

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

Application Examples

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

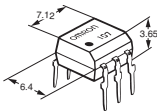


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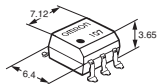
Note: The actual product is marked differently from the image shown here.

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

- Load Voltage**
40 : 400 V
60 : 600 V
- Contact form**
1 : 1a (SPST-NO)
- Package**
B : DIP 6-pin with PCB terminals
E : DIP 6-pin with surface-mounting terminals

- Additional functions**
Y : Dielectric strength between I/O above 2,500 V type
- 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	
			Connection A, B	Connection C	Model	Minimum package quantity	Model	Minimum package quantity	
DIP6	1a (SPST-NO)	400 V	120 mA	240 mA	PCB Terminals	Surface-mounting Terminals	50 pcs.	Surface-mounting Terminals	1,500 pcs.
		600 V	100 mA	200 mA	G3VM-401BY	G3VM-401EY		G3VM-401EY(TR)	
					G3VM-601BY	G3VM-601EY		G3VM-601EY(TR)	

* The AC peak and DC value are given for the load voltage and continuous load current.

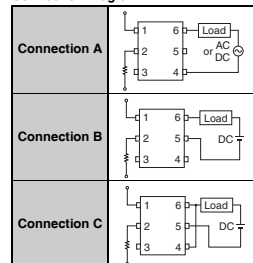
Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	G3VM-401BY G3VM-401EY	G3VM-601BY G3VM-601EY	Unit	Measurement conditions	
Input	LED forward current	If	50	mA		
	Repetitive peak LED forward current	Ifp	1	A	100 μs pulses, 100 pps	
	LED forward current reduction rate	ΔIf/°C	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	Vr	5	V		
	Connection temperature	Tj	125	°C		
Output	Load voltage (AC peak/DC)		400	600	V	
	Continuous load current	Connection A	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	-1.2	-1.0	mA/°C	Ta ≥ 25°C
		Connection B	-2.4	-2.0		
		Connection C	20	35		
Connection temperature	Tj	125	°C			
Dielectric strength between I/O (See note 1.)	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		

Note: 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.

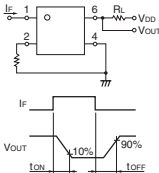
Connection Diagram



Electrical Characteristics (Ta = 25°C)

Item		Symbol	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	R _{ON}	Typical	Connection A	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. G3VM-401BY/EY : I _F = 5 mA, I _o =120 mA G3VM-601BY/EY : I _F = 10 mA, I _o =100 mA G3VM-401BY/EY : I _F = 5 mA, I _o =240 mA G3VM-601BY/EY : I _F = 10 mA, I _o =200 mA Values in parentheses are for t < 1 s. G3VM-401BY/EY : I _F = 5 mA, I _o =120 mA G3VM-601BY/EY : I _F = 10 mA, I _o =100 mA G3VM-401BY/EY : I _F = 5 mA, I _o =240 mA G3VM-601BY/EY : I _F = 10 mA, I _o =200 mA
				Connection B	11	23		
				Connection C	6	12		
			Maximum	Connection A	35	45 (35)		
				Connection B	20	35		
				Connection C	10	18		
	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, RoHs60%		
		Typical	10 ⁶					
Turn-ON time	t _{ON}	Typical	0.3	0.2	ms	G3VM-401BY/EY : I _F =5mA, R _L =200Ω, V _{OD} =20V (See note 2.) G3VM-601BY/EY : I _F =10mA, R _L =200Ω, V _{OD} =20V (See note 2.)		
Maximum	1.0	1.5						
Turn-OFF time	t _{OFF}	Typical	0.1	0.2				
		Maximum	1.0					

Note: 2. 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.

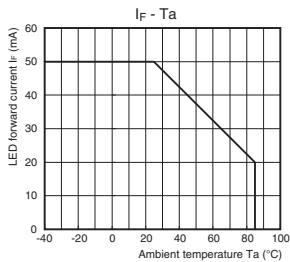
Item	Symbol		G3VM-401BY G3VM-401EY	G3VM-601BY G3VM-601EY	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	320	480	V
Operating LED forward current	I _F	Minimum	5	7.5	mA
		Typical	7.5	15	
		Maximum		25	
Continuous load current (AC peak/DC)	I _o	Maximum	120	100	
Ambient operating temperature	T _a	Minimum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

Spacing and Insulation

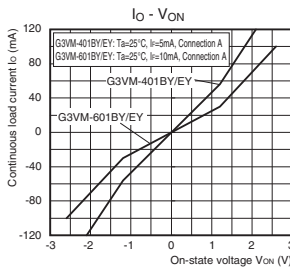
Item	Minimum	Unit
Creepage distances	7.0	mm
Clearance distances	7.0	
Internal isolation thickness	0.4	

Engineering Data

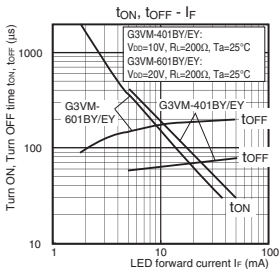
LED forward current vs. Ambient temperature



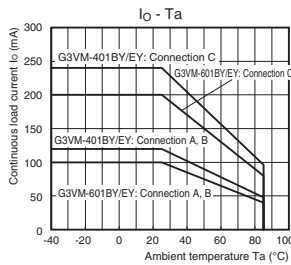
Continuous load current vs. On-state voltage



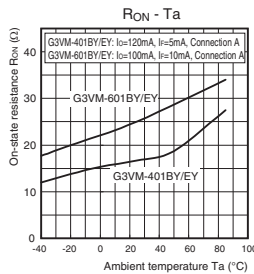
Turn ON, Turn OFF time vs. LED forward current



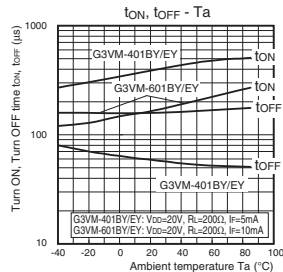
Continuous load current vs. Ambient temperature



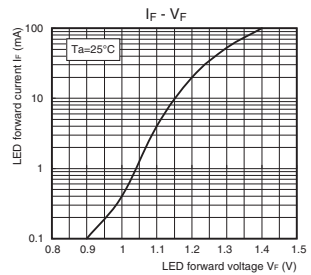
On-state resistance vs. Ambient temperature



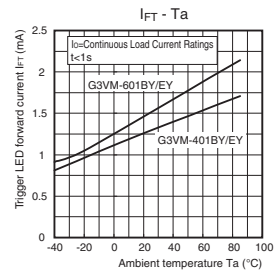
Turn ON, Turn OFF time vs. Ambient temperature



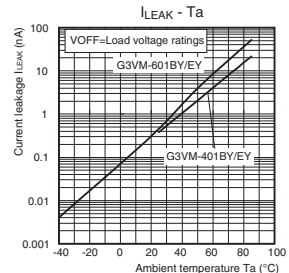
LED forward current vs. LED forward voltage



Trigger LED forward current vs. Ambient temperature



Current leakage vs. Ambient temperature

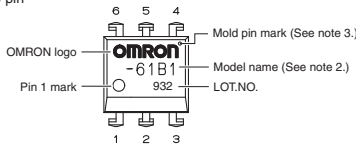


■ Appearance / Terminal Arrangement / Internal Connections

● Appearance

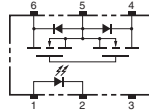
DIP (Dual Inline Package)

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)

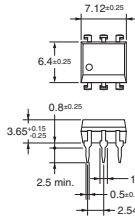


■ Dimensions (Unit: mm)



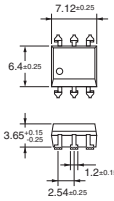
PCB Terminals

Weight: 0.4 g

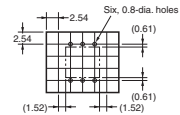


Surface-mounting Terminals

Weight: 0.4 g

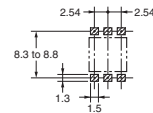


PCB Dimensions (BOTTOM VIEW)



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.

Introduction
General-purpose
High-voltage
Multi-contact pair (2a, 2b, and 1a1)
High-current and Low-ON-resistance
Small and High-strength
High-dielectric strength
Current-limiting
Low-ripple-surge and Low-ON-resistance
Small and High-strength
Certified Models with UL-Recognition

DIP
SOP
SSOP
USOP
VSON

G3VM-□BY/□EY