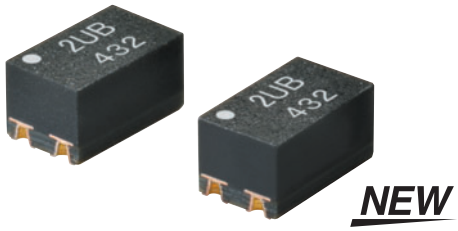
G3VM-41UR10/51UR

MOS FET Relays VSON package with Low Output Capacitance and ON Resistance type (Low C × R)

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



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

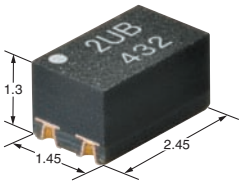
RoHS Compliant

⚠ Refer to "*Common Precautions*".

■Application Examples

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

■Package (Unit : mm, Average)



■Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load Voltage
4: 40V
5: 50V

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

3. Package type
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 type	Contact form	Terminals	Load voltage (peak value) ✻	Continuous load current (peak value) ✻	Packing/Tape cut		Packing/Tape & reel	
					Model	Minimum package quantity	Model	Minimum package quantity
VSON4	1a (SPST-NO)	Surface-mounting Terminals	40V	120mA	**G3VM-41UR10**	–	**G3VM-41UR10(TR05)**	500
			50V	300mA	**G3VM-51UR**		**G3VM-51UR(TR05)**	

Note: When ordering tape packing, add "(TR05)" to the model number.
Ask your OMRON representative for orders under 500 pcs. We can supply products with the tape already cut.
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)

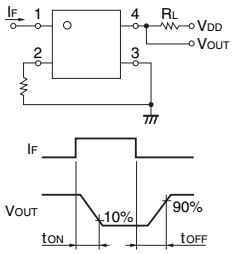
Item		Symbol	G3VM-41UR10	G3VM-51UR	Unit	Measurement conditions
Input	LED forward current	I_F	30		mA	
	LED forward current reduction rate	ΔI_F/°C	–0.3		mA/°C	Ta≥25°C
	LED reverse voltage	V_R	5		V	
	Connection temperature	T_J	125		°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	40	50	V	
	Continuous load current (AC peak/DC)	I_O	120	300	mA	
	ON current reduction rate	ΔI_O/°C	–1.2	–3	mA/°C	Ta≥25°C
	Pulse ON current	I_{OP}	360	900	mA	t=100ms, Duty=1/10
	Connection temperature	T_J	125		°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	300		Vrms	AC for 1 min
Ambient operating temperature		Ta	–40~+85		°C	With no icing or condensation
Ambient storage temperature		Tstg	–40~+125		°C	
Soldering temperature		–	260		°C	10s

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.

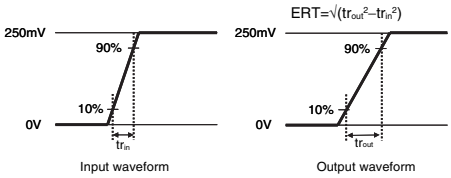
■Electrical Characteristics (Ta = 25°C)

Item		Symbol		G3VM-41UR10	G3VM-51UR	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.1		V	I_F=10mA
			Typical	1.27			
			Maximum	1.4			
	Reverse current	I_R	Maximum	10		μA	V_R=5V
	Capacity between terminals	C_T	Typical	30		pF	V=0, f=1MHz
	Trigger LED forward current	I_{FT}	Maximum	3		mA	I_O=100mA
	Release LED forward current	I_{FC}	Minimum	0.1		mA	I_{OFF}=10μA
Output	Maximum resistance with output ON	R_{ON}	Typical	12	1	Ω	I_F=5mA, t<1s, G3VM-41UR10 I_O=120mA G3VM-51UR I_O=300mA
			Maximum	14	1.5		
	Current leakage when the relay is open	I_{LEAK}	Maximum	1		nA	G3VM-41UR10 V_{OFF} =40V G3VM-51UR V_{OFF}=50V
	Capacity between terminals	C_{OFF}	Typical	0.45	12	pF	V=0, f=100MHz, t<1s
			Maximum	0.8	20		
Capacity between I/O terminals		C_{I-O}	Typical	1		pF	f=1MHz, V_S=0V
Insulation resistance between I/O terminals		R_{I-O}	Typical	10^8		MΩ	V_{I-O}=500VDC, RoH≤60%
Turn-ON time		t_{ON}	Maximum	0.2	0.5	ms	I_F=5mA, R_L=200Ω, V_{DD}=20V (See note 2.)
Turn-OFF time		t_{OFF}	Maximum	0.3	0.4		
Equivalent rise time		ERT	Typical	–	40	ps	I_F=5mA, V_{DD}=0.25V, Tr(in)=25ps (See Note.3)
			Maximum	–	90		

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



Note: 3. Equivalent Rise Time



■Recommended Operating Conditions

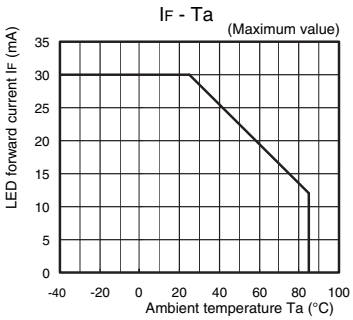
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

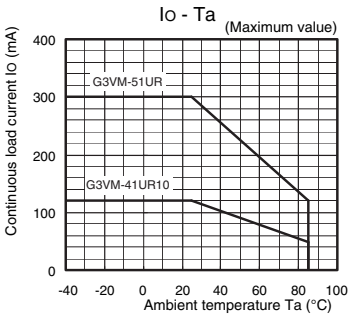
Item	Symbol		G3VM-41UR10	G3VM-51UR	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32	40	V
Operating LED forward current	I_F	Minimum	5		mA
		Typical	7.5		
		Maximum	20		
Continuous load current (AC peak/DC)	I_O	Maximum	120	300	
Ambient operating temperature	Ta	Minimum	–20		°C
		Maximum	65		

■Engineering Data

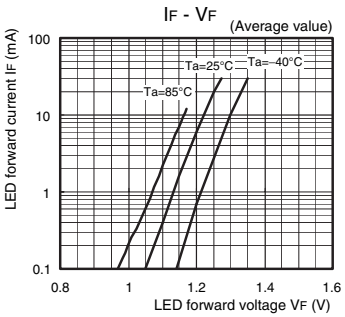
LED forward current vs. Ambient temperature



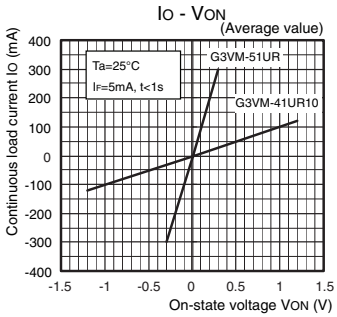
Continuous load current vs. Ambient temperature



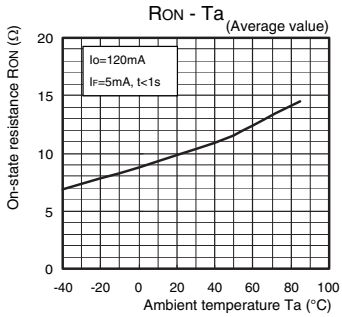
LED forward current vs. LED forward voltage



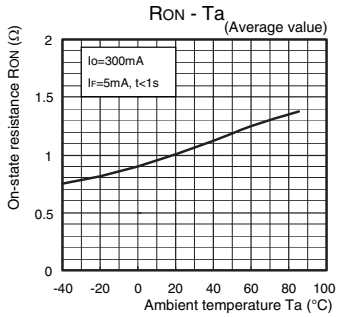
Continuous load current vs. On-state voltage



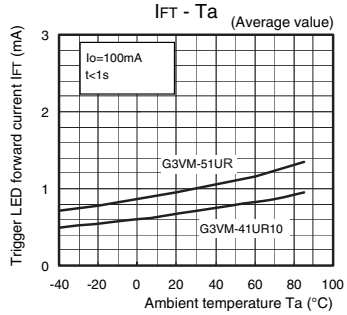
On-state resistance vs. Ambient temperature G3VM-41UR10



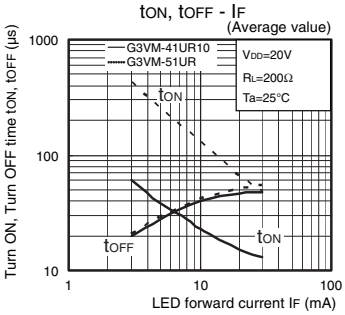
G3VM-51UR



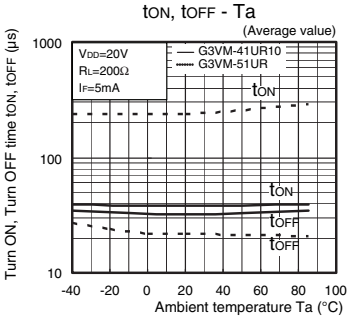
Trigger LED forward current vs. Ambient temperature



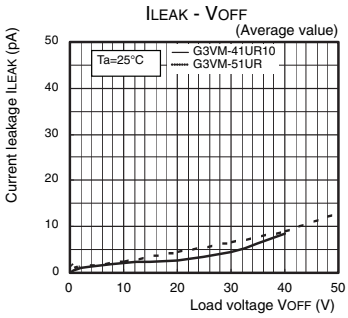
Turn ON, Turn OFF time vs. LED forward current



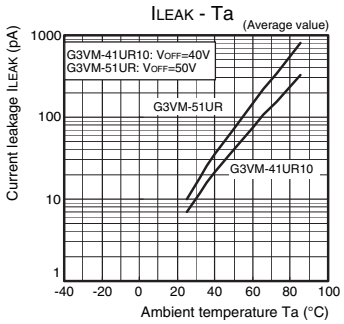
Turn ON, Turn OFF time vs. Ambient temperature



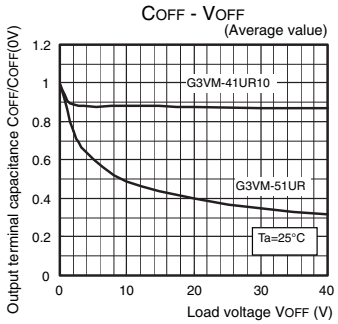
Current leakage vs. Load voltage



Current leakage vs. Ambient temperature



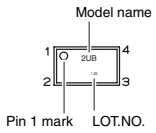
Output terminal capacitance vs. Load voltage



■Appearance/Terminal Arrangement/Internal Connections

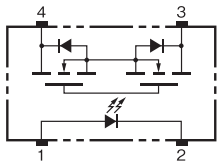
■Appearance

VSON (Very Small Outline Non-leaded)
VSON4



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

■Terminal Arrangement/Internal Connections (Top View)



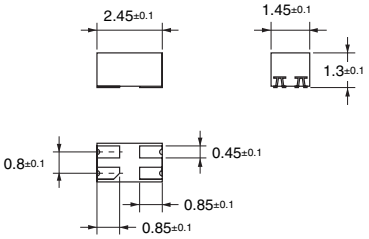
■Dimensions

(Unit: mm)



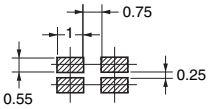
Surface-mounting Terminals

Weight: 0.01g



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 "**Common Precautions**" for all G3VM models.

- 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 **Contact: www.omron.com/ecb**
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