

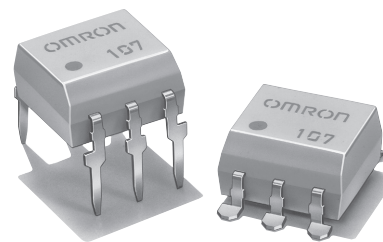
# MOS FET Relays G3VM-61B1/E1

**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.

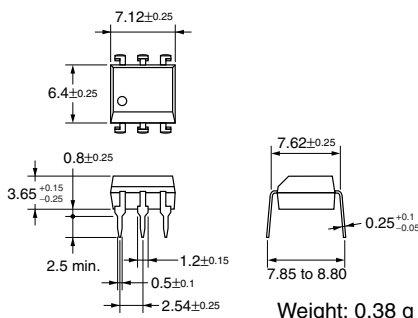
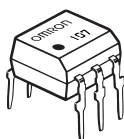
■ **List of Models**

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)	---

■ **Dimensions**

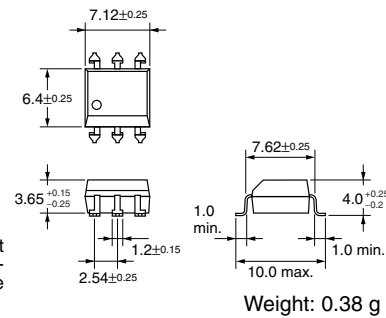
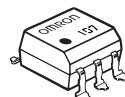
**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-61B1**



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

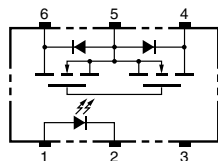
**G3VM-61E1**



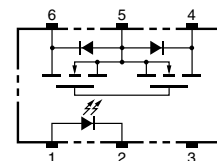
**Note:** The actual product is marked differently from the image shown here.

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

**G3VM-61B1**

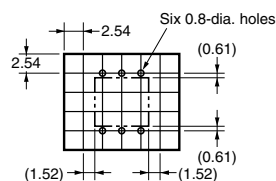


**G3VM-61E1**



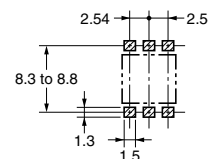
■ **PCB Dimensions (Bottom View)**

**G3VM-61B1**



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

**G3VM-61E1**

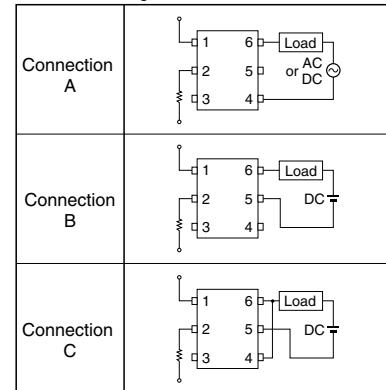


■ Absolute Maximum Ratings (Ta = 25°C)

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	Load voltage (AC peak/DC)	$V_{OFF}$	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	$V_{rms}$	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.

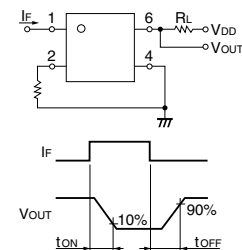
Connection Diagram



■ 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	$I_{LEAK}$	---	0.001	1.0	$\mu\text{A}$	$V_{OFF} = 60$ V	
	Capacity between terminals A Connection	$C_{OFF}$	---	130	---	pF	$V = 0$ , $f = 1$ MHz	
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	---	---	$\text{M}\Omega$	$V_{I-O} = 500$ VDC, $R_{OH} \leq 60\%$	
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

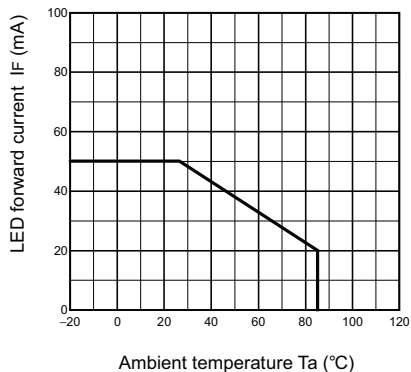
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
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	$^\circ\text{C}$

■ Engineering Data

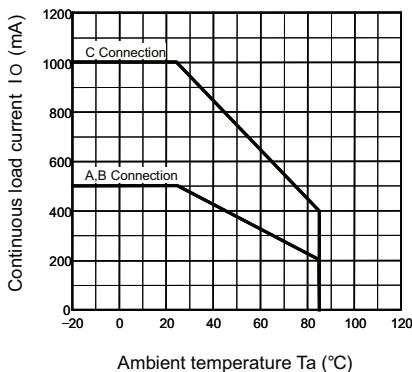
LED forward current vs. Ambient temperature

$I_F - T_a$



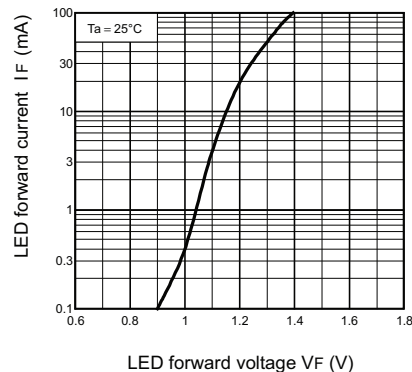
Continuous load current vs. Ambient temperature

$I_O - T_a$



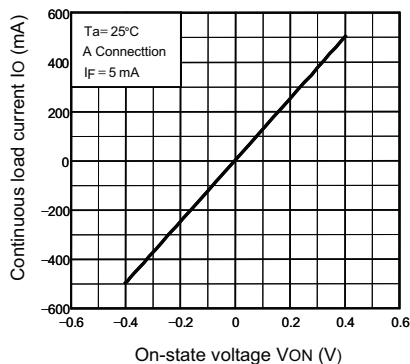
LED forward current vs. LED forward voltage

$I_F - V_F$



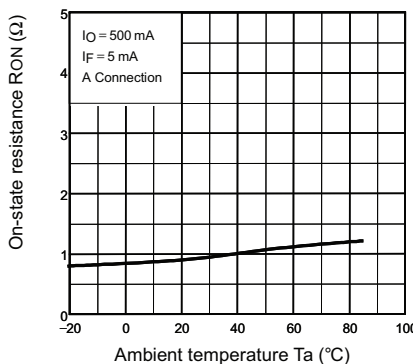
Continuous load current vs. On-state voltage

$I_O - V_{ON}$



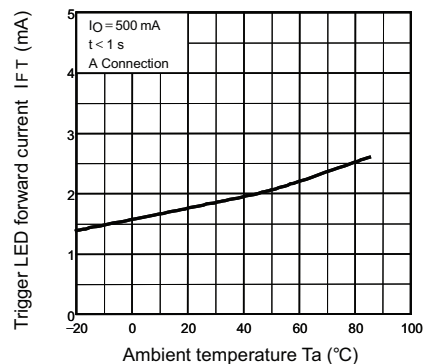
On-state resistance vs. Ambient temperature

$R_{ON} - T_a$



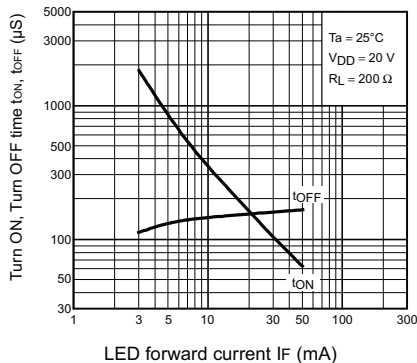
Trigger LED forward current vs. Ambient temperature

$I_{FT} - T_a$



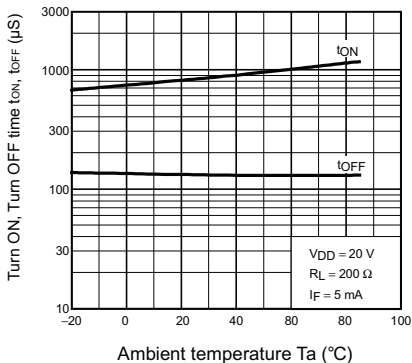
Turn ON, Turn OFF time vs. LED forward current

$t_{ON}, t_{OFF} - I_F$



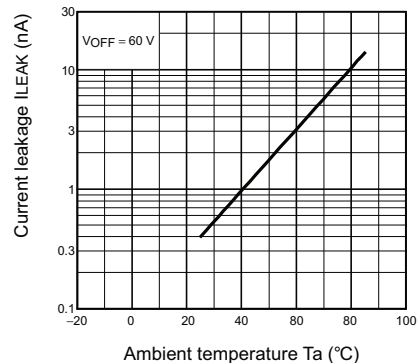
Turn ON, Turn OFF time vs. Ambient temperature

$t_{ON}, t_{OFF} - T_a$



Current leakage vs. Ambient temperature

$I_{LEAK} - T_a$



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