

# MOS FET Relays

# G3VM-61B1/E1

Analog-switching MOS FET Relay for High Switching Currents, with Dielectric Strength of 2.5 kVAC between I/O.

- Upgraded G3VM-61 B/E Series.
- 500 mA continuous load current.
- RoHS Compliant.

## ■ Application Examples

- Measurement devices
- Security systems
- Amusement machines



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

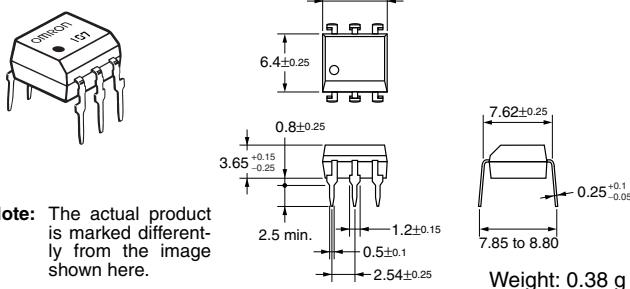
## ■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	60 VAC	G3VM-61B1	50	---
	Surface-mounting terminals		G3VM-61E1	---	---
			G3VM-61E1(TR)	---	1,500

## ■ Dimensions

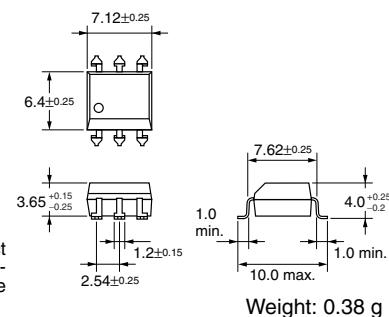
**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-61B1**



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

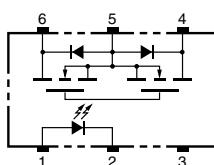
**G3VM-61E1**



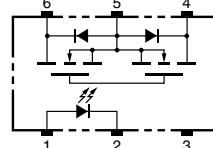
**Note:** The actual product is marked differently from the image shown here.

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

**G3VM-61B1**

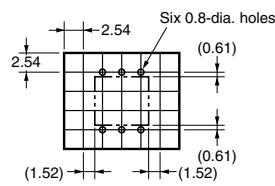


**G3VM-61E1**



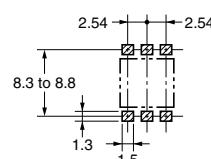
## ■ PCB Dimensions (Bottom View)

**G3VM-61B1**



## ■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

**G3VM-61E1**

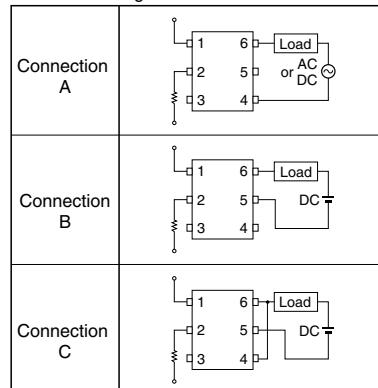


## ■ Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Item		Symbol	Rating	Unit	Measurement conditions	
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A		
	LED forward current reduction rate	$\Delta I_F/\text{°C}$	-0.5	mA/°C		
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_j$	125	°C		
Output	Load voltage (AC peak/DC)	$V_{OFF}$	60	V		
	Continuous load current	$I_O$	500	mA		
			500			
			1,000			
	ON current reduction rate	$\Delta I_{ON}/\text{°C}$	-0.5	mA/°C		
			-0.5			
			-10.0			
	Connection temperature	$T_j$	125	°C		
Dielectric strength between input and output (See note 1.)		$V_{I-O}$	2,500	$V_{rms}$	AC for 1 min	
Operating temperature		$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature		$T_{stg}$	-55 to +125	°C	With no icing or condensation	
Soldering temperature (10 s)		---	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.

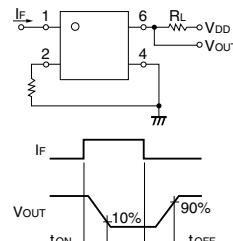
### Connection Diagram



## ■ Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	1.6	3	mA	$I_O = 500 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	1	2	$\Omega$	$I_F = 5 \text{ mA}, I_O = 500 \text{ mA}$
			---	0.5	1	$\Omega$	$I_F = 5 \text{ mA}, I_O = 500 \text{ mA}$
			---	0.25	---	$\Omega$	$I_F = 5 \text{ mA}, I_O = 1,000 \text{ mA}$
	Current leakage when the relay is open	$I_{LEAK}$	---	0.001	1.0	$\mu\text{A}$	$V_{OFF} = 60 \text{ V}$
	Capacity between terminals A Connection	$C_{OFF}$	---	130	---	pF	$V = 0, f = 1 \text{ MHz}$
Capacity between I/O terminals		$C_{I-O}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance		$R_{I-O}$	1,000	---	---	$M\Omega$	$V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$
Turn-ON time		$t_{ON}$	---	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note 2.)
Turn-OFF time		$t_{OFF}$	---	0.1	0.5	ms	

Note: 2. Turn-ON and Turn-OFF Times

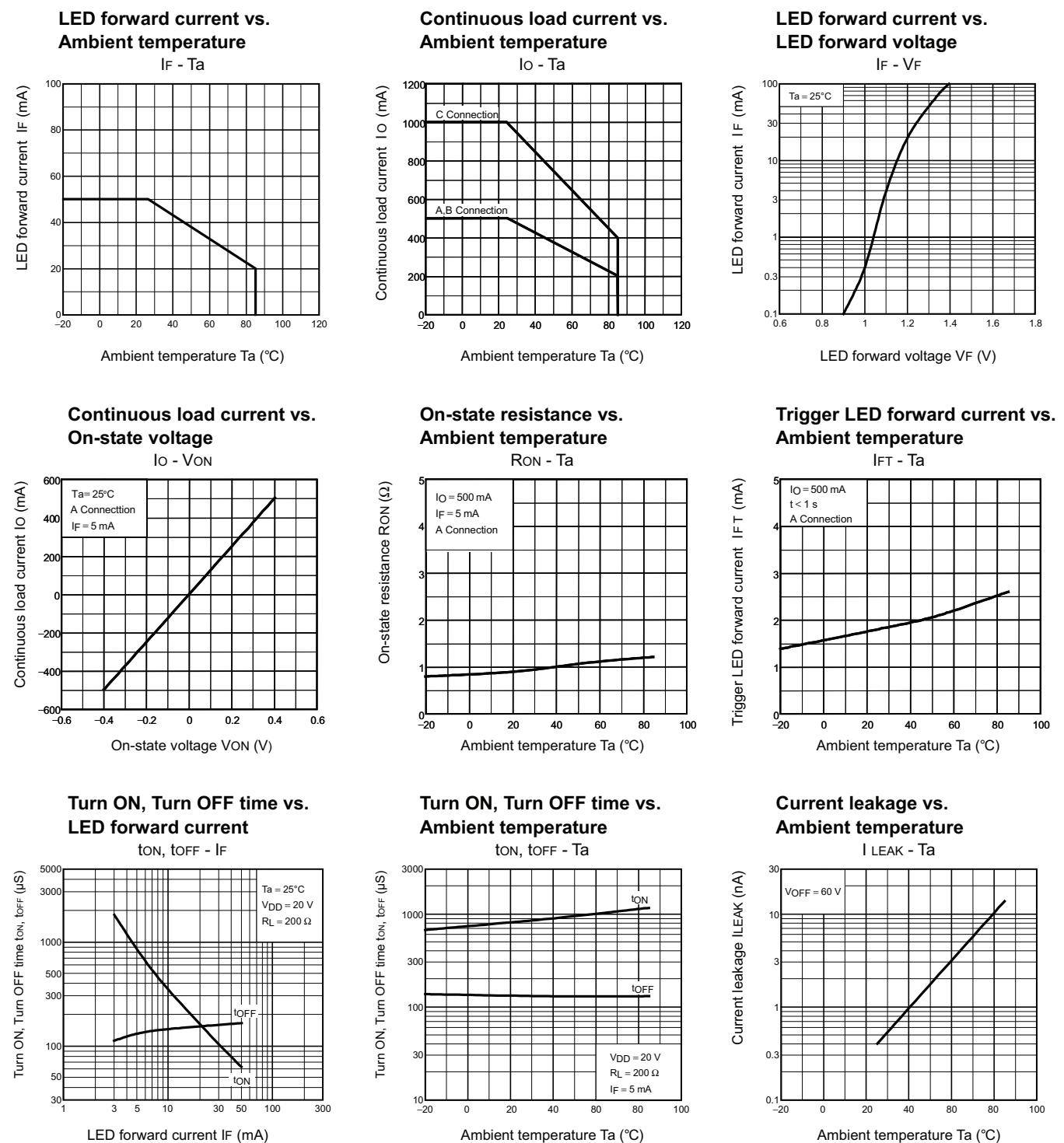


## ■ Recommended Operating Conditions

Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	500	mA
Operating temperature	$T_a$	-20	---	65	°C

## ■ Engineering Data



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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.



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