

# G3VM-61LR/81LR/101LR

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

## MOS FET Relays in SSOP packages for high load voltages

• Load voltage: 60 V, 80 V, or 100 V



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

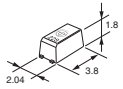
**RoHS Compliant**

### Application Examples

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

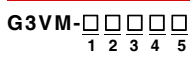
### Package (Unit : mm, Average)

SSOP 4-pin



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

### Model Number Legend



1. Load Voltage  
6 : 60 V  
8 : 80 V  
10 : 100 V
2. Contact form  
1 : 1a (SPST-NO)
3. Package  
L : SSOP 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
SSOP4	1a (SPST-NO)	Surface-mounting Terminals	60 V	400 mA	G3VM-61LR	1 pc.	G3VM-61LR(TR05)	500 pcs.
			80 V	120 mA	G3VM-81LR		G3VM-81LR(TR05)	
			100 V	80 mA	G3VM-101LR		G3VM-101LR(TR05)	

\* The AC peak and DC value are given for the load voltage and continuous load current.  
**Note:** To order tape packaging for Relays with surface-mounting terminals, add "(TR05)" to the end of the model number.  
 Tape-cut SSOPs are packaged without humidity resistance. Use manual soldering to mount them. Refer to common precautions.

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

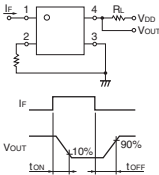
Item		Symbol	G3VM-61LR	G3VM-81LR	G3VM-101LR	Unit	Measurement conditions
Input	LED forward current	IF		50		mA	
	LED forward current reduction rate	ΔIf/°C		-0.5		mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR		5		V	
Output	Connection temperature	TJ		125		°C	
	Load voltage (AC peak/DC)	Voff	60	80	100	V	
	Continuous load current (AC peak/DC)	Io	400	120	80	mA	
	ON current reduction rate	ΔIo/°C	-4	-1.2	-0.8	mA/°C	Ta ≥ 25°C
	Pulse ON current	Iop	1200	360	240	mA	t=100 ms, Duty=1/10
	Connection temperature	TJ		125		°C	
	Dielectric strength between I/O (See note 1.)	Vi-o		1500		Vrms	AC for 1 min
Ambient operating temperature	Ta		-20 to +85		°C	With no icing or condensation	
Ambient storage temperature	Tstg		-40 to +125		°C		
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.

### Electrical Characteristics (Ta = 25°C)

Item	Symbol		G3VM-61LR	G3VM-81LR	G3VM-101LR	Unit	Measurement conditions	
Input	LED forward voltage	Minimum	1.0			V	If=10 mA	
		Typical	1.15					
		Maximum	1.3					
	Reverse current	IR	Maximum	10			μA	VR=5 V
	Capacitance between terminals	CT	Typical	15			pF	V=0, f=1 MHz
Trigger LED forward current	IFT	Typical	2		1	mA	G3VM-61LR : Io=100 mA G3VM-81LR : Io=120 mA G3VM-101LR : Io=80 mA	
		Maximum	5					
Release LED forward current	IFC	Minimum	0.2	0.1	0.2	mA	G3VM-61LR/81LR : IOFF=10 μA G3VM-101LR : IOFF=1 μA	
Output	Maximum resistance with output ON	Typical	1	7.5	8	Ω	G3VM-61LR : If=5 mA, Io=Continuous load current ratings G3VM-81LR/101LR : If=10 mA, Io=Continuous load current ratings, t=10 ms	
		Maximum	1.5	12	14			
	Current leakage when the relay is open	I <sub>LEAK</sub>	Maximum	1,000			nA	G3VM-61LR : V <sub>OFF</sub> =60 V G3VM-81LR : V <sub>OFF</sub> =80 V, Ta=60°C G3VM-101LR : V <sub>OFF</sub> =80 V
Capacitance between terminals	C <sub>OFF</sub>	Typical	20	5	6	pF	V=0, f=100 MHz, t<1 s	
		Maximum	30	7	8			
Capacitance between I/O terminals	C <sub>I-O</sub>	Typical	0.3	0.8	0.6	pF	f=1 MHz, Vs=0 V	
Insulation resistance between I/O terminals	R <sub>I-O</sub>	Minimum	1000			MΩ	V <sub>I-O</sub> =500 VDC, RoHS≤60%	
		Typical	10 <sup>6</sup>					
Turn-ON time	t <sub>ON</sub>	Typical	0.3			ms	G3VM-81LR : If=10 mA, RL=200 Ω, V <sub>DD</sub> =20 V G3VM-61LR/101LR : If=5 mA, RL=200 Ω, V <sub>DD</sub> =20 V (See note 2.)	
		Maximum	1	0.25	0.3			
Turn-OFF time	t <sub>OFF</sub>	Typical	0.2	0.15	0.1	ms		
		Maximum	1	0.2	0.3			

Note: 2. 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.

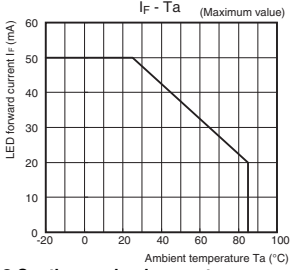
Item	Symbol		G3VM-61LR	G3VM-81LR	G3VM-101LR	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	48	64	80	V
Operating LED forward current	IF	Minimum	10			mA
		Maximum	20	30		
Continuous load current (AC peak/DC)	Io	Maximum	400	120	80	mA
		Minimum	-20			
Ambient operating temperature	Ta	Maximum	70	60		°C
		Minimum				

### Spacing and Insulation

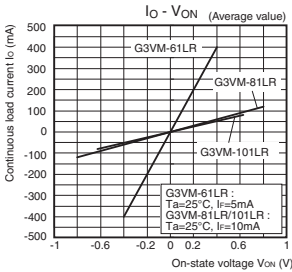
Item	Minimum	Unit
Creepage distances	2.5	mm
Clearance distances	2.5	
Internal isolation thickness	0.1	

### Engineering Data

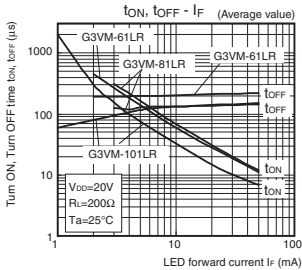
#### LED forward current vs. Ambient temperature



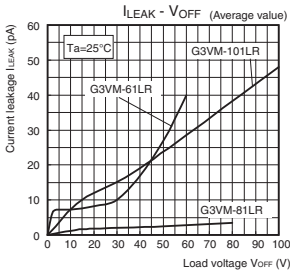
#### Continuous load current vs. On-state voltage



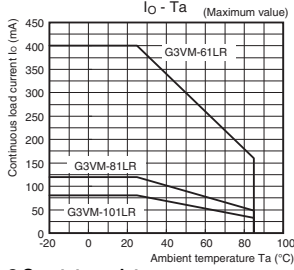
#### Turn ON, Turn OFF time vs. LED forward current



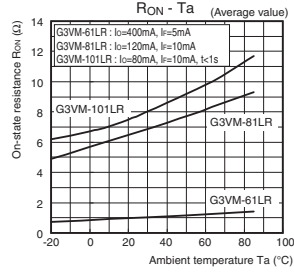
#### Current leakage vs. Ambient temperature



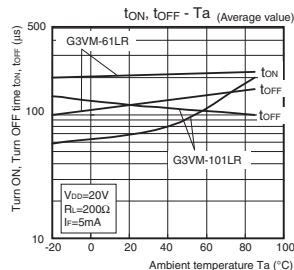
#### Continuous load current vs. Ambient temperature



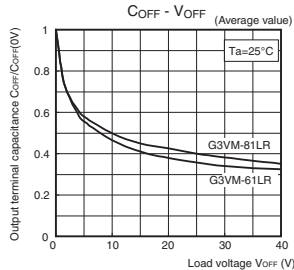
#### On-state resistance vs. Ambient temperature



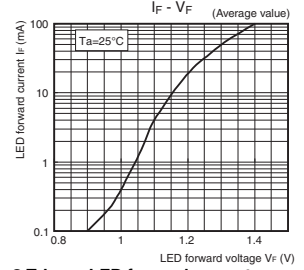
#### Turn ON, Turn OFF time vs. Ambient temperature



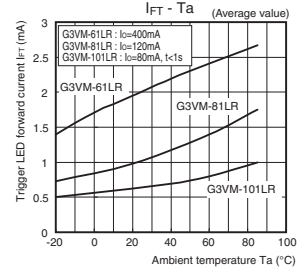
#### Output terminal capacitance vs. Load voltage



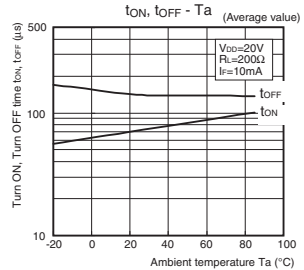
#### LED forward current vs. LED forward voltage



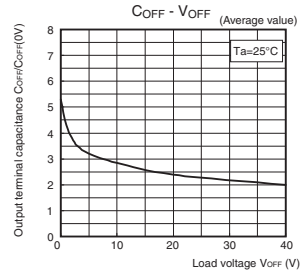
#### Trigger LED forward current vs. Ambient temperature



#### G3VM-81LR



#### G3VM-101LR



Introduction  
General purpose  
High-side-voltage  
Multi-contact pair  
Low-V<sub>ON</sub> resistance  
High-current and  
diagnostic strength  
Small and high-  
strength  
High-dielectric-  
strength  
Current-limiting  
Low-voltage-resistance  
and low-voltage  
Small and high-  
strength  
Certified Models with  
Standard Certification  
DIP  
SOP  
SSOP  
USOP  
VSON  
G3VM-61LR/81LR/101LR

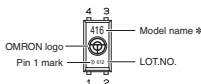
# G3VM-61LR/81LR/101LR

## MOS FET Relays

### ■ Appearance / Terminal Arrangement / Internal Connections

#### ● Appearance

**SSOP (Shrink Small Outline Package)**  
SSOP 4-pin

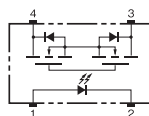


**Note:** 1. The actual product is marked differently from the image shown here.  
**Note:** 2. "G3VM" does not appear in the model number on the Relay.

\* Actual model name marking for each model

Model	Marking
G3VM-61LR	610
G3VM-81LR	810
G3VM-101LR	101

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

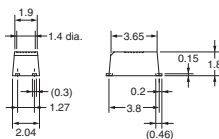


### ■ Dimensions (Unit: mm)



#### Surface-mounting Terminals

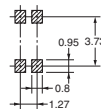
Weight: 0.03 g



Unless otherwise specified, the dimensional tolerance is  $\pm 0.1$  mm.

#### Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

### ■ Approved Standards

UL recognized

Approved Standards	Contact form	File No.
UL (recognized)	1a (SPST-NO)	E80555

### ■ 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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