

MOS FET Relays

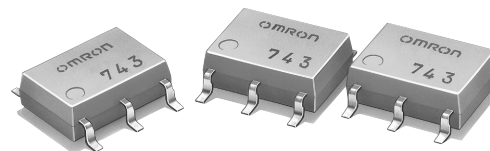
G3VM-41HR

Low 30-mΩ ON Resistance. High-power, 2.5-A Switching with a 40-V Load Voltage, SOP Package.

- Continuous load current of 2.5 A (connection C = 5 A).
- Dielectric strength of 1,500 Vrms between I/O.
- RoHS Compliant

■ Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Industrial equipment



NEW

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

■ List of Models

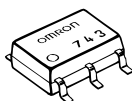
| Contact form | Terminals | Load voltage (peak value) (See note.) | Model | Number per stick | Number per tape |
|--------------|----------------------------|--|---------------|------------------|-----------------|
| SPST-NO | Surface-mounting terminals | 40 V | G3VM-41HR | 75 | --- |
| | | | G3VM-41HR(TR) | --- | 2,500 |

Note: The AC peak and DC value is given for the load voltage.

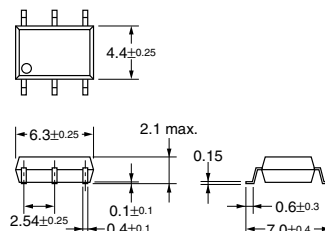
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41HR



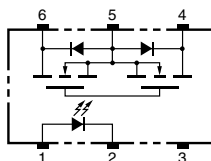
Note: The actual product is marked differently from the image shown here.



Weight: 0.13 g

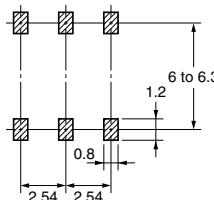
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41HR



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

G3VM-41HR

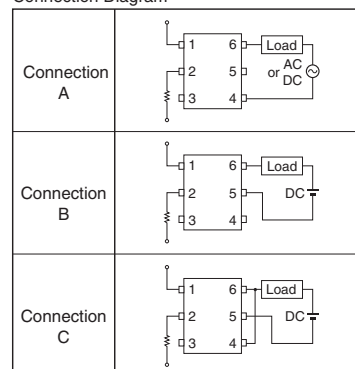


Absolute Maximum Ratings (Ta = 25°C)

| Item | | Symbol | Rating | Unit | Measurement Conditions |
|--|------------------------------------|--|-------------|-----------|--|
| Input | LED forward current | I_F | 30 | mA | |
| | LED forward current reduction rate | $\Delta I_F/^\circ\text{C}$ | -0.3 | 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 | Connection A I_O | 2.5 | A | Connection A: AC peak/DC Connection B and C: DC |
| | | Connection B | 2.5 | | |
| | | Connection C | 5 | | |
| | ON current reduction rate | Connection A $\Delta I_O/^\circ\text{C}$ | -33.3 | mA/°C | $T_a \geq 50^\circ\text{C}$ |
| | | Connection B | -33.3 | | |
| | | Connection C | -66.7 | | |
| | Pulse on current | I_{OP} | 7.5 | A | $t=100\text{ms}$ |
| | 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 | -40 to +85 | °C | With no icing or condensation |
| Storage temperature | | T_{stg} | -55 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.

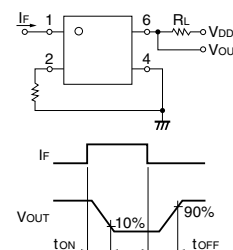
Connection Diagram



Electrical Characteristics (Ta = 25°C)

| Item | | Symbol | Minimum | Typical | Maximum | Unit | Measurement conditions |
|--------------------------------|--|-----------------------|---------|---------|---------|---------------|--|
| Input | LED forward voltage | V_F | 1.18 | 1.33 | 1.48 | V | $I_F = 10\text{ mA}$ |
| | Reverse current | I_R | --- | --- | 10 | μA | $V_R = 5\text{ V}$ |
| | Capacity between terminals | C_T | --- | 70 | --- | pF | $V = 0, f = 1\text{ MHz}$ |
| | Trigger LED forward current | I_{FT} | --- | 0.4 | 3 | mA | $I_O = 100\text{ mA}$ |
| Output | Maximum resistance with output ON | Connection A R_{ON} | --- | 0.03 | 0.06 | Ω | $I_F = 5\text{ mA}, I_O = 2\text{ A}, t < 1\text{ s}$ |
| | | Connection B | --- | 0.015 | 0.03 | Ω | $I_F = 5\text{ mA}, I_O = 2\text{ A}, t < 1\text{ s}$ |
| | | Connection C | --- | 0.008 | --- | Ω | $I_F = 5\text{ mA}, I_O = 4\text{ A}, t < 1\text{ s}$ |
| | Current leakage when the relay is open | I_{LEAK} | --- | --- | 10 | nA | $V_{OFF} = 40\text{ V}$ |
| 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} | --- | 1.0 | 5.0 | ms | $I_F = 5\text{ mA}, R_L = 200\ \Omega, V_{DD} = 20\text{ V}$ (See note 2.) |
| Turn-OFF time | | t_{OFF} | --- | 0.15 | 1.0 | ms | |

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



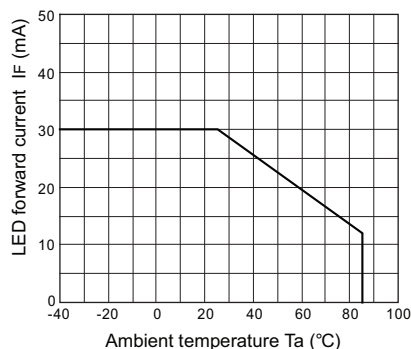
Recommended Operating Conditions

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

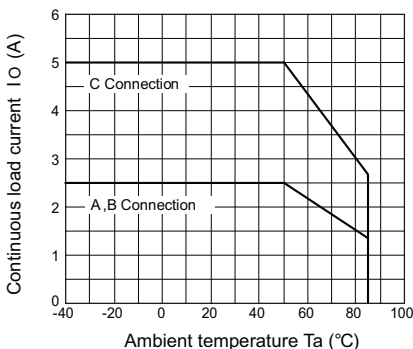
| Item | Symbol | Minimum | Typical | Maximum | Unit |
|--------------------------------------|----------|---------|---------|---------|------|
| Load voltage (AC peak/DC) | V_{DD} | --- | --- | 40 | V |
| Operating LED forward current | I_F | 5 | 7.5 | 20 | mA |
| Continuous load current (AC peak/DC) | I_O | --- | --- | 2 | A |
| Operating temperature | T_a | -20 | --- | 65 | °C |

■ Engineering Data

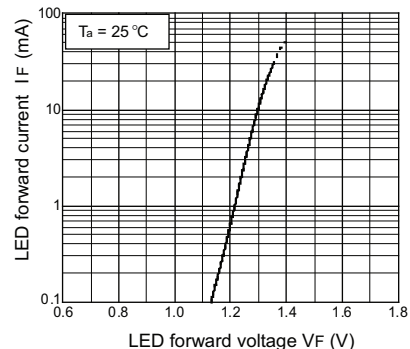
**LED forward current vs.
Ambient temperature**
 $I_F - T_a$



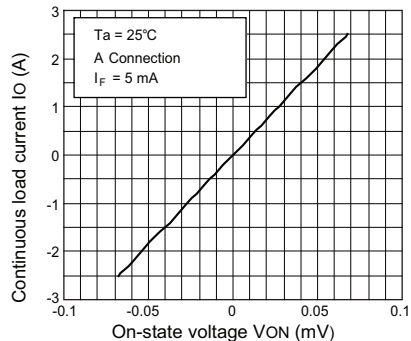
**Continuous load current vs.
Ambient temperature**
 $I_O - T_a$



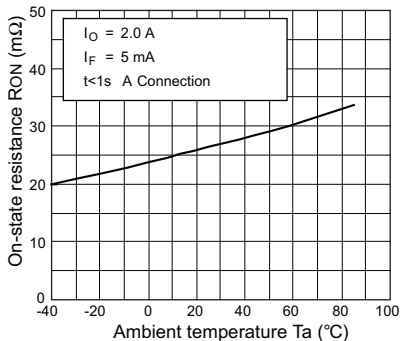
**LED forward current vs.
LED forward voltage**
 $I_F - V_F$



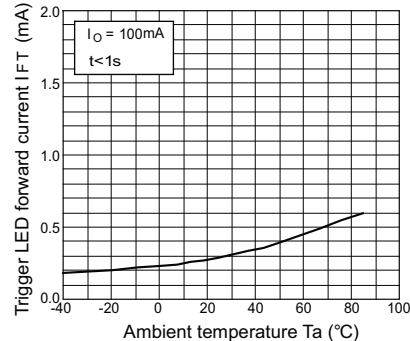
**Continuous load current vs.
On-state voltage**
 $I_O - V_{ON}$



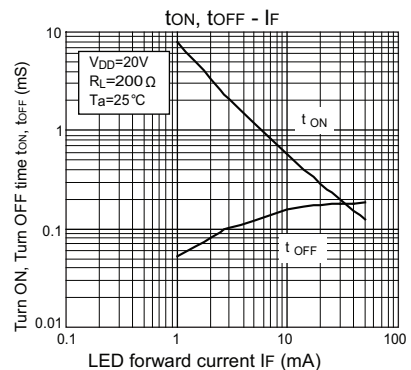
**On-state resistance vs.
Ambient temperature**
 $R_{ON} - T_a$



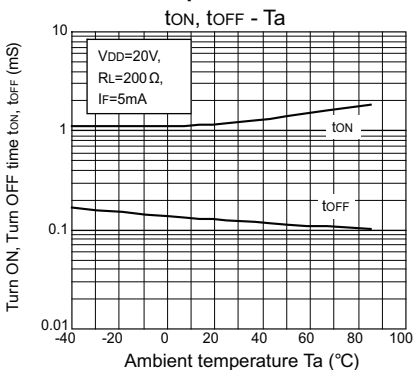
**Trigger LED forward current vs.
Ambient temperature**
 $I_{FT} - T_a$



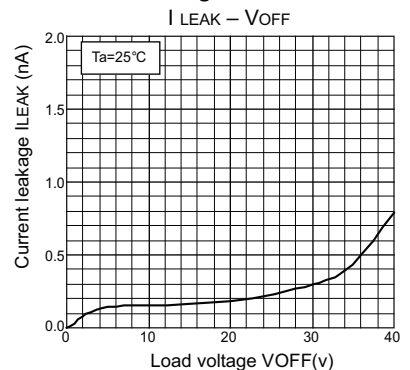
**Turn ON, Turn OFF time vs.
LED forward current**
 $t_{ON}, t_{OFF} - I_F$



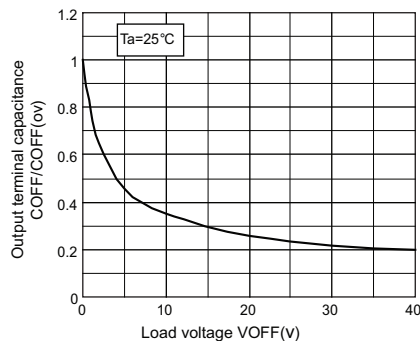
**Turn ON, Turn OFF time vs.
Ambient temperature**
 $t_{ON}, t_{OFF} - T_a$



**Current leakage vs.
Load voltage**
 $I_{LEAK} - V_{OFF}$



**Output terminal capacitance
COFF/COFF(ov) vs. Load voltage**
 $COFF - V_{OFF}$



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