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.

 \bullet Leakage current of 1 μA max. when output relay is open.

RoHS compliant

■ Application Examples

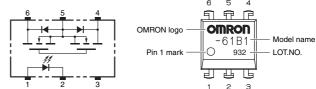
- Communication equipment
- Test & Measurement equipment
- Industrial equipment



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

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	Model	Minimum package quantity	
Раскаде туре	Contact Ionni		(peak value) *	Model	Number per tube	Number per tape and reel
		PCB Terminals	400 V	G3VM-401BY	50	-
DIP6	1a (SPST-NO)			G3VM-401EY	50	
	(01 01 110)	Sunace-mounting Terminals		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	
	LED forward current		lF	50	mA		
т. П	Repetitive peak LED forward current		IFP	1	А	100 μs pulses, 100 pps	
Input	LED forward current reduction rate		∆IF/°C	-0.5	mA/°C	Ta≥25°C	
-	LED reverse voltage		VR	5	V		
Connection ter		mperature	TJ	125	°C		
Lo	Load voltage (AC peak/DC)		Voff	400	V		
	Continuous load current	Connection A		120	mA	Connection A: AC neek/DC	
		Connection B	lo	120		Connection A: AC peak/DC Connection B and C: DC	
bri		Connection C		240		Connection B and C. DC	
Output	ON current	Connection A		-1.2	mA/°C		
	reduction	Connection B	∆lo/°C	-1.2		Ta ≥ 25°C	
	rate	Connection C		-2.4			
	Connection temperature		TJ	125	°C		
Dielectric strength between I/O (See note 1.)			VI-0	5000	Vrms	AC for 1 min	
Ambient operating temperature			Та	-40 to +85	°C	With no icing or condensation	
Ambient storage temperature			Tstg	-55 to +125	°C	With no icing or condensation	
Soldering temperature			-	260	°C	10 s	

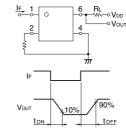
te: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side. Connection Diagram

Connection A	$\begin{bmatrix} 1 & 6 \\ - & Load \\ - & 2 & 5 \\ - & 0 & AC \\ - & 0 & DC \\ - & 0 & - \\ - & 0$
Connection B	
Connection C	$\begin{bmatrix} 1 & 6 \end{bmatrix} + \begin{bmatrix} Load \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} DC \\ - \end{bmatrix}$

Electrical Characteristics (Ta = 25°C)

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions	
LED forward voltage Reverse current Capacity between terminals Trigger LED forward current		VF	1.0	1.15	1.3	V	IF = 10 mA	
		IR	-	-	10	μA	VR = 5 V	
		en terminals	Ст	-	30	-	pF	V = 0, f = 1 MHz
		IFT	-	-	3	mA	lo = 120 mA	
	Maximum	Connection A		-	17	35	Ω	IF = 5 mA, Io = 120 mA
범 resistance		Connection B	Ron	-	11	20	Ω	IF = 5 mA, Io = 120 mA
Output	with output ON	Connection C		-	6	10	Ω	IF = 5 mA, Io = 240 mA
O Current leaka	Current leakage when	nt leakage when the relay is open		-	-	1.0	μA	Voff = 400 V
Capacity between ter		en 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	-	-	MΩ	VI-0 = 500 VDC, $RoH \le 60\%$	
Turn-ON time			ton	-	0.3	1.0	ms	$I_F = 5 \text{ mA}, \text{ RL} = 200 \Omega,$
Turn-OFF time		toff	-	0.1	1.0	ms	VDD = 20 V(See note 2.)	





G3VM-401BY/EY

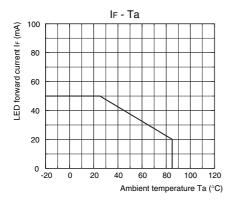
Recommended Operating Conditions

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

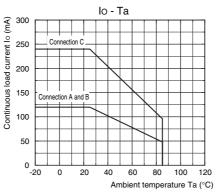
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	Vdd	-	-	320	V
Operating LED forward current	lf	5	7.5	25	mA
Continuous load current (AC peak/DC)	lo	-	-	120	mA
Ambient operating temperature	Та	-20	-	65	°C

Engineering Data

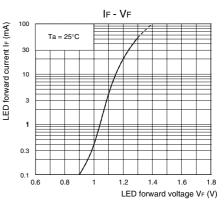
LED forward current vs. Ambient temperature



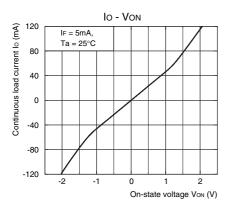
Continuous load current vs. Ambient temperature



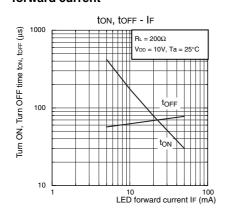
LED forward current vs. LED forward voltage



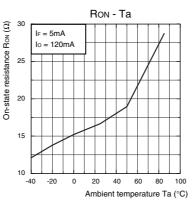
Continuous load current vs. On-state voltage



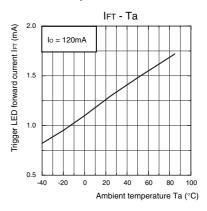
Turn ON, Turn OFF time vs. LED forward current



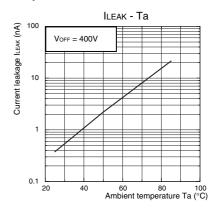
On-state resistance vs. Ambient temperature



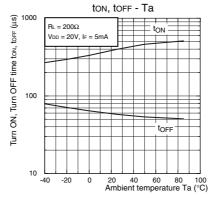
Trigger LED forward current vs. Ambient temperature



Current leakage vs. Ambient temperature



Turn ON, Turn OFF time vs. Ambient temperature

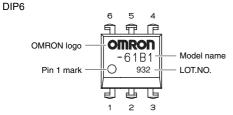


Safety Precautions

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

■ Appearance

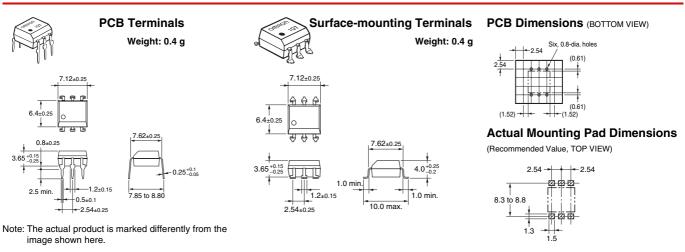
DIP (Dual Inline Package)



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

Dimensions

(Unit:mm)



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, answement 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.

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Cat. No. K220-E1-01 0412(0412)(O)