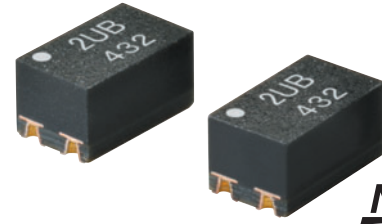


# G3VM-41UR10/51UR

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



**NEW**

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

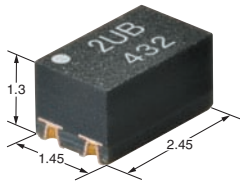
RoHS Compliant

Refer to "Common Precautions".

### Application Examples

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

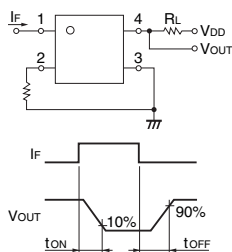
Item		Symbol	G3VM-41UR10	G3VM-51UR	Unit	Measurement conditions
Input	LED forward current	IF	30		mA	
	LED forward current reduction rate	ΔIF/°C	-0.3		mA/°C	Ta≥25°C
	LED reverse voltage	VR	5		V	
	Connection temperature	TJ	125		°C	
Output	Load voltage (AC peak/DC)	VOFF	40	50	V	
	Continuous load current (AC peak/DC)	Io	120	300	mA	
	ON current reduction rate	ΔIo/°C	-1.2	-3	mA/°C	Ta≥25°C
	Pulse ON current	Iop	360	900	mA	t=100ms, Duty=1/10
	Connection temperature	TJ	125		°C	
Dielectric strength between I/O (See note 1.)		VI-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.

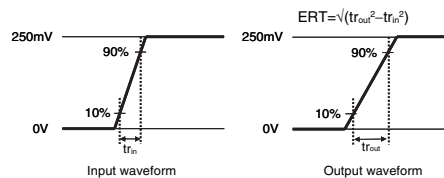
## Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-41UR10	G3VM-51UR	Unit	Measurement conditions	
Input	LED forward voltage	V <sub>F</sub>	Minimum	1.1		V	I <sub>F</sub> =10mA
			Typical	1.27			
			Maximum	1.4			
	Reverse current	I <sub>R</sub>	Maximum	10		μA	V <sub>R</sub> =5V
	Capacity between terminals	C <sub>T</sub>	Typical	30		pF	V=0, f=1MHz
	Trigger LED forward current	I <sub>FT</sub>	Maximum	3		mA	I <sub>O</sub> =100mA
Output	Maximum resistance with output ON	R <sub>ON</sub>	Typical	12	1	Ω	I <sub>F</sub> =5mA, t<1s, G3VM-41UR10 I <sub>O</sub> =120mA G3VM-51UR I <sub>O</sub> =300mA
			Maximum	14	1.5		
	Current leakage when the relay is open	I <sub>LEAK</sub>	Maximum	1		nA	G3VM-41UR10 V <sub>OFF</sub> =40V G3VM-51UR V <sub>OFF</sub> =50V
	Capacity between terminals	C <sub>OFF</sub>	Typical	0.45	12	pF	V=0, f=100MHz, t<1s
			Maximum	0.8	20		
	Capacity between I/O terminals	C <sub>I-O</sub>	Typical	1		pF	f=1MHz, V <sub>S</sub> =0V
Insulation resistance between I/O terminals	R <sub>I-O</sub>	Typical	10 <sup>8</sup>		MΩ	V <sub>I-O</sub> =500VDC, RoH≤60%	
Turn-ON time	t <sub>ON</sub>	Maximum	0.2	0.5	ms	I <sub>F</sub> =5mA, R <sub>L</sub> =200Ω, V <sub>DD</sub> =20V (See note 2.)	
Turn-OFF time	t <sub>OFF</sub>	Maximum	0.3	0.4			
Equivalent rise time	ERT	Typical	-	40	ps	I <sub>F</sub> =5mA, V <sub>DD</sub> =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

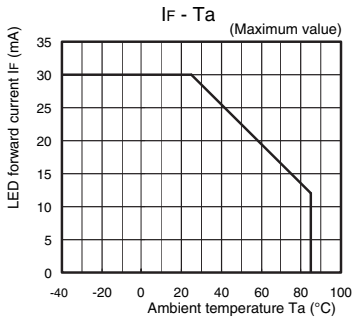
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

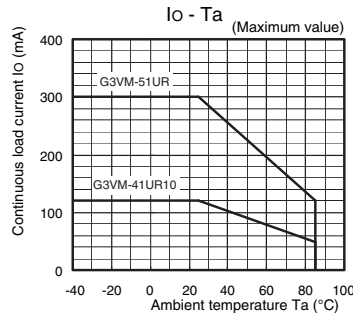
Item	Symbol		G3VM-41UR10	G3VM-51UR	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	32	40	V
		Minimum	5		
Operating LED forward current	I <sub>F</sub>	Typical	7.5		mA
		Maximum	20		
		Maximum	120	300	
Ambient operating temperature	T <sub>a</sub>	Minimum	-20		°C
		Maximum	65		

## Engineering Data

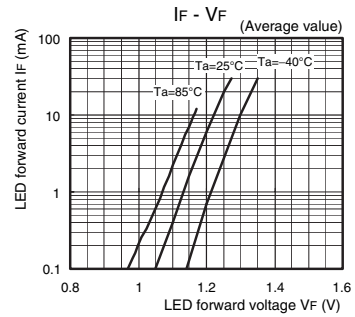
**LED forward current vs. Ambient temperature**



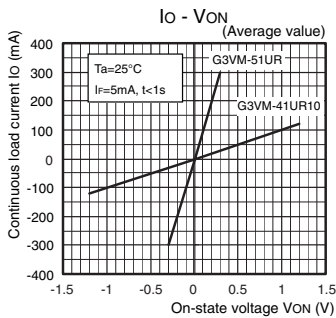
**Continuous load current vs. Ambient temperature**



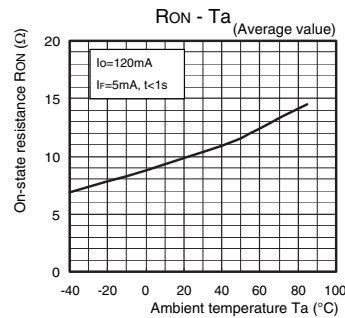
**LED forward current vs. LED forward voltage**



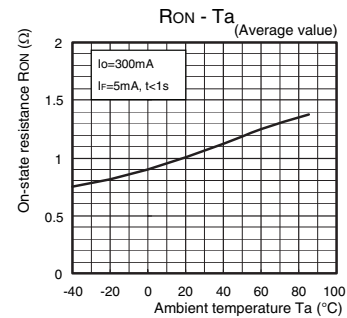
**Continuous load current vs. On-state voltage**



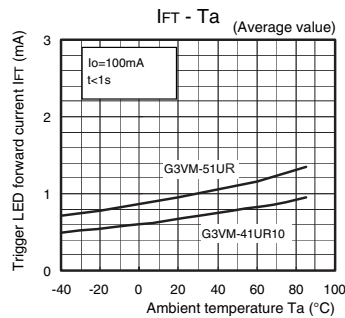
**On-state resistance vs. Ambient temperature**



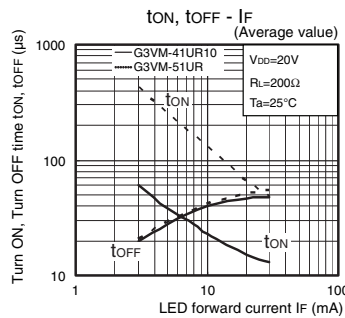
**G3VM-51UR**



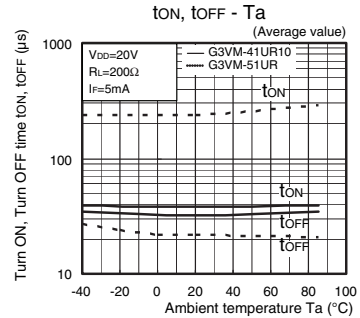
**Trigger LED forward current vs. Ambient temperature**



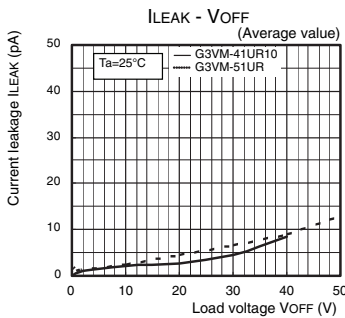
**Turn ON, Turn OFF time vs. LED forward current**



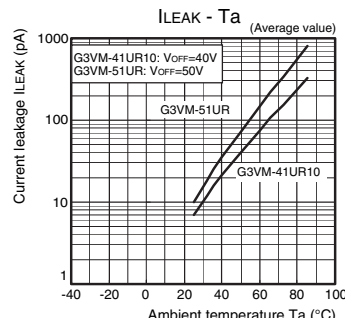
**Turn ON, Turn OFF time vs. Ambient temperature**



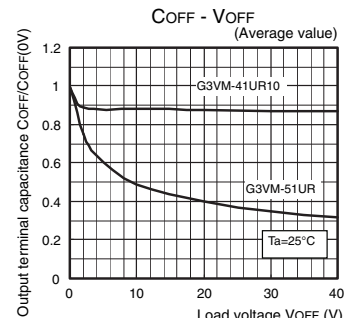
**Current leakage vs. Load voltage**



**Current leakage vs. Ambient temperature**



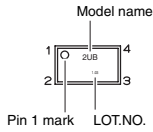
**Output terminal capacitance vs. Load voltage**



## ■Appearance/Terminal Arrangement/Internal Connections

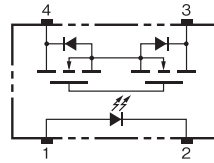
### ■Appearance

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)



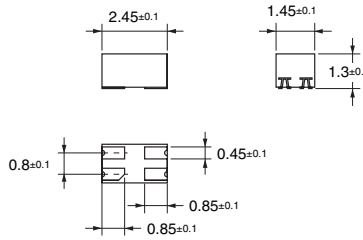
## ■Dimensions

(Unit: mm)



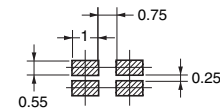
### Surface-mounting Terminals

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](http://www.omron.com/ecb)

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