# yOS FET Relays
# G3VM-41LR3

**World's Smallest SSOP Package MOS FET Relay* with Low Output Capacitance and ON Resistance (C×R = 15pF•Ω) in a 40-V Load Voltage Model.**

- Output capacitance of 0.6 pF (typical) allows high frequency applications.
- RoHS compliant

*Information correct as of May, 2007, according to data obtained by OMRON.

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

## ■ Application Examples

- Semiconductor inspection tools
- Measurement devices and Data loggers
- Broadband systems

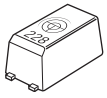
## ■ List of Models

| Contact form | Terminals | Load voltage (peak value) | Model | Number per tape |
|---|---|---|---|---|
| SPST-NO | Surface-mounting terminals | 40 VAC | **G3VM-41LR3** | --- |
| | | | **G3VM-41LR3(TR)** | 1,500 |

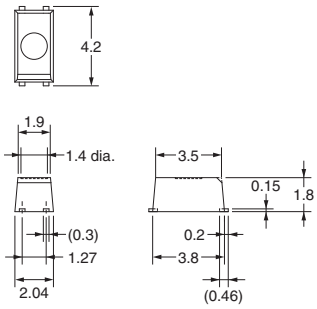
## ■ Dimensions

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

**G3VM-41LR3**



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

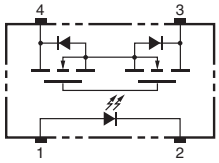



**Note:** A tolerance of ±0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

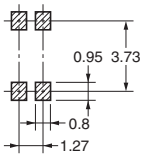
## ■ Terminal Arrangement/Internal Connections (Top View)

**G3VM-41LR3**




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

**G3VM-41LR3**



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

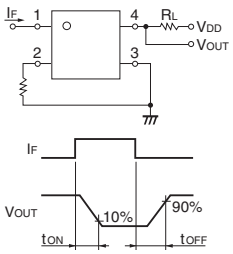
| Item | | Symbol | Rating | Unit | Measurement Conditions |
|---|---|---|---|---|---|
| Input | LED forward current | $I_F$ | 50 | mA | |
| | Repetitive peak LED forward current | $I_{FP}$ | 1 | A | 100 μs plus, 100 pps |
| | LED forward current reduction rate | $\Delta I_F$/°C | –0.5 | mA/°C | $T_a \geq 25$°C |
| | LED reverse voltage | $V_R$ | 5 | V | |
| | Connection temperature | $T_j$ | 125 | °C | |
| Output | Load voltage (AC peak/DC) | $V_{OFF}$ | 40 | V | |
| | Continuous load current | $I_O$ | 80 | mA | |
| | ON current reduction rate | $\Delta I_{ON}$/°C | –0.8 | mA/°C | $T_a \geq 25$°C |
| | Connection temperature | $T_j$ | 125 | °C | |
| Dielectric strength between input and output (See note 1.) | | $V_{I-O}$ | 1,500 | $V_{rms}$ | AC for 1 min |
| Ambient operating temperature | | $T_a$ | –20 to +85 | °C | With no icing or condensation |
| Storage temperature | | $T_{stg}$ | –40 to +125 | °C | With no icing or condensation |
| Soldering temperature | | --- | 260 | °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.

## ■ 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 mA |
| | Reverse current | $I_R$ | --- | --- | 10 | μA | $V_R$ = 5 V |
| | Capacity between terminals | $C_T$ | --- | 15 | --- | pF | V = 0, f = 1 MHz |
| | Trigger LED forward current | $I_{FT}$ | --- | --- | 4 | mA | $I_O$ = 80 mA |
| Output | Maximum resistance with output ON | $R_{ON}$ | --- | 25 | 35 | Ω | $I_F$ = 5 mA, $I_O$ = 80 mA, t = 10 ms |
| | Current leakage when the relay is open | $I_{LEAK}$ | --- | 0.2 | 1.0 | nA | $V_{OFF}$ = 30 V, $T_a$ = 50°C |
| | Capacity between terminals | $C_{OFF}$ | --- | 0.6 | 1.4 | pF | V = 0, f = 100 MHz, t < 1 s |
| Capacity between I/O terminals | | $C_{I-O}$ | --- | 0.8 | --- | pF | f = 1 MHz, $V_s$ = 0 V |
| Insulation resistance between I/O terminals | | $R_{I-O}$ | 1,000 | --- | --- | MΩ | $V_{I-O}$ = 500 VDC, $R_{oH} \leq 60\%$ |
| Turn-ON time | | $t_{ON}$ | --- | 0.03 | 0.5 | ms | $I_F$ = 10 mA, $R_L$ = 200 Ω, $V_{DD}$ = 20 V (See note 2.) |
| Turn-OFF time | | $t_{OFF}$ | --- | 0.12 | 0.5 | ms | |

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




## ■ Recommended Operating Conditions

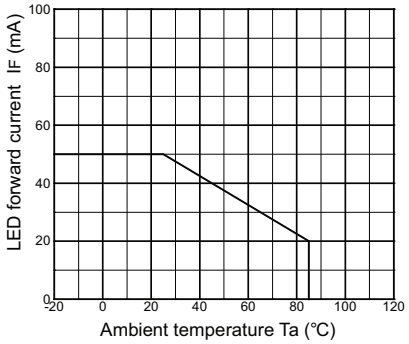
Use the G3VM under the following conditions so that the Relay will operate properly.

| Item | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Load voltage (AC peak/DC) | $V_{DD}$ | --- | --- | 32 | V |
| Operating LED forward current | $I_F$ | 10 | --- | 30 | mA |
| Continuous load current (AC peak/DC) | $I_O$ | --- | --- | 80 | mA |
| Operating temperature | $T_a$ | 25 | --- | 60 | °C |

## ■ Engineering Data

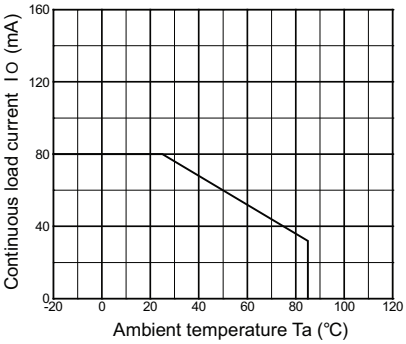
**LED forward current vs. Ambient temperature**

$I_F$ - Ta



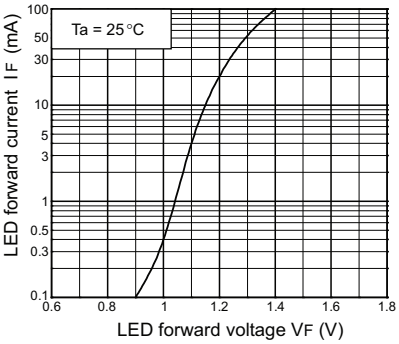

**Continuous load current vs. Ambient temperature**

$I_O$ - Ta



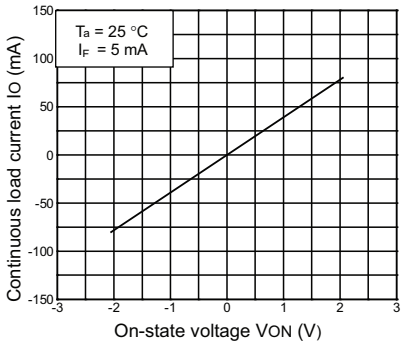

**LED forward current vs. LED forward voltage**

$I_F$ - $V_F$



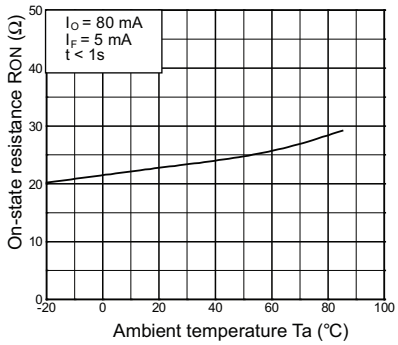

**Continuous load current vs. On-state voltage**

$I_O$ - $V_{ON}$



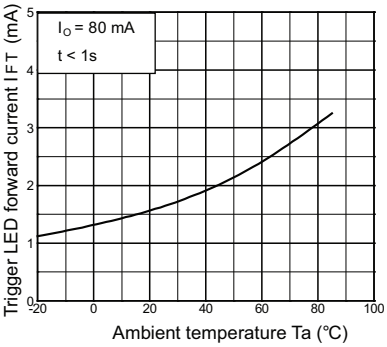

**On-state resistance vs. Ambient temperature**

$R_{ON}$ - Ta



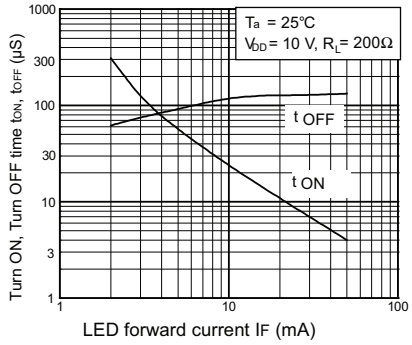

**Trigger LED forward current vs. Ambient temperature**

$I_{FT}$ - Ta



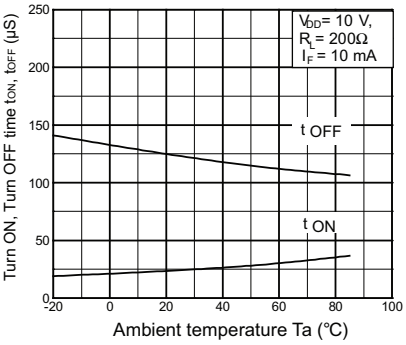

**Turn ON, Turn OFF time vs. LED forward current**

$t_{ON}$, $t_{OFF}$ - $I_F$



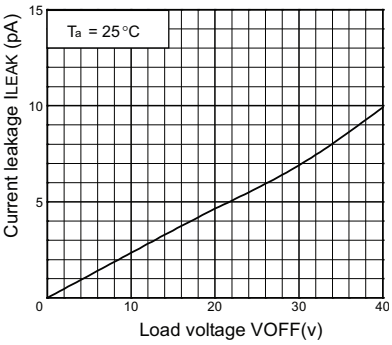

**Turn ON, Turn OFF time vs. Ambient temperature**

$t_{ON}$, $t_{OFF}$ - Ta



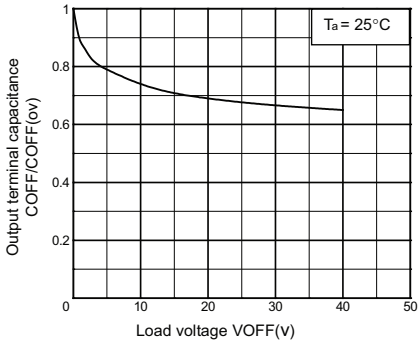

**Current leakage vs. Load voltage**

$I_{LEAK}$ – $V_{OFF}$




**Output terminal capacitance COFF/COFF(ov) vs. Load voltage**

$C_{OFF}$ - $V_{OFF}$



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