

# MOS FET Relays

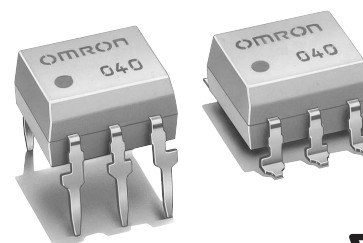
# G3VM-601BY/EY

## Analog-switching MOS FET Relay with a Dielectric Strength of 5 kVAC between I/O Using Optical Isolation

- Switches minute AC and DC analog signals.
- Peak load voltage of 600 V.
- Dielectric strength of 5 kVAC between I/O.
- RoHS Compliant.

### Application Examples

- Electronic automatic exchange systems
- FA systems
- Measurement devices
- Security systems



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

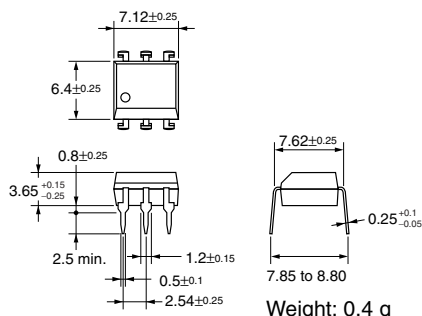
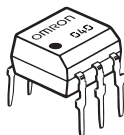
### List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	600 VAC	G3VM-601BY	50	---
	Surface-mounting terminals		G3VM-601EY		
			G3VM-601EY(TR)	---	1,500

### Dimensions

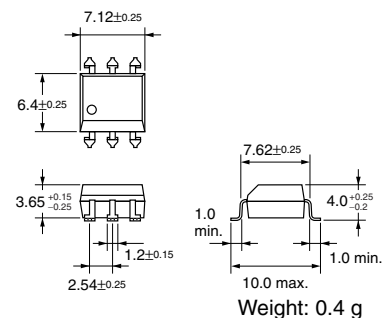
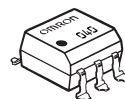
**Note:** All units are in millimeters unless otherwise indicated.

#### G3VM-601BY



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

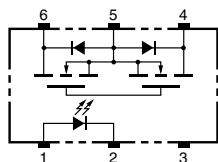
#### G3VM-601EY



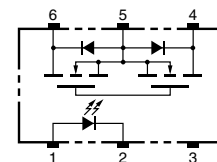
**Note:** The actual product is marked differently from the image shown here.

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

#### G3VM-601BY

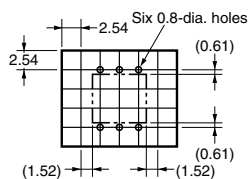


#### G3VM-601EY



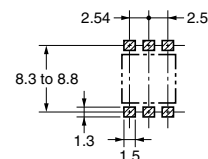
### PCB Dimensions (Bottom View)

#### G3VM-601BY



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

#### G3VM-601EY

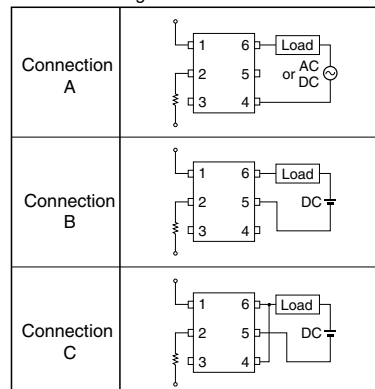


■ Absolute Maximum Ratings (Ta = 25°C)

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 pulses, 100 pps	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	Ta $\geq$ 25°C	
	LED reverse voltage	$V_R$	5	V		
	Connection temperature	$T_j$	125	°C		
Output	Load voltage (AC peak/DC)	$V_{OFF}$	600	V		
	Continuous load current	Connection A	$I_O$	100	mA	
		Connection B		100		
		Connection C		200		
	ON current reduction rate	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-1.0	mA/°C	Ta $\geq$ 25°C
		Connection B		-1.0		
		Connection C		-2.0		
Connection temperature		$T_j$	125	°C		
Dielectric strength between input and output (See note 1.)		$V_{I-O}$	5,000	$V_{rms}$	AC for 1 min	
Operating temperature		$T_a$	-40 to +85	°C	With no icing or condensation	
Storage temperature		$T_{stg}$	-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.

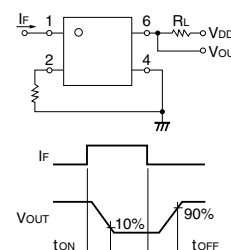
Connection Diagram



■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions		
Input	LED forward voltage	$V_F$	1.0	1.15	1.3	V	$I_F = 10$ mA		
	Reverse current	$I_R$	---	---	10	$\mu$ A	$V_R = 5$ V		
	Capacity between terminals	$C_T$	---	30	---	pF	$V = 0$ , $f = 1$ MHz		
	Trigger LED forward current	$I_{FT}$	---	1.6	5	mA	$I_O = 100$ mA		
Output	Maximum resistance with output ON	Connection A	$R_{ON}$	---	25	35	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA, $t < 1$ s	
				---	30	45	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA	
				---	23	35	$\Omega$	$I_F = 10$ mA, $I_O = 100$ mA	
	Current leakage when the relay is open	Connection B	$I_{LEAK}$	---	---	12	18	$\Omega$	$I_F = 10$ mA, $I_O = 200$ mA
					---	0.0005	1.0	$\mu$ A	$V_{OFF} = 600$ V
Capacity between terminals A Connection		$C_{OFF}$	---	120	---	pF	$V = 0$ , $f = 1$ MHz		
Capacity between I/O terminals		$C_{I-O}$	---	0.8	---	pF	$f = 1$ MHz, $V_s = 0$ V		
Insulation resistance		$R_{I-O}$	1,000	---	---	M $\Omega$	$V_{I-O} = 500$ VDC, $R_{oh} \leq 60\%$		
Turn-ON time		$t_{ON}$	---	0.2	1.5	ms	$I_F = 5$ mA, $R_L = 200 \Omega$ , $V_{DD} = 20$ V (See note 2.)		
Turn-OFF time		$t_{OFF}$	---	0.2	1.0	ms			

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



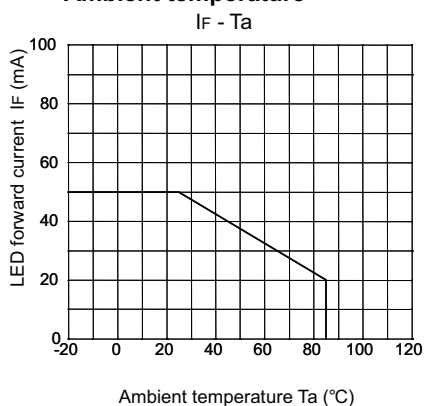
■ Recommended Operating Conditions

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

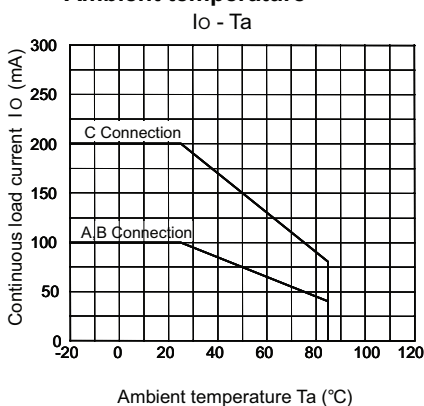
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	480	V
Operating LED forward current	$I_F$	7.5	15	25	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	100	mA
Operating temperature	$T_a$	-20	---	65	°C

■ Engineering Data

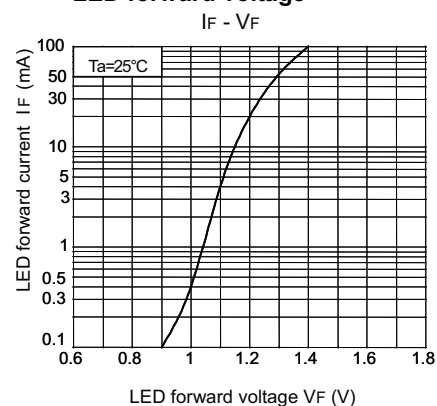
LED forward current vs. Ambient temperature



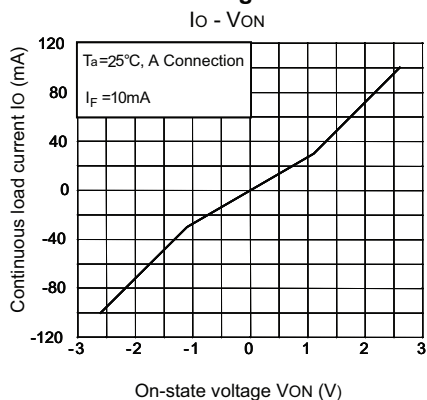
Continuous load current vs. Ambient temperature



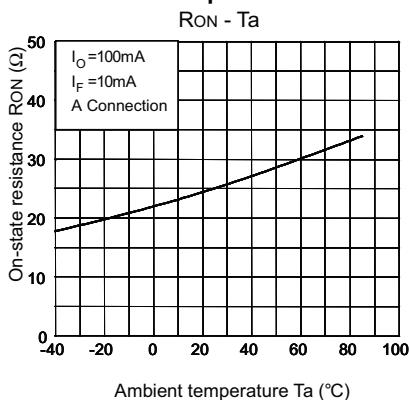
LED forward current vs. LED forward voltage



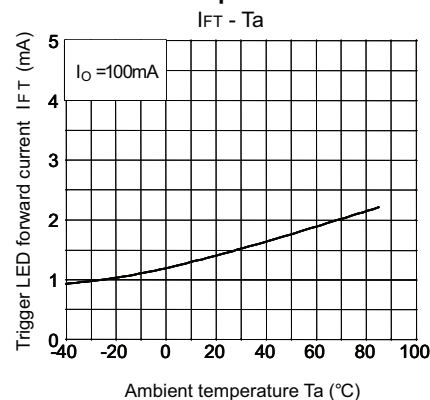
Continuous load current vs. On-state voltage



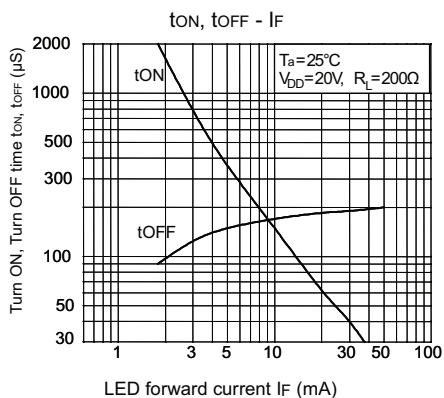
On-state resistance vs. Ambient temperature



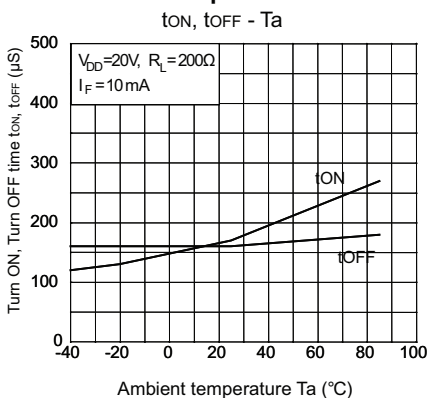
Trigger LED forward current vs. Ambient temperature



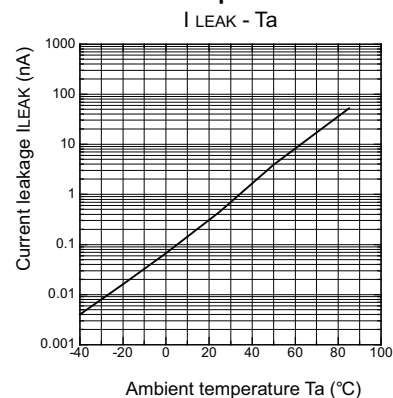
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



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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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