

## MOS FET Relays

G3VM-41LR10

World's Smallest SSOP Package MOS FET Relay ( $C_{OFF}$  (typical): 0.45 pF,  $R_{ON}$  (typical): 12  $\Omega$ ) with Low Output Capacitance and ON Resistance ( $C \times R = 5 \text{ pF} \cdot \Omega$ ) in a 40-V Load Voltage Model

- Output capacitance of 0.45 pF (typical) allows high frequency applications.

**Note:** Information correct as of November 2005, according to data obtained by OMRON.

**RoHS compliant**

⚠ Refer to *Common precautions*.

### Application Examples

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

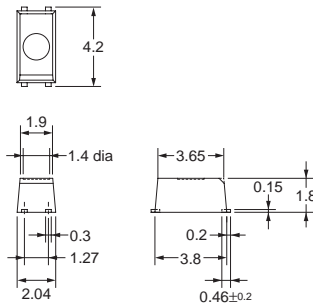
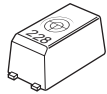
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Minimum packaging unit
				Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41LR10	---
			G3VM-41LR10(TR)	1,500

### Dimensions

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

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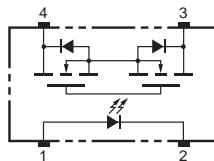
**Note:** A tolerance of  $\pm 0.1$  mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

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

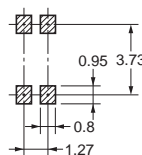
### Terminal Arrangement/Internal Connections (Top View)

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

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### Absolute Maximum Ratings (Ta = 25°C)

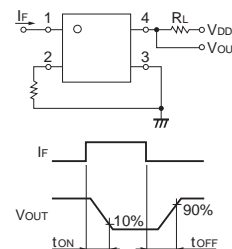
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	30	mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C	Ta ≥ 25°C
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_j$	125	°C	
Output	Output dielectric strength	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C	Ta ≥ 25°C
	Connection temperature	$T_j$	125	°C	
Dielectric strength between input and output (See note 1.)		$V_{I-O}$	1,500	Vrms	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	$V_F$	1.15	1.35	1.45	V	$I_F = 5 \text{ mA}$
	Reverse current	$I_R$	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	$C_T$	---	70	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	---	3	mA	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	12	14	Ω	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}, t < 1 \text{ s}$
	Current leakage when the relay is open	$I_{LEAK}$	---	10	200	pA	$V_{OFF} = 35 \text{ V}, T_a = 25^\circ\text{C}$
	Capacity between terminals	$C_{OFF}$	---	0.45	0.8	pF	$V = 0, f = 100 \text{ MHz}, t = < 1 \text{ s}$
Capacity between I/O terminals		$C_{I-O}$	---	0.3	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance between I/O terminals		$R_{I-O}$	1,000	---	---	MΩ	$V_{I-O} = 500 \text{ VDC}, \text{RoH} \leq 60\%$
Turn-ON time		$t_{ON}$	---	---	0.2	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 10 \text{ V}$ (See note 2.)
Turn-OFF time		$t_{OFF}$	---	---	0.3	ms	

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



### Recommended Operating Conditions

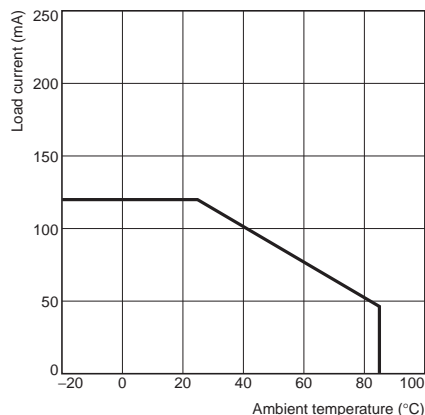
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Output dielectric strength	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	---	---	20	mA
Continuous load current	$I_O$	---	---	120	mA
Operating temperature	$T_a$	25	---	60	°C

### Engineering Data

#### Load Current vs. Ambient Temperature

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### Safety Precautions

Refer to *Common precautions* for all G3VM models.