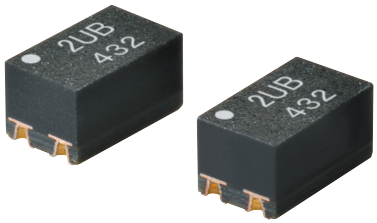
G3VM-21UR□

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

VSON Package with Low Output Capacitance and Low ON Resistance

- **Load voltage: 20 V**
- **G3VM-21UR10: Low C × R = 2.4 pF·Ω, C_{OFF} (standard) = 0.8 pF, R_{ON} (standard) = 3 Ω**
- **G3VM-21UR1: Low C × R = 4 pF·Ω, C_{OFF} (standard) = 5 pF, R_{ON} (standard) = 0.8 Ω**
- **G3VM-21UR11: Low C × R = 7.2 pF·Ω, C_{OFF} (standard) = 40 pF, R_{ON} (standard) = 0.18 Ω**
- **High Ambient operating temperature: -40°C to +110°C**



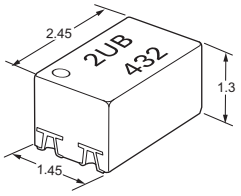
Note: The actual product is marked differently from the image shown here.

■Application Examples

- **Semiconductor test equipment**
- **Test & measurement equipment**
- **Communication 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

1. Load Voltage
2: 20 V

2. Contact form
1: 1a (SPST-NO)

3. Package
U: VSON 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
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.

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■Absolute Maximum Ratings (Ta = 25°C)

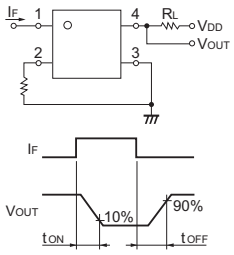
	Item	Symbol	G3VM-21UR10	G3VM-21UR1	G3VM-21UR11	Unit	Measurement conditions
Input	LED forward current	I_F	30			mA	
	LED forward current reduction rate	ΔI_F/°C	–0.3			mA/°C	Ta≥25°C
	LED reverse voltage	V_R	5			V	
	Connection temperature	T_J	125			°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	20			V	
	Continuous load current (AC peak/DC)	I_O	200	450	1,000	mA	
	ON current reduction rate	ΔI_O/°C	–2	–4.5	–10	mA/°C	Ta≥25°C
	Pulse ON current	I_{op}	0.6	1.3	3	A	t=100 ms, Duty=1/10
	Connection temperature	T_J	125			°C	
Dielectric strength between I/O ✻1 ✻2		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

✻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.
✻2. Dielectric strength between I/O 500Vrms is applied from production in December 2016. (Before changes are 300Vrms.)

■Electrical Characteristics (Ta = 25°C)

	Item	Symbol		G3VM-21UR10	G3VM-21UR1	G3VM-21UR11	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.1			V	I_F=10 mA
			Typical	1.22				
			Maximum	1.4				
	Reverse current	I_R	Maximum	10			µA	V_R=5 V
	Capacitance between terminals	C_T	Typical	30			pF	V=0, f=1 MHz
	Trigger LED forward current	I_{FT}	Typical	0.9	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	0.8	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	1			pF	f=1 MHz, V_S=0 V
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}	Typical	0.05	0.17	–	ms	I_F=5 mA, R_L=200 Ω, V_{DD}=10 V ✻
			Maximum	0.2	0.4	2		
Turn-OFF time		t_{OFF}	Typical	0.02	0.03	–		
			Maximum	0.2	0.4	1		

✻ 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	I_F	Minimum	5			mA
		Typical	7.5			
		Maximum	20			
Continuous load current (AC peak/DC)	I_O	Maximum	200	450	1,000	
Ambient operating temperature	Ta	Minimum	–20			°C
		Maximum	85			

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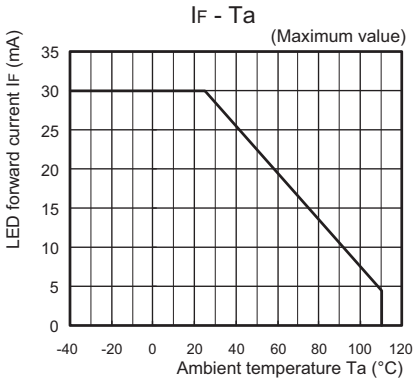
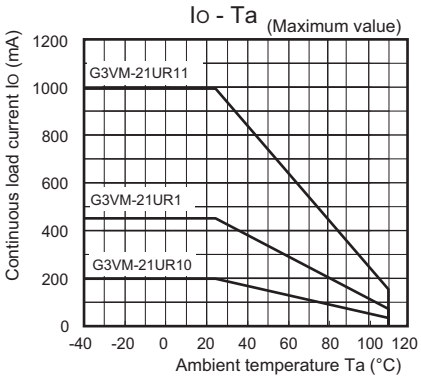
■Engineering Data

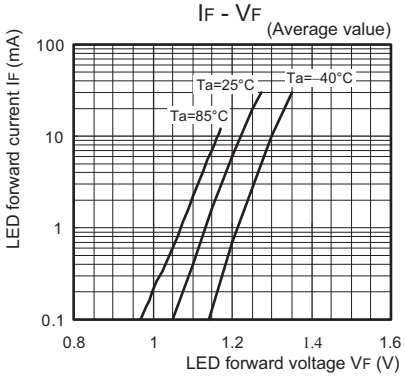
●**LED forward current vs. Ambient temperature**



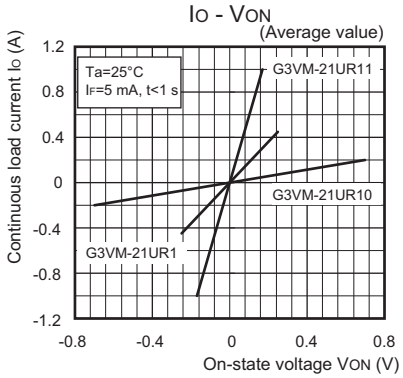
●**Continuous load current vs. Ambient temperature**



●**LED forward current vs. LED forward voltage**

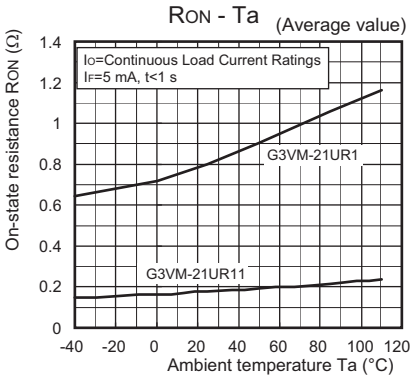


●**Continuous load current vs. On-state voltage**

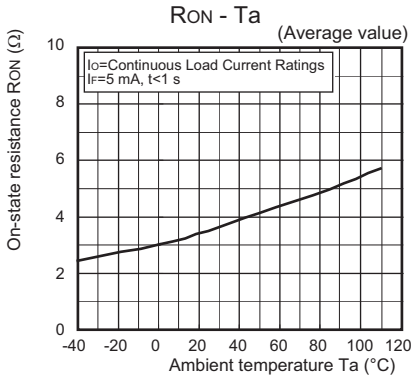


●**On-state resistance vs. Ambient temperature**

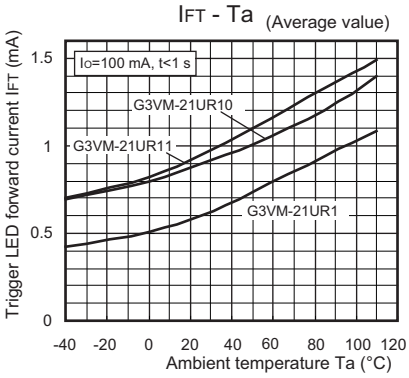
G3VM-21UR1/21UR11



G3VM-21UR10

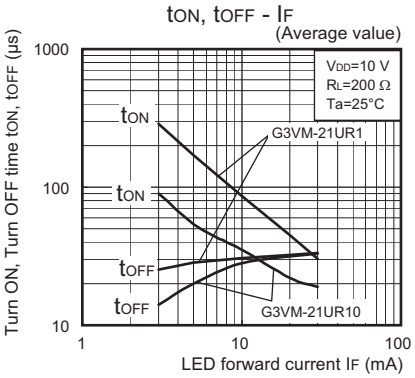


●**Trigger LED forward current vs. Ambient temperature**

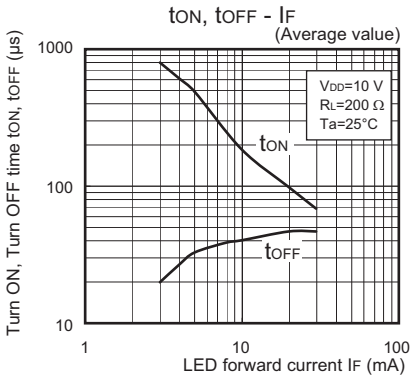


●**Turn ON, Turn OFF time vs. LED forward current**

G3VM-21UR10/21UR1



G3VM-21UR11



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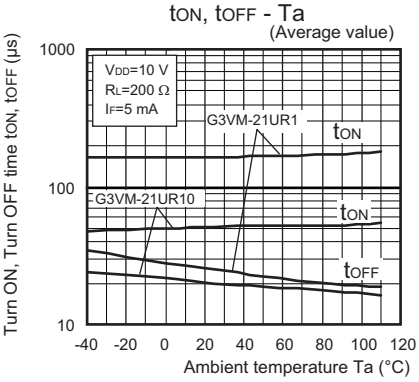
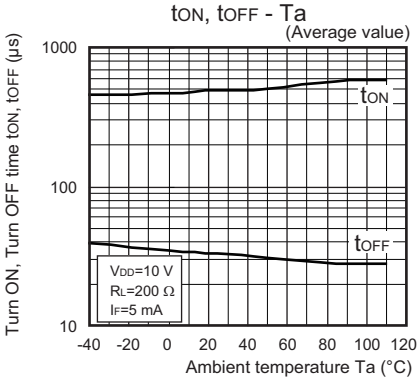
■Engineering Data

●Turn ON, Turn OFF time vs. Ambient temperature

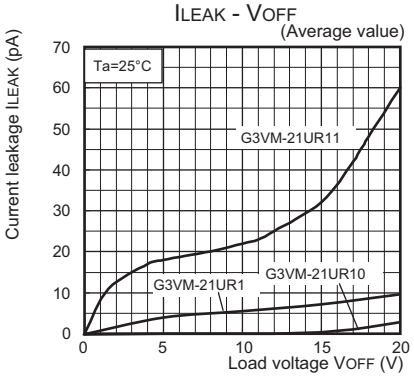
G3VM-21UR10/21UR1



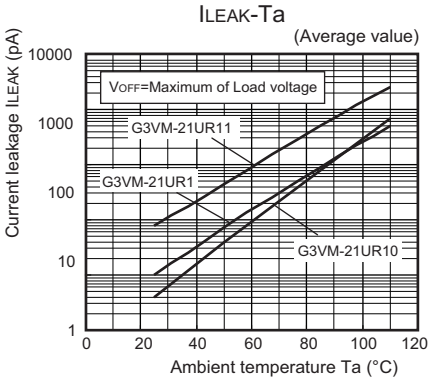
G3VM-21UR11



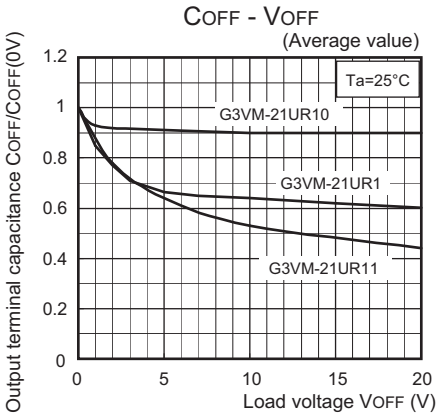
●Current leakage vs. Load voltage



●Current leakage vs. Ambient temperature



●Output terminal capacitance vs. Load voltage



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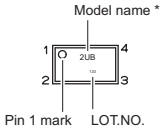
■Appearance / Terminal Arrangement / Internal Connections

●Appearance

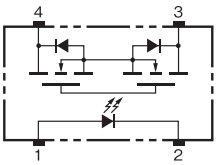
VSON (Very Small Outline Non-leaded)
VSON 4-pin



✻ Actual model name marking for each model

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

●Terminal Arrangement/Internal Connections (Top View)

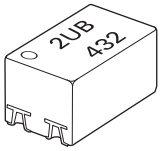


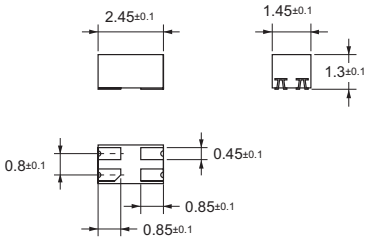
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.

■Dimensions (Unit: mm)

Surface-mounting Terminals

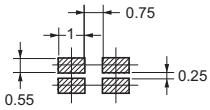
Weight: 0.01 g





Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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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