G3VM-51PR

MOS FET Relays

Smallest Class in market, USOP Package MOS FET Relays is designed to exhibit a fast rise time and reduce signal degradation.

- **ERT(Equivalent Rise Time): 40 ps (typ.), 90 ps (max)**
- **Dielectric strength of 500Vrms between I/O.**

RoHS Compliant

⚠ Refer to "*Common Precautions*".

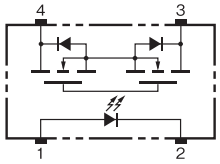
NEW

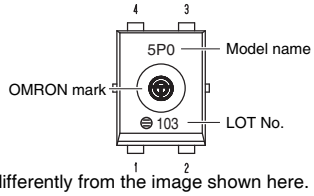
Note: The actual product is marked differently from the image shown here.

■Application Examples

- **Semiconductor test equipment**
- **Test & measurement equipment**
- **Communication equipment**
- **Data loggers**

■Terminal Arrangement/Internal Connections





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

■List of Models

Package type	Contact form	Terminals	Load voltage (peak value) (See note.)	Model	Minimum package quantity Number per tape & reel
USOP4	1a (SPST-NO)	Surface-mounting terminals	50V	**G3VM-51PR**	–
				G3VM-51PR (TR05)	500
				G3VM-51PR (TR)	1,500

Note 1. Ask you OMRON representative for orders under 1,500 pcs or 500 pcs.
2. Tape-cut USOPs are packaged without humidity resistance. Use manual soldering to mount them. Refer to common precautions.
3. The AC peak and DC value is given for the load voltages.

■Absolute Maximum Ratings (Ta = 25°C)

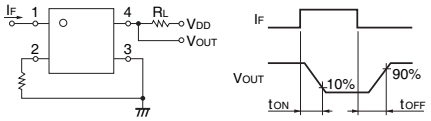
	Item	Symbol	Rating	Unit	Measurement conditions
Input	LED forward current	I_F	50	mA	
	LED forward current reduction rate	ΔI_F/°C	–0.5	mA/°C	Ta≥25°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	50	V	
	Continuous load current (AC peak/DC)	I_O	300	mA	
	ON current reduction rate	ΔI_O/°C	–3.0	mA/°C	Ta≥25°C
	Pulse ON current	I_{OP}	900	mA	t=100ms, Duty=1/10
	Connection temperature	T_J	125	°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	500	Vrms	AC for 1 min
Ambient operating temperature		Ta	–40 ~ +85	°C	With no icing or condensation
Ambient storage temperature		Tstg	–40 ~ +125	°C	With no icing or condensation
Soldering temperature		–	260	°C	10s

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.

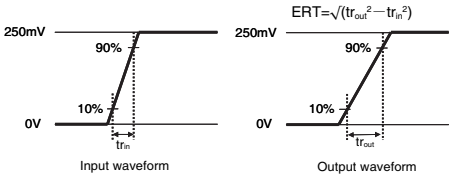
■Electrical Characteristics (Ta = 25°C)

	Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	V_F	1.0	1.15	1.3	V	I_F=10mA
	Reverse current	I_R	–	–	10	μA	V_R=5V
	Capacity between terminals	C_T	–	15	–	pF	V=0, f=1MHz
	Trigger LED forward current	I_{FT}	–	0.5	3	mA	I_O=100mA
Output	Maximum resistance with output ON	R_{ON}	–	1	1.5	Ω	I_F=5mA, I_O=300mA, t<1s
	Current leakage when the relay is open	I_{LEAK}	–	–	1	nA	V_{OFF}=50V
	Capacity between terminals	C_{OFF}	–	12	–	pF	V=0, f=100MHz, t<1s
Capacity between I/O terminals		C_{I-O}	–	0.4	–	pF	f=1MHz, V_S=0V
Insulation resistance between I/O terminals		R_{I-O}	1000	–	–	MΩ	V_{I-O}=500VDC, RoH≤60%
Turn-ON time		t_{ON}	–	0.2	0.5	ms	I_F=5mA, R_L=200Ω, V_{DD}=20V (See note 2.)
Turn-OFF time		t_{OFF}	–	0.1	0.4	ms	
Equivalent rise time		ERT	–	40	90	ps	I_F=5mA, V_{DD}=0.25V, Tr(in)=25ps (See Note.3)

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



Note: 3. ERT (Equivalent Rise Time)



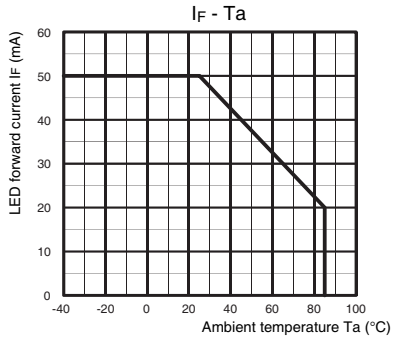
■Recommended Operating Conditions

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

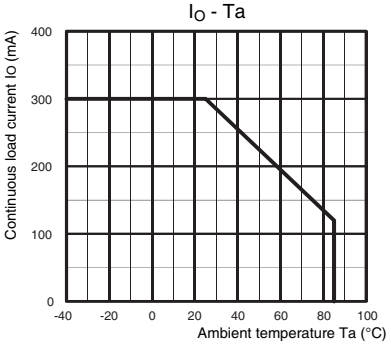
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	–	–	40	V
Operating LED forward current	I_F	5	7.5	20	mA
Continuous load current (AC peak/DC)	I_O	–	–	300	mA
Ambient operating temperature	Ta	–20	–	65	°C

■Engineering Data

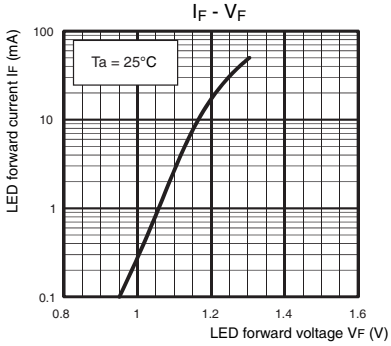
LED forward current vs. Ambient temperature



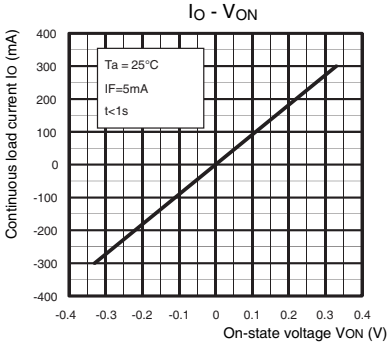
Continuous load current vs. Ambient temperature



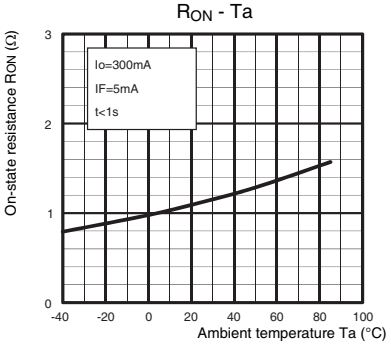
LED forward current vs. LED forward voltage



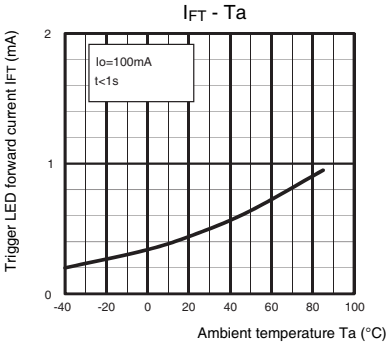
Continuous load current vs. On-state voltage



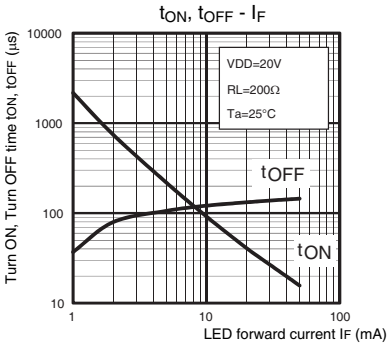
On-state resistance vs. Ambient temperature



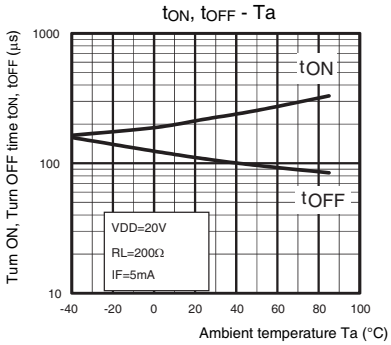
Trigger LED forward current vs. Ambient temperature



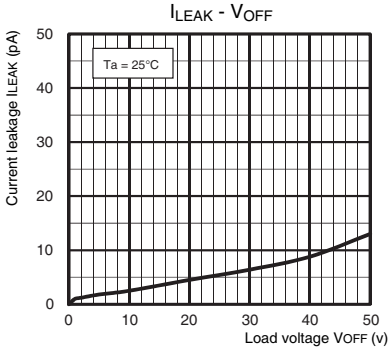
Turn ON, Turn OFF time vs. LED forward current



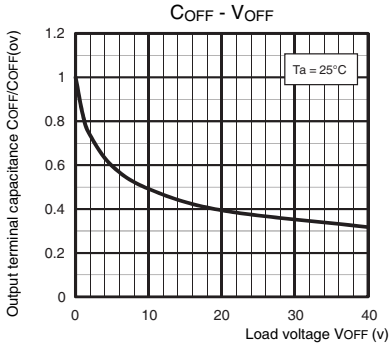
Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Load voltage



Output terminal capacitance COFF/COFF(ov) vs. Load voltage



■Safety Precautions

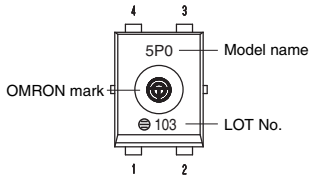
- Refer to **"Common Precautions"** for all G3VM models.

Apperance/Dimensions USOP4

■Appearance

USOP (Ultra Small Outline Package)

USOP4



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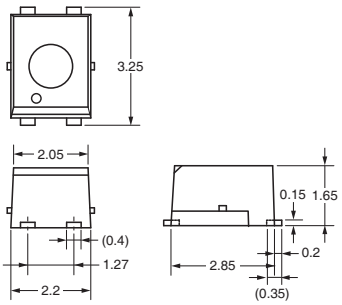
■Dimensions

(Unit: mm)

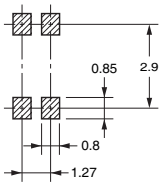
Surface-mounting Terminals

Weight: 0.03g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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