

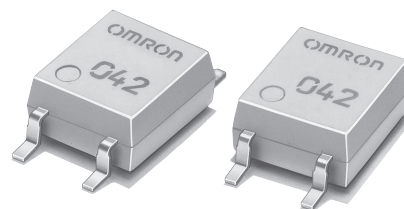
MOS FET Relays G3VM-41GR5

MOS FET Relay with Low Output Capacitance and ON Resistance ($C \times R = 10\text{pF} \cdot \Omega$) in a 40-V Load Voltage, SOP Package.

- ON resistance of 1Ω (typical) suppresses output signal attenuation.
- Leakage current of 1.0 nA max. (0.2 nA typ.) when relay is open.
- RoHS Compliant.

Application Examples

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



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-NO | Surface-mounting terminals | 40 VAC | G3VM-41GR5 | 100 | --- |
| | | | G3VM-41GR5(TR) | --- | 2,500 |

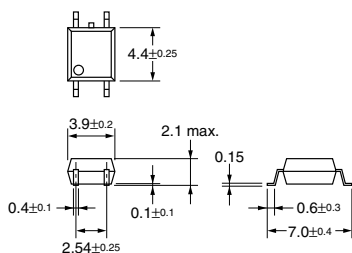
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41GR5



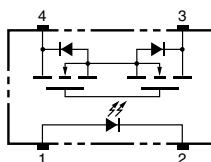
Note: The actual product is marked differently from the image shown here.



Weight: 0.1 g

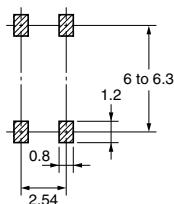
Terminal Arrangement/Internal Connections (Top View)

G3VM-41GR5



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-41GR5



■ Absolute Maximum Ratings (Ta = 25°C)

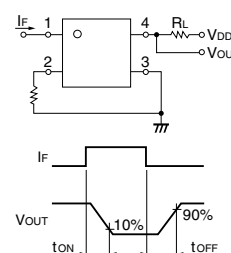
| Item | | Symbol | Rating | Unit | Measurement conditions |
|--|-------------------------------------|--------------------------------|-------------|-----------|-------------------------------|
| Input | LED forward current | I_F | 50 | mA | |
| | Repetitive peak LED forward current | I_{FP} | 1 | A | 100 μ s pulses, 100 pps |
| | LED forward current reduction rate | $\Delta I_F/^\circ\text{C}$ | -0.5 | mA/°C | $T_a \geq 25^\circ\text{C}$ |
| | 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 | 300 | mA | |
| | ON current reduction rate | $\Delta I_{ON}/^\circ\text{C}$ | -3.0 | mA/°C | $T_a \geq 25^\circ\text{C}$ |
| | 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 |
| 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 (10 s) | | --- | 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 | $I_F = 10 \text{ mA}$ |
| | 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} | --- | 1.0 | 1.5 | Ω | $I_F = 5 \text{ mA}, I_O = 300 \text{ mA}, t < 1 \text{ s}$ |
| | Current leakage when the relay is open | I_{LEAK} | --- | 0.2 | 1.0 | nA | $V_{OFF} = 30 \text{ V}, T_a = 50^\circ\text{C}$ |
| | Capacity between terminals | C_{OFF} | --- | 10.0 | 14.0 | 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} | --- | 0.09 | 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} | --- | 0.21 | 0.5 | ms | |

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



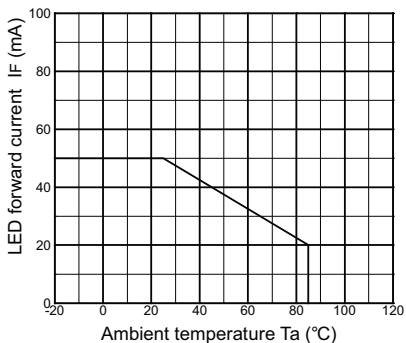
■ Recommended Operating Conditions

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

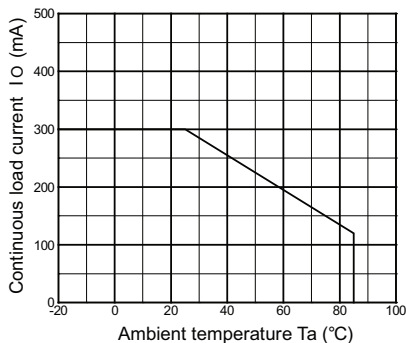
| Item | Symbol | Minimum | Typical | Maximum | Unit |
|--------------------------------------|----------|---------|---------|---------|------|
| Load voltage (AC peak/DC) | V_{DD} | --- | --- | 32 | V |
| Operating LED forward current | I_F | 10 | --- | 30 | mA |
| Continuous load current (AC peak/DC) | I_O | --- | --- | 300 | mA |
| Operating temperature | T_a | 25 | --- | 60 | °C |

■ Engineering Data

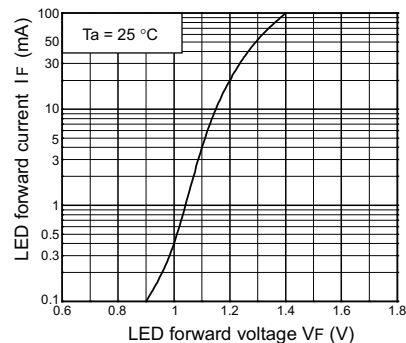
LED forward current vs. Ambient temperature
IF - Ta



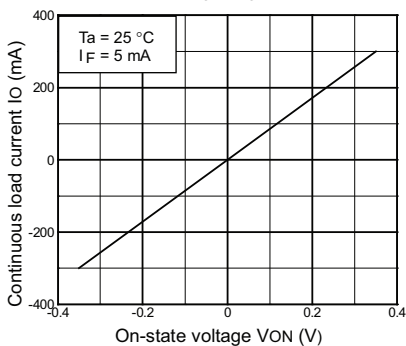
Continuous load current vs. Ambient temperature
IO - Ta



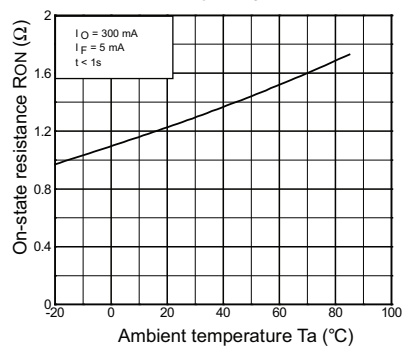
LED forward current vs. LED forward voltage
IF - VF



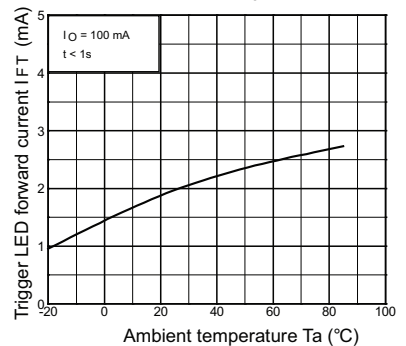
Continuous load current vs. On-state voltage
IO - VON



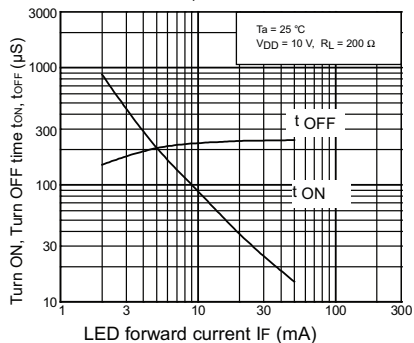
On-state resistance vs. Ambient temperature
RON - Ta



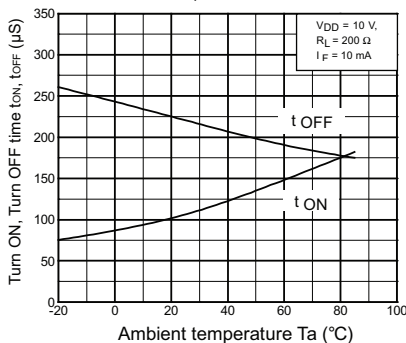
Trigger LED forward current vs. Ambient temperature
IFT - Ta



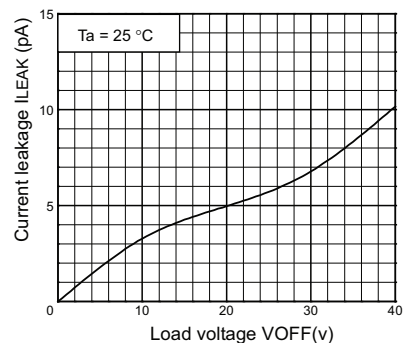
Turn ON, Turn OFF time vs. LED forward current
tON, tOFF - IF



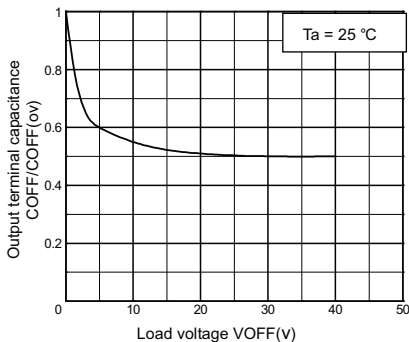
Turn ON, Turn OFF time vs. Ambient temperature
tON, tOFF - Ta



Current leakage vs. Load voltage
ILEAK - VOFF



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



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

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