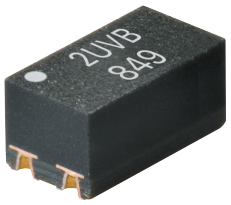
G3VM-21UV11/51UV/61UV

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.

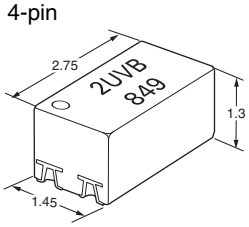
- **Operating input forward voltage: Recommendation 5V (Typical)**
- **Load voltage: 20 V, 50 V, 60 V**
  20-V Relay: Continuous load current of 1 A max.
  Low C × R = 7.2 pF·Ω, COFF (Typical) = 40 pF, RON (Typical) = 0.18 Ω
  50-V Relay: Continuous load current of 0.3 A max.
  Low C × R = 12 pF·Ω, COFF (Typical) = 12 pF, RON (Typical) = 1 Ω
  60-V Relay: Continuous load current of 0.4 A max.
- **High Ambient operating temperature: -40°C to +110°C**

■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.

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■Absolute Maximum Ratings (Ta = 25°C)

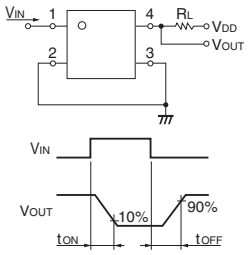
	Item	Symbol	G3VM-21UV11	G3VM-51UV	G3VM-61UV	Unit	Measurement conditions
Input	Input forward voltage	V_{IN}	6			V	
	Input reverse voltage	V_{RIN}	5			V	
	Connection temperature	T_J	125			°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	20	50	60	V	
	Continuous load current (AC peak/DC)	I_O	1,000	300	400	mA	
	ON current reduction rate	ΔIo/°C	–10	–3	–4	mA/°C	Ta≥25°C
	Pulse ON current	Iop	3,000	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			Vrms	AC for 1 min
Ambient operating temperature		Ta	–40 to +110			°C	With no icing or condensation
Ambient storage temperature		Tstg	–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	R_{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	Ta	Minimum	–20			°C
		Maximum	85			

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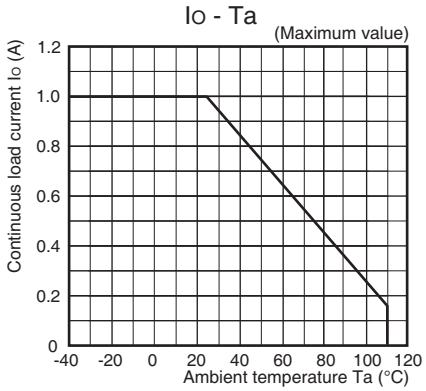
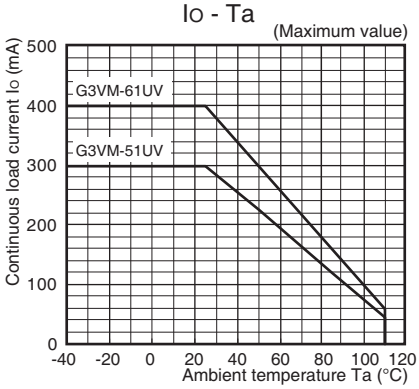
■Engineering Data

●Continuous load current vs. Ambient temperature

G3VM-21UV11

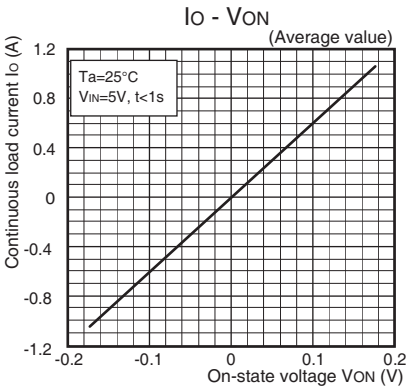


G3VM-51UV/61UV

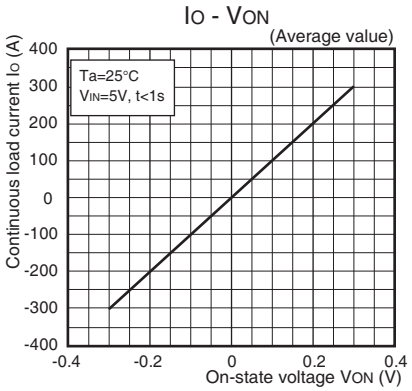


●Continuous load current vs. On-state voltage

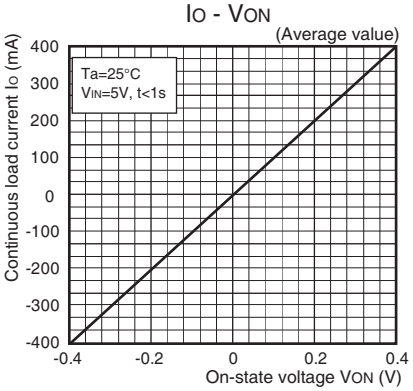
G3VM-21UV11



G3VM-51UV

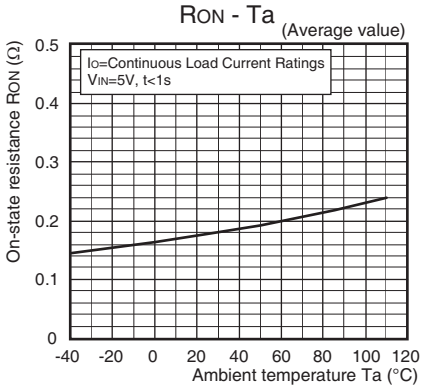


G3VM-61UV

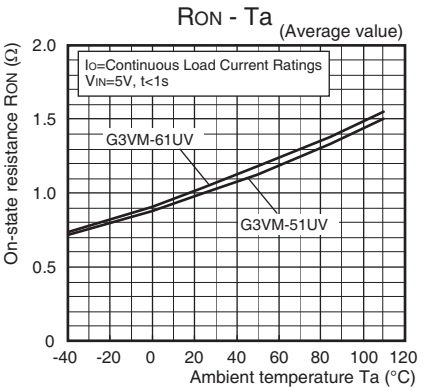


●On-state resistance vs. Ambient temperature

G3VM-21UV11

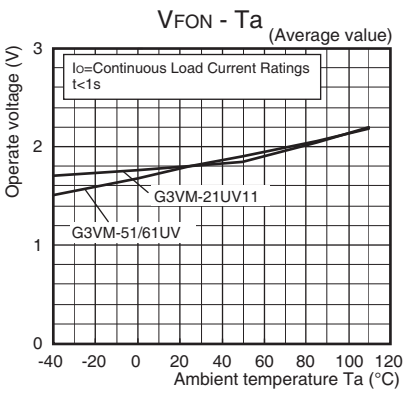


G3VM-51UV/61UV

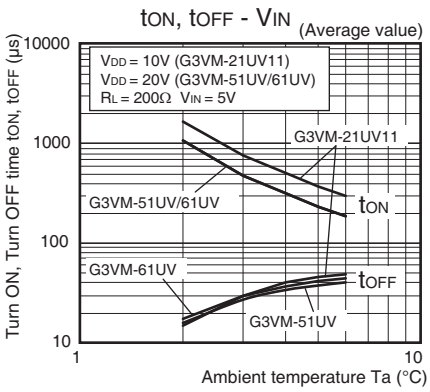


●Operate voltage vs. Ambient temperature

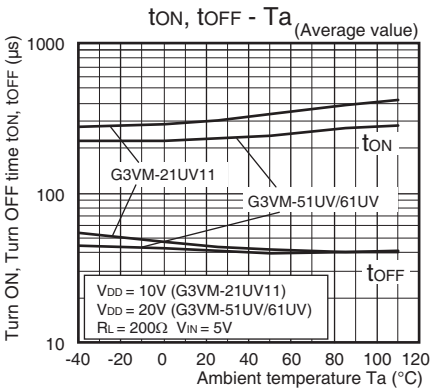
G3VM-21UV11/51UV/61UV



●Turn ON, Turn OFF time vs. Input forward voltage



●Turn ON, Turn OFF time vs. Ambient temperature



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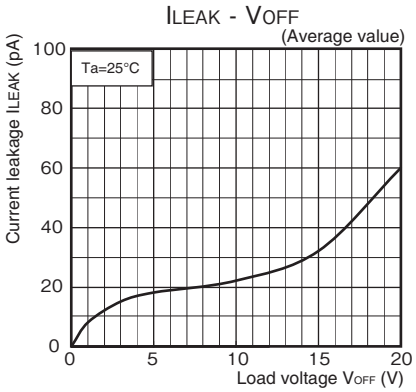
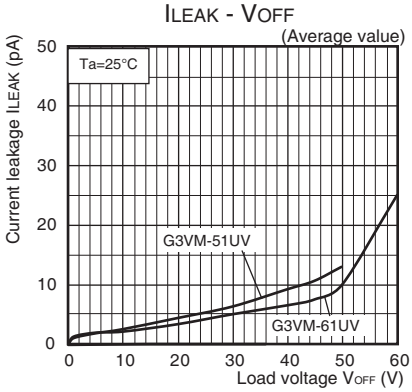
■Engineering Data

●Current leakage vs. Load voltage

G3VM-21UV11

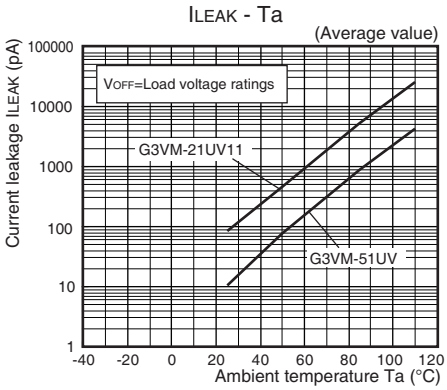


G3VM-51UV/61UV

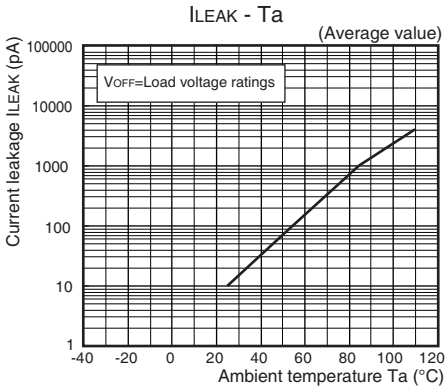


●Current leakage vs. Ambient temperature

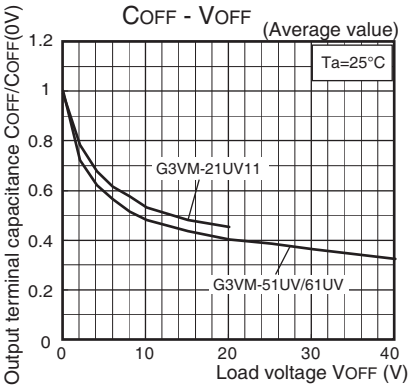
G3VM-21UV/51UV



G3VM-61UV



●Output terminal capacitance vs. Load voltage



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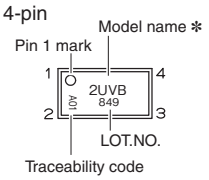
■Appearance / Terminal Arrangement / Internal Connections

●Appearance

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

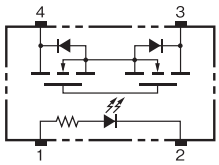
VSON(R) 4-pin



✻ Actual model name marking for each model

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

●Terminal Arrangement/Internal Connections (Top View)

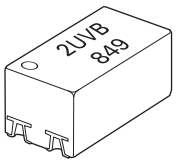


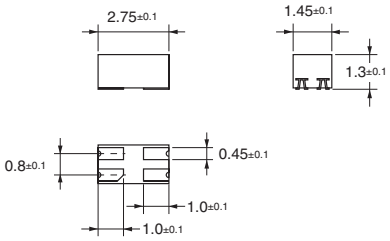
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.

■Dimensions (Unit: mm)

Surface-mounting Terminals

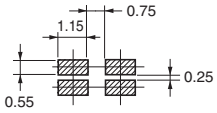
Weight: 0.01 g





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.

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