

MOS FET Relays

G3VM-21LR1

**World's Smallest SSOP Package MOS FET Relay*
with Low Output Capacitance and ON Resistance
(C_XR = 4pF•Ω) in a 20-V Load Voltage Model**

- ON resistance of 0.8 Ω (typical) suppresses output signal attenuation.
- 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

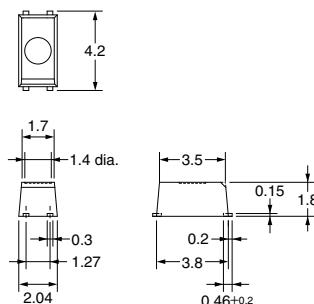
■ List of Models

| Contact form | Terminals | Load voltage (peak value) | Model | Number per tape |
|--------------|----------------------------|---------------------------|------------------|-----------------|
| SPST-NO | Surface-mounting terminals | 20 VAC | G3VM-21LR1 | --- |
| | | | G3VM-21LR1(TR) | 1,500 |
| | | | G3VM-21LR1(TR05) | 500 |
| | | | G3VM-21LR1(TR10) | 1,000 |

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21LR1

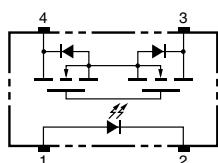


Note: A tolerance of ±0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

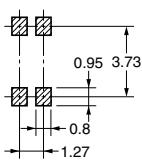
■ Terminal Arrangement/Internal Connections (Top View)

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

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■ Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

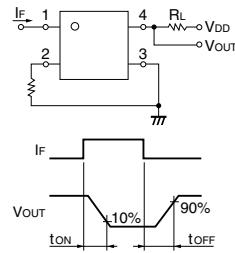
| Item | Symbol | Rating | Unit | Measurement conditions |
|--|-------------------------------------|--|------------------|-------------------------------|
| Input | LED forward current | I_F | 50 | mA |
| | Repetitive peak LED forward current | I_{FP} | 1 | A |
| | LED forward current reduction rate | $\Delta I_F/\text{ }^\circ\text{C}$ | -0.5 | mA/ $^\circ\text{C}$ |
| | LED reverse voltage | V_R | 5 | V |
| | Connection temperature | T_j | 125 | $^\circ\text{C}$ |
| Output | Load voltage (AC peak/DC) | V_{OFF} | 20 | V |
| | Continuous load current | I_O | 450 | mA |
| | ON current reduction rate | $\Delta I_{ON}/\text{ }^\circ\text{C}$ | -4.5 | mA/ $^\circ\text{C}$ |
| | Connection temperature | T_j | 125 | $^\circ\text{C}$ |
| Dielectric strength between input and output (See note 1.) | V_{I-O} | 1,500 | V_{rms} | AC for 1 min |
| Operating temperature | T_a | -20 to +85 | $^\circ\text{C}$ | With no icing or condensation |
| Storage temperature | T_{stg} | -40 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.

■ Electrical Characteristics ($T_a = 25^\circ\text{C}$)

| Item | Symbol | Minim-um | Typical | Maxi-mum | 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 | --- | 15 | --- | pF $V = 0, f = 1 \text{ MHz}$ |
| | Trigger LED forward current | I_{FT} | --- | --- | 4 | mA $I_O = 100 \text{ mA}$ |
| Output | Maximum resistance with output ON | R_{ON} | --- | 0.8 | 1.2 | Ω $I_F = 5 \text{ mA}, I_O = 450 \text{ mA}, t = 10 \text{ ms}$ |
| | Current leakage when the relay is open | I_{LEAK} | --- | 0.2 | 1.0 | nA $V_{OFF} = 20 \text{ V}, T_a = 50^\circ\text{C}$ |
| | Capacity between terminals | C_{OFF} | --- | 5.0 | 12.0 | pF $V = 0, f = 100 \text{ MHz}, t < 1 \text{ s}$ |
| 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 | --- | --- | M Ω | $V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$ |
| Turn-ON time | t_{ON} | --- | 0.2 | 0.5 | ms | $I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note 2.) |
| Turn-OFF time | t_{OFF} | --- | 0.2 | 0.5 | ms | |

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

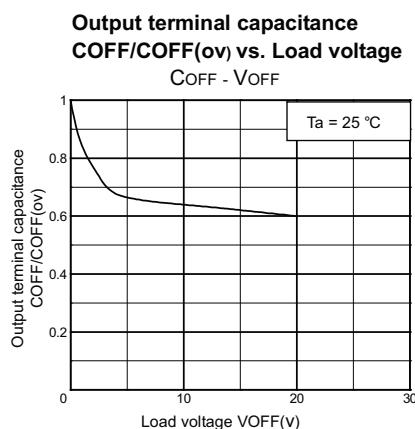
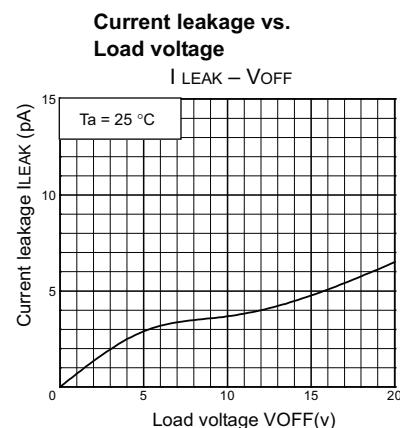
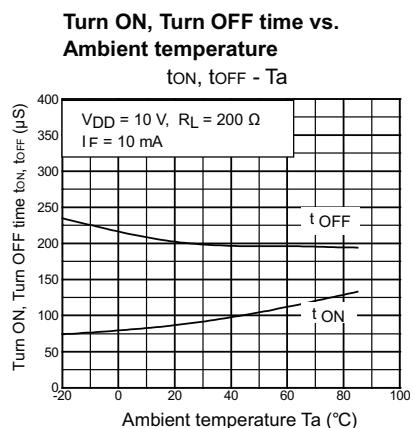
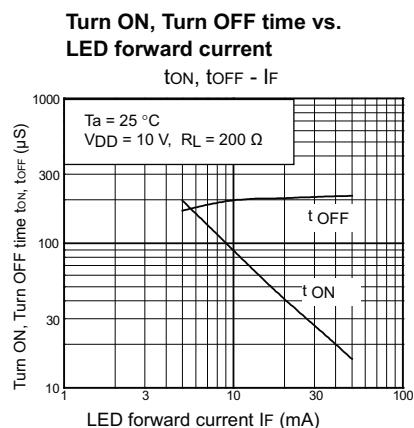
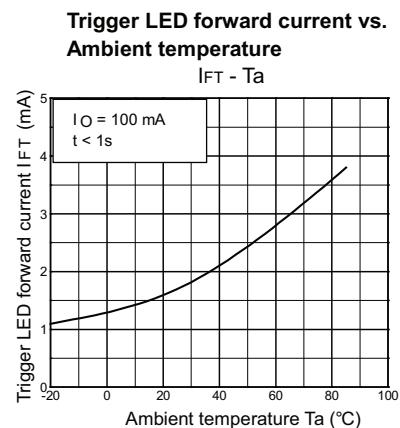
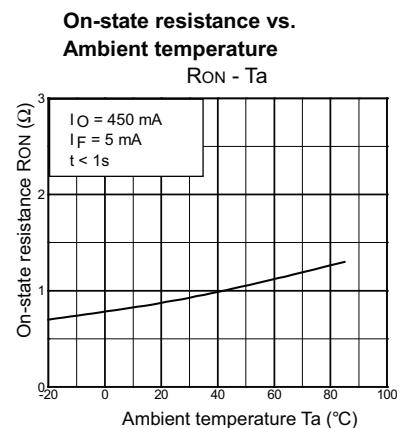
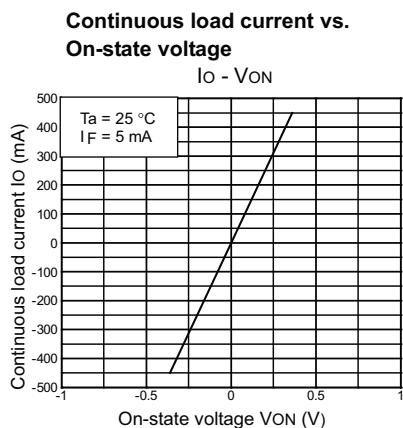
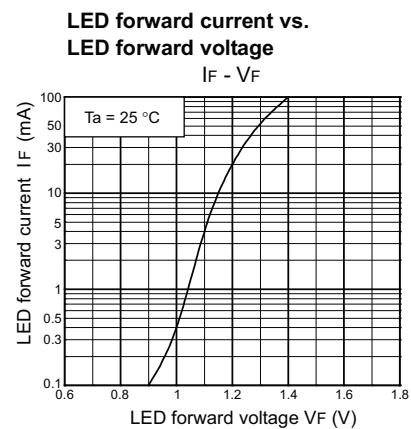
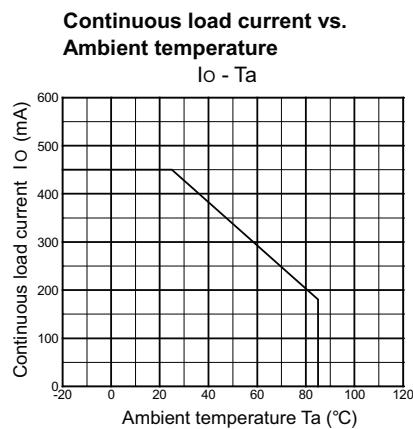
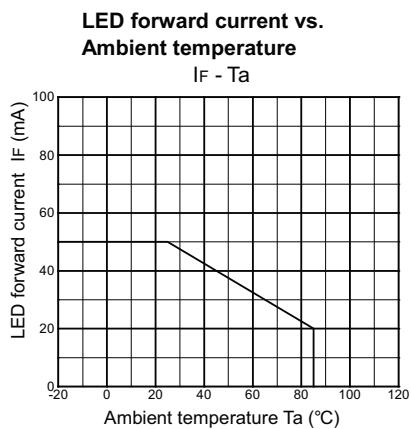


■ Recommended Operating Conditions

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} | --- | --- | 20 | V |
| Operating LED forward current | I_F | 10 | --- | 30 | mA |
| Continuous load current (AC peak/DC) | I_O | --- | --- | 450 | mA |
| Operating temperature | T_a | 25 | --- | 60 | $^\circ\text{C}$ |

■ Engineering Data



All sales are subject to Omron Electronic Components LLC standard terms and conditions of sale, which can be found at http://www.components.omron.com/components/web/webfiles.nsf/sales_terms.html

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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