G3VM-41GR4 MOS FET Relays

MOS FET Relays with Low Output Capacitance and ON Resistance ($C \times R = 10pF \cdot \Omega$) in a 40-V Load Voltage Model.

 \bullet ON resistance of 2 Ω (typical) suppresses output signal attenuation.

• Leakage current of 1.0 nA max. when output relay is open.

RoHS compliant



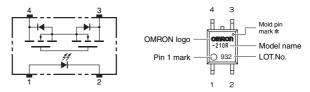
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Note: The actual product is marked differently from the image shown here.

Application Examples

- Semiconductor test equipment
- Test & Measurement equipment
- Communication equipment
- Data loggers

Terminal Arrangement/Internal Connections



Note:The actual product is marked differently from the image shown here. * The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

■ List of Models

Package type	Contact form	Terminals	Load voltage	Model	Minimum package quantity	
			(peak value) *	Model	Number per tube	Number per tape and reel
SOP4	1a (SPST-NO)	Surface-mounting Terminals	40 V	G3VM-41GR4	100	-
30F4				G3VM-41GR4 (TR)	-	2,500

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

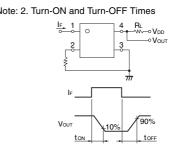
■ Absolute Maximum Ratings (Ta = 25°C)

	Item	Symbol	Rating	Unit	Measurement conditions		
	LED forward current	lf	50	mA			
Input	LED forward current reduction rate	∆IF/°C	-0.5	mA/°C	Ta ≥ 25°C		
<u>n</u>	LED reverse voltage	VR	5	V			
	Connection temperature	TJ	125	°C			
	Load voltage (AC peak/DC)	Voff	40	V			
nd	Continuous load current (AC peak/DC)	lo	250	mA			
Output	ON current reduction rate	∆lo/°C	-2.5	mA/°C	Ta ≥ 25°C		
Ŭ	Connection temperature	TJ	125	°C			
Dielectric strength between I/O (See note 1.)		VI-0	1500	Vrms	AC for 1 min	No	
Ambient operating temperature		Та	-20 to +85	°C	With no icing or condensation		
Ambient storage temperature		Tstg	-55 to +125	°C	With no icing or condensation		
Solo	lering temperature	-	260	°C	10 s		

e: 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	VF	1.0	1.15	1.3	V	IF = 10 mA	N
	Reverse current	IR	-	-	10	μA	VR = 5 V	
	Capacity between terminals	Ст	-	15	-	pF	V = 0, f = 1 MHz	
	Trigger LED forward current	IFT	-	-	4	mA	lo =100 mA	
Output	Maximum resistance with output ON	Ron	-	2.0	3.0	Ω	IF = 5 mA, lo = 250 mA, t < 1 s	
	Current leakage when the relay is open	ILEAK	-	-	1.0	nA	Voff = 30 V, Ta = 50 $^{\circ}$ C	
	Capacity between terminals	COFF	-	5	7	pF	V = 0, f = 100 MHz, t < 1 s	
Capacity between I/O terminals		CI-0	-	0.8	-	pF	f = 1 MHz, Vs = 0 V	
Insulation resistance between I/O terminals		Rı-o	1000	-	-	MΩ	VI-0 = 500 VDC, RoH \leq 60 %	1
Turn-ON time		ton	-	-	0.5	ms	$I_F = 10 \text{ mA}, \text{ RL} = 200 \Omega,$	
Turn-OFF time		toff	-	-	0.5	ms	VDD = 20 V (See note 2.)	



G3VM-41GR4

MOS FET Relays

Recommended Operating Conditions

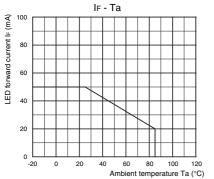
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	Vdd	-	-	32	V
Operating LED forward current	lF	10	-	30	mA
Continuous load current (AC peak/DC)	lo	-	-	250	mA
Ambient operating temperature	Та	25	-	60	°C

500

Engineering Data

LED forward current vs. Ambient temperature



Continuous load current lo (mA) 400 300 200 100 0 60 80 100 120 Ambient temperature Ta (°C) -20 0 20 40

Continuous load current vs. Ambient temperature

lo - Ta

Ron - Ta Rov (Ω) lo = 250 mA lr = 5 mA t < 1s resistance 4 3 On-state 2 0 -20 0 20 40 60 80 100 Ambi temperature Ta (°C)

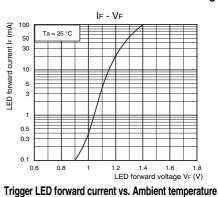
ton, toff - Ta

 $V_{DD} = 10 V$ $R_L = 200 \Omega$

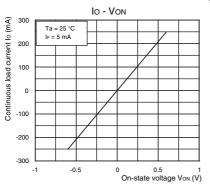
I⊧ = 10 mA

100

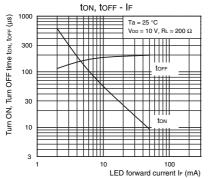
LED forward current vs. LED forward voltage



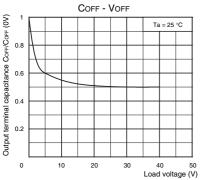
Continuous load current vs. On-state voltage



Turn ON, Turn OFF time vs. LED forward current Turn ON, Turn OFF time vs. Ambient temperature



Output terminal capacitance vs. Load voltage



Turn ON, Turn OFF time ton, toff 150 100 tor 50 0 -20 0 20 40 60 80 Ambient temperature Ta (°C)

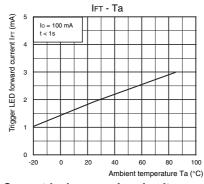
(sn) 300

torr

250

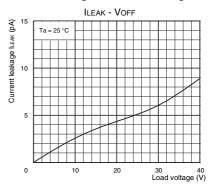
200

On-state resistance vs. Ambient temperature



Current leakage vs. Load voltage

100

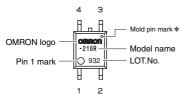


■ Safety Precautions • Refer to "Common Precautions" for all G3VM models.

■ Appearance



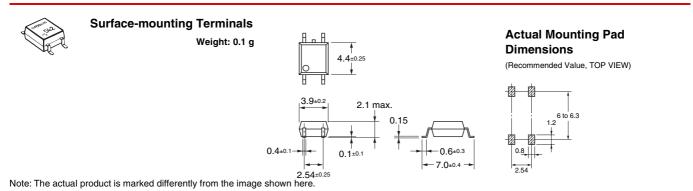




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Dimensions

(Unit: mm)



Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

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