

MOS FET Relays

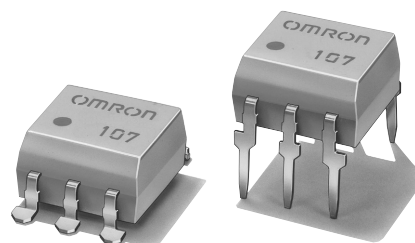
G3VM-401BY/EY

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

- Switches minute analog signals.
- Leakage current of 1 μ A max. when output relay is open.
- RoHS Compliant.

Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems



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

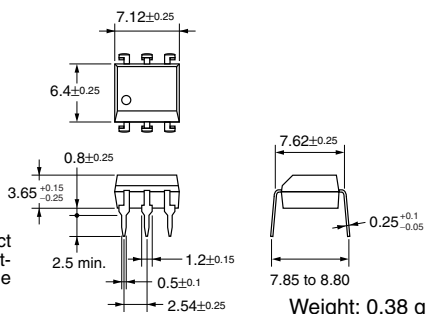
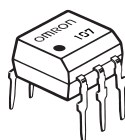
List of Models

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

Dimensions

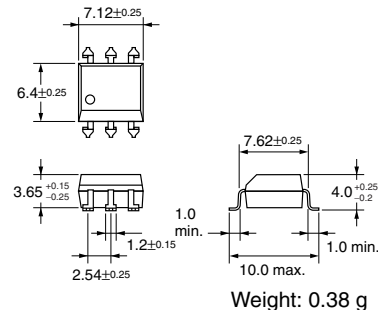
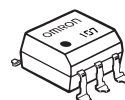
Note: All units are in millimeters unless otherwise indicated.

G3VM-401BY



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

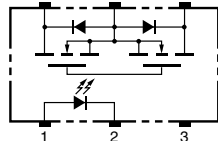
G3VM-401EY



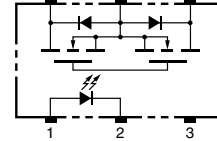
Note: The actual product is marked differently from the image shown here.

Terminal Arrangement/Internal Connections (Top View)

G3VM-401BY

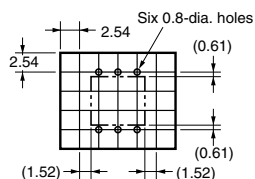


G3VM-401EY



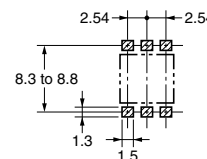
PCB Dimensions (Bottom View)

G3VM-401BY



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401EY

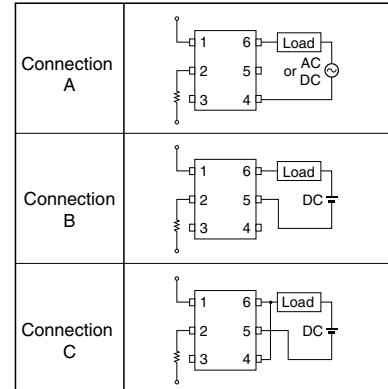


■ Absolute Maximum Ratings (Ta = 25°C)

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	Ta \geq 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}	5,000	V_{rms}	AC for 1 min	
Operating temperature		T_α	-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.

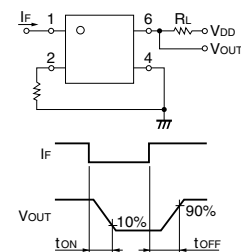
Connection Diagram



■ 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}	---	---	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}	---	0.0004	1.0	μ A	$V_{OFF} = 400$ 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, $R_L = 200 \Omega$, $V_{DD} = 20$ V (See note 2.)	
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms		

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



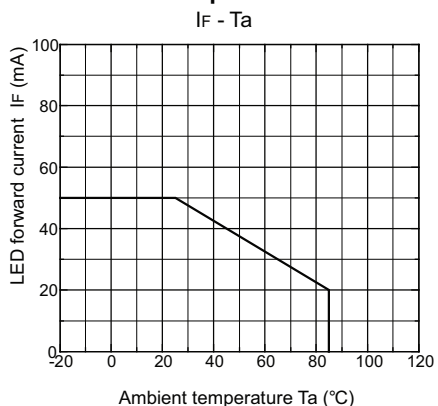
■ Recommended Operating Conditions

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

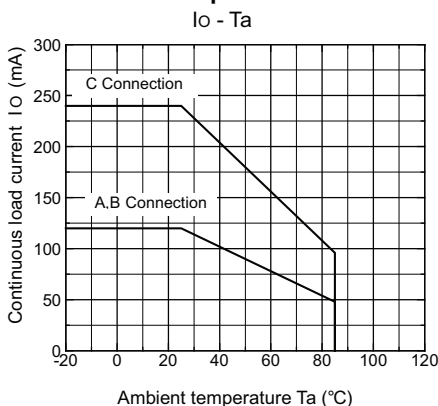
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{\Delta\Delta}$	---	---	320	V
Operating LED forward current	I_Φ	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_α	-20	---	65	°C

■ Engineering Data

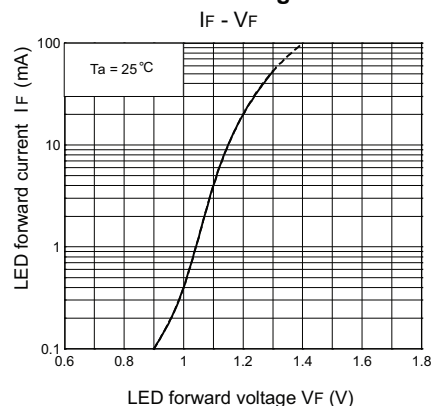
LED forward current vs. Ambient temperature



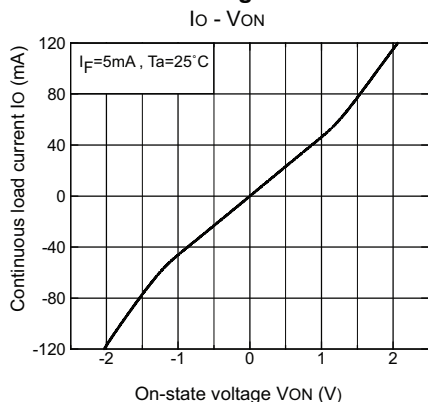
Continuous load current vs. Ambient temperature



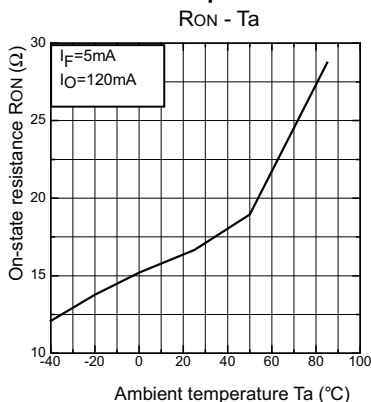
LED forward current vs. LED forward voltage



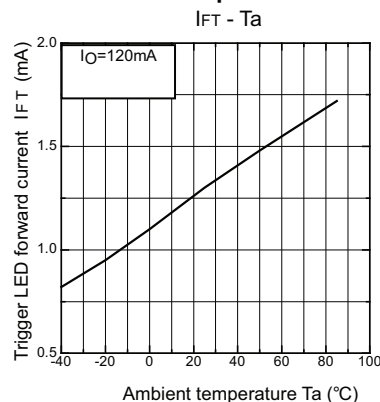
Continuous load current vs. On-state voltage



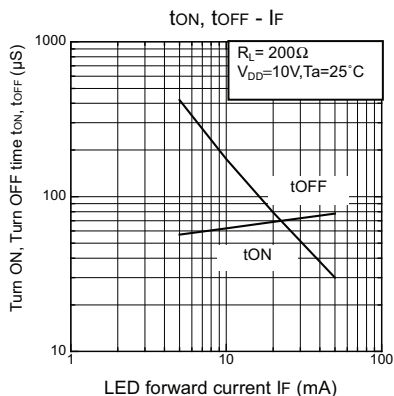
On-state resistance vs. Ambient temperature



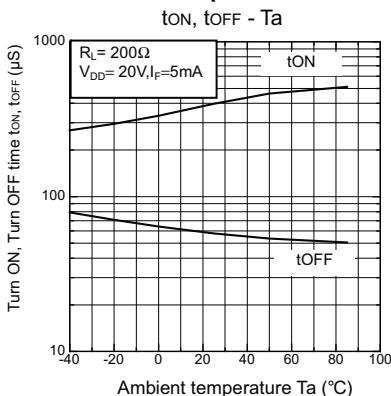
Trigger LED forward current vs. Ambient temperature



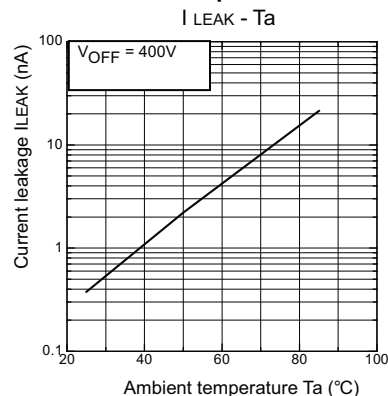
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows of small squares.

Omron Electronic Components, LLC

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COMPONENTS LLC**

55 E. Commerce Drive, Suite B
Schaumburg, IL 60173

847-882-2288

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