

Introduction
General purpose
High-level-voltage
Multi-contact pair
High-current and
Low-ON-resistance
Small and high-
dielectric-strength
High-dielectric-
strength
Current-limiting
Low-voltage-capacitance
and Low-ON-resistance
Small and High-
level-voltage
Certified Models with
Standard Certification
DIP
SOP
SSOP
USOP
VSON

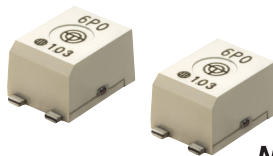
G3VM-21PR□

G3VM-21PR□

MOS FET Relays USOP, Low-output-capacitance and Low-ON-resistance Type (with Low $C \times R$)

USOP Package with Low Output Capacitance and ON Resistance

- Load voltage: 20 V
- G3VM-21PR10: Low $C \times R = 2.4 \text{ pF} \cdot \Omega$, C_{OFF} (standard) = 0.8 pF, R_{ON} (standard) = 3 Ω
- G3VM-21PR1: Low $C \times R = 3 \text{ pF} \cdot \Omega$, C_{OFF} (standard) = 5 pF, R_{ON} (standard) = 0.6 Ω
- G3VM-21PR11: Low $C \times R = 7.2 \text{ pF} \cdot \Omega$, C_{OFF} (standard) = 40 pF, R_{ON} (standard) = 0.18 Ω



NEW

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

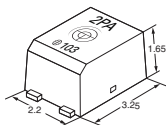
RoHS Compliant

Application Examples

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

Package (Unit : mm, Average)

USOP 4-pin



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load Voltage

2: 20 V

4. Additional functions

R: Low On-resistance

2. Contact form

1: 1a (SPST-NO)

5. Other informations

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

3. Package

P: USOP 4 pin

Ordering Information

| Package | Contact form | Terminals | Load voltage (peak value) * | Continuous load current (peak value) * | Tape cut packaging | | Tape packaging | |
|---------|-----------------|-------------------------------|--------------------------------|--|--------------------|--------------------------------|-------------------|--------------------------------|
| | | | | | Model | Minimum package quantity | Model | Minimum package quantity |
| USOP4 | 1a (SPST-NO) | Surface-mounting Terminals | 20 V | 200 mA | G3VM-21PR10 | 1 pc. | G3VM-21PR10(TR05) | 500 pcs. |
| | | | | 450 mA | G3VM-21PR1 | | G3VM-21PR1(TR05) | |
| | | | | 900 mA | G3VM-21PR11 | | G3VM-21PR11(TR05) | |

Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR05)" to the end of the model number.

Tape-cut USOPs 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.

Introduction

General-purpose

High-side-voltage

Multi-voltage-range (2A, 2A, and 1A)

High-current and Low-ON-resistance

Small and high-dielectric-strength

High-dielectric-strength

Current-limiting

Handling capacitance and low-ON-resistance

Small and high-side-voltage

Certified leads with Standards verification

DIP

SOP

SSOP

USOP

VSON

G3VM-21PR□

G3VM-21PR□

MOS FET Relays

■Absolute Maximum Ratings (Ta = 25°C)

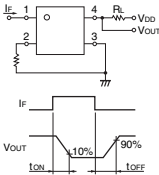
| Item | | Symbol | G3VM-21PR10 | | G3VM-21PR1 | G3VM-21PR11 | Unit | Measurement conditions |
|--------|---|------------------|-------------|-------|-------------|-------------|-------|--|
| Input | LED forward current | IF | | | 50 | | mA | Ta≥25°C |
| | LED forward current reduction rate | ΔIF/°C | | | -0.5 | | mA/°C | |
| | LED reverse voltage | VR | | | 5 | | V | |
| | Connection temperature | TJ | | | 125 | | °C | |
| | Load voltage (AC peak/DC) | V _{OFF} | | | 20 | | V | |
| Output | Continuous load current (AC peak/DC) | Io | 200 | 450 | 900 | | mA | G3VM-21PR10/21PR1 : Ta ≥ 25°C G3VM-21PR11 : Ta ≥ 50°C t=100 ms, Duty=1/10 |
| | ON current reduction rate | ΔIo/°C | -2.0 | -4.5 | -12 | | mA/°C | |
| | Pulse ON current | Iop | 600 | 1,300 | 2,700 | | mA | |
| | Connection temperature | TJ | | | 125 | | °C | |
| | Dielectric strength between I/O (See note 1.) | Vi-o | | | 500 | | Vrms | |
| | Ambient operating temperature | Ta | | | -40 to +85 | | °C | |
| | Ambient storage temperature | Tstg | | | -40 to +125 | | °C | |
| | Soldering temperature | - | | | 260 | | °C | |

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.

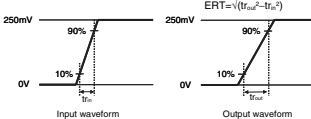
■Electrical Characteristics (Ta = 25°C)

| Item | | Symbol | | G3VM-21PR10 | | G3VM-21PR1 | | G3VM-21PR11 | | Unit | Measurement conditions | |
|---|--|-------------------|-----------------|-------------|-----|------------|----|---|--|------|------------------------|--|
| Input | LED forward voltage | V _F | Minimum | 1.0 | | | | V | I _F =10 mA | | | |
| | | | Typical | 1.15 | | | | | | | | |
| | | | Maximum | 1.3 | | | | | | | | |
| | Reverse current | I _R | Maximum | 10 | | | | μA | V _R =5 V | | | |
| | Capacitance between terminals | C _T | Typical | 15 | | | | pF | V=0, f=1 MHz | | | |
| | Trigger LED forward current | I _{FT} | Typical | 1 | 0.6 | | | mA | I _o =100 mA | | | |
| Maximum | 3 | | | | | | | | | | | |
| Release LED forward current | I _{FC} | Minimum | 0.1 | | | | mA | I _{oFF} =10 μA | | | | |
| Output | Maximum resistance with output ON | R _{ON} | Typical | 3 | 0.6 | 0.18 | | Ω | I _F =5 mA, t<1 s I _o =Continuous load current ratings | | | |
| | | | Maximum | 5 | 1.2 | 0.22 | | | | | | |
| | Current leakage when the relay is open | I _{LEAK} | Maximum | 1 | | | | nA | V _{OFF} =20 V | | | |
| | Capacitance between terminals | C _{OFF} | Typical | 0.8 | 5 | 40 | | pF | V=0, f=100 MHz, t<1 s | | | |
| | | | Maximum | 1.1 | 12 | — | | | | | | |
| | Capacitance between I/O terminals | C _{I-O} | Typical | 0.4 | | | | pF | f=1 MHz, V _S =0 V | | | |
| Insulation resistance between I/O terminals | R _{I-O} | Minimum | 1000 | | | | MΩ | V _{I-O} =500VDC, R _{oH} ≤60% | | | | |
| | | Typical | 10 ⁶ | | | | | | | | | |
| Turn-ON time | t _{ON} | Typical | 0.04 | 0.2 | 0.5 | | ms | I _F =5 mA, R _L =200 Ω, V _{DD} =10 V (See note 2.) | | | | |
| | | Maximum | 0.2 | 0.5 | 2 | | | | | | | |
| Turn-OFF time | t _{OFF} | Typical | 0.13 | 0.2 | 0.1 | | | | | | | |
| | | Maximum | 0.2 | 0.5 | 1 | | | | | | | |
| Equivalent rise time | ERT | Typical | — | 40 | — | | ps | I _F =5 mA, V _{DD} =0.25 V, T _r (in)=25 ps (See note.3) | | | | |
| | | Maximum | — | 90 | — | | | | | | | |

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



Note: 3. Equivalent Rise Time



■Recommended Operating Conditions

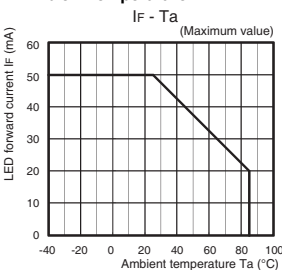
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

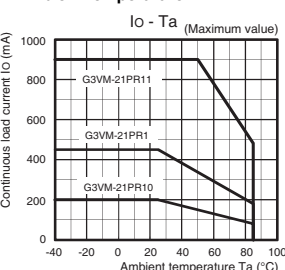
| Item | Symbol | | G3VM-21PR10 | | G3VM-21PR1 | | G3VM-21PR11 | | Unit |
|--------------------------------------|-----------------|---------|-------------|--|------------|--|-------------|--|------|
| Load voltage (AC peak/DC) | V _{DD} | Maximum | 16 | | | | | | V |
| | | Minimum | 5 | | | | | | |
| Operating LED forward current | I _F | Typical | 7.5 | | | | | | mA |
| | | Maximum | 20 | | | | | | |
| | | Minimum | | | | | | | |
| Continuous load current (AC peak/DC) | I _O | Maximum | 200 | | 450 | | 900 | | |
| | | Minimum | | | | | | | |
| Ambient operating temperature | T _a | Minimum | -20 | | | | | | °C |
| | | Maximum | 65 | | | | | | |

Engineering Data

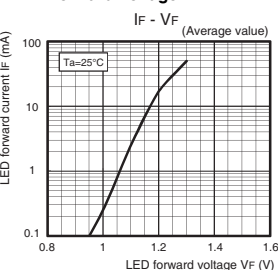
LED forward current vs. Ambient temperature



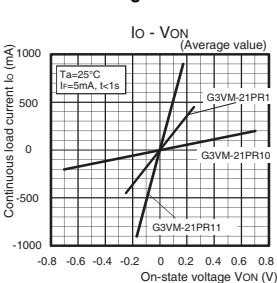
Continuous load current vs. Ambient temperature



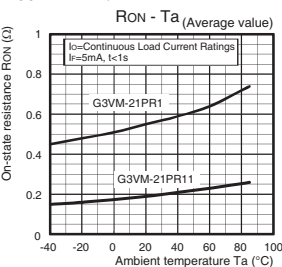
LED forward current vs. LED forward voltage



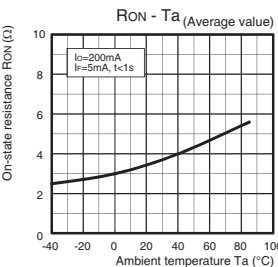
Continuous load current vs. On-state voltage



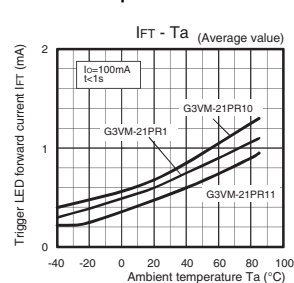
On-state resistance vs. Ambient temperature



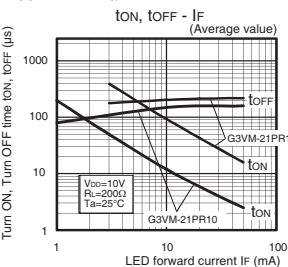
G3VM-21PR10



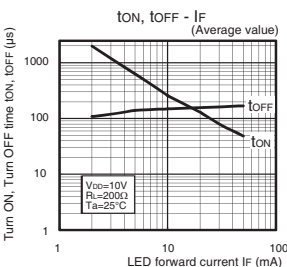
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current



G3VM-21PR11

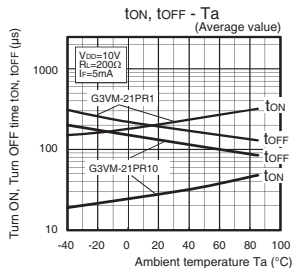


G3VM-21PR□

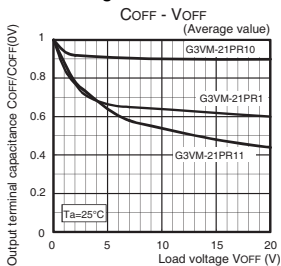
MOS FET Relays

Engineering Data

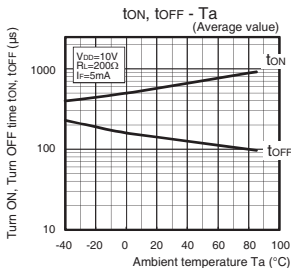
● Turn ON, Turn OFF time vs. Ambient temperature G3VM-21PR10/21PR1



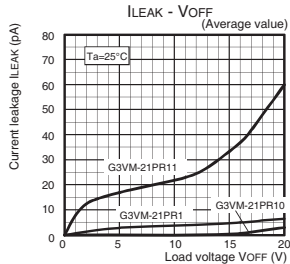
● Output terminal capacitance vs. Load voltage



G3VM-21PR11



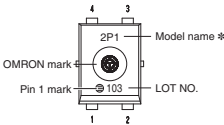
● Current leakage vs. Load voltage



■Appearance / Terminal Arrangement / Internal Connections

●Appearance

USOP (Ultra Small Outline Package)
USOP 4-pin

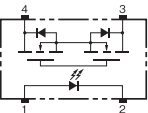


* Actual model name marking for each model

| Model | Marking |
|-------------|---------|
| G3VM-21PR10 | 2PA |
| G3VM-21PR1 | 2P1 |
| G3VM-21PR11 | 2PB |

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.

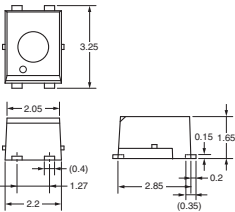
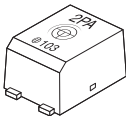
●Terminal Arrangement/Internal Connections (Top View)



■Dimensions (Unit: mm)

Surface-mounting Terminals

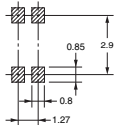
Weight: 0.03 g



Unless otherwise specified, the dimensional tolerance is ± 0.2 mm.

Actual Mounting Pad Dimensions

(Recommended Value, Top View)



Unless otherwise specified, the dimensional tolerance is ± 0.2 mm.

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

■Approved Standards

UL recognized

| Approved Standards | Contact form | File No. |
|--------------------|-----------------|----------|
| UL recognized | 1a (SPST-NO) | E80555 |

■Safety Precautions

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

Mouser Electronics

Authorized Distributor

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Omron:

[G3VM-21PR1\(TR05\)](#)