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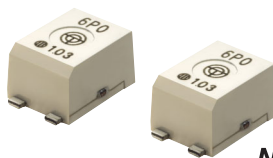


G3VM-21PR□

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

USOP Package with Low Output Capacitance and ON Resistance

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



NEW

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

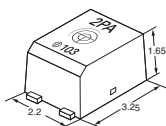
RoHS Compliant

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
- 2. Contact form**
 1: 1a (SPST-NO)
- 3. Package**
 P: USOP 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	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.

Absolute Maximum Ratings (Ta = 25°C)

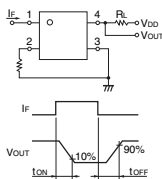
Item	Symbol	G3VM-21PR10	G3VM-21PR1	G3VM-21PR11	Unit	Measurement conditions		
Input	LED forward current	IF	50			mA	Ta≥25°C	
	LED forward current reduction rate	ΔIF/°C	-0.5			mA/°C		
	LED reverse voltage	VR	5			V		
	Connection temperature	TJ	125			°C		
Output	Load voltage (AC peak/DC)	V _{OFF}	20			V	G3VM-21PR10/21PR1 : Ta ≥ 25°C G3VM-21PR11 : Ta ≥ 50°C	
	Continuous load current (AC peak/DC)	Io	200	450	900	mA		
	ON current reduction rate	ΔIo/°C	-2.0	-4.5	-12	mA/°C		
	Pulse ON current	I _{op}	600	1,300	2,700	mA		I _o =100 ms, Duty=1/10
	Connection temperature	TJ	125			°C		
	Dielectric strength between I/O (See note 1.)	V _{i-o}	500			V _{rms}		AC for 1 min
	Ambient operating temperature	Ta	-40 to +85			°C		With no icing or condensation
Ambient storage temperature	Tstg	-40 to +125			°C			
Soldering temperature	-	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.

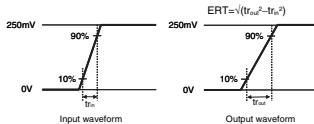
Electrical Characteristics (Ta = 25°C)

Item	Symbol	G3VM-21PR10	G3VM-21PR1	G3VM-21PR11	Unit	Measurement conditions	
Input	LED forward voltage	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}	1	0.6		mA
Release LED forward current	I _{FC}	Minimum	0.1			mA	I _{OFF} =10 μA
		Maximum resistance with output ON	R _{ON}	3	0.6	0.18	Ω
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
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, RoH=±60%
		Typical	10 ⁸				
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		
		Typical	0.13	0.2	0.1		
Turn-OFF time	t _{OFF}	Maximum	0.2	0.5	1	ms	I _F =5 mA, V _{DD} =0.25 V, T _r (in)=25 ps (See note.3)
		Typical	-	40	-		
		Maximum	-	90	-		
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

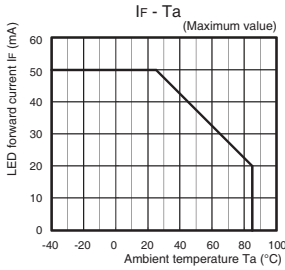
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

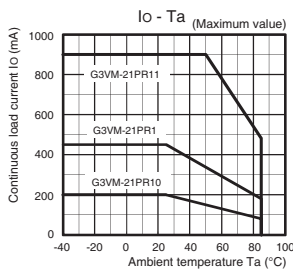
Item	Symbol	G3VM-21PR10	G3VM-21PR1	G3VM-21PR11	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum	16			V
		Minimum	5			
Operating LED forward current	I _F	Typical	7.5			mA
		Maximum	20			
		Maximum	200	450	900	
Ambient operating temperature	Ta	Minimum	-20			°C
		Maximum	65			

Engineering Data

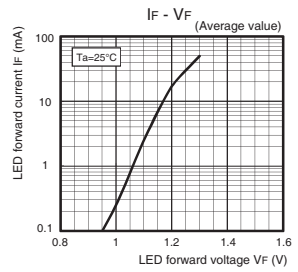
LED forward current vs. Ambient temperature



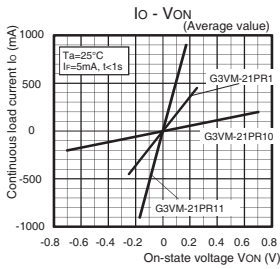
Continuous load current vs. Ambient temperature



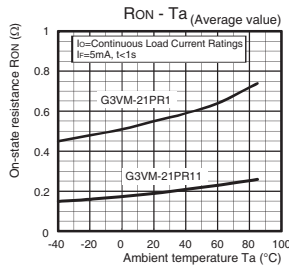
LED forward current vs. LED forward voltage



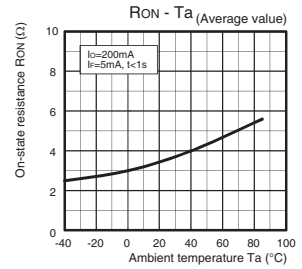
Continuous load current vs. On-state voltage



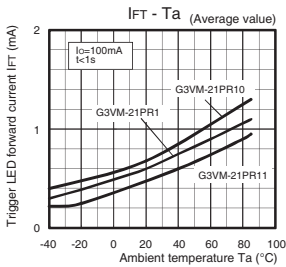
On-state resistance vs. Ambient temperature



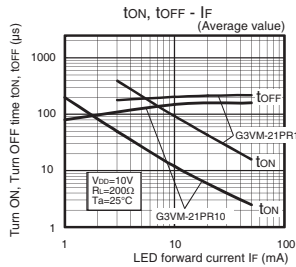
G3VM-21PR10



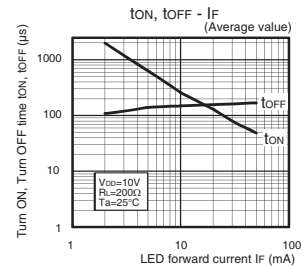
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current



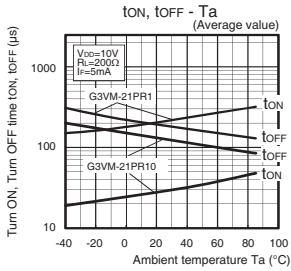
G3VM-21PR11



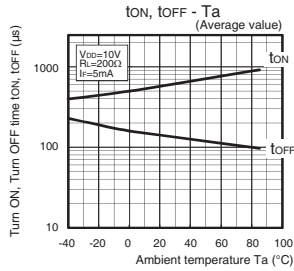
Introduction
General purpose
High-side-voltage
Multi-contact pair
(2a, 2b, and 1a1)
High-current and
Low-ON-resistance
Small and high-
inductive strength
High-dielectric-
strength
Current-limiting
Low-voltage
Small and High-
side-voltage
Certified Models with
Statistical Derivation
DIP
SOP
SSOP
USOP
VSON
G3VM-21PR□

Engineering Data

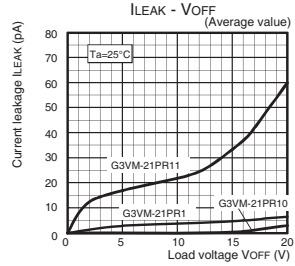
Turn ON, Turn OFF time vs. Ambient temperature G3VM-21PR10/21PR1



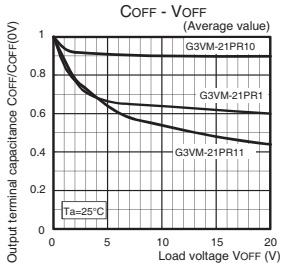
G3VM-21PR11



Current leakage vs. Load voltage



Output terminal capacitance vs. Load voltage

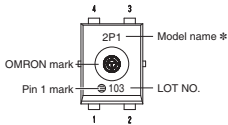


■ Appearance / Terminal Arrangement / Internal Connections

● Appearance

USOP (Ultra Small Outline Package)

USOP 4-pin

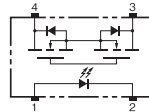


* Actual model name marking for each model

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.

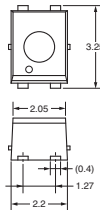
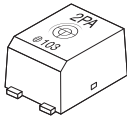
● Terminal Arrangement/Internal Connections (Top View)



■ Dimensions (Unit: mm)

Surface-mounting Terminals

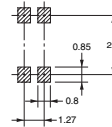
Weight: 0.03 g



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.

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-appliance and Low-ON-resistance
 Small and High-voltage
 Certified Models with Standards Certification
 DIP
 SOP
 SSOP
 USOP
 VSON
 G3VM-21PR□