G3VM-401AY1/DY1

MOS FET Relays

Compact, General-purpose, Analog switching MOS FET Relays, with Dielectric Strength of 5 kVAC between I/O Using Optical Isolation.

- Switches minute analog signals.
- Continuous load current of 120 mA.

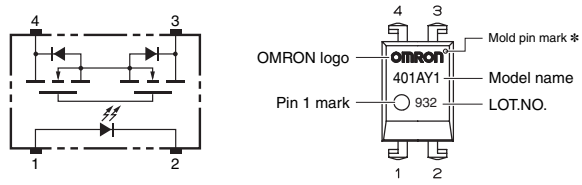
RoHS compliant

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

■ Application Examples

- Electrical power unit
- Test & Measurement equipment
- Security equipment
- Industrial equipment

■ Terminal Arrangement/Internal Connections



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✻ The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

■ List of Models

Package type	Contact form	Terminals	Load voltage (peak value) ✻	Model	Minimum package quantity	
					Number per tube	Number per tape and reel
DIP4	1a (SPST-NO)	PCB Terminals	400 V	G3VM-401AY1	100	-
		Surface-mounting Terminals		G3VM-401DY1		
				G3VM-401DY1(TR05)	-	500

✻ The AC peak and DC value are given for the load voltage.

■ Absolute Maximum Ratings (Ta = 25°C)

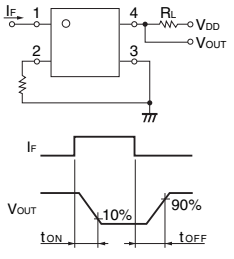
	Item	Symbol	Rating	Unit	Measurement conditions
Input	LED forward current	I_F	30	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	−0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	400	V	
	Continuous load current (AC peak/DC)	I_O	120	mA	
	ON current reduction rate	ΔI_O/°C	−1.2	mA/°C	Ta ≥ 25°C
	Pulse ON current	I_{op}	360	mA	t = 100 ms, Duty = 1/10
	Connection temperature	T_J	125	°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	5000	Vrms	AC for 1 min
Ambient operating temperature		Ta	−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

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.

■ Electrical Characteristics (Ta = 25°C)

	Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	V_F	1.1	1.27	1.4	V	I_F = 10 mA
	Reverse current	I_R	-	-	10	μA	V_R = 5 V
	Capacity between terminals	C_T	-	50	-	pF	V = 0, f = 1 MHz
	Trigger LED forward current	I_{FT}	-	0.6	3	mA	I_O = 120 mA
Output	Maximum resistance with output ON	R_{ON}	-	17	28	Ω	I_F = 5 mA, I_O = 120 mA, t < 1 s
				22	35		I_F = 5 mA, I_O = 120 mA
	Current leakage when the relay is open	I_{LEAK}	-	-	1000	nA	V_{OFF} = 400 V
	Capacity between terminals	C_{OFF}	-	80	-	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 between I/O terminals		R_{I-O}	1000	-	-	MΩ	V_{I-O} = 500 VDC, RoH ≤ 60%
Turn-ON time		t_{ON}	-	0.6	2	ms	I_F = 5 mA, R_L = 200 Ω, V_{DD} = 20 V(See note 2.)
Turn-OFF time		t_{OFF}	-	0.2	1	ms	

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



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■ Recommended Operating Conditions

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

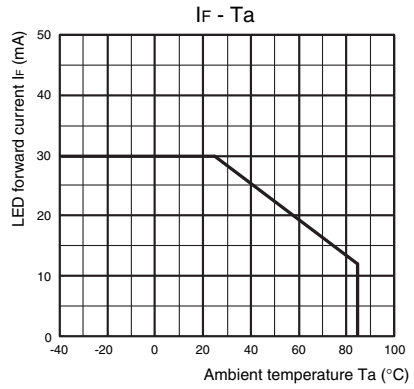
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	-	-	320	V
Operating LED forward current	I_F	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	-	-	120	mA
Ambient operating temperature	Ta	–20	-	65	°C

■ Spacing and Insulation

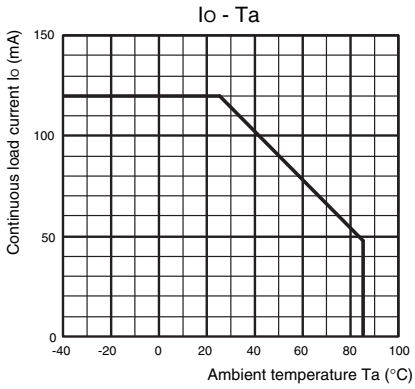
Item	Minimum	Unit
Creepage distances	7.0	mm
Clearance distances	7.0	
Internal isolation thickness	0.4	

■ Engineering Data

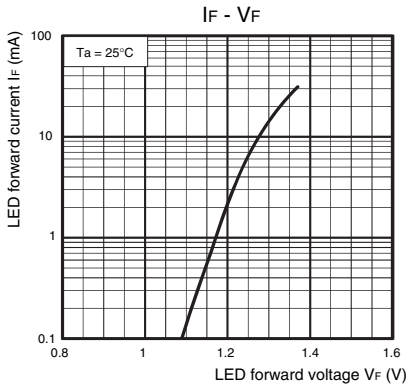
LED forward current vs. Ambient temperature



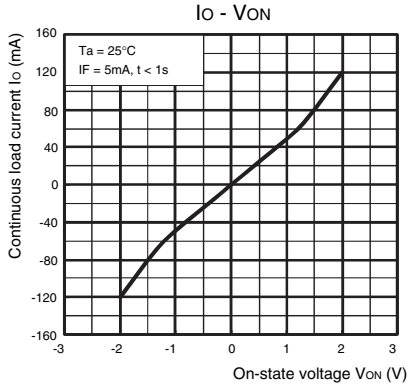
Continuous load current vs. Ambient temperature



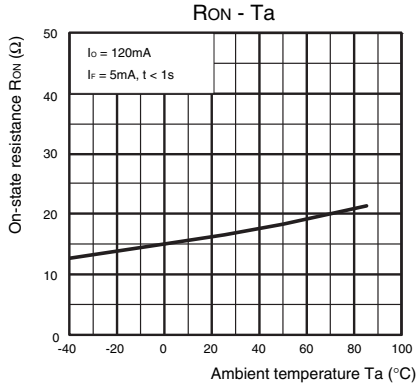
LED forward current vs. LED forward voltage



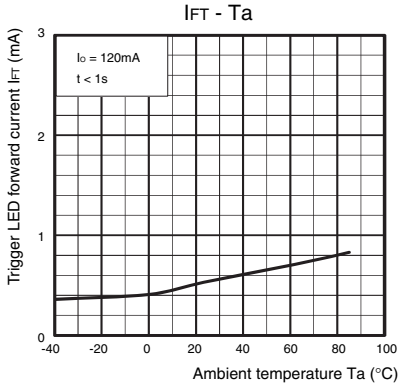
Continuous load current vs. On-state voltage



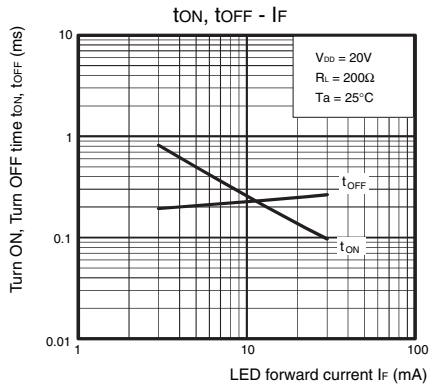
On-state resistance vs. Ambient temperature



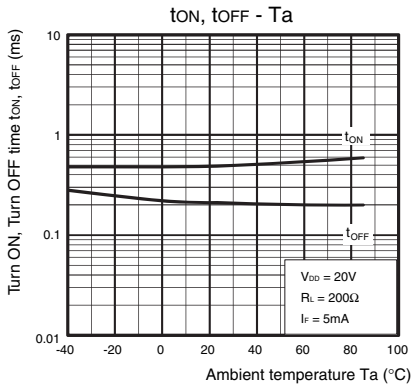
Trigger LED forward current vs. Ambient temperature



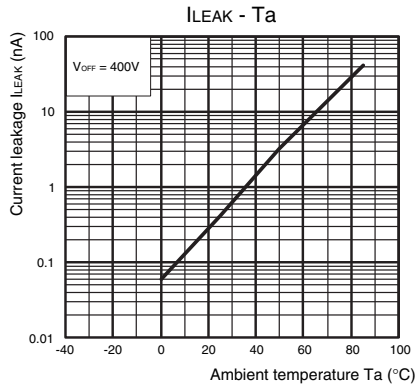
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



■ Safety Precautions

- Refer to **"Common Precautions"** for all G3VM models.

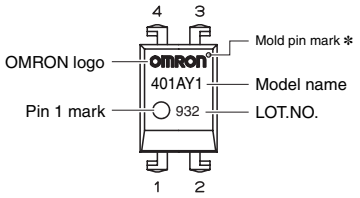
Appearance/Dimensions

DIP4 type

■ Appearance

DIP (Dual Inline Package)

DIP4



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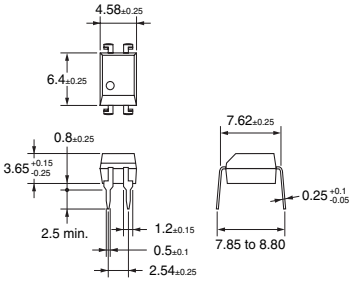
■ Dimensions

(Unit:mm)

PCB Terminals

Weight: 0.25 g



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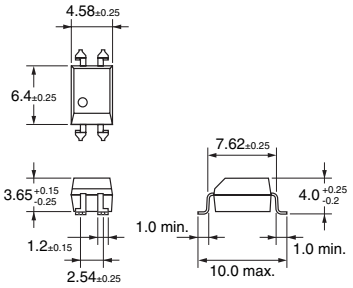
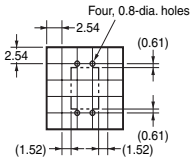
Surface-mounting Terminals

Weight: 0.25 g

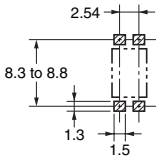


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



- 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, amusement 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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