

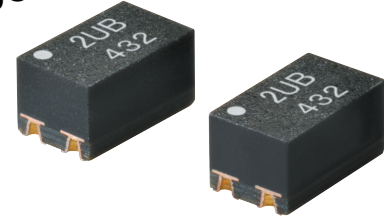
# G3VM-61UR□/81UR□/101UR

MOS FET Relays VSON, Small and High-load-voltage Type

## World's smallest \* class New VSON Package with High Load voltage

\* As of November 2016 Survey by OMRON.

- Load voltage: 60 V, 80 V, or 100 V
- G3VM-61UR1: Low  $C \times R = 7 \text{ pF} \cdot \Omega$ ,  $C_{\text{OFF}}$  (standard) = 0.7 pF,  $R_{\text{ON}}$  (standard) = 10  $\Omega$
- High Ambient operating temperature: -40°C to +110°C



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

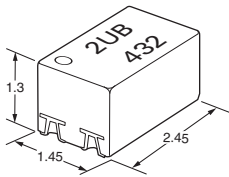
RoHS Compliant

### 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

- 6: 60 V
- 8: 80 V
- 10: 100 V

#### 2. Contact form

- 1: 1a (SPST-NO)

#### 4. Additional functions

- R: Low On-resistance

#### 3. Package

- U: VSON 4-pin

#### 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	60 V	120 mA	G3VM-61UR1	1 pc.	G3VM-61UR1(TR05)	500 pcs.
				400 mA	G3VM-61UR		G3VM-61UR(TR05)	
			80 V	120 mA	G3VM-81UR		G3VM-81UR(TR05)	
				200 mA	G3VM-81UR1		G3VM-81UR1(TR05)	
100 V	100 mA	G3VM-101UR	G3VM-101UR(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.

VSON

G3VM-61UR□/81UR□/101UR

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

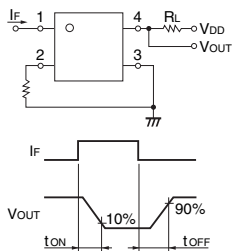
Item		Symbol	G3VM-61UR1	G3VM-61UR	G3VM-81UR	G3VM-81UR1	G3VM-101UR	Unit	Measurement conditions
Input	LED forward current	IF	30					mA	
	LED forward current reduction rate	ΔIF/°C	-0.3					mA/°C	Ta≥25°C
	LED reverse voltage	VR	5					V	
	Connection temperature	TJ	125					°C	
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>	60		80		100	V	
	Continuous load current (AC peak/DC)	Io	120	400	120	200	100	mA	
	ON current reduction rate	ΔIo/°C	-1.2	-4.0	-1.2	-2	-1	mA/°C	Ta≥25°C
	Pulse ON current	I <sub>op</sub>	360	1200	360	600	300	mA	t=100 ms, Duty=1/10
	Connection temperature	TJ	125					°C	
Dielectric strength between I/O (See note 1.) (See note 2.)		V <sub>I-o</sub>	500					V <sub>rms</sub>	AC for 1 min
Ambient operating temperature		Ta	-40 to +110					°C	
Ambient storage temperature		T <sub>stg</sub>	-40 to +125					°C	With no icing or condensation
Soldering temperature		-	260					°C	10 s

**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.  
**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-61UR1	G3VM-61UR	G3VM-81UR	G3VM-81UR1	G3VM-101UR	Unit	Measurement conditions
Input	LED forward voltage	Minimum	1.1					V	I <sub>F</sub> =10 mA
		Typical	1.27						
		Maximum	1.4						
	Reverse current	I <sub>R</sub>	Maximum 10					μA	V <sub>R</sub> =5 V
	Capacitance between terminals	C <sub>T</sub>	Typical 30					pF	V=0, f=1 MHz
Trigger LED forward current	I <sub>FT</sub>	Typical	1	-	1	-	mA	I <sub>o</sub> =100 mA	
		Maximum	3						
	Release LED forward current	I <sub>FC</sub>	Minimum 0.1					mA	I <sub>oFF</sub> =10 μA
Maximum resistance with output ON	R <sub>ON</sub>	Typical	10	1.0	7	6	8	Ω	I <sub>F</sub> =5 mA, t<1 s, I <sub>o</sub> =Continuous load current ratings
		Maximum	15	1.5	12	8	14		
	Current leakage when the relay is open	I <sub>LEAK</sub>	Maximum 1					nA	V <sub>OFF</sub> =Load voltage ratings
Capacitance between terminals	C <sub>OFF</sub>	Typical	0.7	20	5	6.5	6	pF	V=0, f=100 MHz, t<1 s
		Maximum	1.3	-	7	11	8		
Capacitance between I/O terminals	C <sub>I-O</sub>	Typical	1					pF	f=1 MHz, V <sub>s</sub> =0 V
Insulation resistance between I/O terminals	R <sub>I-O</sub>	Typical	10 <sup>8</sup>					MΩ	V <sub>I-O</sub> =500 VDC, R <sub>oH</sub> ≤60%
Turn-ON time	t <sub>ON</sub>	Typical	0.05	-	-	-	-	ms	I <sub>F</sub> =5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.)
		Maximum	0.2	0.5	0.4	0.3			
Turn-OFF time	t <sub>OFF</sub>	Typical	0.015	-	-	-	-	ms	I <sub>F</sub> =5 mA, R <sub>L</sub> =200 Ω, V <sub>DD</sub> =20 V (See note 2.)
		Maximum	0.2	0.5	0.2	0.4	0.3		

**Note: 3.** Turn-ON and Turn-OFF Times



## ■ Recommended Operating Conditions

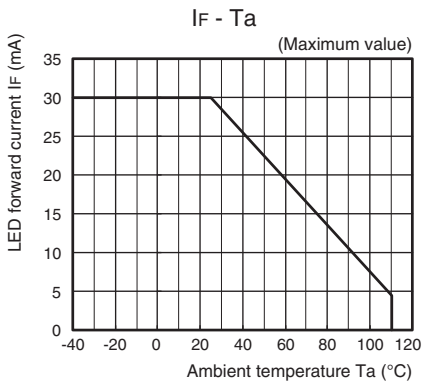
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

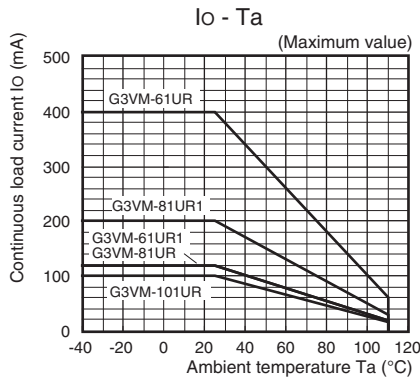
Item	Symbol		G3VM-61UR1	G3VM-61UR	G3VM-81UR	G3VM-81UR1	G3VM-101UR	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	48		64		80	V
Operating LED forward current	I <sub>F</sub>	Minimum	5					mA
		Typical	7.5					
		Maximum	20					
Continuous load current (AC peak/DC)	I <sub>o</sub>	Maximum	120	400	120	200	100	
Ambient operating temperature	Ta	Minimum	-20					°C
		Maximum	85					

## Engineering Data

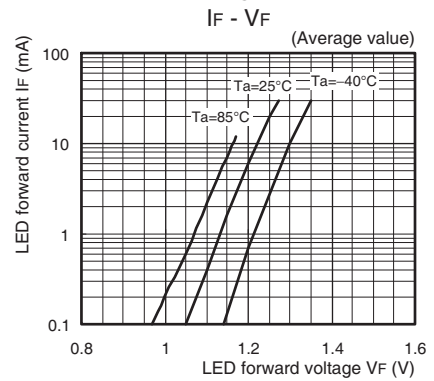
### LED forward current vs. Ambient temperature



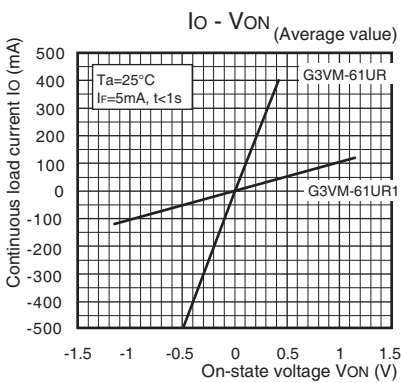
### Continuous load current vs. Ambient temperature



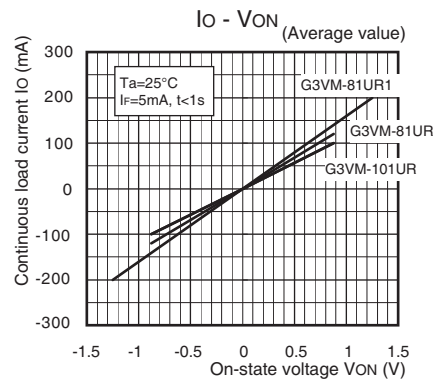
### LED forward current vs. LED forward voltage



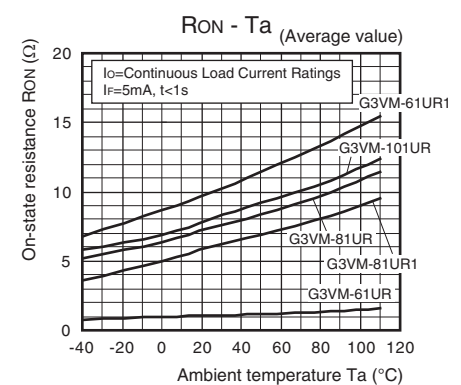
### Continuous load current vs. On-state voltage



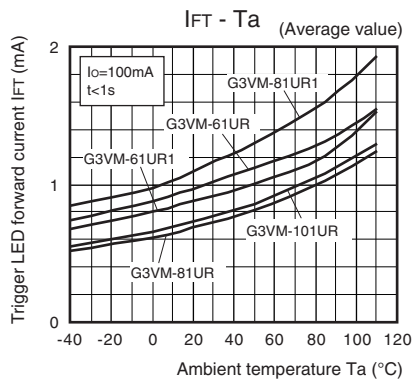
### G3VM-81UR/81UR1/101UR



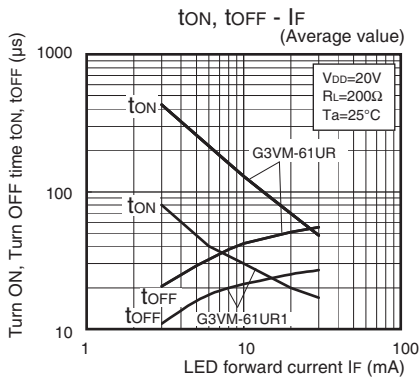
### On-state resistance vs. Ambient temperature



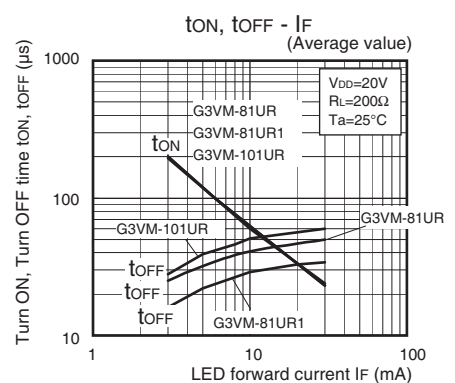
### Trigger LED forward current vs. Ambient temperature



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

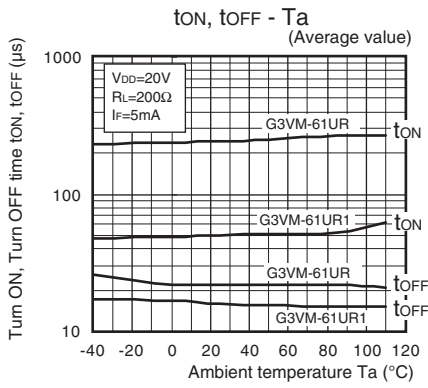


### G3VM-81UR/81UR1/101UR

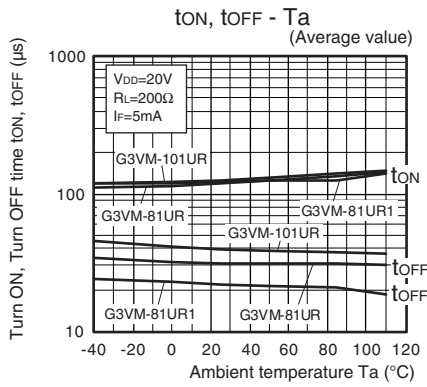


## Engineering Data

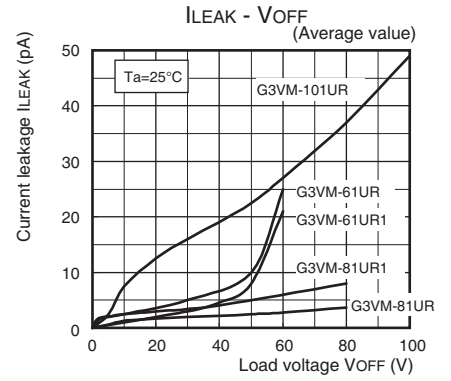
### Turn ON, Turn OFF time vs. Ambient temperature G3VM-61UR1/61UR



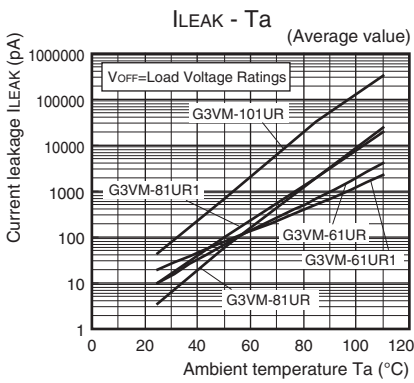
### G3VM-81UR/81UR1/101UR



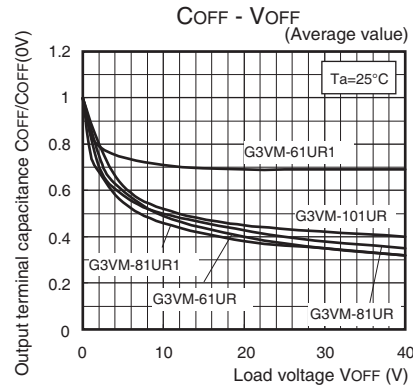
### Current leakage vs. Load voltage



### Current leakage vs. Ambient temperature



### Output terminal capacitance vs. Load voltage

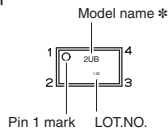


## ■ Appearance / Terminal Arrangement / Internal Connections

### ● Appearance

VSON (Very Small Outline Non-leaded)

VSON 4-pin



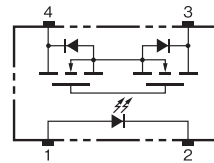
\* Actual model name marking for each model

Model	Marking
G3VM-61UR1	6U1
G3VM-61UR	6U0
G3VM-81UR	8U0
G3VM-81UR1	8U1
G3VM-101UR	AU0

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.

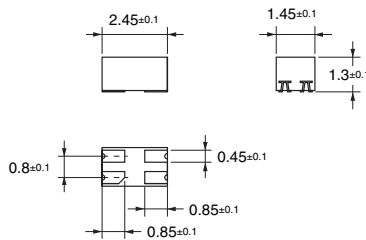
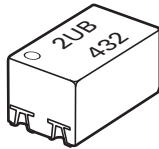
### ● Terminal Arrangement/Internal Connections (Top View)



## ■ Dimensions (Unit: mm)

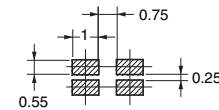
### Surface-mounting Terminals

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.

• 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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