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G3VM-401BY/EY

MOS FET Relays

Analog-switching MOS FET Relays with a Dielectric Strength of 5 kVAC between I/O Using Optical Isolation.

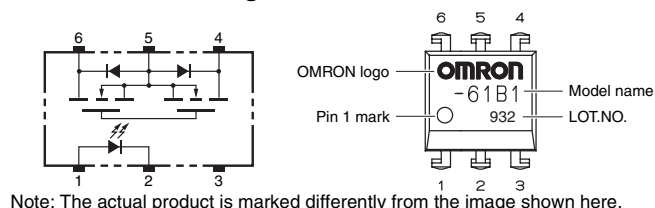
- Switches minute analog signals.
- Leakage current of 1 μA max. when output relay is open.

RoHS compliant

Application Examples

- Communication equipment
- Test & Measurement equipment
- Industrial equipment

Terminal Arrangement/Internal Connections



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	400 V	G3VM-401BY	50	-
		Surface-mounting Terminals		G3VM-401EY		
				G3VM-401EY (TR)	-	1,500

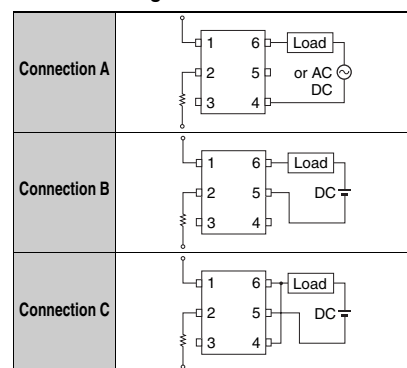
* The AC peak and DC value are given for the load voltage.

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement conditions
Input	LED forward current	IF	50	mA
	Repetitive peak LED forward current	IFP	1	A
	LED forward current reduction rate	$\Delta I_F / ^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	VR	5	V
	Connection temperature	TJ	125	°C
Output	Load voltage (AC peak/DC)	VOFF	400	V
	Continuous load current	Connection A	120	mA
		Connection B	120	
		Connection C	240	
	ON current reduction rate	Connection A	-1.2	mA/°C
		Connection B	-1.2	
		Connection C	-2.4	
	Connection temperature	TJ	125	°C
Dielectric strength between I/O (See note 1.)		VI-O	500	Vrms
Ambient operating temperature		Ta	-40 to +85	°C
Ambient storage temperature		Tstg	-55 to +125	°C
Soldering temperature		-	260	°C

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.

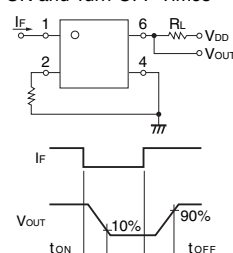
Connection Diagram



Electrical Characteristics (Ta = 25°C)

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	VF	1.0	1.15	1.3	V
	Reverse current	IR	-	10	μA	VR = 5 V
	Capacity between terminals	CT	30	-	pF	V = 0, f = 1 MHz
	Trigger LED forward current	IFT	-	3	mA	Io = 120 mA
Output	Maximum resistance with output ON	RON	Connection A	17	35	Ω
			Connection B	11	20	Ω
			Connection C	6	10	Ω
	Current leakage when the relay is open	ILEAK	-	1.0	μA	VOFF = 400 V
	Capacity between terminals	COFF	40	-	pF	V = 0, f = 1 MHz
Capacity between I/O terminals		CI-O	0.8	-	pF	f = 1 MHz, Vs = 0 V
Insulation resistance between I/O terminals		RI-O	1000	-	M Ω	VI-O = 500 VDC, RoH $\leq$ 60%
Turn-ON time		tON	0.3	1.0	ms	IF = 5 mA, RL = 200 Ω , VDD = 20 V (See note 2.)
Turn-OFF time		tOFF	0.1	1.0	ms	

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



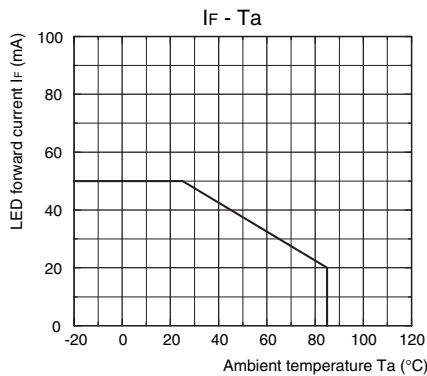
Recommended Operating Conditions

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

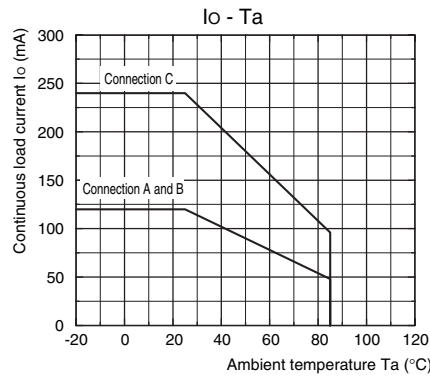
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	-	-	320	V
Operating LED forward current	I_F	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	-	-	120	mA
Ambient operating temperature	T_a	-20	-	65	°C

Engineering Data

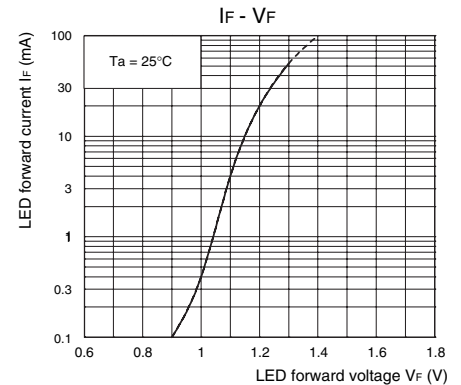
LED forward current vs. Ambient temperature



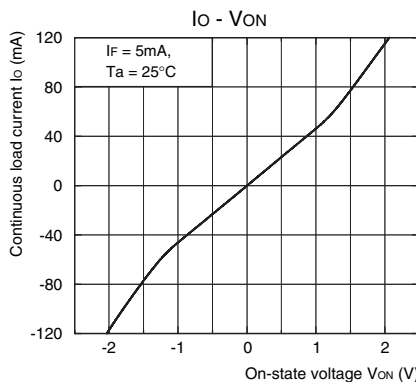
Continuous load current vs. Ambient temperature



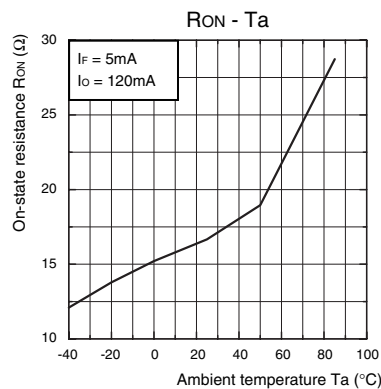
LED forward current vs. LED forward voltage



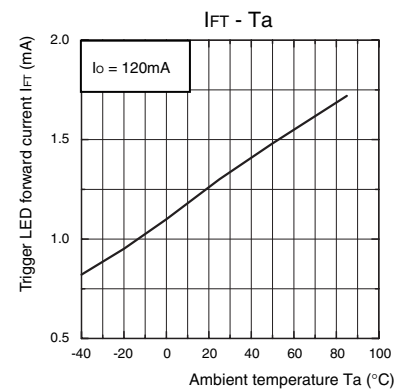
Continuous load current vs. On-state voltage



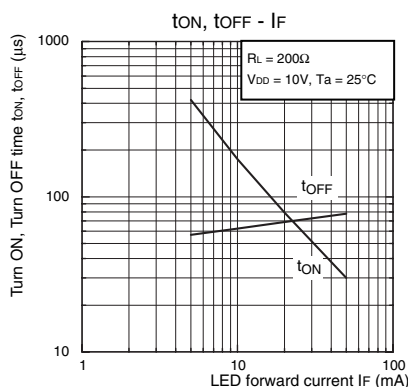
On-state resistance vs. Ambient temperature



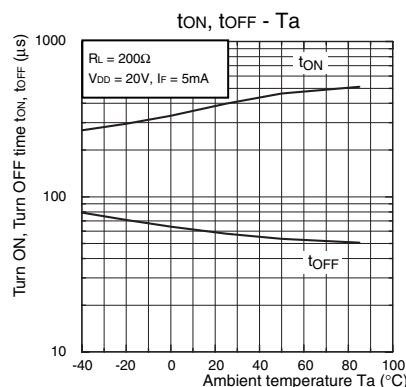
Trigger LED forward current vs. Ambient temperature



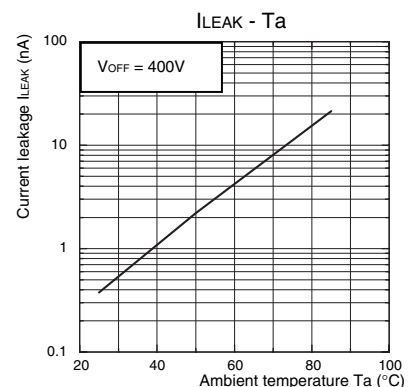
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature

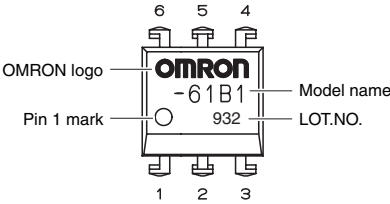


Safety Precautions

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

■ Appearance

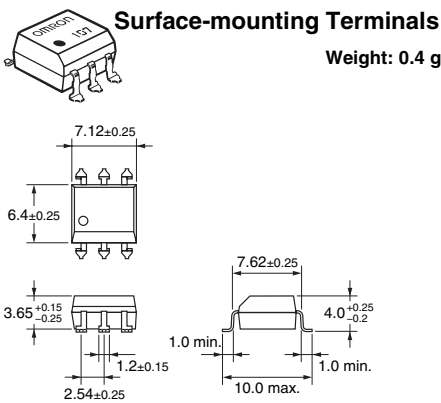
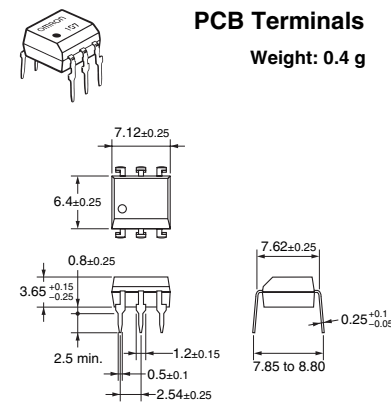
DIP (Dual Inline Package) DIP6



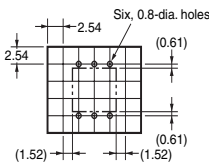
Note: The actual product is marked differently from the image shown here.

■ Dimensions

(Unit:mm)

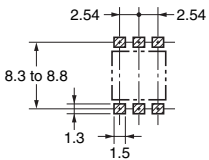


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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

- 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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