G3VM-□BY/□EY

MOS FET Relays DIP 6-pin, High-dielectric-strength Type

MOS FET Relays in DIP 6-pin packages that achieve a dielectric strength of 5,000 VAC between I/O

- **Load voltage: 400 V or 600 V**

RoHS Compliant

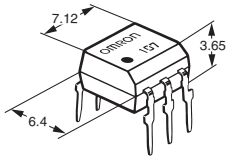
Note: The actual product is marked differently from the image shown here.

■Application Examples

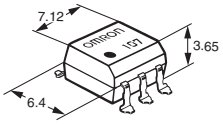
- **Electrical power unit**
- **Test & Measurement equipment**
- **Security equipment**
- **Industrial equipment**
- **Medical equipment**

■Package (Unit : mm, Average)

DIP 6-pin
PCB Terminals



Surface-mounting Terminals



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

■Model Number Legend

G3VM-□□□□□
1 2 3 4 5

1. Load Voltage
40 : 400 V
60 : 600 V

2. Contact form
1 : 1a (SPST-NO)

3. Package
B : DIP 6-pin with PCB terminals
E : DIP 6-pin with surface-mounting terminals

4. Additional functions
Y: Dielectric strength between I/O above 2,500 V type

5. Other informations
When specifications overlap, serial code is added in the recorded order.

■Ordering Information

Package	Contact form	Load voltage (peak value) ✻	Continuous load current (peak value) ✻		Stick packaging			Tape packaging	
					Model		Minimum package quantity	Model	Minimum package quantity
			Connection A, B	Connection C	PCB Terminals	Surface-mounting Terminals		Surface-mounting Terminals	
DIP6	1a (SPST-NO)	400 V	120 mA	240 mA	**G3VM-401BY**	**G3VM-401EY**	50 pcs.	**G3VM-401EY(TR)**	1,500 pcs.
		600 V	100 mA	200 mA	**G3VM-601BY**	**G3VM-601EY**		**G3VM-601EY(TR)**	

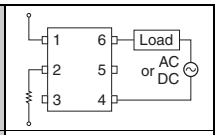
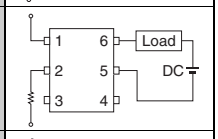
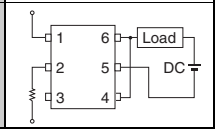
✻ The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

■Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	G3VM-401BY G3VM-401EY	G3VM-601BY G3VM-601EY	Unit	Measurement conditions
Input	LED forward current		I_F	50		mA	
	Repetitive peak LED forward current		I_{FP}	1		A	100 μs pulses, 100 pps
	LED forward current reduction rate		ΔI_F/°C	-0.5		mA/°C	Ta ≥ 25°C
	LED reverse voltage		V_R	5		V	
	Connection temperature		T_J	125		°C	
Output	Load voltage (AC peak/DC)		V_{OFF}	400	600	V	
	Continuous load current	Connection A	I_O	120	100	mA	Connection A: AC peak/DC Connection B and C: DC
		Connection B					
		Connection C		240	200		
	ON current reduction rate	Connection A	ΔI_O/°C	-1.2	-1.0	mA/°C	Ta ≥ 25°C
		Connection B		-2.4	-2.0		
		Connection C		20	35		
	Connection temperature		T_J	125		°C	
Dielectric strength between I/O ✻			V_{I-O}	5000		Vrms	AC for 1 min
Ambient operating temperature			Ta	-40 to +85		°C	With no icing or condensation
Ambient storage temperature			Tstg	-55 to +125		°C	
Soldering temperature			–	260		°C	10 s

✻ 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.

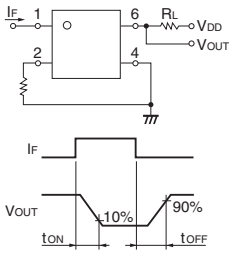
Connection Diagram

Connection A	
Connection B	
Connection C	

■Electrical Characteristics (Ta = 25°C)

Item			Symbol		G3VM-401BY G3VM-401EY	G3VM-601BY G3VM-601EY	Unit	Measurement conditions
Input	LED forward voltage		V_F	Minimum	1		V	I_F=10 mA
				Typical	1.15			
				Maximum	1.3			
	Reverse current		I_R	Maximum	10		μA	V_R=5 V
	Capacitance between terminals		C_T	Typical	30		pF	V=0, f=1 MHz
	Trigger LED forward current		I_{FT}	Typical	–	1.6	mA	I_O=Continuous load current ratings
				Maximum	3	5		
Output	Maximum resistance with output ON	Connection A	R_{ON}	Typical	17	30 (25)	Ω	G3VM-401BY/EY : I_F= 5 mA, I_O=120 mA G3VM-601BY/EY : I_F=10 mA, I_O=100 mA Values in parentheses are for t < 1 s.
		Connection B			11	23		G3VM-401BY/EY : I_F= 5 mA, I_O=120 mA G3VM-601BY/EY : I_F=10 mA, I_O=100 mA
		Connection C			6	12		G3VM-401BY/EY : I_F= 5 mA, I_O=240 mA G3VM-601BY/EY : I_F=10 mA, I_O=200 mA
		Connection A		Maximum	35	45 (35)		G3VM-401BY/EY : I_F= 5 mA, I_O=120 mA G3VM-601BY/EY : I_F=10 mA, I_O=100 mA Values in parentheses are for t < 1 s.
		Connection B			20	35		G3VM-401BY/EY : I_F= 5 mA, I_O=120 mA G3VM-601BY/EY : I_F=10 mA, I_O=100 mA
		Connection C			10	18		G3VM-401BY/EY : I_F= 5 mA, I_O=240 mA G3VM-601BY/EY : I_F=10 mA, I_O=200 mA
	Current leakage when the relay is open		I_{LEAK}	Maximum	1		μA	V_{OFF}=Load voltage ratings
	Capacitance between terminals		C_{OFF}	Typical	40	120	pF	V=0, f=1 MHz
Capacitance between I/O terminals			C_{I-O}	Typical	0.8		pF	f=1 MHz, V_S=0 V
Insulation resistance between I/O terminals			R_{I-O}	Minimum	1000		MΩ	V_{I-O}=500 VDC, RoH≤60%
				Typical	10^8			
Turn-ON time			t_{ON}	Typical	0.3	0.2	ms	G3VM-401BY/EY : I_F=5mA, R_L=200Ω, V_{DD}=20V ✻ G3VM-601BY/EY : I_F=10mA, R_L=200Ω, V_{DD}=20V ✻
				Maximum	1.0	1.5		
Turn-OFF time			t_{OFF}	Typical	0.1	0.2		
				Maximum	1.0			

✻ Turn-ON and Turn-OFF Times



■Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

Each item on this list is an independent condition, so it is not simultaneously satisfy several conditions.

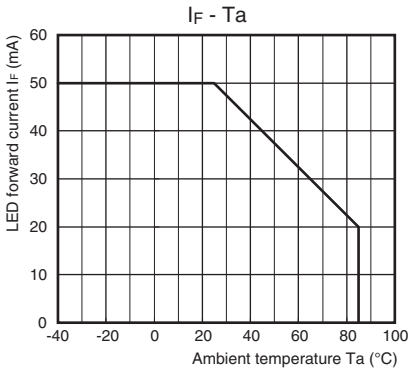
Item	Symbol		G3VM-401BY G3VM-401EY	G3VM-601BY G3VM-601EY	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	320	480	V
Operating LED forward current	I_F	Minimum	5	7.5	mA
		Typical	7.5	15	
		Maximum	25		
Continuous load current (AC peak/DC)	I_O	Maximum	120	100	
Ambient operating temperature	Ta	Minimum	-20		°C
		Maximum	65		

■Spacing and Insulation

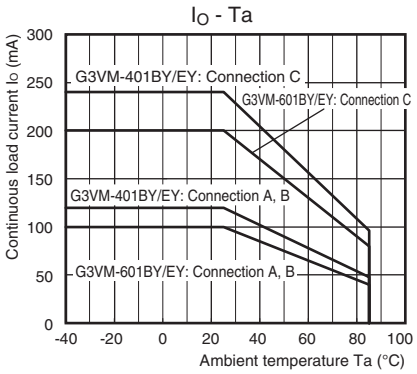
Item	Minimum	Unit
Creepage distances	7.0	mm
Clearance distances	7.0	
Internal isolation thickness	0.4	

■Engineering Data

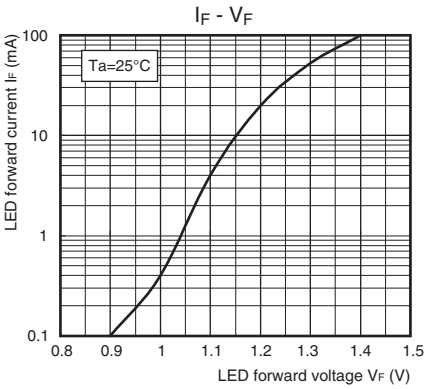
●LED forward current vs. Ambient temperature



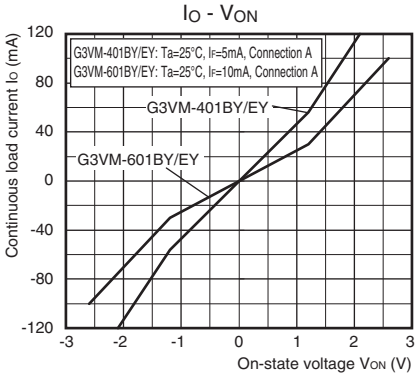
●Continuous load current vs. Ambient temperature



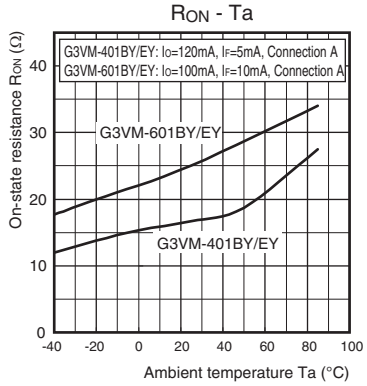
●LED forward current vs. LED forward voltage



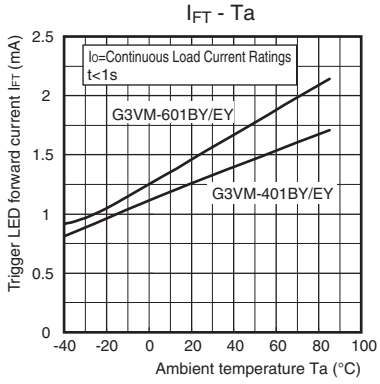
●Continuous load current vs. On-state voltage



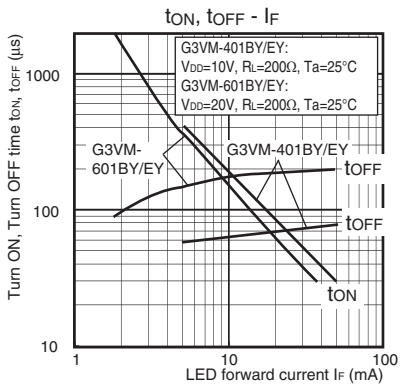
●On-state resistance vs. Ambient temperature



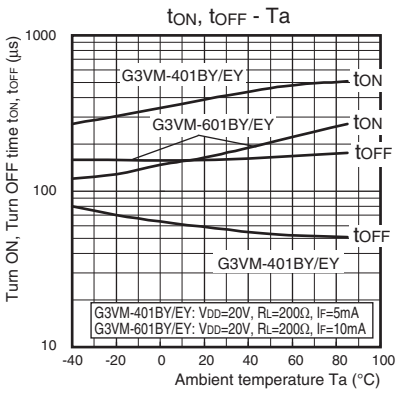
●Trigger LED forward current vs. Ambient temperature



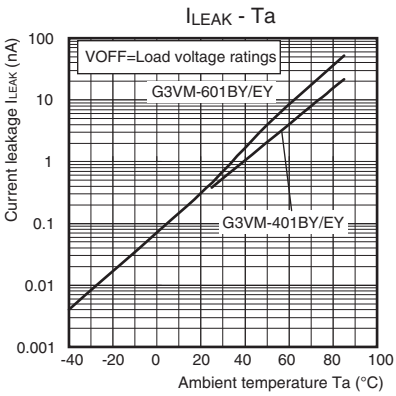
●Turn ON, Turn OFF time vs. LED forward current



●Turn ON, Turn OFF time vs. Ambient temperature



●Current leakage vs. Ambient temperature

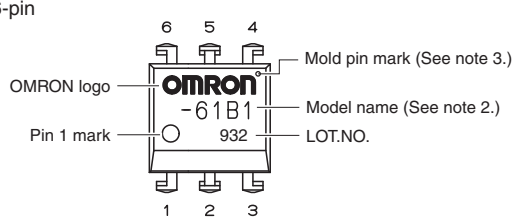


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

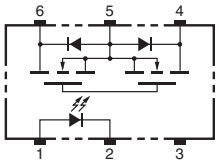
DIP (Dual Inline Package)

DIP 6-pin

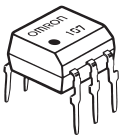


Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections (Top View)

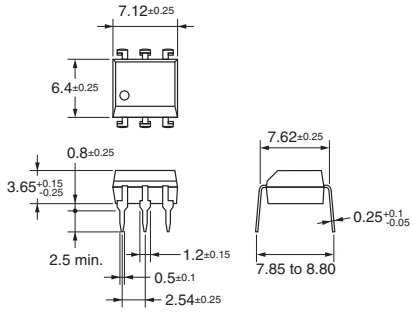


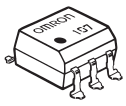
■Dimensions (Unit: mm)



PCB Terminals

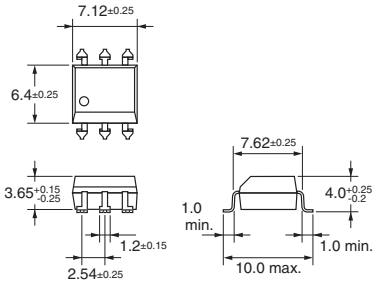
Weight: 0.4 g



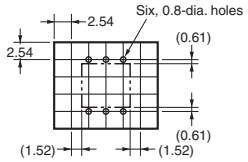


Surface-mounting Terminals

Weight: 0.4 g

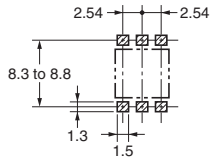


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

■Approved Standards

UL recognized

Approved Standards	Contact form	File No.
UL (recognized)	1a (SPST-NO)	E80555

■Safety Precautions

• Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.

Please check each region's Terms & Conditions by region website.

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Regional Contact

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