

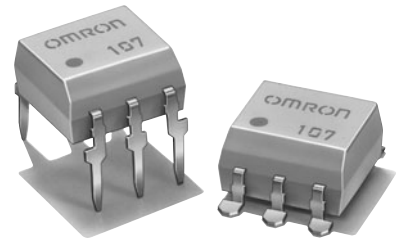
G3VM-61B1/E1

MOS FET Relays

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



- Upgraded G3VM-61B/E Series.
- Switches minute analog signals.
- Leakage current of 1 μA max. when output relay is open.



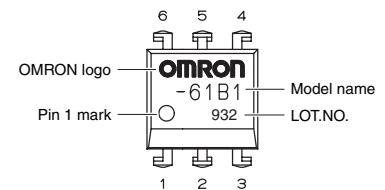
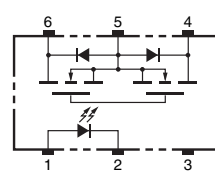
Note: The actual product is marked differently from the image shown here.

RoHS compliant

Application Examples

- Test & Measurement equipment
- Security equipment
- Amusement equipment

Terminal Arrangement/Internal Connections



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

List of Models

Package type	Contact form	Terminals	Load voltage (peak value) *	Model	Minimum package quantity	
					Number per tube	Number per tape and reel
DIP6	1a (SPST-NO)	PCB Terminals	60 V	G3VM-61B1	50	-
		Surface-mounting Terminals		G3VM-61E1		
					G3VM-61E1 (TR)	-

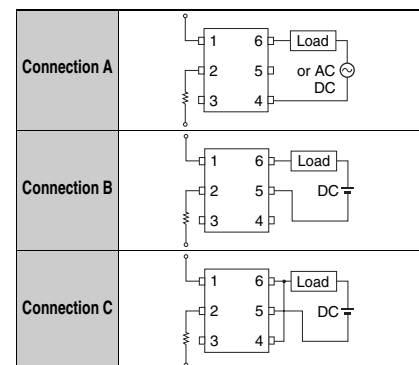
* The AC peak and DC value are given for the load voltage.

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	100 μs pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	$\text{mA}/^\circ\text{C}$	$T_a \geq 25^\circ\text{C}$	
	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	I_o	Connection A	500	mA	Connection A: AC peak/DC Connection B and C: DC
			Connection B	500		
			Connection C	1000		
	ON current reduction rate	$\Delta I_o/^\circ\text{C}$	Connection A	-5	$\text{mA}/^\circ\text{C}$	$T_a \geq 25^\circ\text{C}$
			Connection B	-5		
Connection C			-10			
Connection temperature	T_J	125	$^\circ\text{C}$			
Dielectric strength between I/O (See note 1.)	V_{I-O}	2500	V_{rms}	AC for 1 min		
Ambient operating temperature	T_a	-40 to +85	$^\circ\text{C}$	With no icing or condensation		
Ambient storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$	With no icing or condensation		
Soldering temperature	-	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.

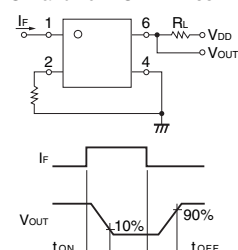
Connection Diagram



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

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	μA	$V_R = 5 \text{ V}$	
	Capacity between terminals	C_T	-	30	-	pF	$V = 0, f = 1 \text{ MHz}$	
Output	Trigger LED forward current	I_{FT}	-	1.6	3	mA	$I_o = 500 \text{ mA}$	
	Maximum resistance with output ON	R_{ON}	Connection A	-	1	2	Ω	$I_F = 5 \text{ mA}, I_o = 500 \text{ mA}$
			Connection B	-	0.5	1	Ω	$I_F = 5 \text{ mA}, I_o = 500 \text{ mA}$
			Connection C	-	0.25	-	Ω	$I_F = 5 \text{ mA}, I_o = 1000 \text{ mA}$
	Current leakage when the relay is open	I_{LEAK}	-	-	1.0	μA	$V_{OFF} = 60 \text{ V}$	
	Capacity between terminals	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 between I/O terminals	R_{I-O}	1000	-	-	M Ω	$V_{I-O} = 500 \text{ VDC}, R_oH \leq 60\%$		
Turn-ON time	t_{ON}	-	0.8	2.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$		
Turn-OFF time	t_{OFF}	-	0.1	0.5	ms	$V_{DD} = 20 \text{ V}$ (See note 2.)		

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



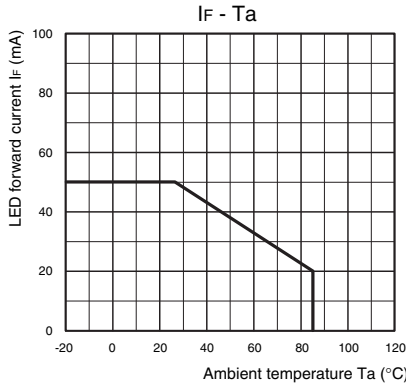
Recommended Operating Conditions

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

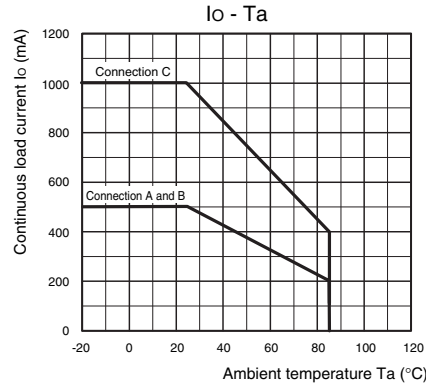
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V _{DD}	-	-	48	V
Operating LED forward current	I _F	5	7.5	25	mA
Continuous load current (AC peak/DC)	I _O	-	-	500	mA
Ambient operating temperature	T _a	-20	-	65	°C

Engineering Data

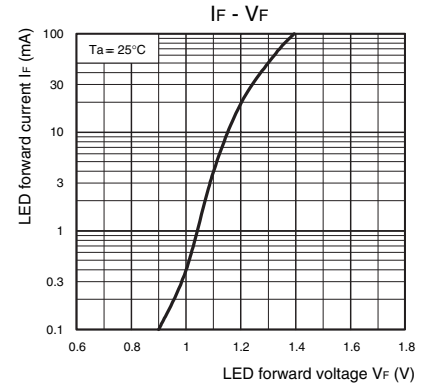
LED forward current vs. Ambient temperature



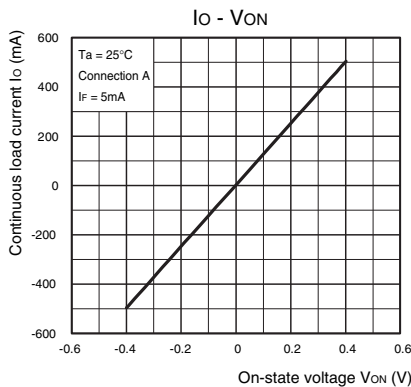
Continuous load current vs. Ambient temperature



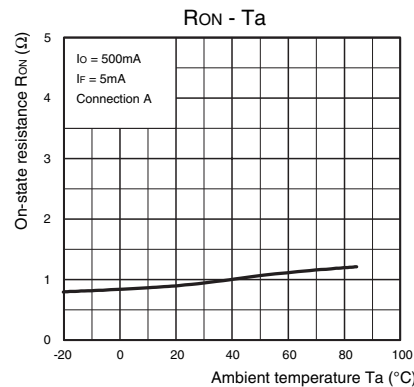
LED forward current vs. LED forward voltage



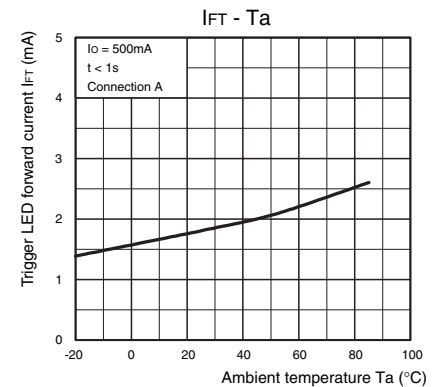
Continuous load current vs. On-state voltage



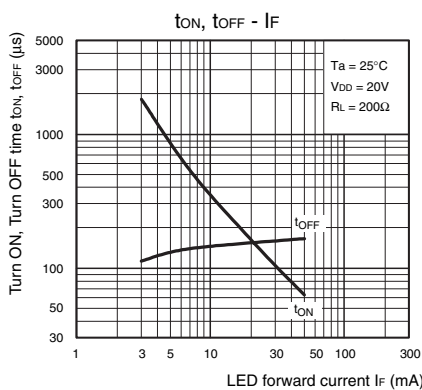
On-state resistance vs. Ambient temperature



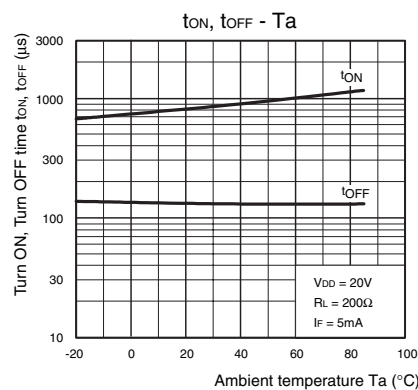
Trigger LED forward current vs. Ambient temperature



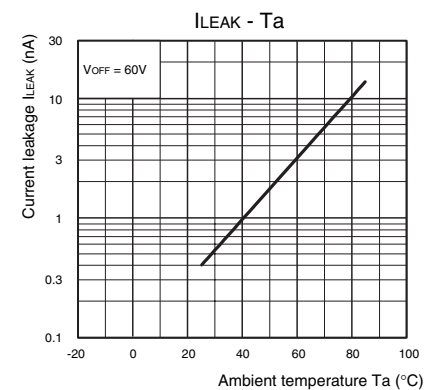
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



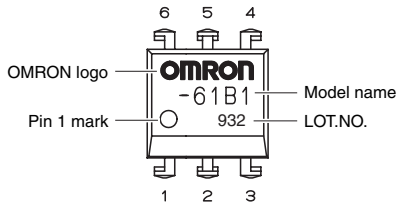
Safety Precautions

- Refer to "Common Precautions" for all G3VM models.

■ Appearance

DIP (Dual Inline Package)

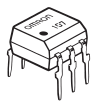
DIP6



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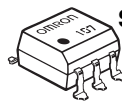
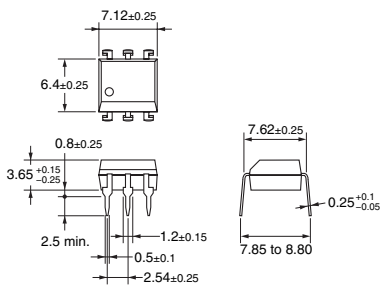
■ Dimensions

(Unit:mm)



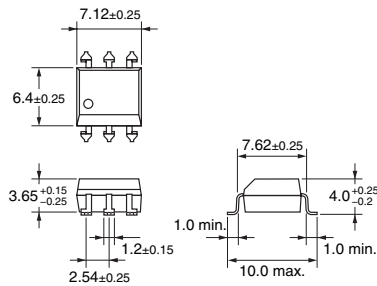
PCB Terminals

Weight: 0.4 g

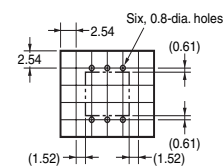


Surface-mounting Terminals

Weight: 0.4 g

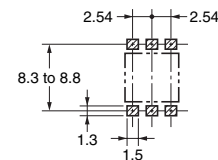


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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- Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
- Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

OMRON Corporation

ELECTRONIC AND MECHANICAL COMPONENTS COMPANY

Contact: www.omron.com/ecb

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