

G3VM-63BR/63ER

MOS FET Relays DIP 6-pin, High Current and Low ON-Resistance Type

MOS FET Relays in DIP 6-pin Packages with SPST-NC Contacts That Achieve Low ON-Resistance and High Switching Capacity of a Mechanical Relay

- Contact form: 1b
 - Load voltage: 60 V
 - Continuous load current (peak value): 1.2 A (2.4 A) *
- * Values in parentheses are for connection C.



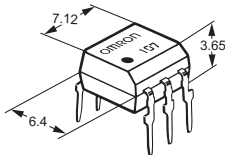
Note: The actual product is marked differently from the image shown here.

Application Examples

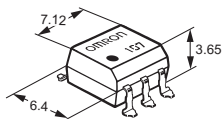
- Industrial equipment (PLC, Temperature controller, Power supply, etc.)
- Security equipment
- Test & measurement equipment
- Communication equipment

Package (Unit : mm, average)

DIP 6-pin
PCB Terminals



Surface-mounting Terminals



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

Model Number Legend

G3VM-□ □ □ □
1 2 3 4

- | | | |
|--|--|---|
| <p>1. Load voltage 6 : 60 V</p> | <p>2. Contact form 3 : 1b (SPST-NC)</p> | <p>3. Package B : DIP 6-pin with PCB terminals E : DIP 6-pin with surface-mounting terminals</p> |
| <p>4. Additional functions R: Low ON resistance</p> | | |

Ordering Information

| Package | Contact form | Load voltage (peak value) * | Continuous load current (peak value) * | | Stick packaging | | | Tape packaging | |
|---------|--------------|-----------------------------|--|-------|-----------------|--------------|--------------------------|-----------------|----------------------------|
| | | | | | Model | | Minimum package quantity | Model | |
| | | | | | Connection A, B | Connection C | | PCB terminals | Surface-mounting terminals |
| DIP6 | 1b | 60 V | 1.2 A | 2.4 A | G3VM-63BR | G3VM-63ER | 50 pcs. | G3VM-63ER(TR05) | 500 pcs. |

* The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for relays with surface-mounting terminals, add "(TR05)" to the end of the model number.

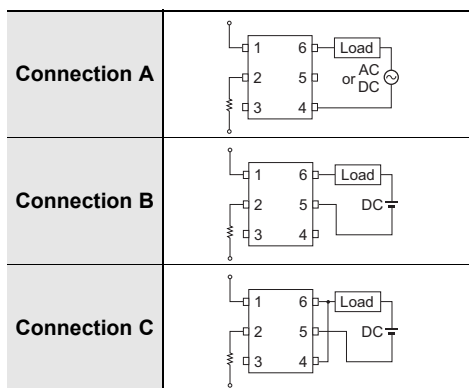
G3VM-63BR/63ER

Absolute Maximum Ratings (Ta = 25°C)

| Item | | Symbol | G3VM-63BR G3VM-63ER | Unit | Measurement conditions | |
|-----------------------------------|------------------------------------|-------------------------------|-------------------------------|----------------------|-------------------------------|--|
| Input | LED forward current | I_F | 20 | mA | | |
| | LED forward current reduction rate | $\Delta I_F / ^\circ\text{C}$ | -0.3 | mA/ $^\circ\text{C}$ | Ta $\geq 58^\circ\text{C}$ | |
| | LED reverse voltage | V_R | 6 | V | | |
| | Junction temperature | T_J | 125 | $^\circ\text{C}$ | | |
| Output | Load voltage (AC peak/DC) | V_{OFF} | 60 | V | | |
| | Continuous load current | Connection A | I_o | 1.2 | A | Connection A: AC peak/DC Connection B and C: DC |
| | | Connection B | | | | |
| | | Connection C | | | | |
| | ON current reduction rate | Connection A | $\Delta I_o / ^\circ\text{C}$ | -12 | mA/ $^\circ\text{C}$ | Ta $\geq 25^\circ\text{C}$ |
| | | Connection B | | | | |
| | | Connection C | | | | |
| | Pulse ON current | I_{op} | 3 | A | t=100 ms, Duty=1/10 | |
| Junction temperature | T_J | 125 | $^\circ\text{C}$ | | | |
| Dielectric strength between I/O * | | V_{I-O} | 5,000 | Vrms | AC for 1 min | |
| Ambient operating temperature | | Ta | -40 to +110 | $^\circ\text{C}$ | With no icing or condensation | |
| Ambient storage temperature | | Tstg | -55 to +125 | $^\circ\text{C}$ | | |
| Soldering temperature | | — | 260 | $^\circ\text{C}$ | 10 s | |

* 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.

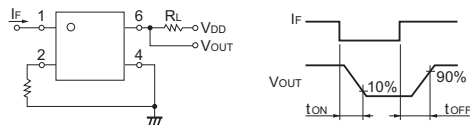
Connection Diagram



Electrical Characteristics (Ta = 25°C)

| Item | | Symbol | | G3VM-63BR G3VM-63ER | Unit | Measurement conditions |
|---|-----------------------------------|-----------------|-----------------|------------------------|--|------------------------|
| Input | LED forward voltage | V _F | Minimum | 1.1 | V | I _F =10 mA |
| | | | Typical | 1.27 | | |
| | | | Maximum | 1.4 | | |
| | Reverse current | I _R | Maximum | 10 | μA | V _R =6 V |
| | Capacitance between terminals | C _T | Typical | 70 | pF | V=0 V, f=1 MHz |
| Trigger LED forward current | I _{FC} | Typical | 0.3 | mA | I _{OFF} =10 μA | |
| | | Maximum | 2 | | | |
| Release LED forward current | I _{FT} | Minimum | 0.01 | mA | I _o =1.2 A | |
| Output | Maximum resistance with output ON | R _{ON} | Typical | 0.3 | Ω | I _o =1.2 A |
| | | | Maximum | 0.6 | | |
| | | | Typical | 0.2 | | |
| | | | Typical | 0.1 | | |
| Current leakage when the relay is open | I _{LEAK} | Maximum | 10 | μA | V _{OFF} =60 V, I _F =5 mA | |
| | | | 1 | | V _{OFF} =40 V, I _F =2 mA | |
| Capacitance between terminals | C _{OFF} | Typical | 550 | pF | V=0 V, f=1 MHz, I _F =5 mA | |
| Capacitance between I/O terminals | C _{I-O} | Typical | 0.9 | pF | V _S =0 V, f=1 MHz | |
| Insulation resistance between I/O terminals | R _{I-O} | Minimum | 1,000 | MΩ | V _{I-O} =500 VDC, R _{oH} ≤ 60% | |
| | | Typical | 10 ⁸ | | | |
| Turn-ON time | t _{ON} | Typical | 0.3 | ms | I _F =5 mA, R _L =200 Ω, V _{DD} =20 V * | |
| | | Maximum | 2 | | | |
| Turn-OFF time | t _{OFF} | Typical | 2 | ms | I _F =5 mA, R _L =200 Ω, V _{DD} =20 V * | |
| | | Maximum | 3 | | | |

* Turn-ON and Turn-OFF times



Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions are measures that take into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

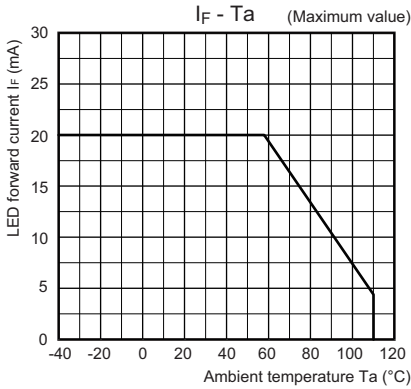
Each item on this list is an independent condition, so they do not simultaneously satisfy several conditions.

| Item | Symbol | | G3VM-63BR G3VM-63ER | Unit |
|--------------------------------------|-----------------|---------|------------------------|------|
| Load voltage (AC peak/DC) | V _{DD} | Maximum | 48 | V |
| Operating LED forward current | I _F | Typical | 5 | mA |
| | | Maximum | 10 | |
| Continuous load current (AC peak/DC) | I _o | Maximum | 1.2 | A |
| Ambient operating temperature | T _a | Minimum | -20 | °C |
| | | Maximum | 85 | |

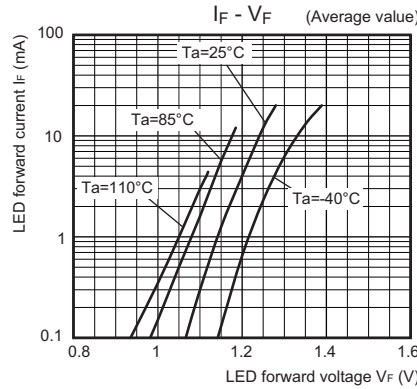
Spacing and Insulation

| Item | Minimum | Unit |
|------------------------------|---------|------|
| Creepage distance | 7.0 | mm |
| Clearance distance | 7.0 | |
| Internal isolation thickness | 0.3 | |

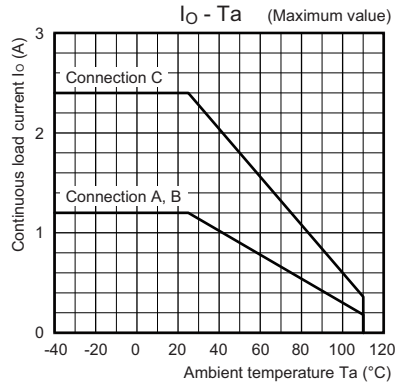
LED forward current vs. Ambient temperature



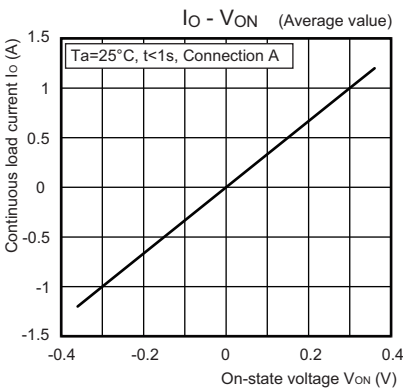
LED forward current vs. LED forward voltage



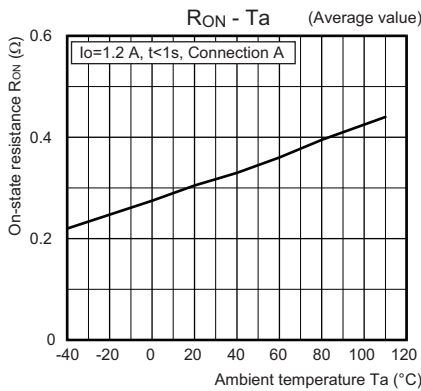
Continuous load current vs. Ambient temperature



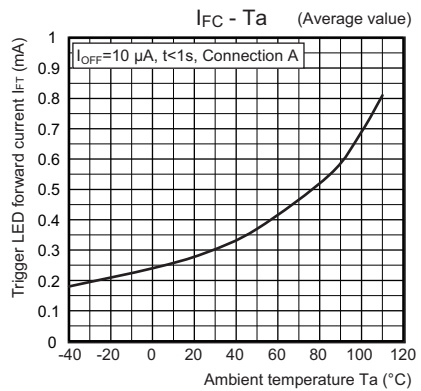
Continuous load current vs. On-state voltage



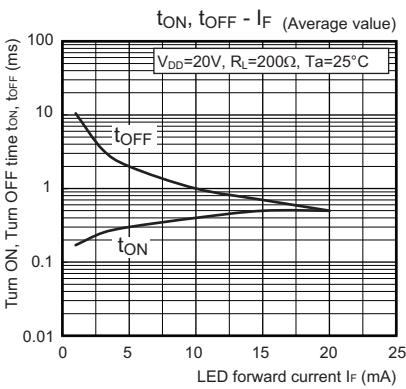
On-state resistance vs. Ambient temperature



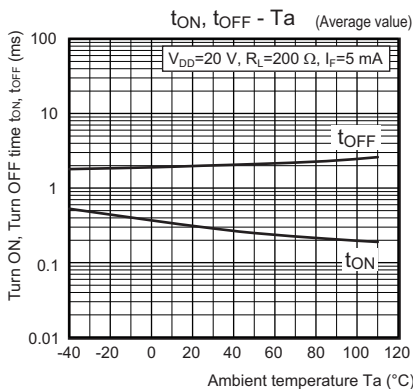
Trigger LED forward current vs. Ambient temperature



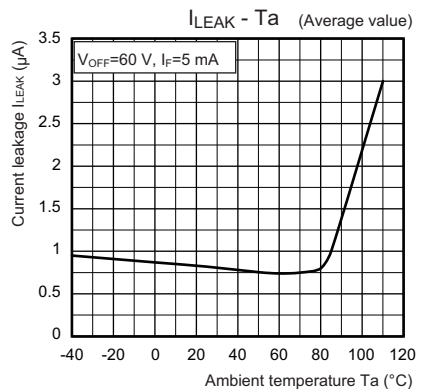
Turn ON, Turn OFF time vs. LED forward current



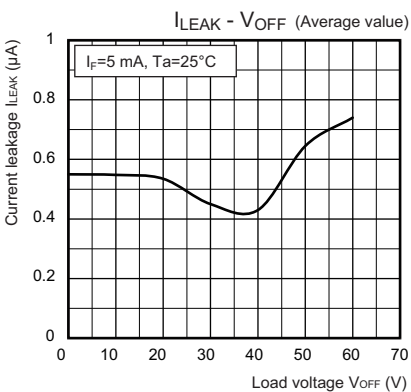
Turn ON, Turn OFF time vs. Ambient temperature



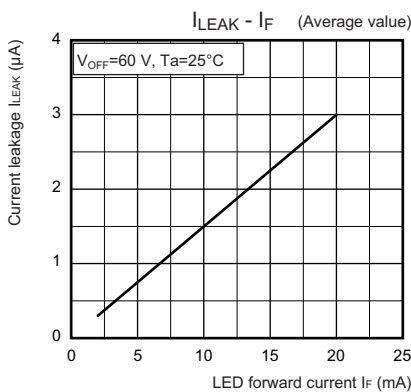
Current leakage vs. Ambient temperature



Current leakage vs. Load voltage



Current leakage vs. LED forward current



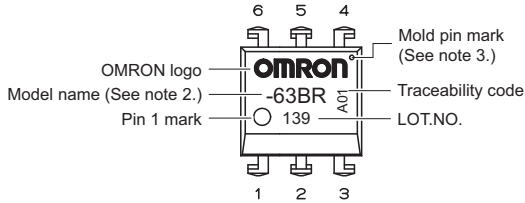
Note: About the "Current leakage vs. LED forward current" graph:
Take note that the current leakage is affected by the LED forward current input due to the internal mechanism of this model.

Appearance / Terminal Arrangement / Internal Connections

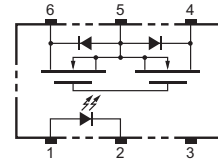
Appearance

DIP (Dual Inline Package)

DIP 6-pin



Terminal Arrangement/Internal Connections (Top View)



Note 1: The actual product is marked differently from the image shown here.

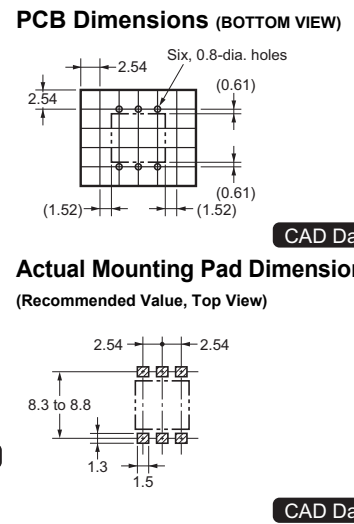
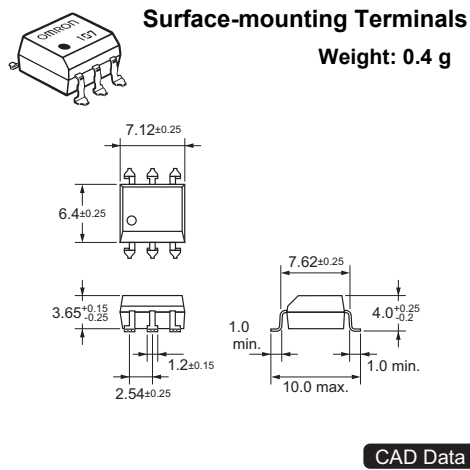
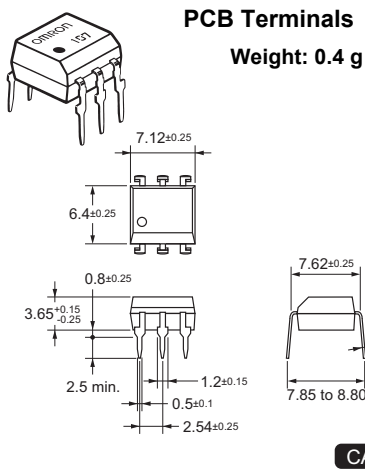
Note 2: "G3VM" does not appear in the model number on the relay.

Note 3: The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

Dimensions

CAD Data marked products. 2D drawings and 3D CAD models are available. For CAD information, please visit our website, which is noted on the last page.

(Unit: mm)



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

Safety Precautions

- Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.

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