

## 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.
- Switches minute analog signals.
- Leakage current of 1  $\mu$ A max. when output relay is open.

### Application Examples

- Measurement devices
- Security systems
- Amusement machines

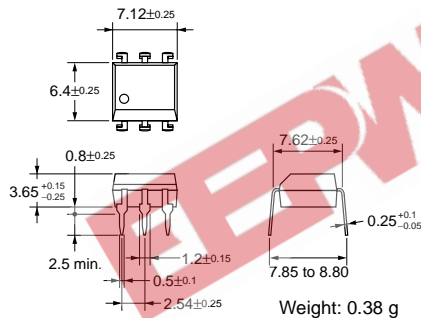
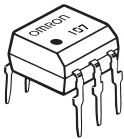
### List of Models

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)	---	

### Dimensions

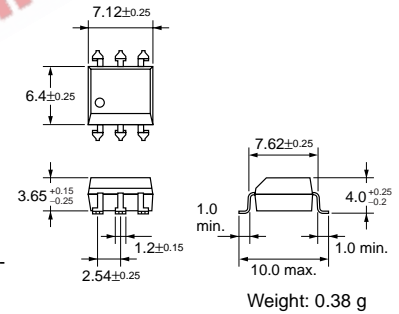
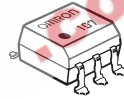
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-61B1



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

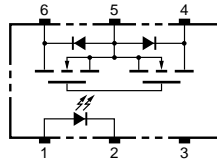
#### G3VM-61E1



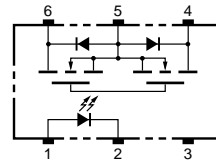
**Note:** The actual product is marked differently from the image shown here.

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

#### G3VM-61B1

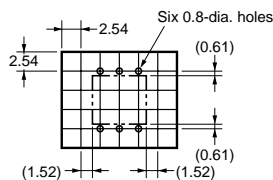


#### G3VM-61E1



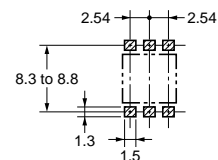
### PCB Dimensions (Bottom View)

#### G3VM-61B1



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

#### G3VM-61E1

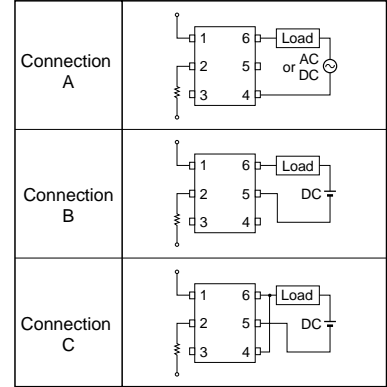


**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/ $^\circ\text{C}$	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_j$	125	$^\circ\text{C}$		
Output	Output dielectric strength	$V_{OFF}$	60	V		
	Continuous load current	Connection A	$I_O$	500	mA	
		Connection B		500		
		Connection C		1,000		
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-0.5	mA/ $^\circ\text{C}$	Ta $\geq$ 25°C
		Connection B		-0.5		
Connection C			-10.0			
Connection temperature	$T_j$	125	$^\circ\text{C}$			
Dielectric strength between input and output (See note 1.)		$V_{I-O}$	2,500	Vrms	AC for 1 min	
Operating temperature		$T_a$	-40 to +85	$^\circ\text{C}$	With no icing or condensation	
Storage temperature		$T_{stg}$	-55 to +125	$^\circ\text{C}$	With no icing or condensation	
Soldering temperature (10 s)		---	260	$^\circ\text{C}$	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.

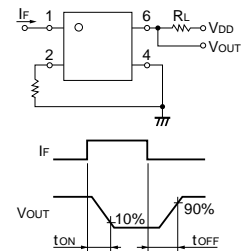
Connection Diagram



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

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

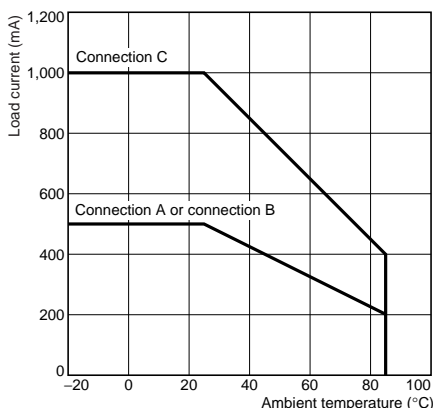
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	48	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	500	mA
Operating temperature	$T_a$	-20	---	65	$^\circ\text{C}$

**Engineering Data**

**Load Current vs. Ambient Temperature**

G3VM-61B1(E1)



**Safety Precautions**

Refer to page 6 for precautions common to all G3VM models.