

MOS FET Relays

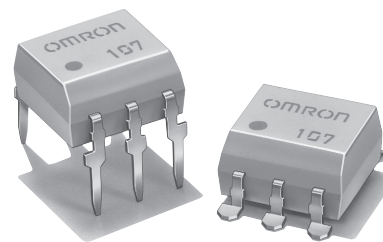
G3VM-61B1/E1

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.

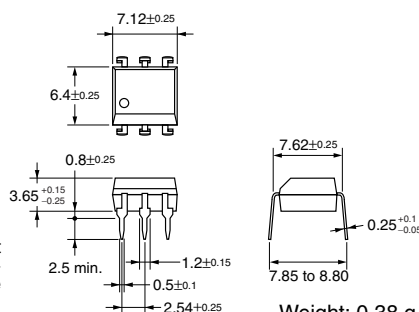
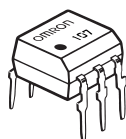
■ List of Models

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

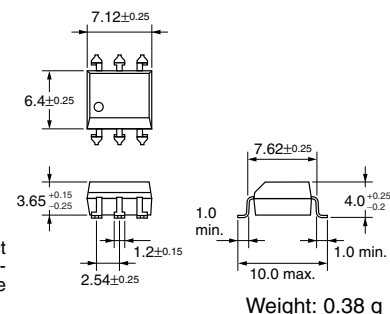
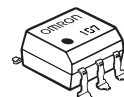
Note: All units are in millimeters unless otherwise indicated.

G3VM-61B1



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

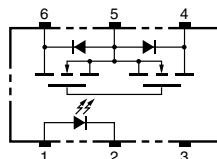
G3VM-61E1



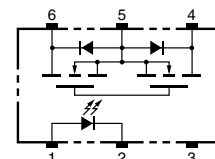
Note: The actual product is marked differently from the image shown here.

■ Terminal Arrangement/Internal Connections (Top View)

G3VM-61B1

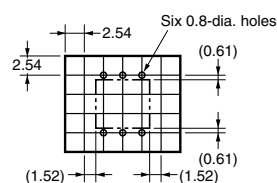


G3VM-61E1



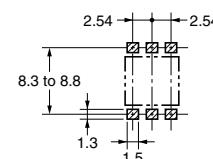
■ PCB Dimensions (Bottom View)

G3VM-61B1



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

G3VM-61E1

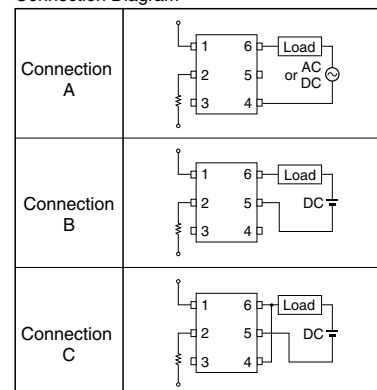


■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement conditions	
Input	LED forward current	I _F	50	mA	Ta ≥ 25°C	
	Repetitive peak LED forward current	I _{FP}	1	A		
	LED forward current reduction rate	Δ I _F /°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	Ta ≥ 25°C
	Continuous load current	Connection A	I _O	500	mA	
		Connection B		500		
		Connection C		1,000		
	ON current reduction rate	Connection A	Δ I _{ON} /°C	−0.5	mA/°C	
		Connection B		−0.5		
		Connection C		−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.

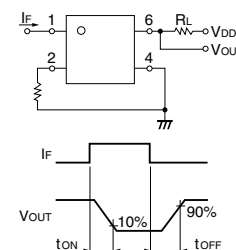
Connection Diagram



■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	V_F	1.0	1.15	1.3	V	$I_F = 10 \text{ mA}$
	Reverse current	I_R	---	---	10	μA	$V_R = 5 \text{ V}$
	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	Connection A	R_{ON}	---	1	Ω	$I_F = 5 \text{ mA}, I_O = 500 \text{ mA}$
		Connection B		---	0.5	Ω	$I_F = 5 \text{ mA}, I_O = 500 \text{ mA}$
		Connection C		---	0.25	Ω	$I_F = 5 \text{ mA}, I_O = 1,000 \text{ mA}$
	Current leakage when the relay is open	I_{LEAK}	---	0.001	1.0	μA	$V_{OFF} = 60 \text{ V}$
	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	---	---	$\text{M}\Omega$	$V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$
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



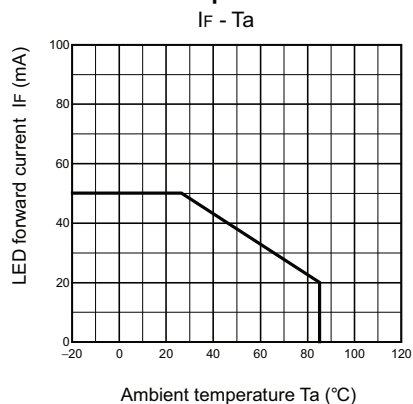
■ Recommended Operating Conditions

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

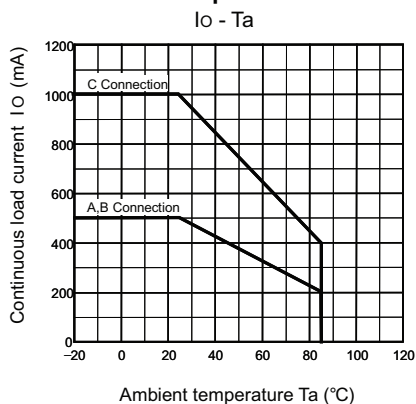
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	48	V
Operating LED forward current	I_F	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	500	mA
Operating temperature	T_a	-20	---	65	°C

■ Engineering Data

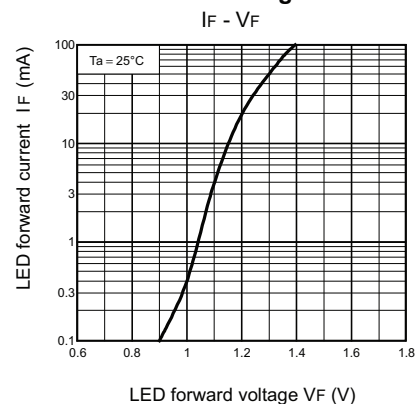
LED forward current vs.
Ambient temperature



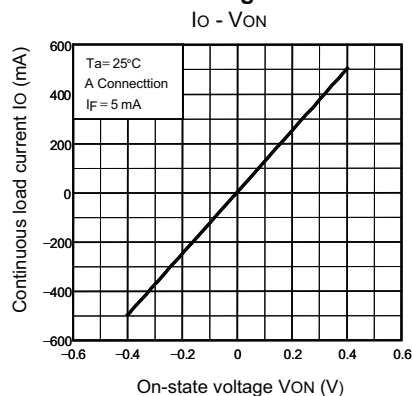
Continuous load current vs.
Ambient temperature



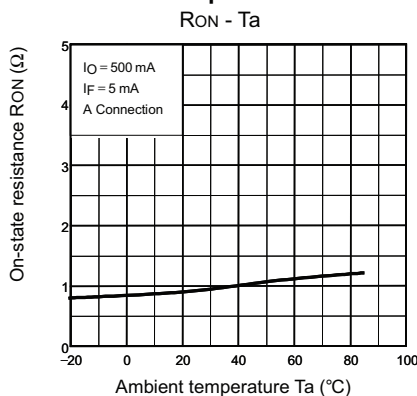
LED forward current vs.
LED forward voltage



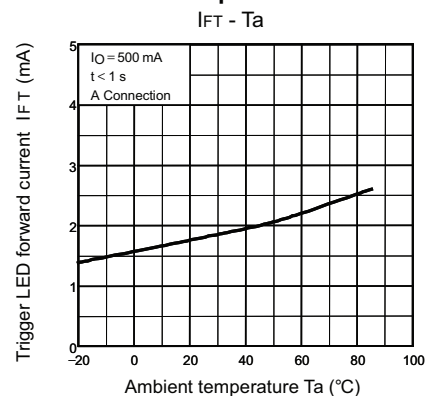
Continuous load current vs.
On-state voltage



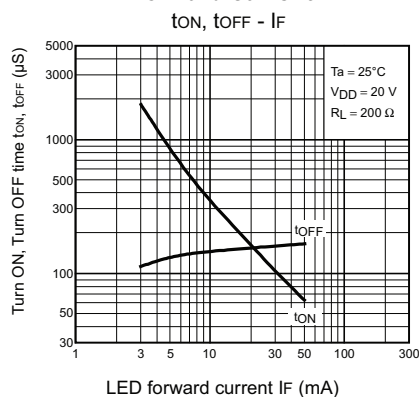
On-state resistance vs.
Ambient temperature



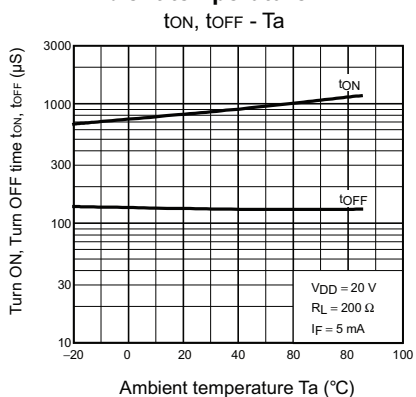
Trigger LED forward current vs.
Ambient temperature



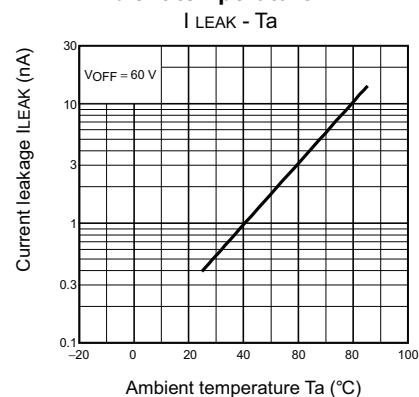
Turn ON, Turn OFF time vs.
LED forward current



Turn ON, Turn OFF time vs.
Ambient temperature



Current leakage vs.
Ambient temperature



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