

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 μ A max. when output relay is open.
- Upgraded G3VM-4N Series.

Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems

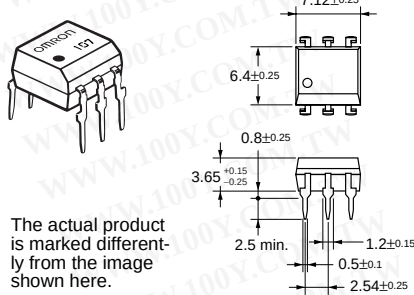
List of Models

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)	---	1,500

Dimensions

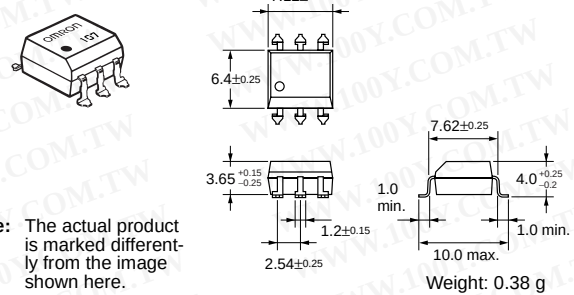
Note: All units are in millimeters unless otherwise indicated.

G3VM-401B



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

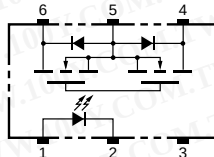
G3VM-401E



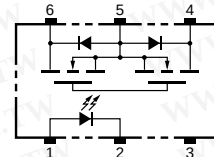
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Terminal Arrangement/Internal Connections (Top View)

G3VM-401B

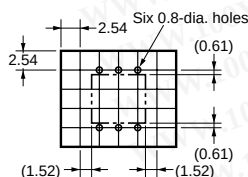


G3VM-401E



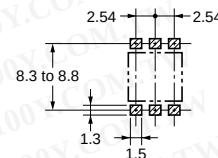
PCB Dimensions (Bottom View)

G3VM-401B



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401E

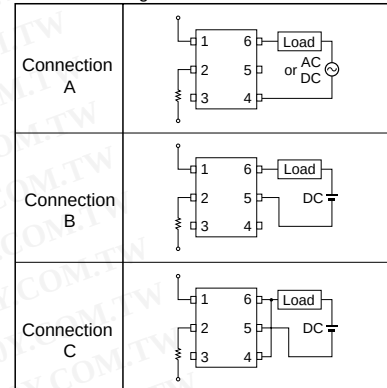


Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 μ s pulses, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq 25^\circ\text{C}$
	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
		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.

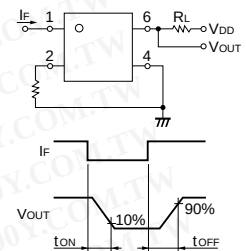
Connection Diagram



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	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
		Connection B		---	11	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}$
		Connection C		---	6	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	---	---	M Ω	$V_{I-O} = 500 \text{ VDC}, R_{oH} \leq 60\%$
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

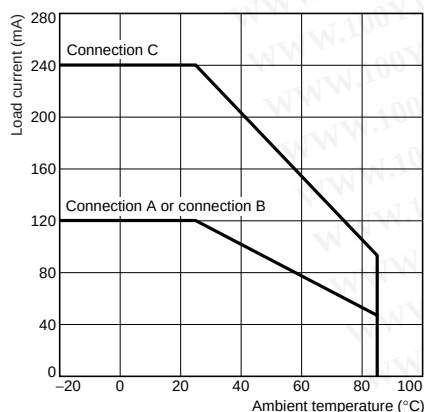
Use the G3VM under the following conditions so that the Relay will operate properly.

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.

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