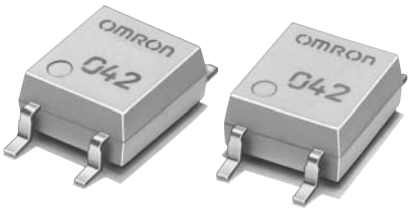
G3VM-401G1

MOS FET Relays

Ultrasensitive MOS FET Relays in 400-V Load series for electric power saving.

- **Continuous load current of 100 mA.**

RoHS compliant

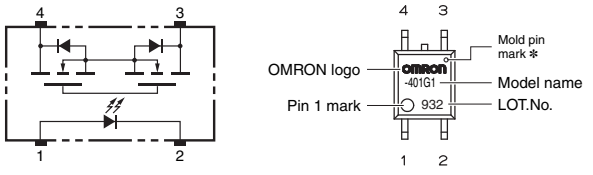


Note: The actual product is marked differently from the image shown here.

■ Application Examples

- **Communication equipment**
- **Test & Measurement equipment**
- **Security equipment**
- **Amusement equipment**
- **Industrial equipment**
- **Various battery-driven devices**

■ 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
SOP4	1a (SPST-NO)	Surface-mounting Terminals	400 V	**G3VM-401G1**	100	-
				G3VM-401G1 (TR)	-	2,500

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

■ Absolute Maximum Ratings (Ta = 25°C)

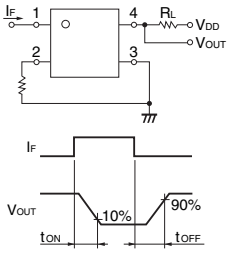
	Item	Symbol	Rating	Unit	Measurement conditions
Input	**LED forward current**	I_F	30	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	100 µs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	–0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	°C	
Output	**Load voltage (AC peak/DC)**	V_{OFF}	400	V	
	Continuous load current (AC peak/DC)	I_O	100	mA	
	ON current reduction rate	ΔI_O/°C	–1.0	mA/°C	Ta ≥ 25°C
	Pulse ON current	I_{OP}	0.3	A	t = 100 ms, Duty = 1/10
	Connection temperature	T_J	125	°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	1500	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	-	30	-	pF	V = 0, f = 1 MHz
	Trigger LED forward current	I_{FT}	-	-	0.2	mA	I_O = 100 mA
Output	Maximum resistance with output ON	R_{ON}	-	18	35	Ω	I_F = 0.5mA, I_O = 100 mA, t < 1 s
	Current leakage when the relay is open	I_{LEAK}	-	1	1000	nA	V_{OFF} = 400 V
	Capacity between terminals	Coff	-	70	-	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}	-	2	10	ms	I_F = 0.5 mA, R_L = 200 Ω, V_{DD} = 20 V (See note 2.)
Turn-OFF time		t_{OFF}	-	1	5	ms	

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



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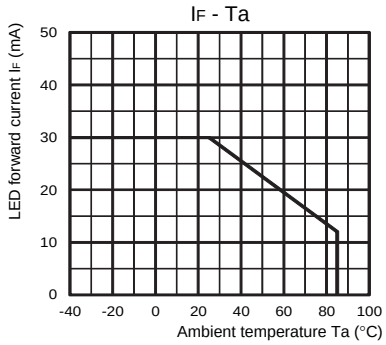
■ Recommended Operating Conditions

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

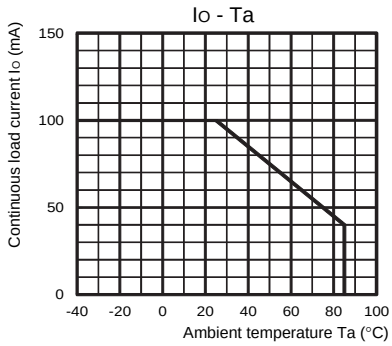
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	-	-	320	V
Operating LED forward current	I_F	-	0.5	25	mA
Continuous load current (AC peak/DC)	I_O	-	-	80	mA
Ambient operating temperature	Ta	–20	-	65	°C

■ Engineering Data

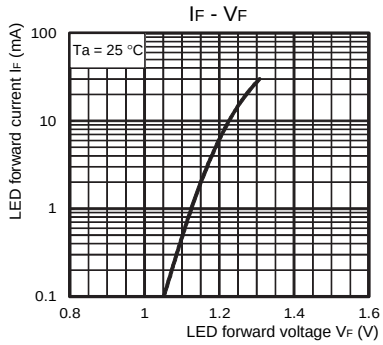
LED forward current vs. Ambient temperature



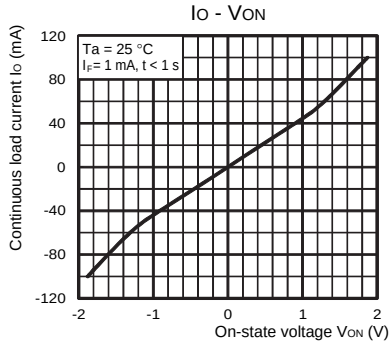
Continuous load current vs. Ambient temperature



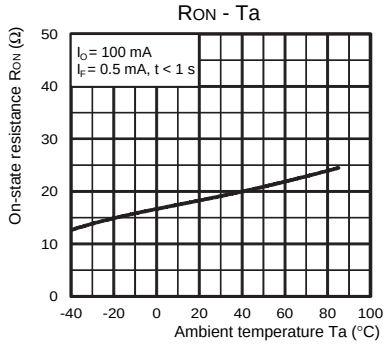
LED forward current vs. LED forward voltage



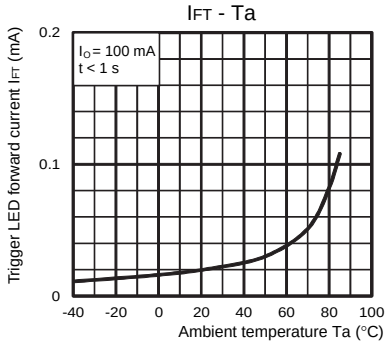
Continuous load current vs. On-state voltage



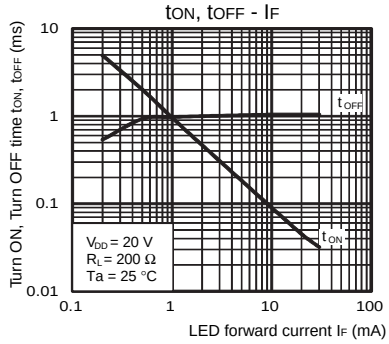
On-state resistance vs. Ambient temperature



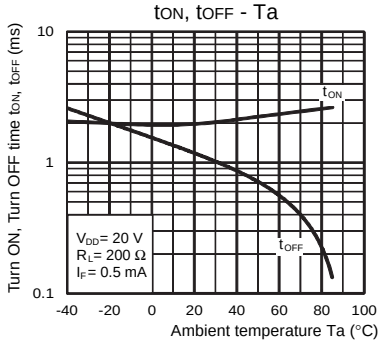
Trigger LED forward current vs. Ambient temperature



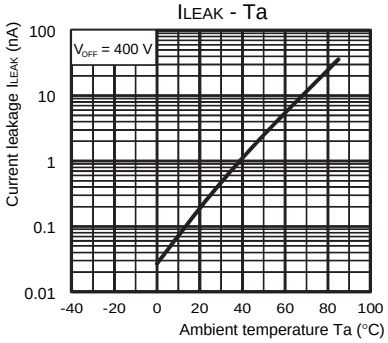
Turn ON, Turn OFF time vs. LED forward current



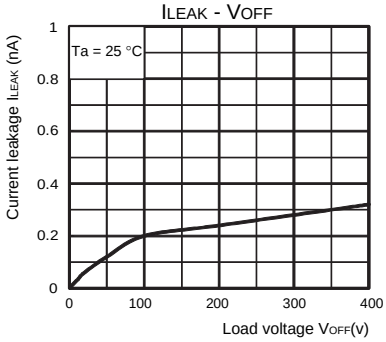
Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



Current leakage vs. Load voltage



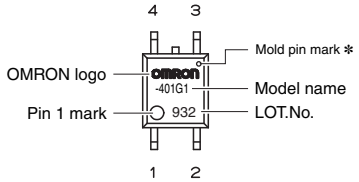
■ Safety Precautions

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

Appearance/Dimensions SOP4 type

■ Appearance

SOP (Small Outline Package)
SOP4



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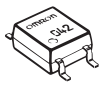
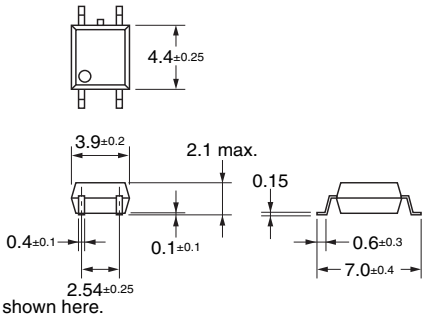
■ Dimensions

(Unit: mm)



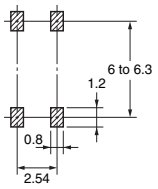
Surface-mounting Terminals

Weight: 0.1 g



Actual Mounting Pad Dimensions

(Recommended Value, TOP VIEW)



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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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