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Introduction
General purpose
High-voltage-type
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-
voltage-type
Certified Models with
Standard Certification
DIP
SOP
SSOP
USOP
VSON

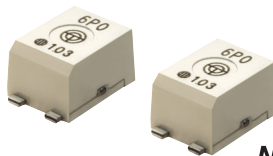
G3VM-21PR□

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.

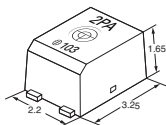
RoHS Compliant

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-capacitive and low-ON-resistance

Small and high-side-voltage

Certified leads with Standards certification

DIP

SOP

SSOP

USOP

VSON

G3VM-21PR□

G3VM-21PR□

MOS FET Relays

■Absolute Maximum Ratings (Ta = 25°C)

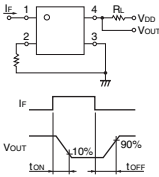
Item		Symbol	G3VM-21PR10		G3VM-21PR1	G3VM-21PR11	Unit	Measurement conditions
Input	LED forward current	IF			50		mA	Ta≥25°C
	LED forward current reduction rate	ΔIF/°C			-0.5		mA/°C	
	LED reverse voltage	VR			5		V	
	Connection temperature	TJ			125		°C	
	Load voltage (AC peak/DC)	V _{OFF}			20		V	
Output	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.

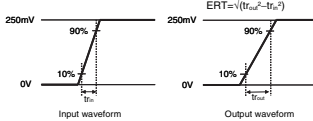
■Electrical Characteristics (Ta = 25°C)

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 ⁹					
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	ms		
		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

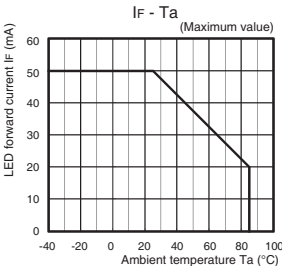
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

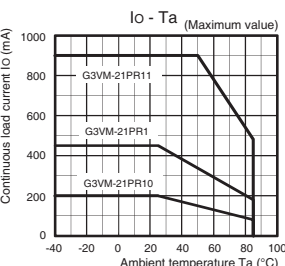
Item	Symbol		G3VM-21PR10		G3VM-21PR1		G3VM-21PR11		Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	16						V
		Minimum	5						
Operating LED forward current	I _F	Typical	7.5						mA
		Maximum	20						
		Minimum							
Continuous load current (AC peak/DC)	I _O	Maximum	200		450		900		°C
		Minimum	-20		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

Engineering Data

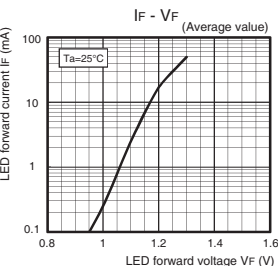
LED forward current vs. Ambient temperature



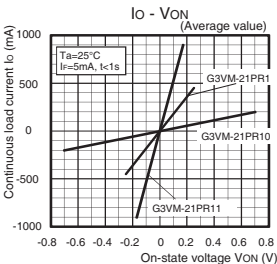
Continuous load current vs. Ambient temperature



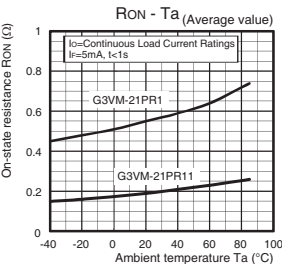
LED forward current vs. LED forward voltage



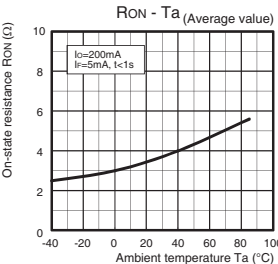
Continuous load current vs. On-state voltage



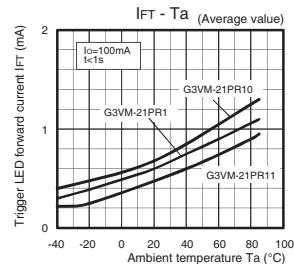
On-state resistance vs. Ambient temperature



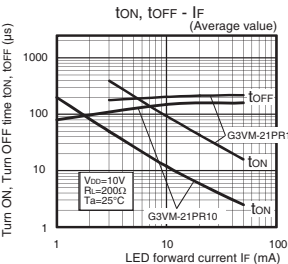
G3VM-21PR10



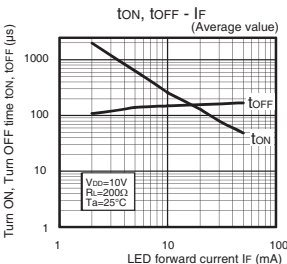
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current



G3VM-21PR11

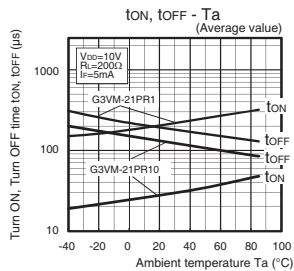


G3VM-21PR□

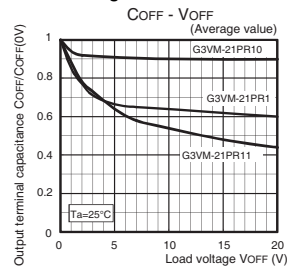
MOS FET Relays

Engineering Data

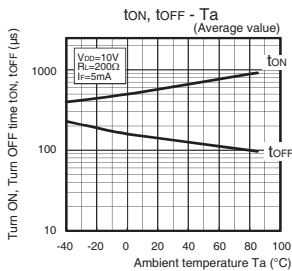
● Turn ON, Turn OFF time vs. Ambient temperature G3VM-21PR10/21PR1



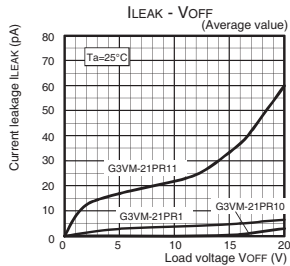
● Output terminal capacitance vs. Load voltage



G3VM-21PR11



● Current leakage vs. Load voltage

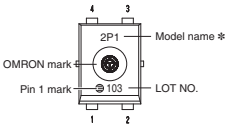


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

USOP (Ultra Small Outline Package)

USOP 4-pin

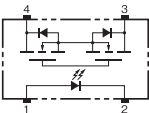


* Actual model name marking for each model

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.

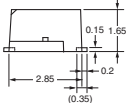
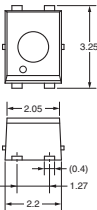
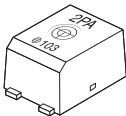
●Terminal Arrangement/Internal Connections (Top View)



■Dimensions (Unit: mm)

Surface-mounting Terminals

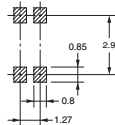
Weight: 0.03 g



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.