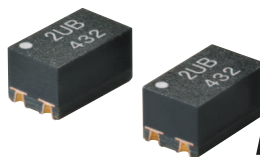


G3VM-21UR□

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

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

- Load voltage: 20 V
- G3VM-21UR10: Low $C \times R = 2.4 \text{ pF} \cdot \Omega$, C_{OFF} (standard) = 0.8 pF, R_{ON} (standard) = 3 Ω
- G3VM-21UR1: Low $C \times R = 4 \text{ pF} \cdot \Omega$, C_{OFF} (standard) = 5 pF, R_{ON} (standard) = 0.8 Ω
- G3VM-21UR11: 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.

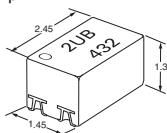
RoHS Compliant

Application Examples

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

Package (Unit : mm, Average)

VSON 4-pin



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

- Load Voltage**
2: 20 V
- Contact form**
1: 1a (SPST-NO)
- Package**
U: VSON 4-pin
- Additional functions**
R: Low On-resistance
- 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
VSON4	1a (SPST-NO)	Surface-mounting Terminals	20 V	200 mA	G3VM-21UR10	1 pc.	G3VM-21UR10(TR05)	500 pcs.
				450 mA	G3VM-21UR1		G3VM-21UR1(TR05)	
				1,000 mA	G3VM-21UR11		G3VM-21UR11(TR05)	

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

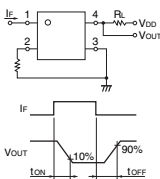
Item	Symbol	G3VM-21UR10	G3VM-21UR1	G3VM-21UR11	Unit	Measurement conditions	
Input	LED forward current	IF	30			mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3			$\text{mA}/^\circ\text{C}$	Ta $\geq 25^\circ\text{C}$
	LED reverse voltage	VR	5			V	
Connection temperature	TJ	125			$^\circ\text{C}$		
Output	Load voltage (AC peak/DC)	V _{OFF}	20			V	
	Continuous load current (AC peak/DC)	Io	200	450	1,000	mA	
	ON current reduction rate	$\Delta I_o/^\circ\text{C}$	-2	-4.5	-10	$\text{mA}/^\circ\text{C}$	Ta $\geq 25^\circ\text{C}$
	Pulse ON current	Iop	0.6	1.3	3	A	t=100 ms, Duty=1/10
	Connection temperature	TJ	125			$^\circ\text{C}$	
	Dielectric strength between I/O (See note 1.)	V _{I-O}	300			V _{rms}	AC for 1 min
	Ambient operating temperature	Ta	-40 to +85			$^\circ\text{C}$	With no icing or condensation
Ambient storage temperature	Tstg	-40 to +125			$^\circ\text{C}$		
Soldering temperature	-	260			$^\circ\text{C}$	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-21UR10	G3VM-21UR1	G3VM-21UR11	Unit	Measurement conditions	
Input	LED forward voltage	Minimum	1.1			V	IF=10 mA
		Typical	1.27				
		Maximum	1.4				
Reverse current	IR	Maximum			μA	VR=5 V	
Capacitance between terminals	CT	Typical			pF	V=0, f=1 MHz	
Trigger LED forward current	IFT	Typical	1	0.6	-	mA	Io=100 mA
		Maximum	3				
Release LED forward current	IFC	Minimum			mA	I _{OFF} =10 μA	
Maximum resistance with output ON	RON	Typical	3	0.8	0.18	Ω	IF=5 mA, t<1 s, Io=Continuous load current ratings
		Maximum	5	1.2	0.22		
Current leakage when the relay is open	I _{LEAK}	Maximum			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			pF	f=1 MHz, Vs=0 V	
Insulation resistance between I/O terminals	R _{I-O}	Typical			M Ω	V _{I-O} =500 VDC, RoH $\geq 60\%$	
Turn-ON time	t _{ON}	Typical	0.05	0.17	-	ms	IF=5 mA, RL=200 Ω , V _{DD} =10 V (See note 2.)
		Maximum	0.2	0.4	2		
Turn-OFF time	t _{OFF}	Typical	0.02		-	ms	IF=5 mA, RL=200 Ω , V _{DD} =10 V (See note 2.)
		Maximum	0.2	0.4	1		

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



Recommended Operating Conditions

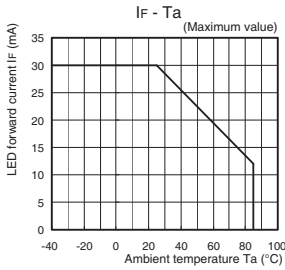
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

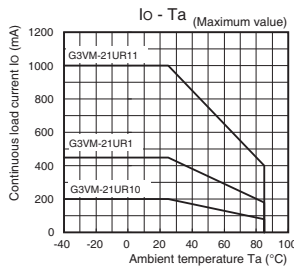
Item	Symbol	G3VM-21UR10	G3VM-21UR1	G3VM-21UR11	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum			16	V
Operating LED forward current	IF	Minimum			5	mA
		Typical			7.5	
		Maximum			20	
Continuous load current (AC peak/DC)	Io	Maximum	200	450	1,000	
Ambient operating temperature	Ta	Minimum			-20	$^\circ\text{C}$
		Maximum			65	

Engineering Data

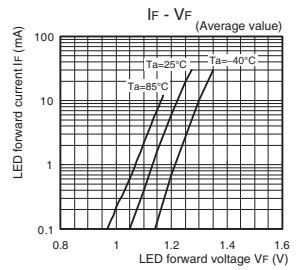
LED forward current vs. Ambient temperature



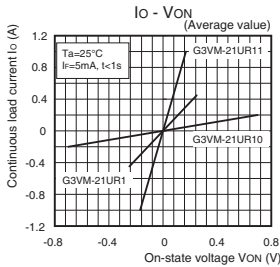
Continuous load current vs. Ambient temperature



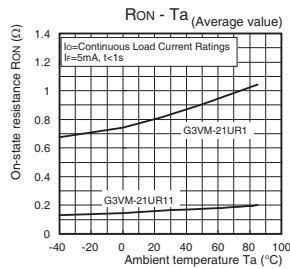
LED forward current vs. LED forward voltage



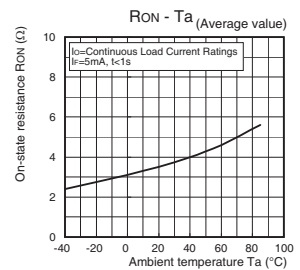
Continuous load current vs. On-state voltage



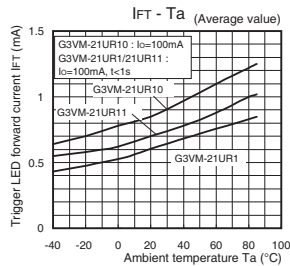
On-state resistance vs. Ambient temperature



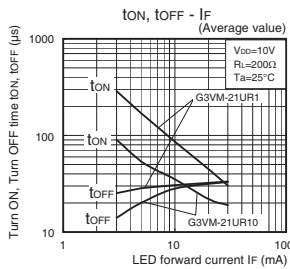
G3VM-21UR10



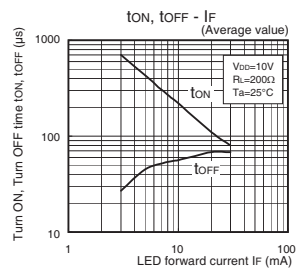
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current



G3VM-21UR11

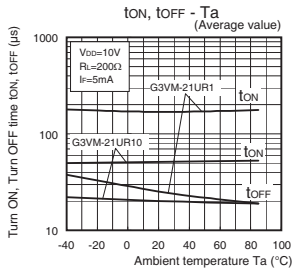


Introduction
General purpose
High-side-voltage
Multi-contact pair
(2a, 2b, and 1a1)
High-current and
Low-ON-resistance
Small and high-
dielectric-strength
High-dielectric-
strength
Current-limiting
Low-voltage-capacitance
and low ON-resistance
Small and High-
side-voltage
Certified Models with
Statistical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

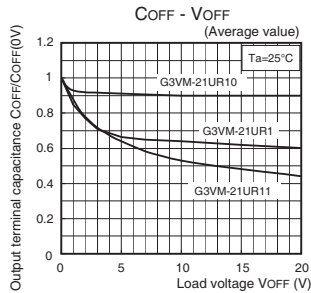
G3VM-21UR□

Engineering Data

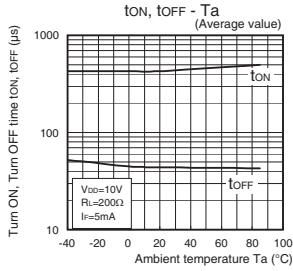
Turn ON, Turn OFF time vs. Ambient temperature G3VM-21UR10/21UR1



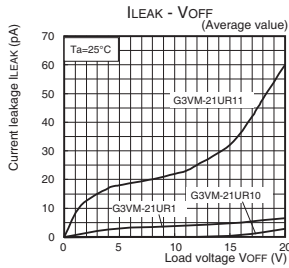
Output terminal capacitance vs. Load voltage



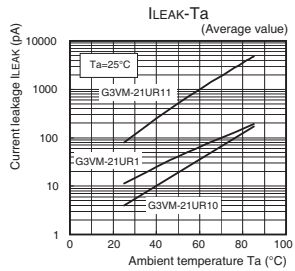
G3VM-21UR11



Current leakage vs. Load voltage



Current leakage vs. Ambient temperature

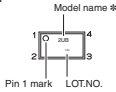


■ Appearance / Terminal Arrangement / Internal Connections

● Appearance

VSON (Very Small Outline Non-leaded)

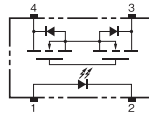
VSON 4-pin



* Actual model name marking for each model

Model	Marking
G3VM-21UR10	2UA
G3VM-21UR1	2U1
G3VM-21UR11	2UB

● Terminal Arrangement/Internal Connections (Top View)

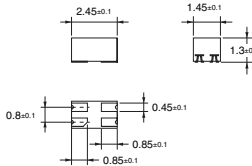
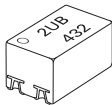


Note: 1. The actual product is marked differently from the image shown here.
 Note: 2. "G3VM" does not appear in the model number on the Relay.

■ Dimensions (Unit: mm)

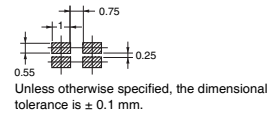
Surface-mounting Terminals

Weight: 0.01 g



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

Introduction
General-purpose
High-side-voltage
Multi-contact pair
Low-Ohm-resistance
High-current and
Small and high-
High-dielectric-
Current-limiting
Low-voltage
Small and High-
Certified Models with
DIP
SOP
SSOP
USOP
VSON

G3VM-21UR□