

# MOS FET Relays

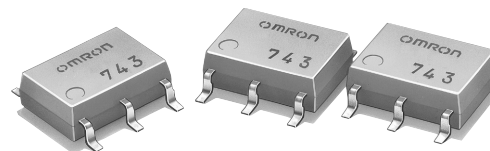
## G3VM-61HR

**Low 40-mΩ ON Resistance. High-power, 2.3-A Switching with a 60-V Load Voltage, SOP Package.**

- Continuous load current of 2.3 A (connection C = 4.6 A).
- Dielectric strength of 1,500 Vrms between I/O.
- RoHS Compliant

### ■ Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Industrial equipment



**NEW**

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

### ■ List of Models

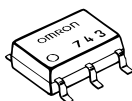
Contact form	Terminals	Load voltage (peak value) (See note.)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	60 V	G3VM-61HR	75	---
			G3VM-61HR(TR)	---	2,500

**Note:** The AC peak and DC value is given for the load voltage.

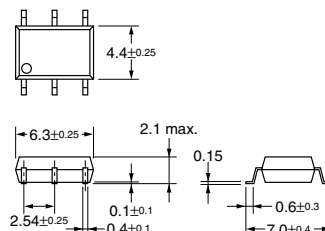
### ■ Dimensions

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

#### G3VM-61HR



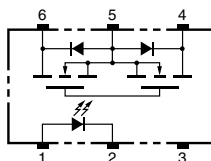
**Note:** The actual product is marked differently from the image shown here.



Weight: 0.13 g

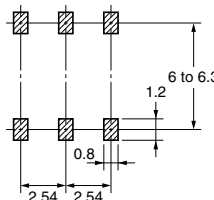
### ■ Terminal Arrangement/Internal Connections (Top View)

#### G3VM-61HR



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

#### G3VM-61HR

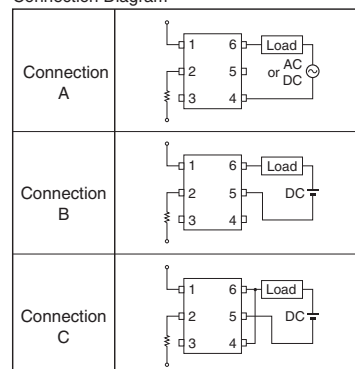


## Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current		I <sub>F</sub>	30	mA	
	LED forward current reduction rate		Δ I <sub>F</sub> /°C	−0.3	mA/°C	T <sub>a</sub> ≥ 25°C
	LED reverse voltage		V <sub>R</sub>	5	V	
	Connection temperature		T <sub>j</sub>	125	°C	
Output	Load voltage (AC peak/DC)		V <sub>OFF</sub>	60	V	
	Continuous load current	Connection A	I <sub>O</sub>	2.3	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B		2.3		
		Connection C		4.6		
	ON current reduction rate	Connection A	Δ I <sub>O</sub> /°C	−30.7	mA/°C	T <sub>a</sub> ≥ 50°C
		Connection B		−30.7		
		Connection C		−61.3		
	Pulse on current		I <sub>OP</sub>	7	A	t=100ms
	Connection temperature		T <sub>j</sub>	125	°C	
Dielectric strength between input and output (See note 1.)			V <sub>I-O</sub>	1,500	V <sub>rms</sub>	AC for 1 min
Operating temperature			T <sub>a</sub>	−40 to +85	°C	With no icing or condensation
Storage temperature			T <sub>stg</sub>	−55 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.

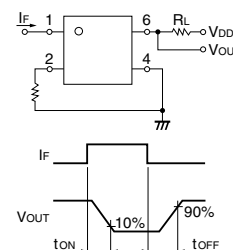
Connection Diagram



## Electrical Characteristics (Ta = 25°C)

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	$V_F$	1.18	1.33	1.48	V	$I_F = 10\text{ mA}$
	Reverse current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 5\text{ V}$
	Capacity between terminals	$C_T$	---	70	---	pF	$V = 0, f = 1\text{ MHz}$
	Trigger LED forward current	$I_{FT}$	---	0.4	3	mA	$I_O = 100\text{ mA}$
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	0.04	$\Omega$	$I_F = 5\text{ mA}, I_O = 2\text{ A}, t < 1\text{ s}$
		Connection B		---	0.02	$\Omega$	$I_F = 5\text{ mA}, I_O = 2\text{ A}, t < 1\text{ s}$
		Connection C		---	0.01	$\Omega$	$I_F = 5\text{ mA}, I_O = 4\text{ A}, t < 1\text{ s}$
	Current leakage when the relay is open	$I_{LEAK}$	---	---	10	nA	$V_{OFF} = 60\text{ V}$
Capacity between I/O terminals		$C_{I-O}$	---	0.8	---	pF	$f = 1\text{ MHz}, V_s = 0\text{ V}$
Insulation resistance		$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500\text{ VDC}, R_{oh} \leq 60\%$
Turn-ON time		$t_{ON}$	---	1.0	5.0	ms	$I_F = 5\text{ mA}, R_L = 200\ \Omega, V_{DD} = 20\text{ V}$ (See note 2.)
Turn-OFF time		$t_{OFF}$	---	0.15	1.0	ms	

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



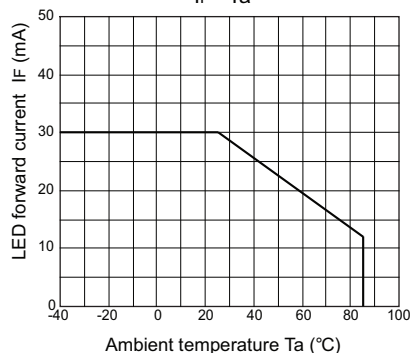
## Recommended Operating Conditions

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

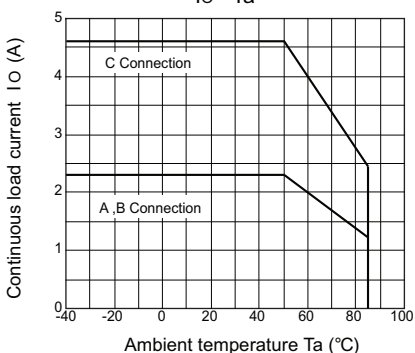
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	60	V
Operating LED forward current	$I_F$	5	7.5	20	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	1.8	A
Operating temperature	$T_a$	-20	---	65	°C

# ■ Engineering Data

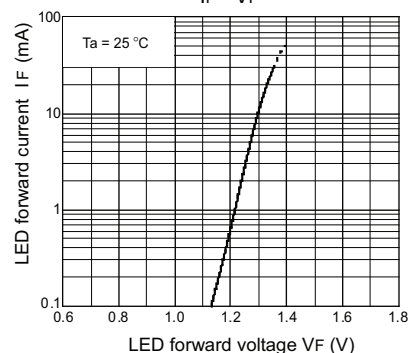
**LED forward current vs.  
Ambient temperature**  
 $I_F - T_a$



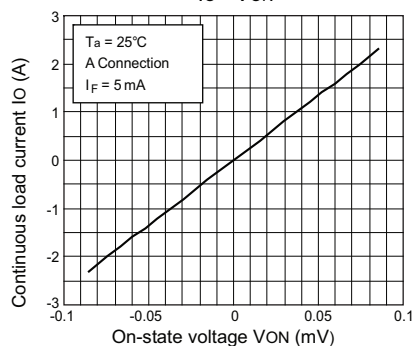
**Continuous load current vs.  
Ambient temperature**  
 $I_O - T_a$



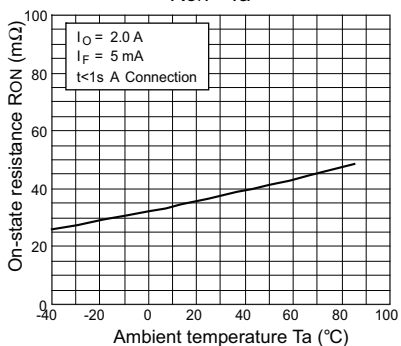
**LED forward current vs.  
LED forward voltage**  
 $I_F - V_F$



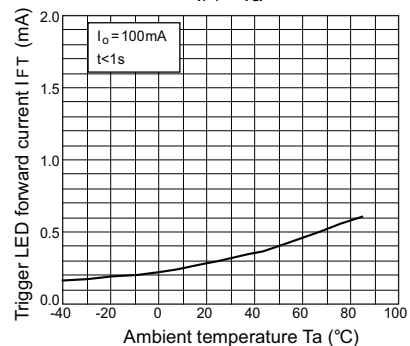
**Continuous load current vs.  
On-state voltage**  
 $I_O - V_{ON}$



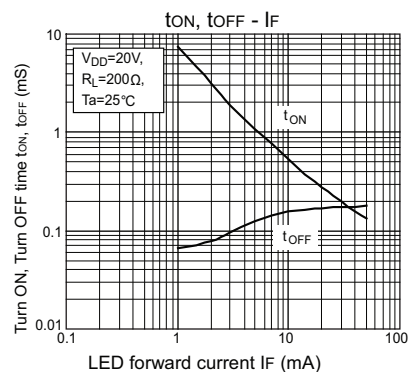
**On-state resistance vs.  
Ambient temperature**  
 $R_{ON} - T_a$



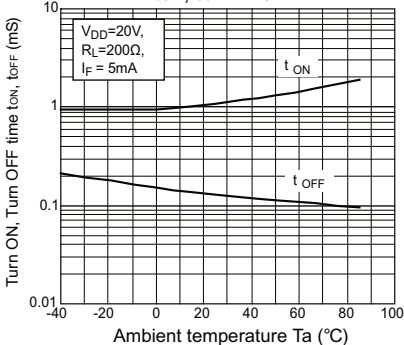
**Trigger LED forward current vs.  
Ambient temperature**  
 $I_{FT} - T_a$



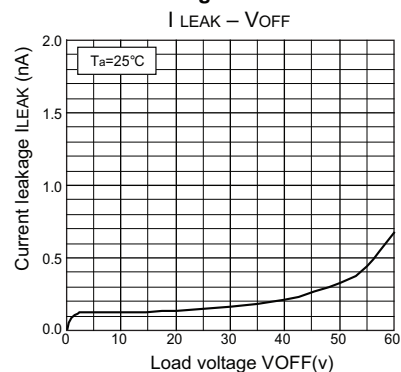
**Turn ON, Turn OFF time vs.  
LED forward current**  
 $t_{ON}, t_{OFF} - I_F$



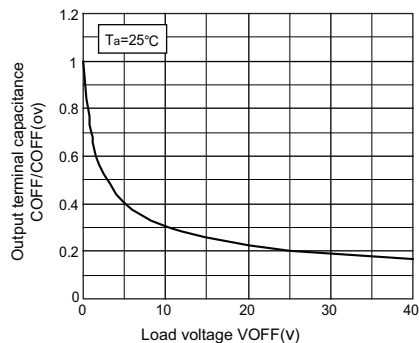
**Turn ON, Turn OFF time vs.  
Ambient temperature**  
 $t_{ON}, t_{OFF} - T_a$



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



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



All sales are subject to Omron Electronic Components LLC standard terms and conditions of sale, which can be found at [http://www.components.omron.com/components/web/webfiles.nsf/sales\\_terms.html](http://www.components.omron.com/components/web/webfiles.nsf/sales_terms.html)

**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**<sup>®</sup>

**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. G3VM-61HR\_1

02/11

Specifications subject to change without notice

Printed in USA