

# MOS FET Relays G3VM-41GR7

**New MOS FET Relays with Low Output Capacitance and ON Resistance ( $C \times R = 10.7 \text{ pF} \cdot \Omega$ ) in a 40-V Load Voltage, SOP Package.**

- $C_{OFF} = 1.65 \text{ pF}$  (typical),  $R_{ON} = 6.5 \Omega$  (typical)
- Leakage current of 1.0 nA max. (0.2 nA typ.) when relay is open.
- RoHS compliant

### Application Examples

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

### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41GR7	100	---
			G3VM-41GR7(TR)	---	2,500

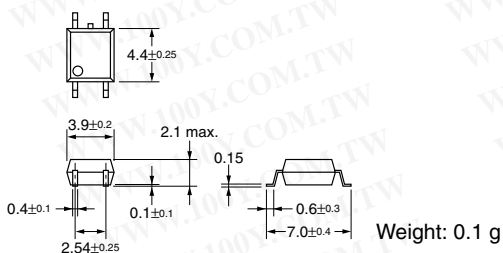
### Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### G3VM-41GR7

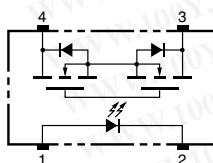


Note: The actual product is marked differently from the image shown here.



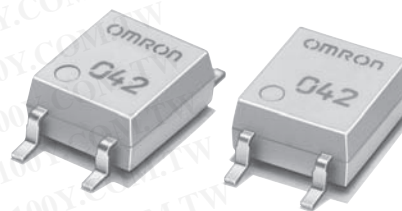
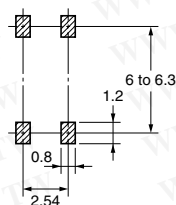
### Terminal Arrangement/Internal Connections (Top View)

#### G3VM-41GR7



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

#### G3VM-41GR7



**NEW**

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■ Absolute Maximum Ratings (Ta = 25°C)

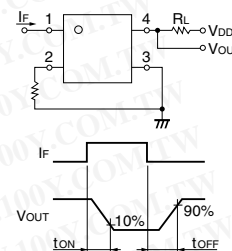
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	$I_F$	50	mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_j$	125	°C	
Output	Load voltage (AC peak/DC)	$V_{OFF}$	40	V	
	Continuous load current	$I_O$	120	mA	
	ON current reduction rate	$\Delta I_O/^\circ\text{C}$	-1.2	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
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 (10 s)		---	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	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	$R_{ON}$	---	6.5	9.5	$\Omega$	$I_F = 5 \text{ mA}, I_O = 120 \text{ mA}, t = 10 \text{ ms}$
	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	$C_{OFF}$	---	1.65	3.0	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	$I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{DD} = 10 \text{ V}$ (See note 2.)
Turn-OFF time		$t_{OFF}$	---	0.15	0.5	ms	

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



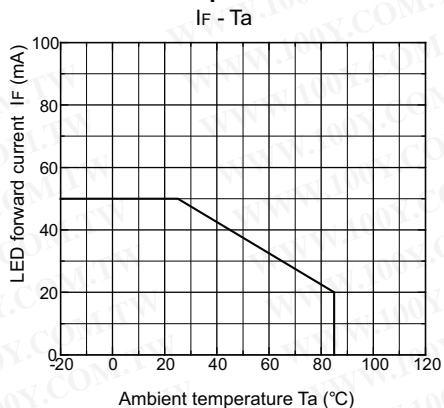
■ Recommended Operating Conditions

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

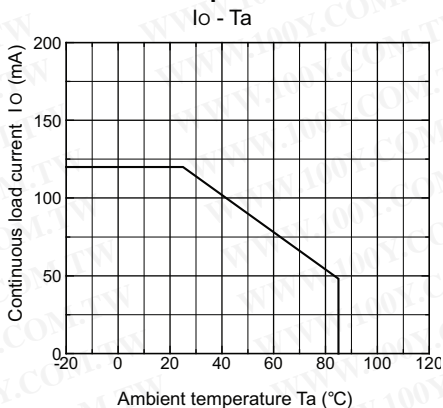
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	32	V
Operating LED forward current	$I_F$	10	---	30	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	120	mA
Operating temperature	$T_a$	25	---	60	°C

Engineering Data

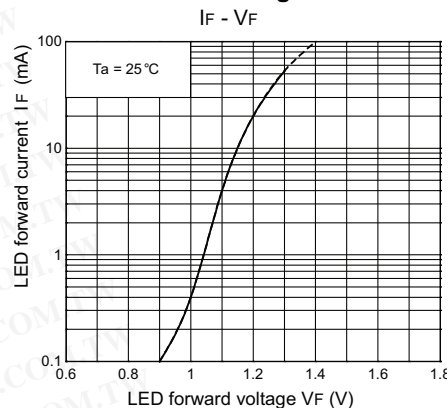
LED forward current vs. Ambient temperature



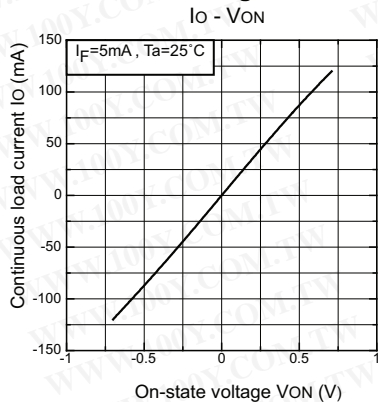
Continuous load current vs. Ambient temperature



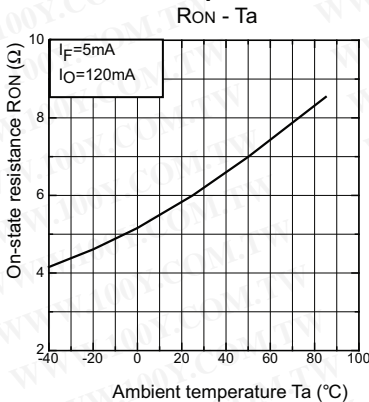
LED forward current vs. LED forward voltage



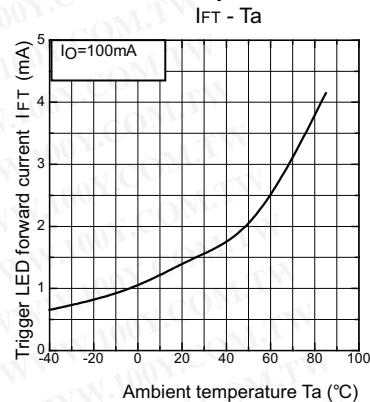
Continuous load current vs. On-state voltage



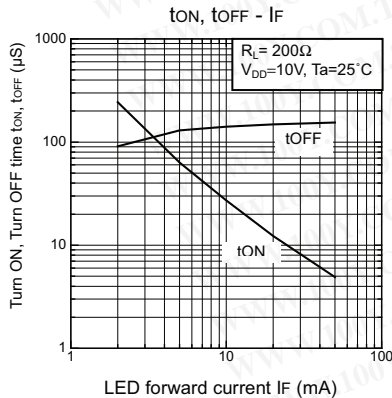
On-state resistance vs. Ambient temperature



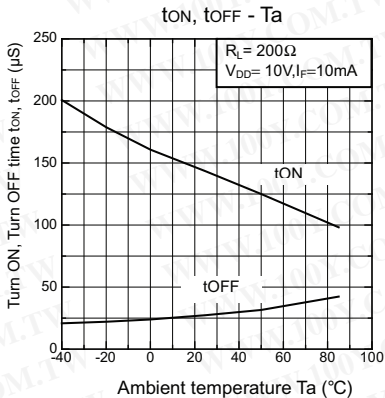
Trigger LED forward current vs. Ambient temperature



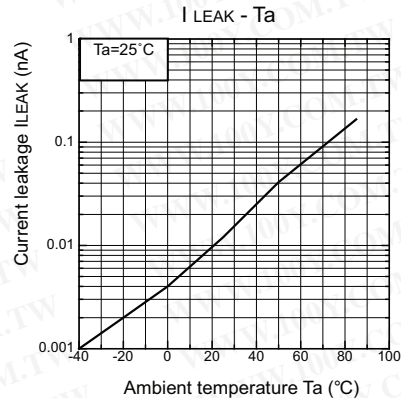
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



MEMO

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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.

**OMRON**

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