

## MOS FET Relays

G3VM-401B/E

### New Series of Analog-switching MOS FET Relays with Dielectric Strength of 2.5 kVAC between I/O Using Optical Isolation

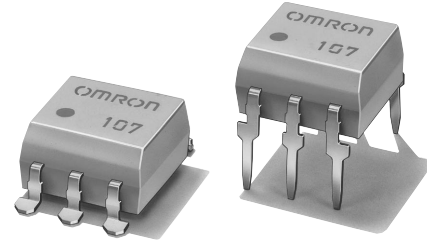
- Switches minute analog signals.
- Leakage current of 1  $\mu$ A max. when output relay is open.
- Upgraded G3VM-4N Series.

#### Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems

#### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	G3VM-401B	50	---
	Surface-mounting terminals		G3VM-401E		
				G3VM-401E(TR)	---

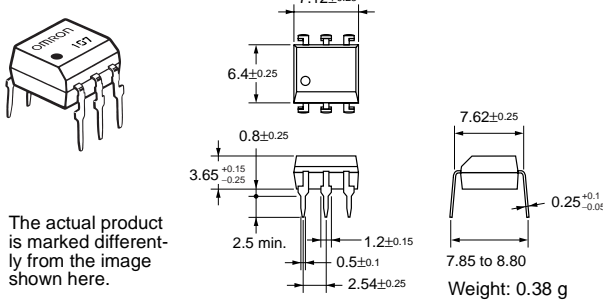


**Note:** The actual product is marked differently from the image shown here.

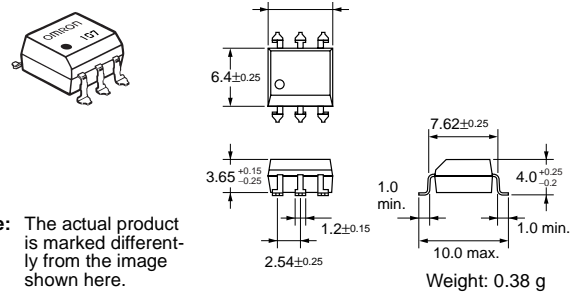
#### Dimensions

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

##### G3VM-401B

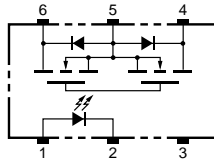


##### G3VM-401E

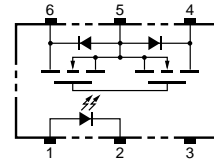


#### Terminal Arrangement/Internal Connections (Top View)

##### G3VM-401B

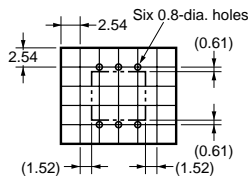


##### G3VM-401E



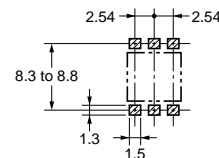
#### PCB Dimensions (Bottom View)

##### G3VM-401B



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

##### G3VM-401E

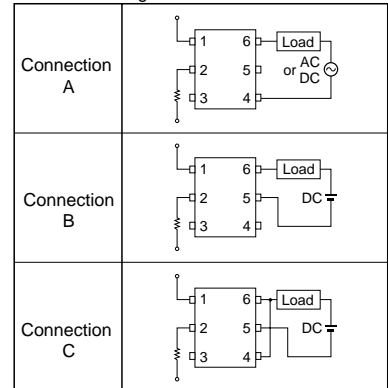


### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit	Measurement Conditions		
Input	LED forward current	$I_F$	50	mA		
	Repetitive peak LED forward current	$I_{FP}$	1	A		
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_j$	125	°C		
Output	Output dielectric strength	$V_{OFF}$	400	V		
	Continuous load current	Connection A	$I_O$	120	mA	
		Connection B		120		
		Connection C		240		
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta ≥ 25°C
		Connection B		-1.2		
Connection C			-2.4			
Connection temperature	$T_j$	125	°C			
Dielectric strength between input and output (See note 1.)	$V_{I-O}$	2,500	Vrms	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.

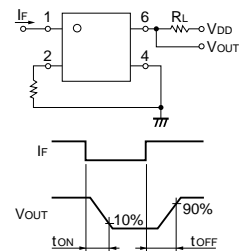
Connection Diagram



### 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	3	mA	$I_O = 120 \text{ mA}$	
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	17	35	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
		Connection B		---	11	20	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
		Connection C		---	6	10	Ω	$I_F = 5 \text{ mA}, I_O = 240 \text{ mA}$
Current leakage when the relay is open	$I_{LEAK}$	---	---	1.0	μA	$V_{OFF} = 350 \text{ V}$		
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	---	---	MΩ	$V_{I-O} = 500 \text{ VDC}, RoH \leq 60\%$		
Turn-ON time	$t_{ON}$	---	0.3	1.0	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	1.0	ms			

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



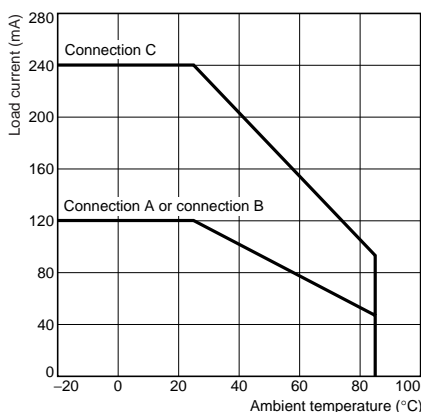
### Recommended Operating Conditions

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

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	320	V
Operating LED forward current	$I_F$	5	7.5	25	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_a$	-20	---	65	°C

### Engineering Data

#### Load Current vs. Ambient Temperature G3VM-401B(E)



### Safety Precautions

Refer to page 6 for precautions common to all G3VM models.