

G3VM-21UV11/51UV/61UV

MOS FET Relays VSON(R), Voltage Driving Type

Very Small Outline Non-Leaded Package with Voltage Driving Type; VSON(R) MOS FET relay with current limiting internal resistor on the input side



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

- Operating input forward voltage: Recommendation 5V (Typical)
- Load voltage: 20 V, 50 V, 60 V
 - 20-V Relay: Continuous load current of 1 A max.
Low $C \times R = 7.2 \text{ pF} \cdot \Omega$, C_{OFF} (Typical) = 40 pF, R_{ON} (Typical) = 0.18 Ω
 - 50-V Relay: Continuous load current of 0.3 A max.
Low $C \times R = 12 \text{ pF} \cdot \Omega$, C_{OFF} (Typical) = 12 pF, R_{ON} (Typical) = 1 Ω
 - 60-V Relay: Continuous load current of 0.4 A max.
- High Ambient operating temperature: -40°C to +110°C

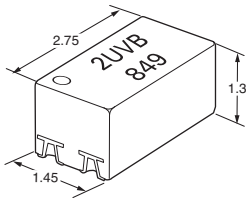
RoHS Compliant

Application Examples

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

Package (Unit : mm, Average)

VSON(R) 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
- 5: 50 V
- 6: 60 V

2. Contact form

- 1: 1a (SPST-NO)

3. Package

- U: VSON(R) 4-pin

4. Additional functions

- V: Voltage Driving Type

5. Other information

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
VSON(R)4	1a (SPST-NO)	Surface-mounting Terminals	20 V	1,000 mA	G3VM-21UV11	1 pc.	G3VM-21UV11 (TR05)	500 pcs.
			50 V	300 mA	G3VM-51UV		G3VM-51UV (TR05)	
			60 V	400 mA	G3VM-61UV		G3VM-61UV (TR05)	

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

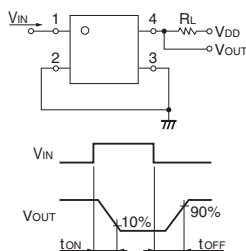
Item		Symbol	G3VM-21UV11	G3VM-51UV	G3VM-61UV	Unit	Measurement conditions
Input	Input forward voltage	V _{IN}	6			V	
	Input reverse voltage	V _{RIN}	5			V	
	Connection temperature	T _J	125			°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	20	50	60	V	
	Continuous load current (AC peak/DC)	I _o	1,000	300	400	mA	
	ON current reduction rate	ΔI _o /°C	-10	-3	-4	mA/°C	Ta≥25°C
	Pulse ON current	I _{op}	3	900	1,200	mA	t=100 ms, Duty=1/10
	Connection temperature	T _J	125			°C	
Dielectric strength between I/O *		V _{I-O}	500			V _{rms}	AC for 1 min
Ambient operating temperature		T _a	-40 to +110			°C	With no icing or condensation
Ambient storage temperature		T _{stg}	-40 to +125			°C	
Soldering temperature		-	260			°C	10 s

* The dielectric strength between the input and output was checked by applying voltage between all pins on the LED side and all pins on the light-receiving side.

Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-21UV11	G3VM-51UV	G3VM-61UV	Unit	Measurement conditions	
Input	Reverse current	I _R	Maximum 10			μA	V _R =5 V	
	Capacity between terminals	C _T	Typical 30			pF	V=0, f=1 MHz	
	Input forward current	I _F	Typical 6.3			mA	V _{IN} =5 V	
	Operate voltage	V _{FON}	Typical	1.8			V	I _{ON} =100 mA
			Maximum	3				
Release voltage	V _{FOFF}	Minimum	0.8			V	I _{OFF} =10 μA	
		Typical	1.8					
Output	Maximum resistance with output ON	Typical	0.18	1		Ω	V _{IN} =5 V, t<1 s, I _o =Continuous load current ratings	
		Maximum	0.22	1.5				
	Current leakage when the relay is open	I _{LEAK}	Maximum	1			nA	V _{OFF} =Load voltage ratings
Capacity between terminals	C _{off}	Typical	40	12	20	pF	V=0, f=100 MHz, t<1 s	
		Maximum	-	20	-			
Capacity between I/O terminals		C _{I-O}	Typical 1			pF	f=1 MHz, V _s =0V	
Insulation resistance between I/O terminals		R _{I-O}	Typical 10 ⁸			MΩ	V _{I-O} =500 VDC, RoH≤60%	
Turn-ON time	t _{ON}	Maximum	2	0.5		ms	V _{IN} =5 V, R _L =200 Ω, V _{DD} =10 V (G3VM-21UV11) V _{DD} =20 V (G3VM-51UV, -61UV) *	
Turn-OFF time	t _{OFF}	Maximum	1	0.4	0.5			

* Turn-ON and Turn-OFF Times



Recommended Operating Conditions

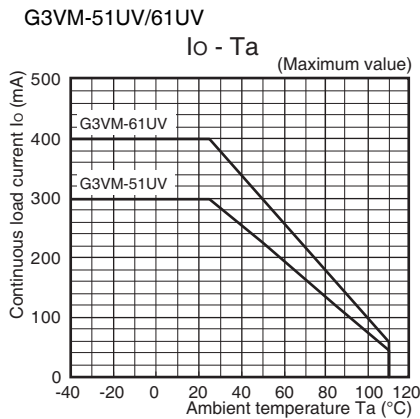
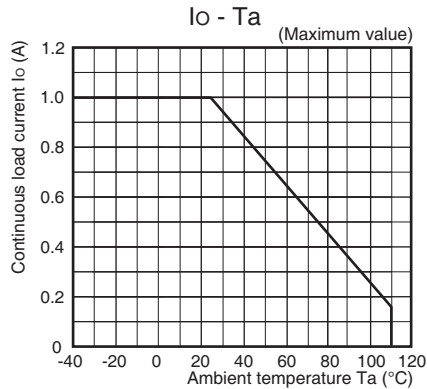
To ensure highest reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

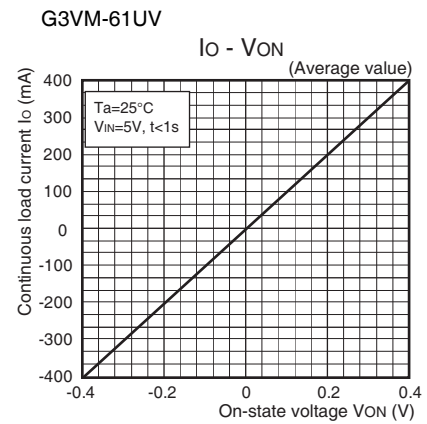
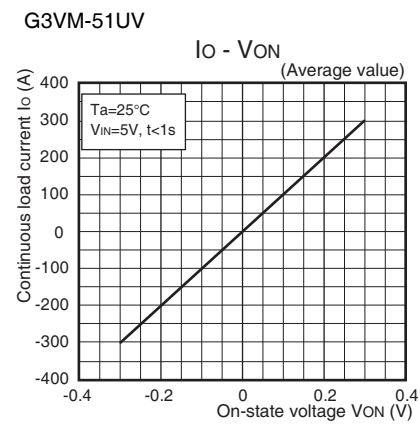
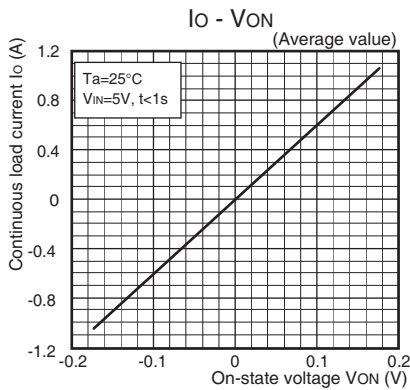
Item	Symbol	G3VM-21UV11	G3VM-51UV	G3VM-61UV	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum 16	40	48	V
Operating input forward voltage	V _{IN}	Minimum	4		V
		Typical	5		
		Maximum	6		
Continuous load current (AC peak/DC)	I _o	Maximum 1000	300	400	mA
Ambient operating temperature	T _a	Minimum	-20		°C
		Maximum	85		

Engineering Data

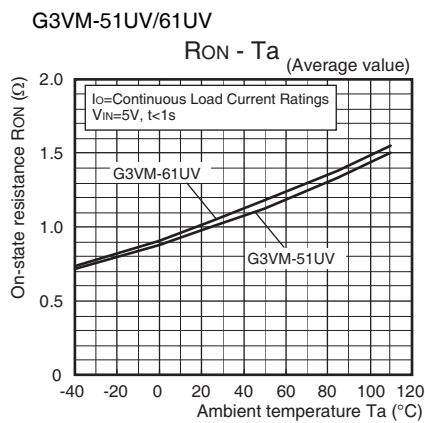
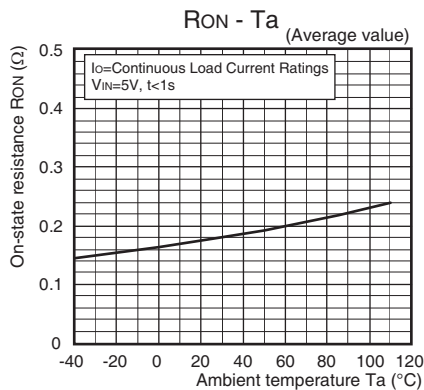
Continuous load current vs. Ambient temperature G3VM-21UV11



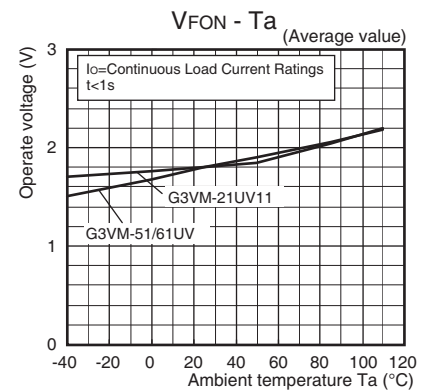
Continuous load current vs. On-state voltage G3VM-21UV11



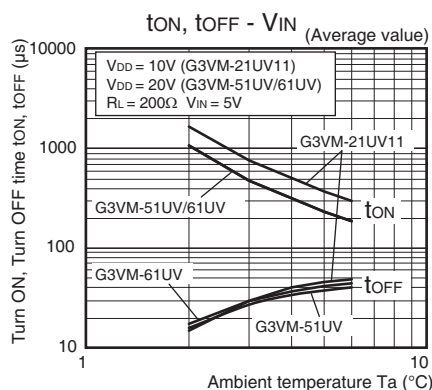
On-state resistance vs. Ambient temperature G3VM-21UV11



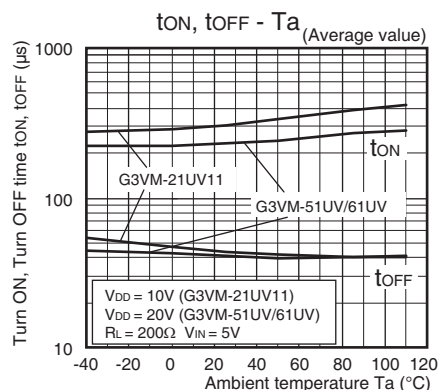
Operate voltage vs. Ambient temperature G3VM-21UV11/51UV/61UV



Turn ON, Turn OFF time vs. Input forward voltage

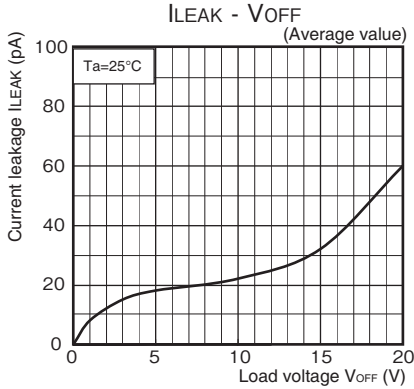


Turn ON, Turn OFF time vs. Ambient temperature

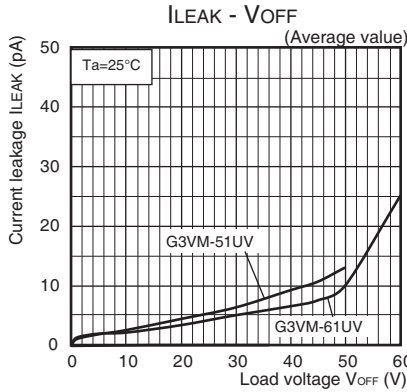


Engineering Data

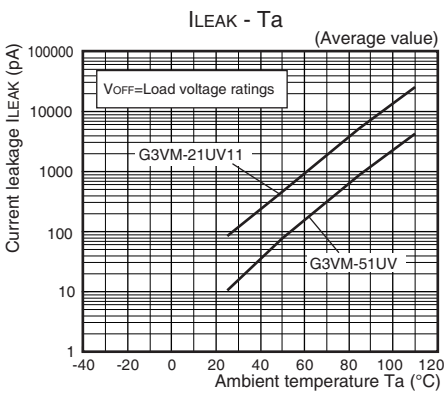
Current leakage vs. Load voltage G3VM-21UV11



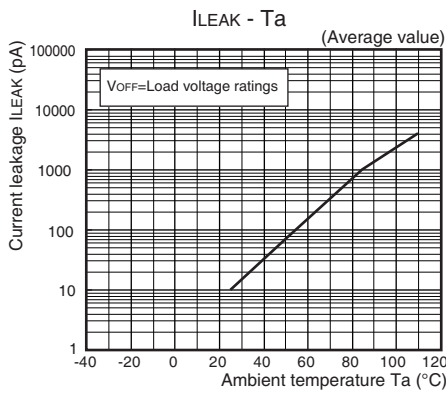
G3VM-51UV/61UV



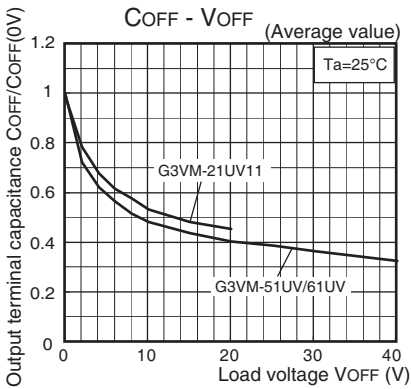
Current leakage vs. Ambient temperature G3VM-21UV/51UV



G3VM-61UV



Output terminal capacitance vs. Load voltage

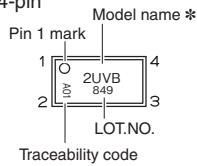


Appearance / Terminal Arrangement / Internal Connections

Appearance

VSON(R) (Very Small Outline Non-leaded with Resistance)

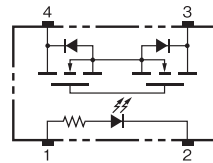
VSON(R) 4-pin



* Actual model name marking for each model

Model	Marking
G3VM-21UV11	2UVB
G3VM-51UV	5UV0
G3VM-61UV	6UV0

Terminal Arrangement/Internal Connections (Top View)



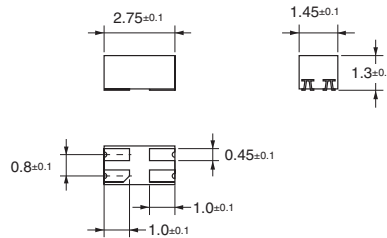
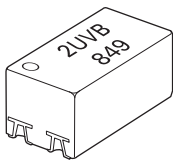
Note: 1. The actual product is marked differently from the image shown here.

Note: 2. "G3VM" does not appear in the model number on the Relay.

Dimensions (Unit: mm)

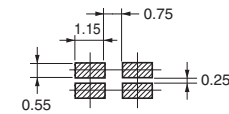
Surface-mounting Terminals

Weight: 0.01 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



Unless otherwise specified, the dimensional tolerance is ± 0.1 mm.

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

Safety Precautions

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

• 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

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Cat. No. K313-E1-01
1118(1118)(O)

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