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**

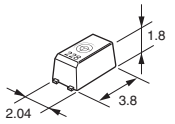
Note: The actual product is marked differently from the image shown here.

■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

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)

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)

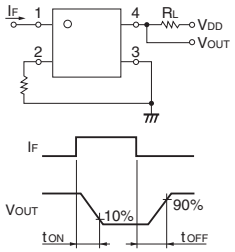
	Item	Symbol	G3VM-61LR	G3VM-81LR	G3VM-101LR	Unit	Measurement conditions
Input	LED forward current	I_F	50			mA	
	LED forward current reduction rate	ΔI_F/°C	-0.5			mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5			V	
	Connection temperature	T_J	125			°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	60	80	100	V	
	Continuous load current (AC peak/DC)	I_O	400	120	80	mA	
	ON current reduction rate	ΔI_O/°C	-4	-1.2	-0.8	mA/°C	Ta ≥ 25°C
	Pulse ON current	I_{OP}	1200	360	240	mA	t=100 ms, Duty=1/10
	Connection temperature	T_J	125			°C	
Dielectric strength between I/O ✻		V_{I-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

✻ 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	V_F	Minimum	1.0			V	I_F=10 mA
			Typical	1.15				
			Maximum	1.3				
	Reverse current	I_R	Maximum	10			μA	V_R=5 V
	Capacitance between terminals	C_T	Typical	15			pF	V=0, f=1 MHz
	Trigger LED forward current	I_{FT}	Typical	2		1	mA	G3VM-61LR : I_O=100 mA G3VM-81LR : I_O=120 mA G3VM-101LR : I_O=80 mA
			Maximum	5				
	Release LED forward current	I_{FC}	Minimum	0.2	0.1	0.2	mA	G3VM-61LR/81LR : I_{OFF}=10 μA G3VM-101LR : I_{OFF}=1 μA
Output	Maximum resistance with output ON	R_{ON}	Typical	1	7.5	8	Ω	G3VM-61LR : I_F=5 mA, I_O=Continuous load current ratings G3VM-81LR/101LR : I_F=10 mA, I_O=Continuous load current ratings, t=10 ms
			Maximum	1.5	12	14		
	Current leakage when the relay is open	I_{LEAK}	Maximum	1,000	0.2		nA	G3VM-61LR : V_{OFF}=60 V G3VM-81LR : V_{OFF}=80 V, Ta=60°C G3VM-101LR : V_{OFF}=80 V
	Capacitance between terminals	C_{OFF}	Typical	20	5	6	pF	V=0, f=100 MHz, t<1 s
			Maximum	30	7	8		
Capacitance between I/O terminals		C_{I-O}	Typical	0.3	0.8	0.6	pF	f=1 MHz, V_S=0 V
Insulation resistance between I/O terminals		R_{I-O}	Minimum	1000			MΩ	V_{I-O}=500 VDC, RoH≤60%
			Typical	10^8				
Turn-ON time		t_{ON}	Typical	0.3	0.1		ms	G3VM-81LR : I_F=10 mA, R_L=200 Ω, V_{DD}=20 V ✻ G3VM-61LR/101LR : I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻
			Maximum	1	0.25	0.3		
Turn-OFF time		t_{OFF}	Typical	0.2	0.15	0.1		
			Maximum	1	0.2	0.3		

✻ 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.

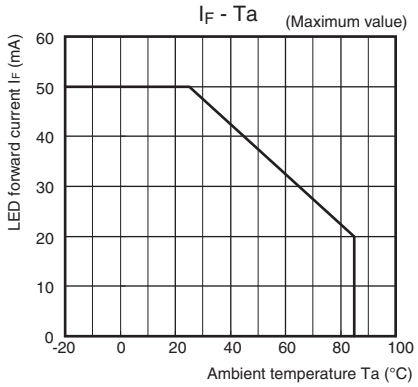
Item	Symbol		G3VM-61LR	G3VM-81LR	G3VM-101LR	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	48	64	80	V
Operating LED forward current	I_F	Minimum	10			mA
		Maximum	20	30		
Continuous load current (AC peak/DC)	I_O	Maximum	400	120	80	
Ambient operating temperature	Ta	Minimum	-20			°C
		Maximum	70	60		

■Spacing and Insulation

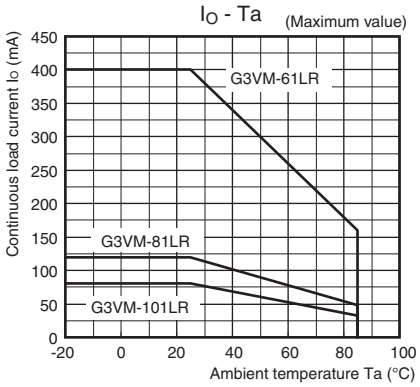
Item	Minimum	Unit
Creepage distances	2.5	mm
Clearance distances	2.5	
Internal isolation thickness	0.1	

■Engineering Data

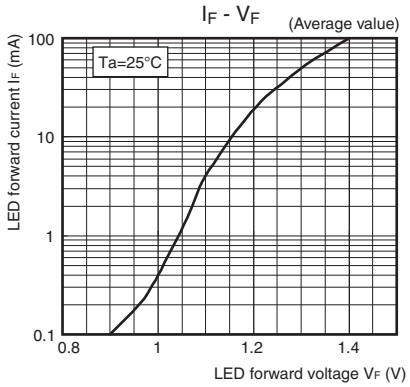
● **LED forward current vs. Ambient temperature**



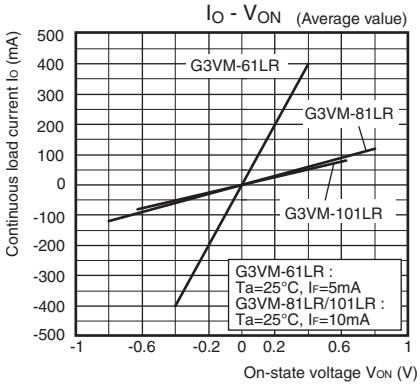
● **Continuous load current vs. Ambient temperature**



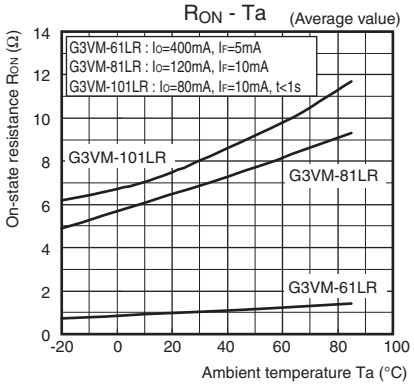
● **LED forward current vs. LED forward voltage**



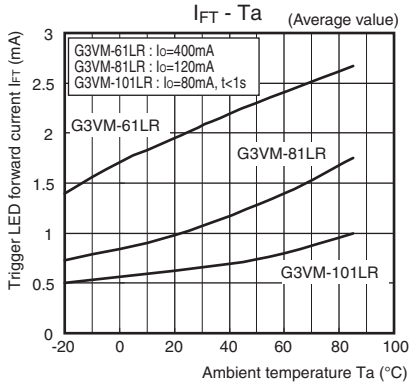
● **Continuous load current vs. On-state voltage**



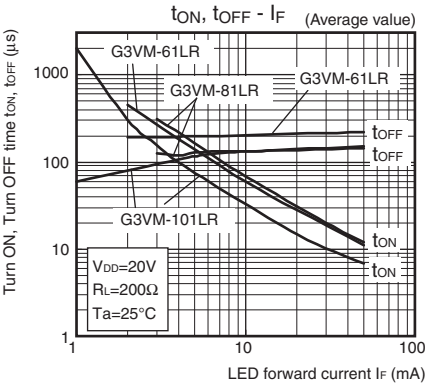
● **On-state resistance vs. Ambient temperature**



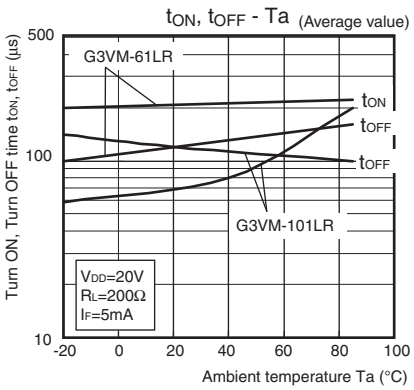
● **Trigger LED forward current vs. Ambient temperature**



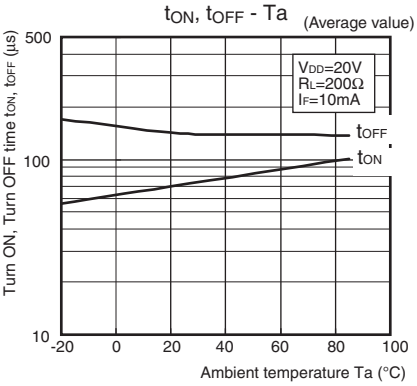
● **Turn ON, Turn OFF time vs. LED forward current**



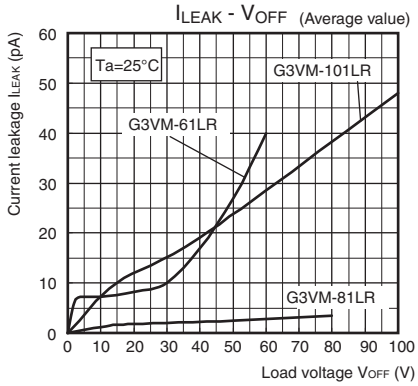
● **Turn ON, Turn OFF time vs. Ambient temperature**
G3VM-61LR/101LR



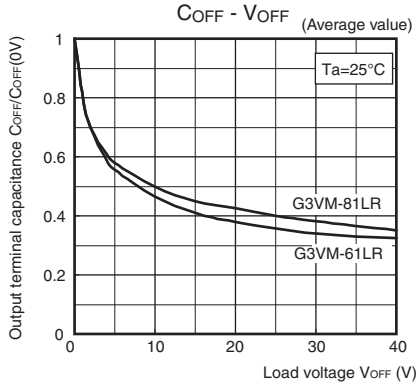
G3VM-81LR



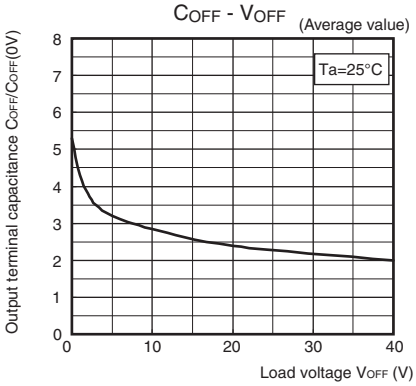
● **Current leakage vs. Ambient temperature**



● **Output terminal capacitance vs. Load voltage**
G3VM-61LR/81LR



G3VM-101LR



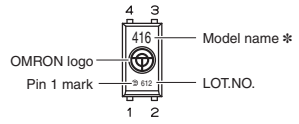
SSOP

G3VM-61LR/81LR/101LR

■Appearance / Terminal Arrangement / Internal Connections

●Appearance

SSOP (Shrink Small Outline Package)
SSOP 4-pin

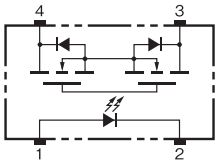


✻ Actual model name marking for each model

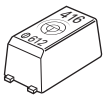
Model	Marking
G3VM-61LR	610
G3VM-81LR	810
G3VM-101LR	101

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)

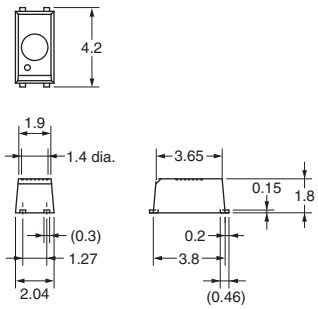


■Dimensions (Unit: mm)



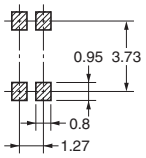
Surface-mounting Terminals

Weight: 0.03 g



Unless otherwise specified, the dimensional tolerance is ± 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.

Please check each region's Terms & Conditions by region website.

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