MOS FET Relays
G3VM-81LR

World's Smallest SSOP Package MOS FET Relay* with Low Output Capacitance and ON Resistance (C×R = 37.5pF•Ω) in a 80-V Load Voltage Model.

- Turn-on time = 0.1 ms (typ.), Turn-off time = 0.15 ms (typ.)
- RoHS compliant

*Information correct as of May 2007, according to data obtained by OMRON.

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

■ Application Examples

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers

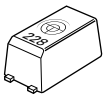
■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	80 VAC	**G3VM-81LR**	---
			G3VM-81LR(TR05)	500
			G3VM-81LR(TR)	1,500

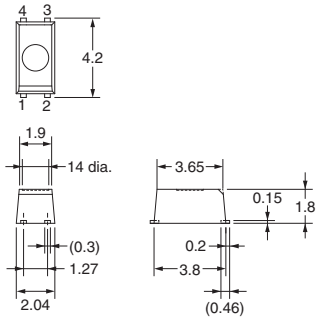
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-81LR



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

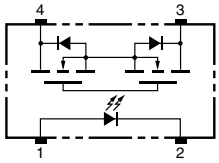


Note: A tolerance of ±0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

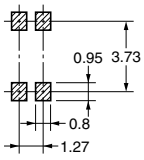
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-81LR



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

G3VM-81LR



■ Absolute Maximum Ratings (Ta = 25°C)

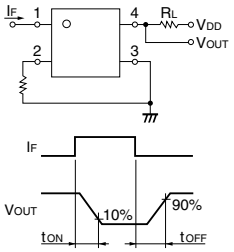
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	Repetitive peak LED forward current	I_{FP}	---	A	100 μs pulses, 100 pps
	LED forward current reduction rate	ΔI_F/°C	–0.5	mA/°C	$T_a \geq 25$°C
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_j	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	80	V	
	Continuous load current	I_O	120	mA	
	ON current reduction rate	ΔI_O/°C	–1.2	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}	---	2	5	mA	I_O = 120 mA
Output	Maximum resistance with output ON	R_{ON}	---	7.5	12	Ω	I_F = 10 mA, I_O = 120 mA, t = 10 ms
	Current leakage when the relay is open	I_{LEAK}	---	100	200	pA	V_{OFF} = 80 V, T_a = 60°C
	Capacity between terminals	C_{OFF}	---	5	7	pF	V = 0, f = 100 MHz, t < 1 s
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}	1,000	---	---	MΩ	V_{I-O} = 500 VDC, $R_{oH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.1	0.25	ms	I_F = 10 mA, R_L = 200 Ω, V_{DD} = 20 V (See note 2.)
Turn-OFF time		t_{OFF}	---	0.15	0.2	ms	

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



■ Recommended Operating Conditions

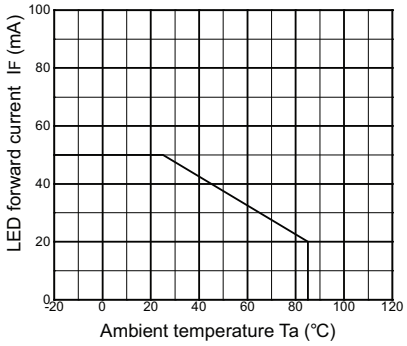
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	64	V
Operating LED forward current	I_F	10	---	30	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_a	25	---	60	°C

■ Engineering Data

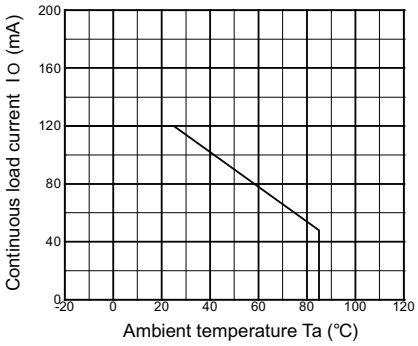
LED forward current vs. Ambient temperature

IF - Ta



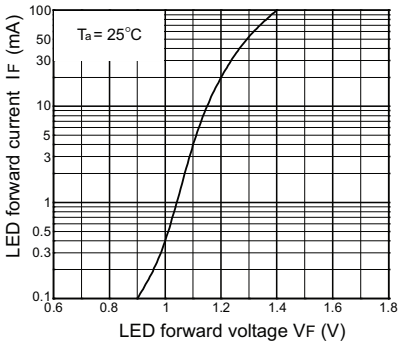
Continuous load current vs. Ambient temperature

IO - Ta



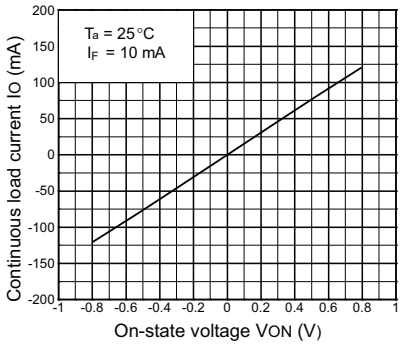
LED forward current vs. LED forward voltage

IF - VF



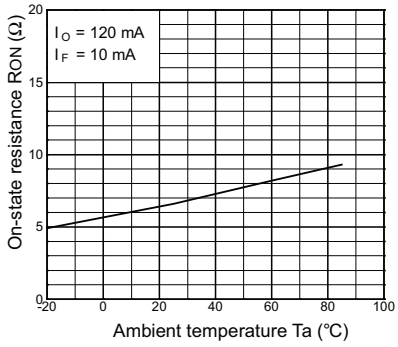
Continuous load current vs. On-state voltage

IO - VON



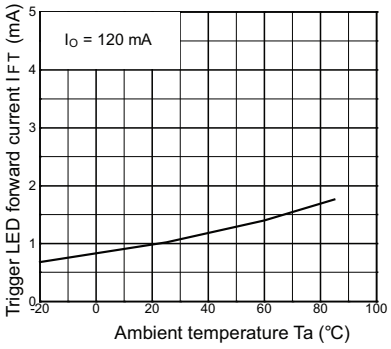
On-state resistance vs. Ambient temperature

RON - Ta



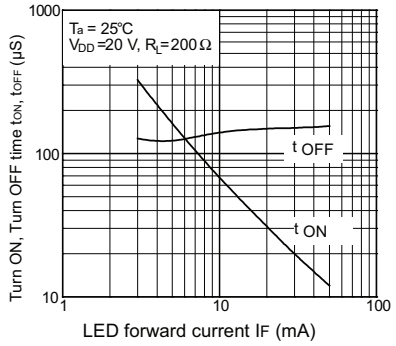
Trigger LED forward current vs. Ambient temperature

IFT - Ta



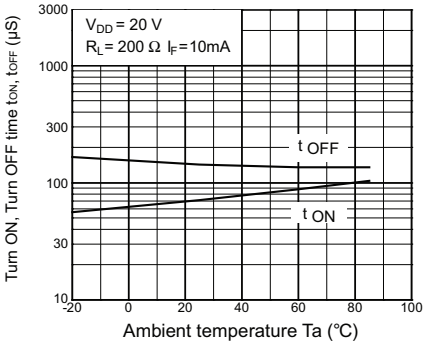
Turn ON, Turn OFF time vs. LED forward current

tON, tOFF - IF



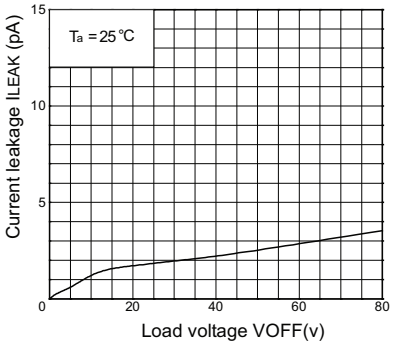
Turn ON, Turn OFF time vs. Ambient temperature

tON, tOFF - Ta



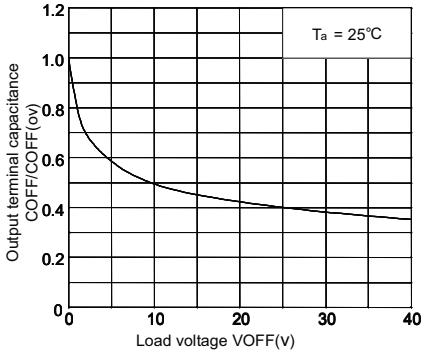
Current leakage vs. Load voltage

I LEAK – VOFF



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

COFF - VOFF



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

OMRON ON-LINE
Global - http://www.omron.com
USA - http://www.components.omron.com

Cat. No. X302-E-1 12/10 Specifications subject to change without notice Printed in USA