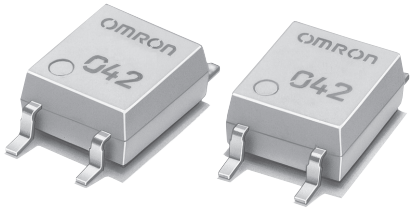
MOS FET Relays
G3VM-81GR1

New MOS FET Relay Designed for Switching Minute and Analog Signals, SOP Package.

- New model for 80-V loads.
- Low C × R of 32.5 pF•Ω.
- Dielectric strength of 1,500 Vrms between I/O.
- RoHS compliant



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

■ Application Examples

- Broadband systems
- Measurement devices and Data loggers
- Amusement machines

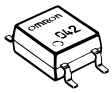
■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	80 VAC	**G3VM-81GR1**	100	---
			G3VM-81GR1(TR)	---	2,500

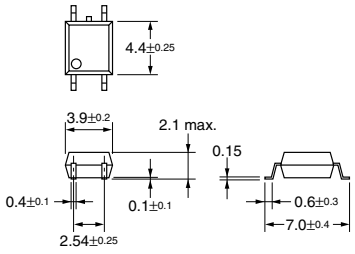
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-81GR1



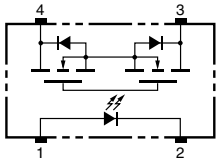
Note: The actual product is marked differently from the image shown here.



Weight: 0.1 g

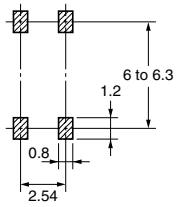
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-81GR1



■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-81GR1



■ Absolute Maximum Ratings (Ta = 25°C)

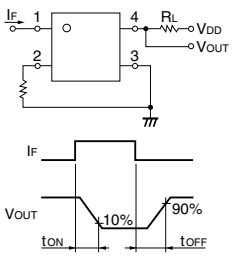
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	1	A	
	LED forward current reduction rate	ΔI_F/°C	–0.5	mA/°C	$T_a \geq 25$°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_j	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	80	V	
	Continuous load current	I_O	200	mA	
	ON current reduction rate	ΔI_O/°C	–2.0	mA/°C	$T_a \geq 25$°C
	Connection temperature	T_j	125	°C	
Dielectric strength between input and output (See note 1.)		V_{I-O}	1,500	V_{rms}	AC for 1 min
Ambient operating temperature		T_a	–20 to +85	°C	With no icing or condensation
Storage temperature		T_{stg}	–40 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	1.0	1.15	1.3	V	I_F = 10 mA
	Reverse current	I_R	---	---	10	μA	V_R = 5 V
	Capacity between terminals	C_T	---	15	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	I_{FT}	---	---	3	mA	I_O = 200 mA
Output	Maximum resistance with output ON	R_{ON}	---	5	8	Ω	I_F = 5 mA, I_O = 200 mA
	Current leakage when the relay is open	I_{LEAK}	---	0.5	1	nA	V_{OFF} = 80 V, T_a = 50°C
	Capacity between terminals	C_{OFF}	---	6.5	11	pF	V = 0, f = 100 MHz, t < 10 s
Capacity between I/O terminals		C_{I-O}	---	0.7	---	pF	f = 1 MHz, V_s = 0 V
Insulation resistance between I/O terminals		R_{I-O}	1,000	---	---	MΩ	V_{I-O} = 500 VDC, $R_{oH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.13	0.5	ms	I_F = 5 mA, R_L = 200 Ω, V_{DD} = 10 V (See note 2.)
Turn-OFF time		t_{OFF}	---	0.17	0.5	ms	

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



■ Recommended Operating Conditions

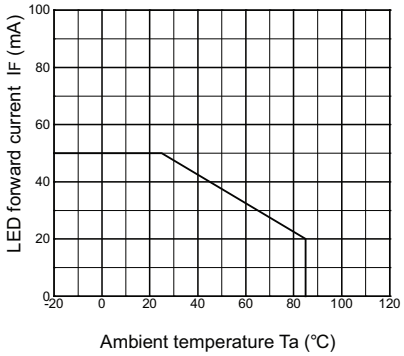
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	64	V
Operating LED forward current	I_F	5	---	30	mA
Continuous load current (AC peak/DC)	I_O	---	---	200	mA
Operating temperature	T_a	25	---	60	°C

■ Engineering Data

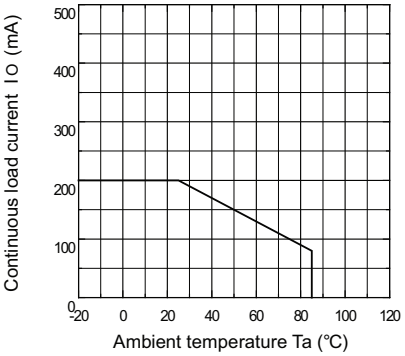
LED forward current vs. Ambient temperature

I_F - Ta



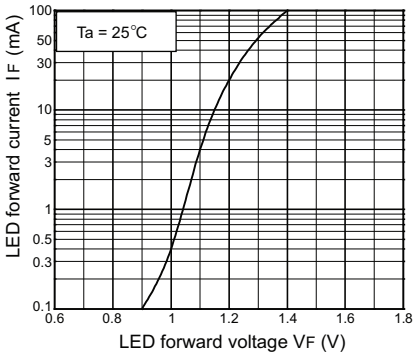
Continuous load current vs. Ambient temperature

I_O - Ta



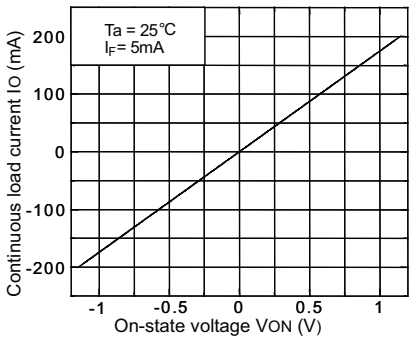
LED forward current vs. LED forward voltage

I_F - V_F



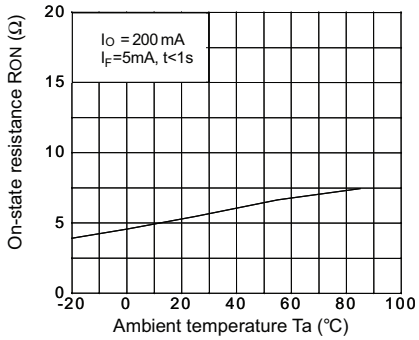
Continuous load current vs. On-state voltage

I_O - V_{ON}



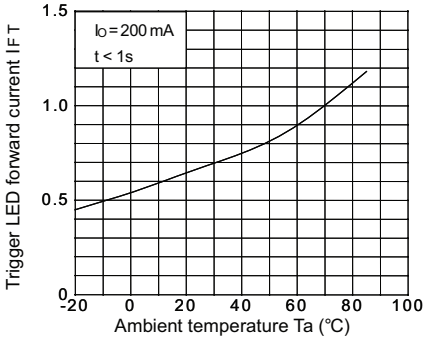
On-state resistance vs. Ambient temperature

R_{ON} - Ta



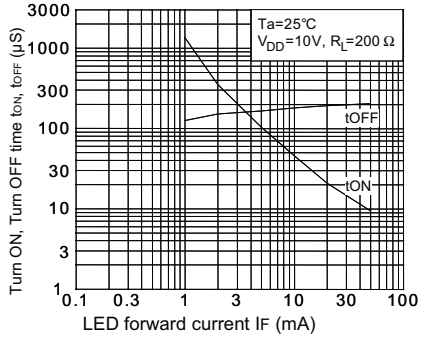
Trigger LED forward current vs. Ambient temperature

I_{FT} - Ta



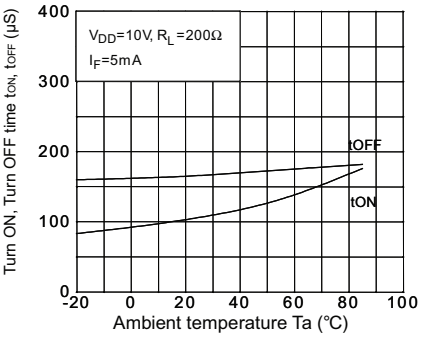
Turn ON, Turn OFF time vs. LED forward current

t_{ON}, t_{OFF} - I_F



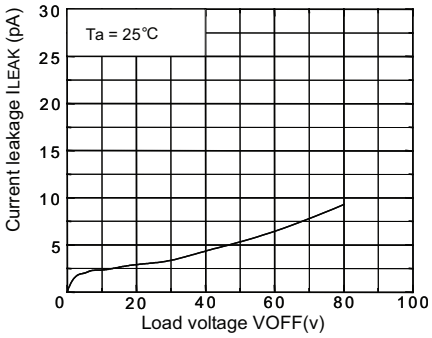
Turn ON, Turn OFF time vs. Ambient temperature

t_{ON}, t_{OFF} - Ta



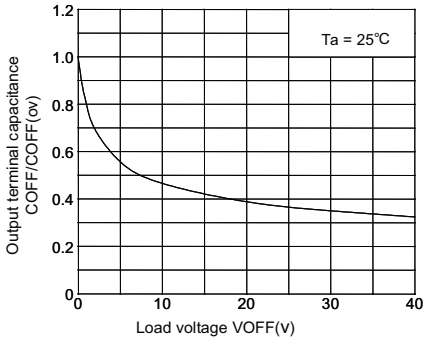
Current leakage vs. Load voltage

I_{LEAK} – V_{OFF}



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

C_{OFF} - V_{OFF}



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

OMRON ELECTRONIC COMPONENTS LLC
55 E. Commerce Drive, Suite B
Schaumburg, IL 60173
847-882-2288

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