



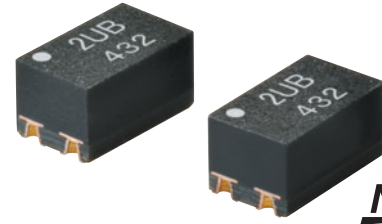
**THE DATASHEET OF
G3VM-51UR(TR05)**



G3VM-41UR10/51UR

MOS FET Relays VSON package with Low Output Capacitance and ON Resistance type (Low C × R)

World's smallest New VSON Package with Low Output Capacitance and Low ON Resistance



NEW

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

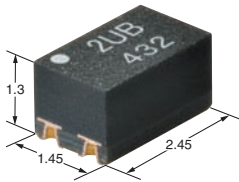
RoHS Compliant

Refer to "Common Precautions".

Application Examples

- Semiconductor test equipment
- Communication equipment
- Test & measurement equipment
- Data loggers

Package (Unit : mm, Average)



Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load Voltage

- 4: 40V
- 5: 50V

2. Contact form

- 1: 1a (SPST-NO)

3. Package type

- U: VSON 4 pin

4. Additional functions

- R: Low On-resistance

5. Other informations

When specifications overlap, serial code is added in the recorded order.

Ordering Information

| Package type | Contact form | Terminals | Load voltage (peak value) * | Continuous load current (peak value) * | Packing/Tape cut | | Packing/Tape & reel | |
|--------------|--------------|----------------------------|-----------------------------|--|------------------|--------------------------|---------------------|--------------------------|
| | | | | | Model | Minimum package quantity | Model | Minimum package quantity |
| VSON4 | 1a (SPST-NO) | Surface-mounting Terminals | 40V | 120mA | G3VM-41UR10 | - | G3VM-41UR10(TR05) | 500 |
| | | | 50V | 300mA | G3VM-51UR | | G3VM-51UR(TR05) | |

Note: When ordering tape packing, add "(TR05)" to the model number.

Ask your OMRON representative for orders under 500 pcs. We can supply products with the tape already cut.

Tape-cut VSONs are packaged without humidity resistance. Use manual soldering to mount them.

Refer to common precautions.

* The AC peak and DC value are given for the load voltage and continuous load current.

Absolute Maximum Ratings (Ta = 25°C)

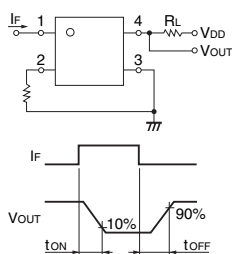
| Item | | Symbol | G3VM-41UR10 | G3VM-51UR | Unit | Measurement conditions |
|---|--------------------------------------|--------|-------------|-----------|-------|-------------------------------|
| Input | LED forward current | IF | 30 | | mA | |
| | LED forward current reduction rate | ΔIF/°C | -0.3 | | mA/°C | Ta≥25°C |
| | LED reverse voltage | VR | 5 | | V | |
| | Connection temperature | TJ | 125 | | °C | |
| Output | Load voltage (AC peak/DC) | VOFF | 40 | 50 | V | |
| | Continuous load current (AC peak/DC) | Io | 120 | 300 | mA | |
| | ON current reduction rate | ΔIo/°C | -1.2 | -3 | mA/°C | Ta≥25°C |
| | Pulse ON current | Iop | 360 | 900 | mA | t=100ms, Duty=1/10 |
| | Connection temperature | TJ | 125 | | °C | |
| Dielectric strength between I/O (See note 1.) | | VI-o | 300 | | Vrms | AC for 1 min |
| Ambient operating temperature | | Ta | -40~+85 | | °C | With no icing or condensation |
| Ambient storage temperature | | Tstg | -40~+125 | | °C | |
| Soldering temperature | | - | 260 | | °C | 10s |

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.

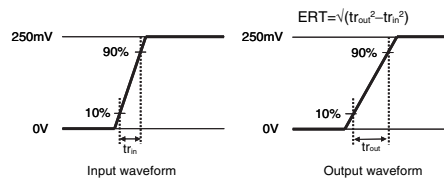
Electrical Characteristics (Ta = 25°C)

| Item | | Symbol | G3VM-41UR10 | G3VM-51UR | Unit | Measurement conditions | |
|---|--|-------------------|-----------------|-----------|------|--|--|
| Input | LED forward voltage | V _F | Minimum | 1.1 | | V | I _F =10mA |
| | | | Typical | 1.27 | | | |
| | | | Maximum | 1.4 | | | |
| | Reverse current | I _R | Maximum | 10 | | μA | V _R =5V |
| | Capacity between terminals | C _T | Typical | 30 | | pF | V=0, f=1MHz |
| | Trigger LED forward current | I _{FT} | Maximum | 3 | | mA | I _O =100mA |
| Output | Maximum resistance with output ON | R _{ON} | Typical | 12 | 1 | Ω | I _F =5mA, t<1s, G3VM-41UR10 I _O =120mA G3VM-51UR I _O =300mA |
| | | | Maximum | 14 | 1.5 | | |
| | Current leakage when the relay is open | I _{LEAK} | Maximum | 1 | | nA | G3VM-41UR10 V _{OFF} =40V G3VM-51UR V _{OFF} =50V |
| | Capacity between terminals | C _{OFF} | Typical | 0.45 | 12 | pF | V=0, f=100MHz, t<1s |
| | | | Maximum | 0.8 | 20 | | |
| | Capacity between I/O terminals | C _{I-O} | Typical | 1 | | pF | f=1MHz, V _S =0V |
| Insulation resistance between I/O terminals | R _{I-O} | Typical | 10 ⁸ | | MΩ | V _{I-O} =500VDC, RoH≤60% | |
| Turn-ON time | t _{ON} | Maximum | 0.2 | 0.5 | ms | I _F =5mA, R _L =200Ω, V _{DD} =20V (See note 2.) | |
| Turn-OFF time | t _{OFF} | Maximum | 0.3 | 0.4 | | | |
| Equivalent rise time | ERT | Typical | - | 40 | ps | I _F =5mA, V _{DD} =0.25V, Tr(in)=25ps (See Note.3) | |
| | | Maximum | - | 90 | | | |

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



Note: 3. Equivalent Rise Time



Recommended Operating Conditions

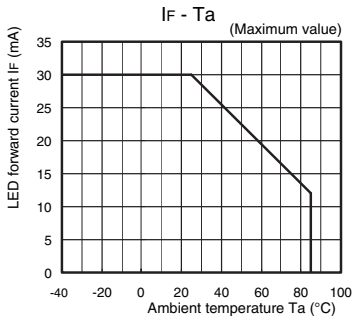
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

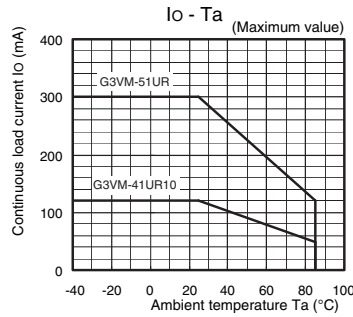
| Item | Symbol | | G3VM-41UR10 | G3VM-51UR | Unit |
|-------------------------------|-----------------|---------|-------------|-----------|------|
| Load voltage (AC peak/DC) | V _{DD} | Maximum | 32 | 40 | V |
| | | Minimum | 5 | | |
| Operating LED forward current | I _F | Typical | 7.5 | | mA |
| | | Maximum | 20 | | |
| | | Maximum | 120 | 300 | |
| Ambient operating temperature | T _a | Minimum | -20 | | °C |
| | | Maximum | 65 | | |

Engineering Data

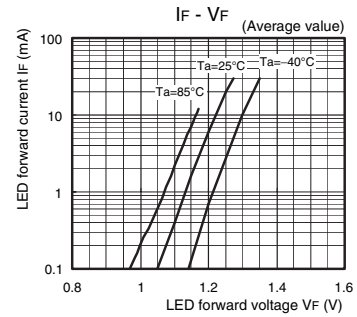
LED forward current vs. Ambient temperature



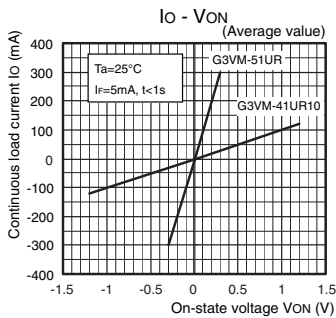
Continuous load current vs. Ambient temperature



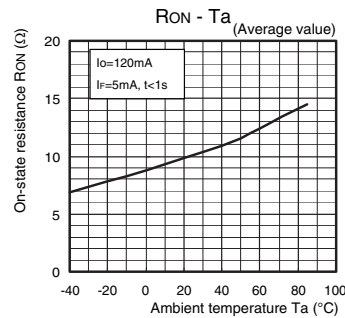
LED forward current vs. LED forward voltage



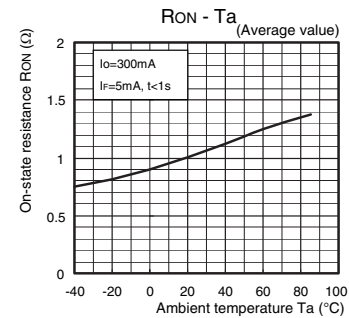
Continuous load current vs. On-state voltage



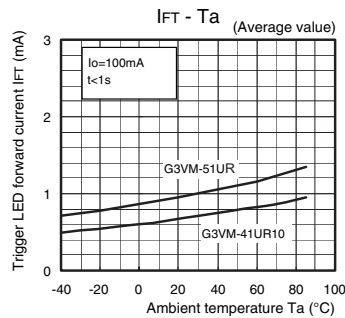
On-state resistance vs. Ambient temperature



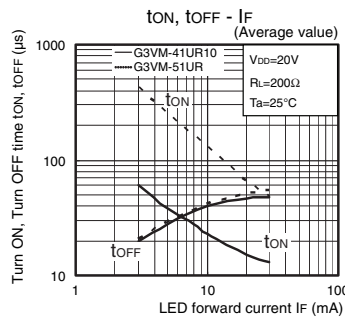
G3VM-51UR



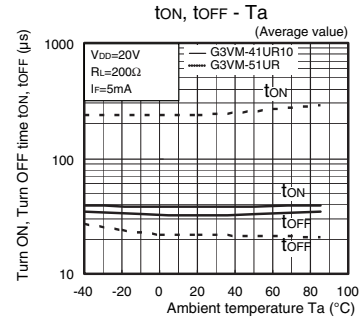
Trigger LED forward current vs. Ambient temperature



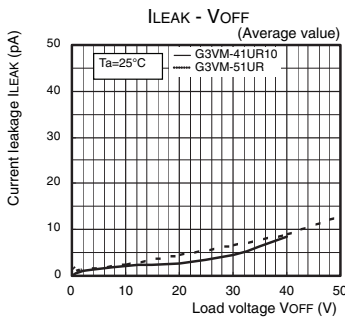
Turn ON, Turn OFF time vs. LED forward current



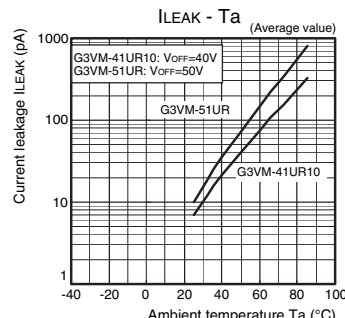
Turn ON, Turn OFF time vs. Ambient temperature



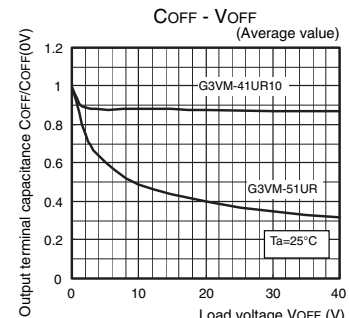
Current leakage vs. Load voltage



Current leakage vs. Ambient temperature



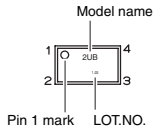
Output terminal capacitance vs. Load voltage



■Appearance/Terminal Arrangement/Internal Connections

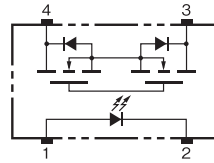
■Appearance

VSON (Very Small Outline Non-leaded)
VSON4



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

■Terminal Arrangement/Internal Connections (Top View)



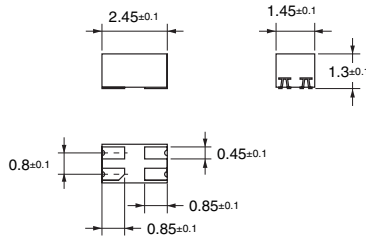
■Dimensions

(Unit: mm)



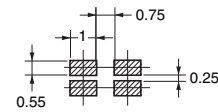
Surface-mounting Terminals

Weight: 0.01g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

■Approved Standards

Applying for UL recognition

■Safety Precautions

- Refer to "Common Precautions" for all G3VM models.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

OMRON Corporation

Electronic and Mechanical Components Company

Contact: www.omron.com/ecb



Cat. No. K268-E1-01
0814(0814)(O)

VSON

G3VM-41UR10/51UR

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