

# MOS FET Relays G3VM-41LR3

**World's Smallest SSOP Package MOS FET Relay\* with Low Output Capacitance and ON Resistance (C×R = 15pF•Ω) in a 40-V Load Voltage Model.**

- Output capacitance of 0.6 pF (typical) allows high frequency applications.
- 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 and Data loggers
- Broadband systems

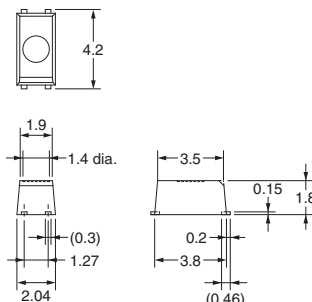
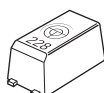
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41LR3	---
			G3VM-41LR3(TR)	1,500

### Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-41LR3



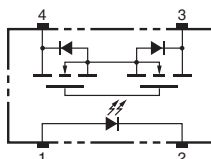
**Note:** The actual product is marked differently from the image shown here.

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

Weight: 0.03 g

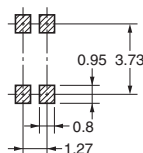
### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-41LR3



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

#### G3VM-41LR3



■ Absolute Maximum Ratings (Ta = 25°C)

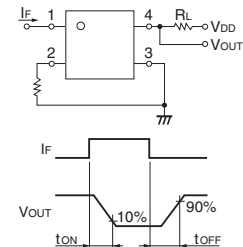
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	$I_F$	50	mA	
	Repetitive peak LED forward current	$I_{FP}$	1	A	100 $\mu$ s plus, 100 pps
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_j$	125	°C	
Output	Load voltage (AC peak/DC)	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	80	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-0.8	mA/°C	$T_a \geq 25^\circ\text{C}$
	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		$T_{sig}$	-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	$I_F = 10 \text{ mA}$
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	---	15	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	---	4	mA	$I_O = 80 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	25	35	$\Omega$	$I_F = 5 \text{ mA}, I_O = 80 \text{ mA}, t = 10 \text{ ms}$
	Current leakage when the relay is open	$I_{LEAK}$	---	0.2	1.0	nA	$V_{OFF} = 30 \text{ V}, T_a = 50^\circ\text{C}$
	Capacity between terminals	$C_{OFF}$	---	0.6	1.4	pF	$V = 0, f = 100 \text{ MHz}, t < 1 \text{ s}$
Capacity between I/O terminals		$C_{I-O}$	---	0.8	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance between I/O terminals		$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500 \text{ VDC}, R_{OH} \leq 60\%$
Turn-ON time		$t_{ON}$	---	0.03	0.5	ms	$I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{DD} = 20 \text{ V}$ (See note 2.)
Turn-OFF time		$t_{OFF}$	---	0.12	0.5	ms	

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



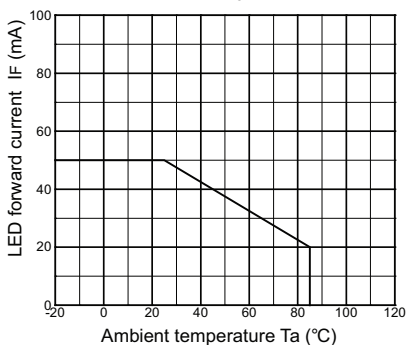
■ Recommended Operating Conditions

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

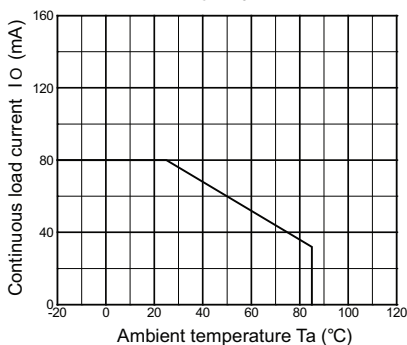
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	80	mA
Operating temperature	$T_a$	25	---	60	°C

■ Engineering Data

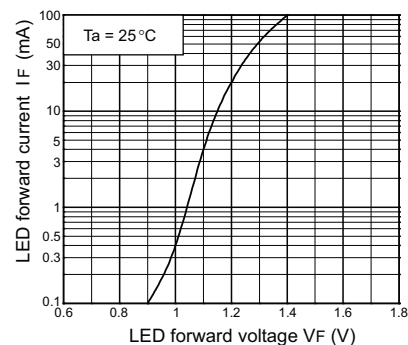
**LED forward current vs. Ambient temperature**  
 $I_F - T_a$



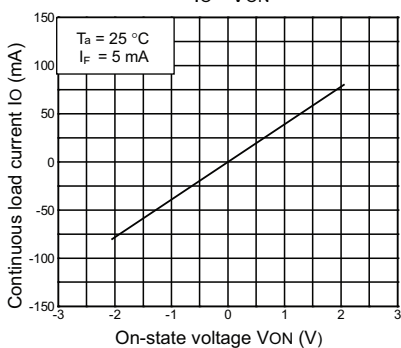
**Continuous load current vs. Ambient temperature**  
 $I_O - T_a$



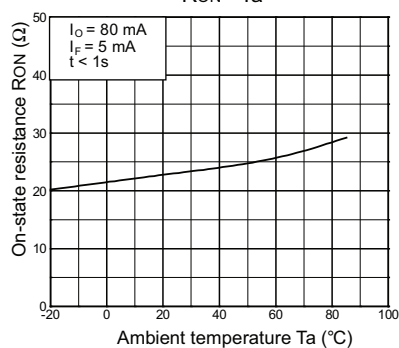
**LED forward current vs. LED forward voltage**  
 $I_F - V_F$



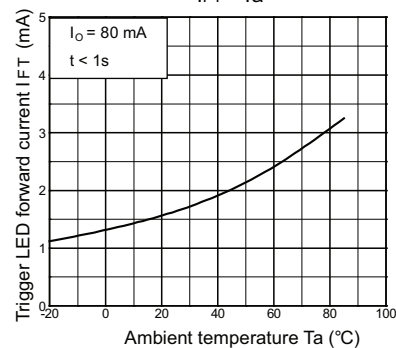
**Continuous load current vs. On-state voltage**  
 $I_O - V_{ON}$



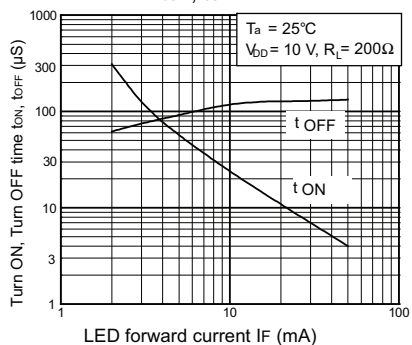
**On-state resistance vs. Ambient temperature**  
 $R_{ON} - T_a$



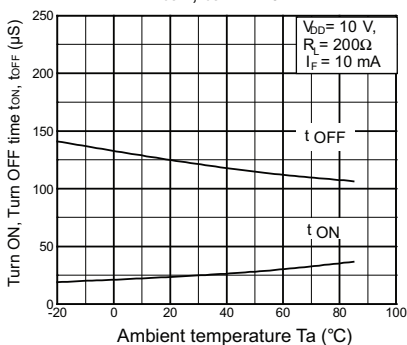
**Trigger LED forward current vs. Ambient temperature**  
 $I_{FT} - T_a$



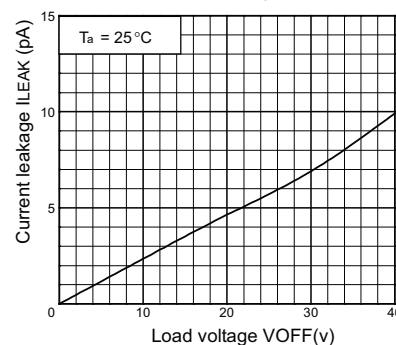
**Turn ON, Turn OFF time vs. LED forward current**  
 $t_{ON}, t_{OFF} - I_F$



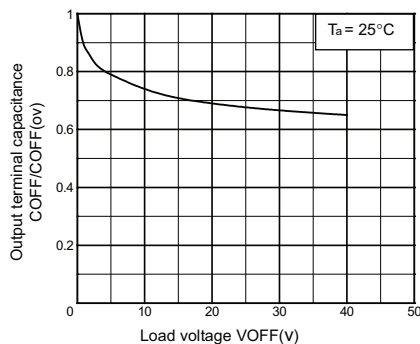
**Turn ON, Turn OFF time vs. Ambient temperature**  
 $t_{ON}, t_{OFF} - T_a$



**Current leakage vs. Load voltage**  
 $I_{LEAK} - V_{OFF}$



**Output terminal capacitance COFF/COFF(ov) vs. Load voltage**  
 $C_{OFF} - V_{OFF}$



MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows of small squares.

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  - Delivery and shipping dates are estimates only; and
  - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier or any claim related to pricing or other charges must be presented in detail in writing to Seller within 30 days of receipt of shipment.

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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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