 0.1 (0.25) | 1.0 (0.5) | ms | $I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V (See note 2.)}$ |
| Turn-OFF time | | t_{OFF} | --- | 1.0 (0.5) | 3.0 (1) | ms | |

Values in parentheses are for the G3VM-353A1/D1.

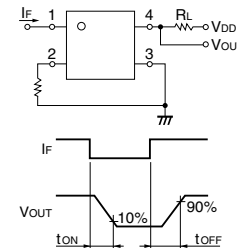
■ Recommended Operating Conditions

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 | --- | --- | 150 (100) | mA |
| Operating temperature | T_a | -20 | --- | 65 | $^\circ\text{C}$ |

Values in parentheses are for the G3VM-353A1/D1.

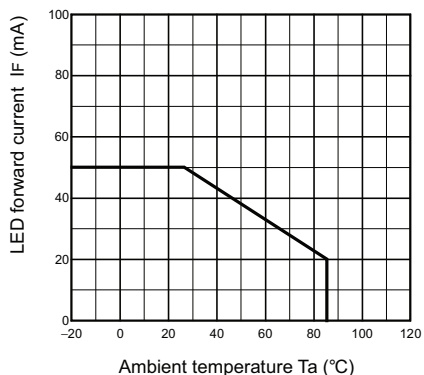
Note: 2. Turn-ON and Turn-OFF Times



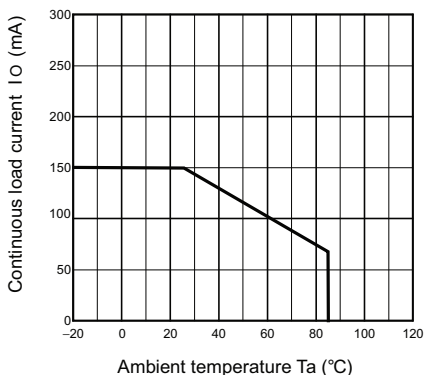
■ Engineering Data

G3VM-353A/D

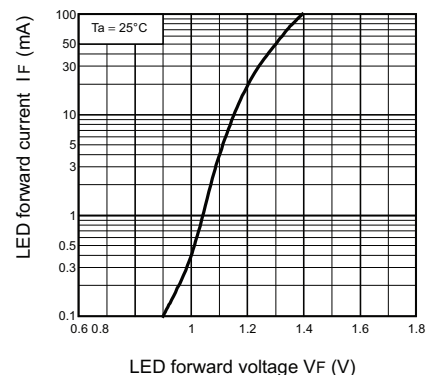
LED forward current vs. Ambient temperature
IF - Ta



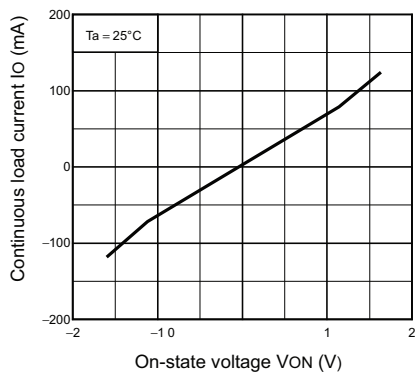
Continuous load current vs. Ambient temperature
IO - Ta



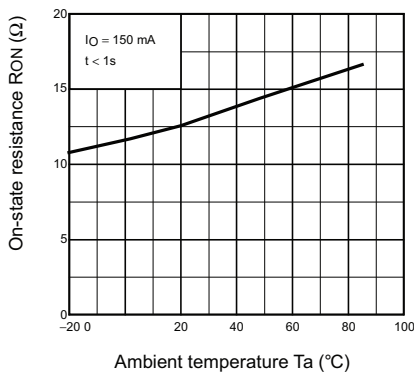
LED forward current vs. LED forward voltage
IF - VF



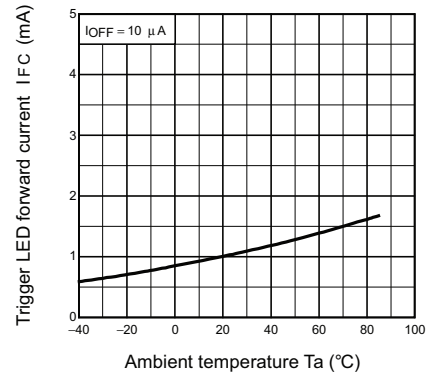
Continuous load current vs. On-state voltage
IO - VON



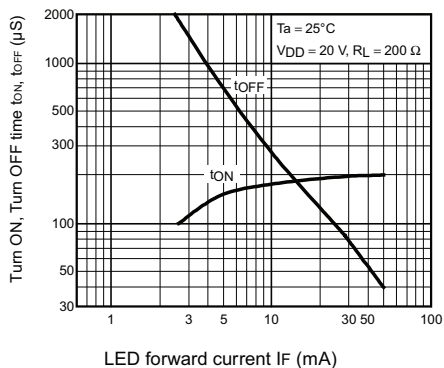
On-state resistance vs. Ambient temperature
RON - Ta



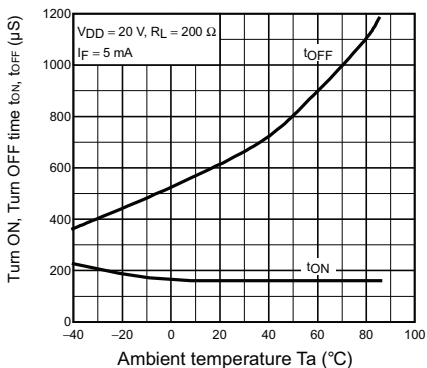
Trigger LED forward current vs. Ambient temperature
IFC - Ta



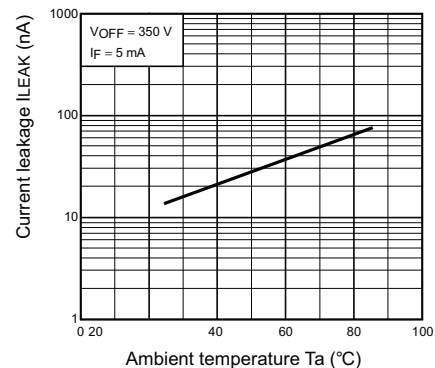
Turn ON, Turn OFF time vs. LED forward current
tON, tOFF - IF



Turn ON, Turn OFF time vs. Ambient temperature
tON, tOFF - Ta



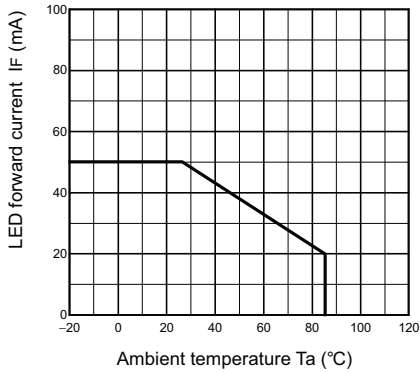
Current leakage vs. Ambient temperature
ILEAK - Ta



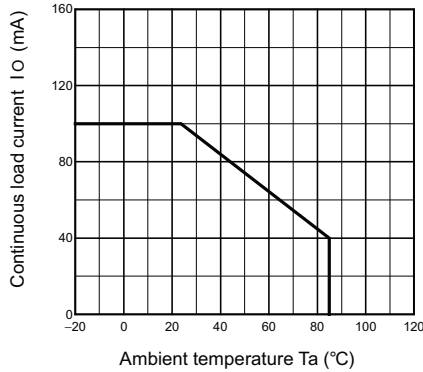
■ Engineering Data

G3VM-353A1/D1

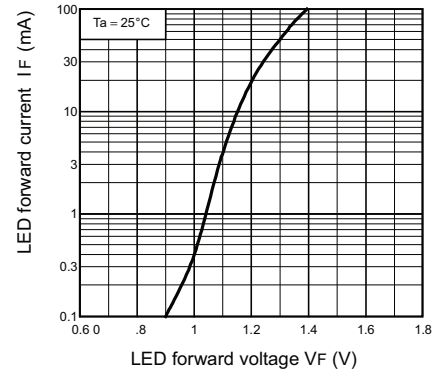
LED forward current vs. Ambient temperature
IF - Ta



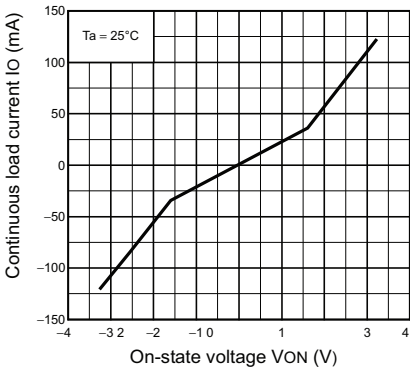
Continuous load current vs. Ambient temperature
IO - Ta



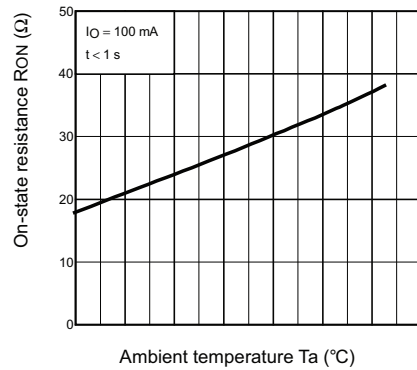
LED forward current vs. LED forward voltage
IF - VF



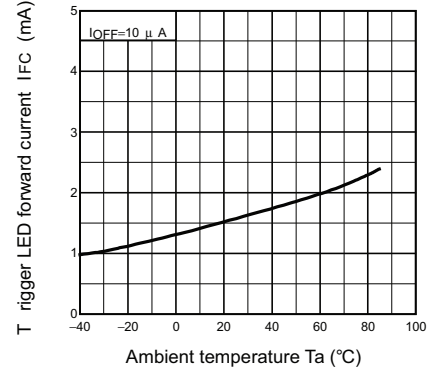
Continuous load current vs. On-state voltage
IO - VON



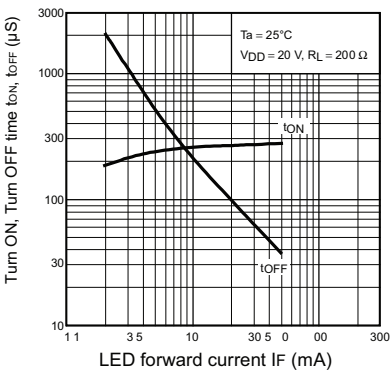
On-state resistance vs. Ambient temperature
RON - Ta



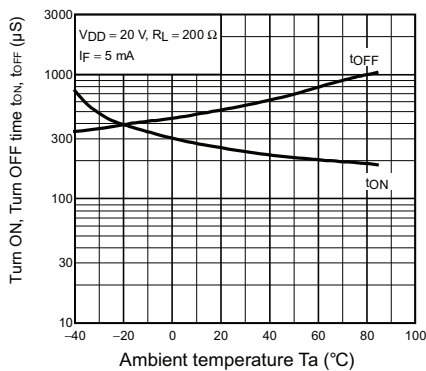
Trigger LED forward current vs. Ambient temperature
IFC - Ta



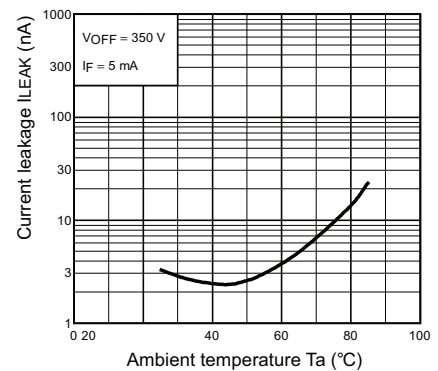
Turn ON, Turn OFF time vs. LED forward current
tON, tOFF - IF



Turn ON, Turn OFF time vs. Ambient temperature
tON, tOFF - Ta



Current leakage vs. Ambient temperature
ILEAK - Ta



Omron Electronic Components, LLC

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 - (iii) Use in consumer products or any use in significant quantities.
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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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