

# G3VM-41UR□/51UR

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

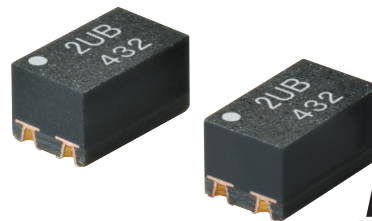
## World's smallest New VSON Package with Low Output Capacitance and Low ON Resistance

• Load voltage 40V/50V

RoHS Compliant



Refer to "Common Precautions".



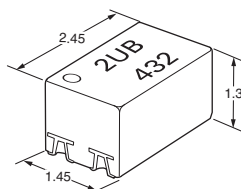
**NEW**

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

### Application Examples

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

### Package (Unit : mm, Average)



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

### 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	100mA	G3VM-41UR12	1 pc.	G3VM-41UR12(TR05)	500 pcs.
				120mA	G3VM-41UR10		G3VM-41UR10(TR05)	
				140mA	G3VM-41UR11		G3VM-41UR11(TR05)	
			50V	300mA	G3VM-51UR		G3VM-51UR(TR05)	

Note: When ordering tape packing, add "(TR05)" (500pcs/reel) 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.

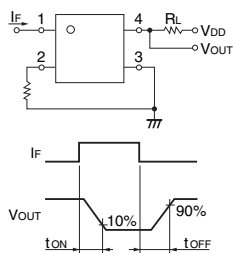
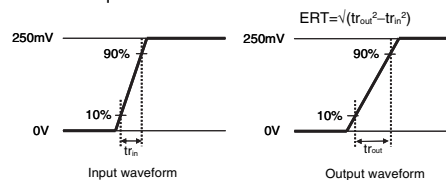
### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-51UR	Unit	Measurement conditions
Input	LED forward current	30				mA	
	LED forward current reduction rate	-0.3				mA/°C	Ta≥25°C
	LED reverse voltage	5				V	
	Connection temperature	125				°C	
Output	Load voltage (AC peak/DC)	40			50	V	
	Continuous load current (AC peak/DC)	100	120	140	300	mA	
	ON current reduction rate	-1.0	-1.2	-1.4	-3	mA/°C	Ta≥25°C
	Pulse ON current	300	360	420	900	mA	t=100ms, Duty=1/10
	Connection temperature	125				°C	
Dielectric strength between I/O (See note 1.)		300				Vrms	AC for 1 min
Ambient operating temperature		-40~+85				°C	
Ambient storage temperature		-40~+125				°C	With no icing or condensation
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-41UR12		G3VM-41UR10		G3VM-41UR11		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>	Typical	0.9	—	0.7	—	mA	I <sub>O</sub> =100mA			
			Maximum	3								
Release LED forward current	I <sub>FC</sub>	Minimum	0.1						mA	I <sub>OFF</sub> =10μA		
Output	Maximum resistance with output ON	R <sub>ON</sub>	Typical	15	12	7	1	Ω	I <sub>F</sub> =5mA, t<1s, I <sub>O</sub> =Continuous load current ratings			
			Maximum	20	14	10	1.5					
	Current leakage when the relay is open	I <sub>LEAK</sub>	Maximum	1						nA	V <sub>OFF</sub> =Load voltage ratings	
	Capacity between terminals	C <sub>OFF</sub>	Typical	0.3	0.45	0.7	12	pF	V=0, f=100MHz, t<1s			
			Maximum	0.6	0.8	1.3	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, R <sub>oH</sub> ≤60%	
Turn-ON time		t <sub>ON</sub>	Typical	0.05	—	0.06	—	ms	I <sub>F</sub> =5mA, R <sub>L</sub> =200Ω, V <sub>DD</sub> =20V (See note 2.)			
			Maximum	0.2						0.5		
Turn-OFF time		t <sub>OFF</sub>	Typical	0.03	—	0.03	—					
			Maximum	0.2	0.3	0.2	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

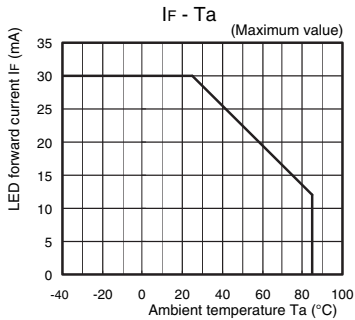
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

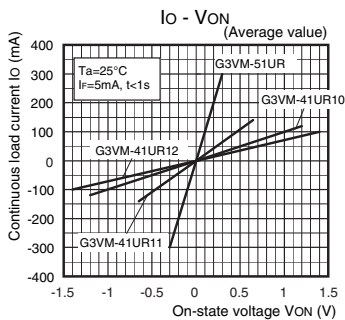
Item	Symbol		G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-51UR	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	32			40	V
Operating LED forward current	I <sub>F</sub>	Minimum	5				mA
		Typical	7.5				
		Maximum	20				
Continuous load current (AC peak/DC)	I <sub>O</sub>	Maximum	100	120	140	300	
Ambient operating temperature	T <sub>a</sub>	Minimum	-20				°C
		Maximum	65				

## Engineering Data

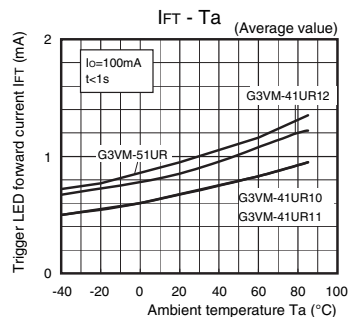
### LED forward current vs. Ambient temperature



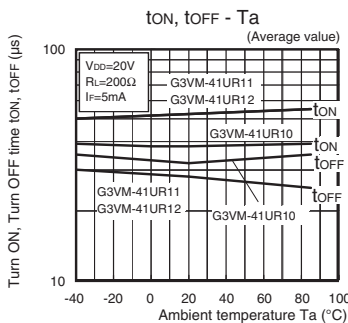
### Continuous load current vs. On-state voltage



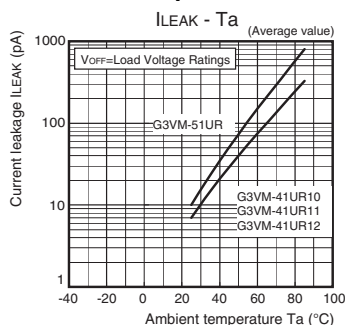
### Trigger LED forward current vs. Ambient temperature



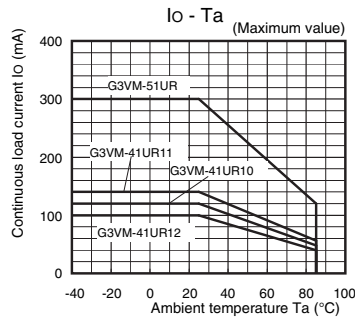
### Turn ON, Turn OFF time vs. Ambient temperature



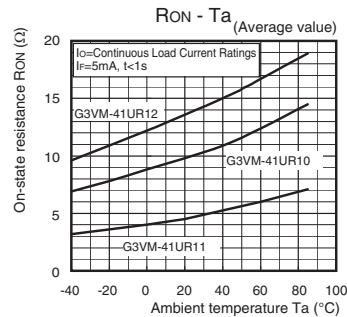
### Current leakage vs. Ambient temperature



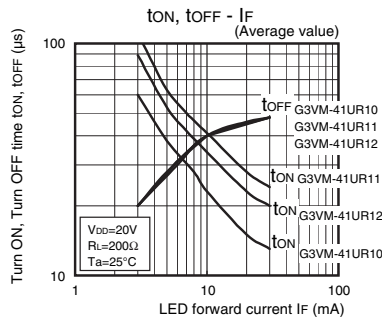
### Continuous load current vs. Ambient temperature



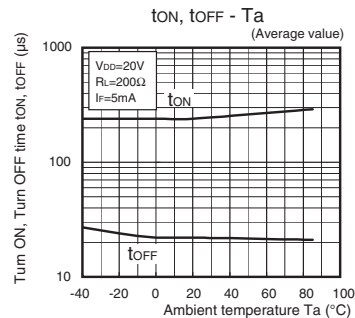
### On-state resistance vs. Ambient temperature



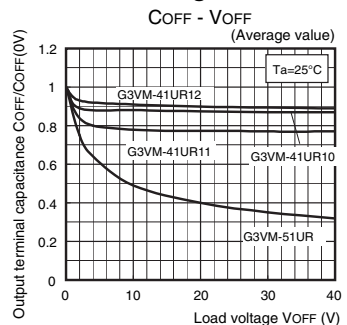
### Turn ON, Turn OFF time vs. LED forward current



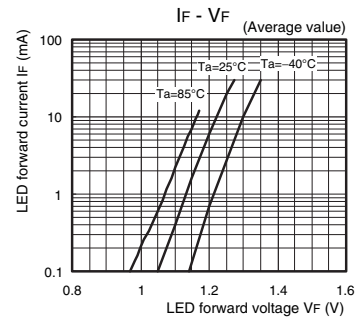
### G3VM-51UR



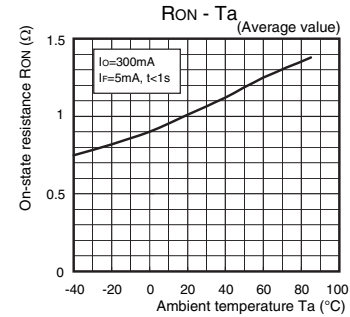
### Output terminal capacitance vs. Load voltage



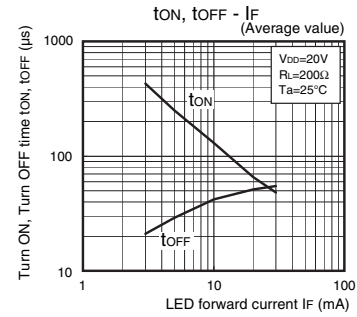
### LED forward current vs. LED forward voltage



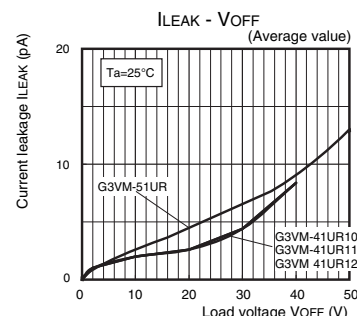
### G3VM-51UR



### G3VM-51UR



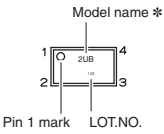
### Current leakage vs. Load voltage



■Appearance / Terminal Arrangement / Internal Connections

■Appearance

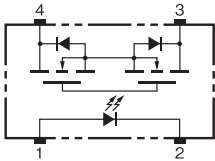
VSON (Very Small Outline Non-leaded)  
VSON4 pin



\* Actual model name marking for each model

Model	Marking
G3VM-41UR12	4UC
G3VM-41UR10	4UA
G3VM-41UR11	4UB
G3VM-51UR	5U0

■Terminal Arrangement/Internal Connections (Top View)

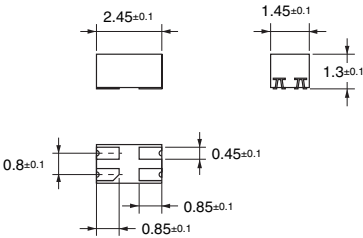
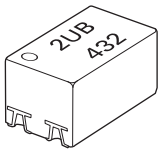


**Note:** The actual product is marked differently from the image shown here.

■Dimensions (Unit: mm)

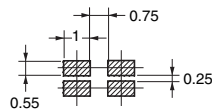
Surface-mounting Terminals

Weight: 0.01g



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.

■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.

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