

MOS FET Relays

G3VM-401B/E

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 μA max. (0.8 nA typ.) when relay is open.
- Upgraded G3VM-4N Series.
- RoHS Compliant.

Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems

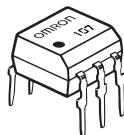
List of Models

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

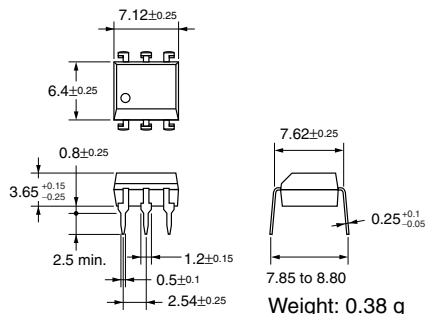
Dimensions

Note: All units are in millimeters unless otherwise indicated.

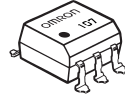
G3VM-401B



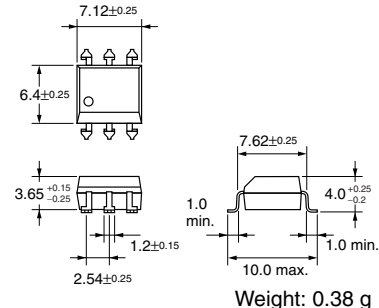
Note: The actual product is marked differently from the image shown here.



G3VM-401E

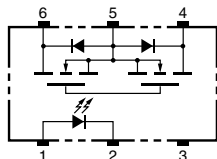


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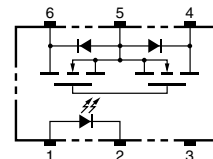


Terminal Arrangement/Internal Connections (Top View)

G3VM-401B

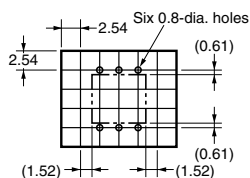


G3VM-401E



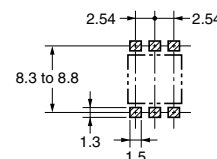
PCB Dimensions (Bottom View)

G3VM-401B



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401E

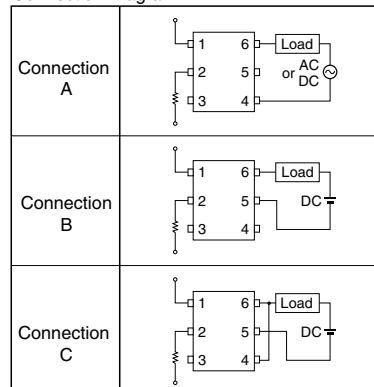


Absolute Maximum Ratings (Ta = 25°C)

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°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	°C	
Output	Load voltage (AC peak/DC)	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	V_{rms}	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.

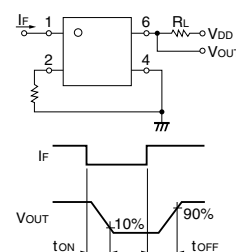
Connection Diagram



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	$I_F = 10$ mA
	Reverse current	I_R	---	---	10	μ A	$V_R = 5$ V
	Capacity between terminals	C_T	---	30	---	pF	$V = 0$, $f = 1$ MHz
	Trigger LED forward current	I_{FT}	---	1	3	mA	$I_O = 120$ mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	17	35	Ω	$I_F = 5$ mA, $I_O = 120$ mA
		Connection B		11	20	Ω	$I_F = 5$ mA, $I_O = 120$ mA
		Connection C		6	10	Ω	$I_F = 5$ mA, $I_O = 240$ mA
	Current leakage when the relay is open	I_{LEAK}	---	0.0008	1.0	μ A	$V_{OFF} = 350$ V
	Capacity between terminals A Connection	C_{OFF}	---	40	---	pF	$V = 0$, $f = 1$ MHz
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V
Insulation resistance		R_{I-O}	1,000	---	---	M Ω	$V_{I-O} = 500$ VDC, $R_{OH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.3	1.0	ms	$I_F = 5$ mA, $R_L = 200$ Ω , $V_{DD} = 20$ V (See note 2.)
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms	

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



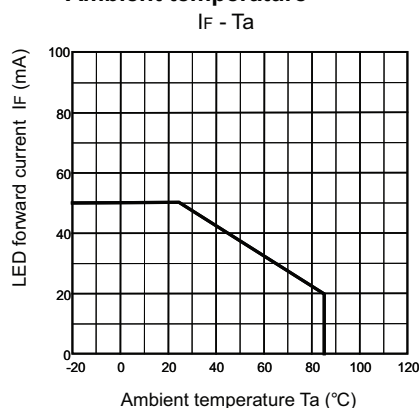
Recommended Operating Conditions

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

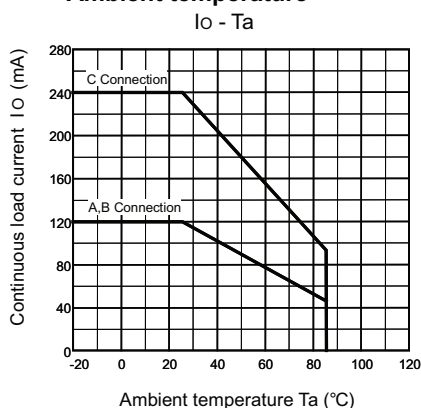
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	320	V
Operating LED forward current	I_F	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_a	-20	---	65	°C

■ Engineering Data

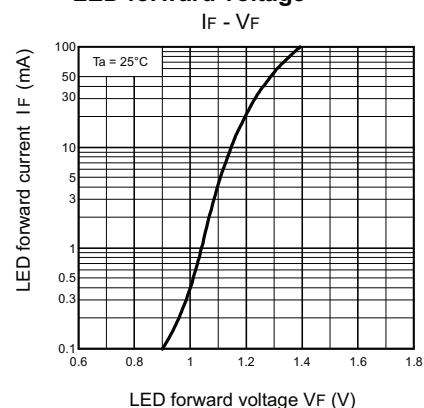
LED forward current vs.
Ambient temperature



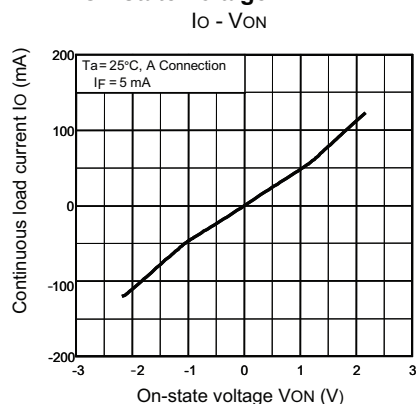
Continuous load current vs.
Ambient temperature



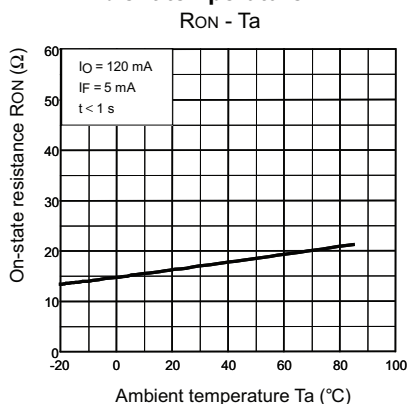
LED forward current vs.
LED forward voltage



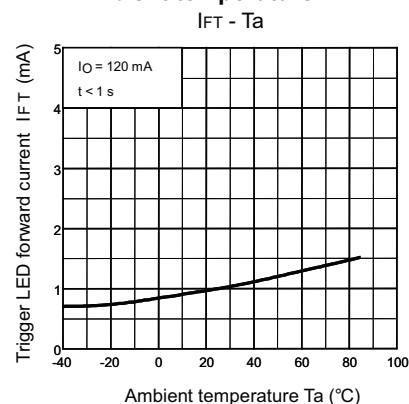
Continuous load current vs.
On-state voltage



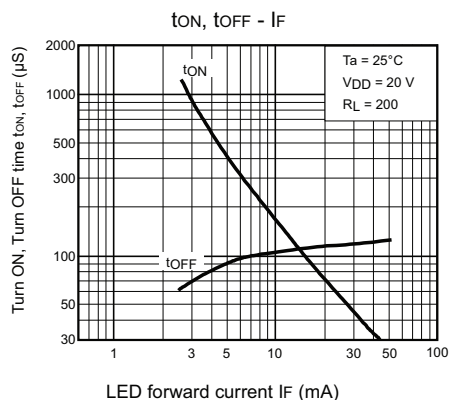
On-state resistance vs.
Ambient temperature



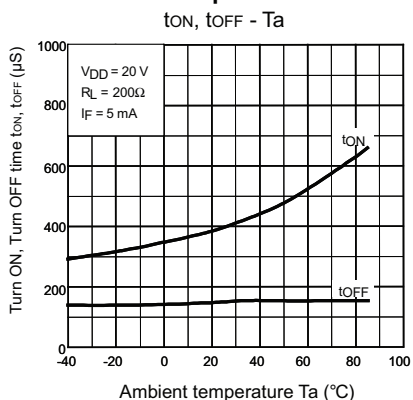
Trigger LED forward current vs.
Ambient temperature



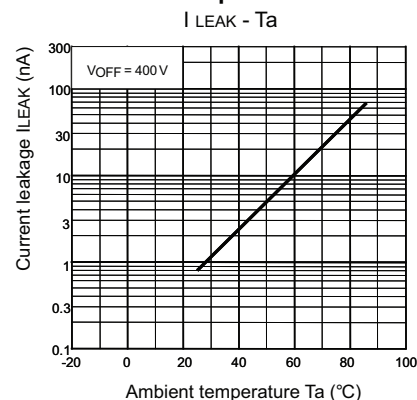
Turn ON, Turn OFF time vs.
LED forward current



Turn ON, Turn OFF time vs.
Ambient temperature



Current leakage vs.
Ambient temperature



MEMO

A large grid of 100 small squares, each containing a unique combination of the letters 'L', 'T', 'F', and 'H' in various orientations, creating a complex, abstract pattern. The letters are arranged in a way that forms a larger, more complex shape when viewed as a whole. The letters are arranged in a way that forms a larger, more complex shape when viewed as a whole. The letters are arranged in a way that forms a larger, more complex shape when viewed as a whole.

Omron Electronic Components, LLC

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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