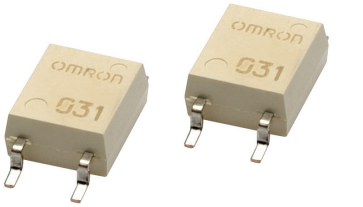
G3VM-41GR5/41GR6/81GR1

MOSFET Relays SOP 4-pin, Low-output-capacitance and Low-ON-resistance Type (with Low C × R)

MOSFET Relays in SOP 4-pin packages that achieve a low C × R

- **Load voltage: 40 V, or 80 V**
- **G3VM-41GR6: Low C × R = 10 pF·Ω, C_{OFF} (standard) = 1 pF, R_{ON} (standard) = 10 Ω**
- **G3VM-41GR5: Low C × R = 10 pF·Ω, C_{OFF} (standard) = 10 pF, R_{ON} (standard) = 1 Ω**



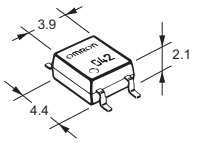
Note: The actual product is marked differently from the image shown here.

■ Application Examples

- **Semiconductor test equipment**
- **Test & Measurement equipment**
- **Communication equipment**
- **Security equipment**
- **Industrial equipment**
- **Power circuit**
- **Amusement equipment**

■ Package (Unit : mm, Average)

SOP 4-pin



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

■ Model Number Legend

G3VM-□ □ □ □ □
1 2 3 4 5

1. Load Voltage
4 : 40 V
8 : 80 V

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

3. Package
G : SOP 4-pin

4. Additional functions
R: Low ON resistance

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

■ Ordering Information

Package	Contact form	Terminals	Load voltage (peak value) ✻	Continuous load current (peak value) ✻	Stick packaging		Tape packaging	
					Model	Minimum package quantity	Model	Minimum package quantity
SOP4	1a (SPST-NO)	Surface-mounting Terminals	40 V	120 mA	G3VM-41GR6	100 pcs.	G3VM-41GR6(TR)	2,500 pcs.
				300 mA	G3VM-41GR5		G3VM-41GR5(TR)	
			80 V	200 mA	G3VM-81GR1		G3VM-81GR1(TR)	

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

■ Absolute Maximum Ratings (Ta = 25°C)

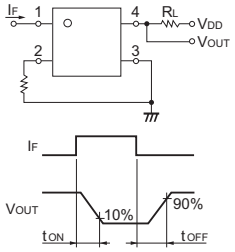
Item		Symbol	G3VM-41GR6	G3VM-41GR5	G3VM-81GR1	Unit	Measurement conditions
Input	LED forward current	I_F	50			mA	
	LED forward current reduction rate	ΔI_F/°C	-0.5			mA/°C	Ta ≥ 25°C
	LED reverse voltage	V_R	5			V	
	Connection temperature	T_J	125			°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	40		80	V	
	Continuous load current (AC peak/DC)	I_O	120	300	200	mA	
	ON current reduction rate	ΔI_O/°C	-1.2	-3.0	-2.0	mA/°C	Ta ≥ 25°C
	Pulse ON current	I_{OP}	360	900	600	mA	t=100 ms, Duty=1/10
	Connection temperature	T_J	125			°C	
Dielectric strength between I/O ✻		V_{I-O}	1500			Vrms	AC for 1 min
Ambient operating temperature		Ta	-20 to +85			°C	With no icing or condensation
Ambient storage temperature		Tstg	-55 to +125	-40 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.

■Electrical Characteristics (Ta = 25°C)

	Item	Symbol		G3VM-41GR6	G3VM-41GR5	G3VM-81GR1	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.0			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	15			pF	V=0, f=1 MHz
	Trigger LED forward current	I_{FT}	Maximum	4		3	mA	41GR5/41GR6 : I_O=100 mA G3VM-81GR1 : I_O=200 mA
	Release LED forward current	I_{FC}	Minimum	0.2		0.1	mA	I_{OFF}=10μA
Output	Maximum resistance with output ON	R_{ON}	Typical	10	1	5	Ω	G3VM-41GR5/41GR6 : I_F=5 mA, I_O=Continuous load current ratings, t<1s G3VM-81GR1 : I_F=5 mA, I_O=Continuous load current ratings
			Maximum	15	1.5	8		
	Current leakage when the relay is open	I_{LEAK}	Maximum	1			nA	G3VM-41GR5/41GR6 : V_{OFF}=30 V, Ta=50°C G3VM-81GR1 : V_{OFF}=80 V, Ta=50°C
	Capacitance between terminals	C_{OFF}	Typical	1	10	6.5	pF	G3VM-41GR5/41GR6 : V=0, f=100 MHz, t<1 s G3VM-81GR1 : V=0, f=100 MHz, t<10 s
			Maximum	2	14	11		
Capacitance between I/O terminals		C_{I-O}	Typical	0.8		0.7	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	–		0.13	ms	G3VM-41GR5/41GR6 : I_F=10 mA, R_L=200 Ω, V_{DD}=20 V ✻ G3VM-81GR1 :I_F=5 mA, R_L=200 Ω, V_{DD}=10 V ✻
			Maximum	0.5				
Turn-OFF time		t_{OFF}	Typical	–		0.17		
			Maximum	0.5				

✻ 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.

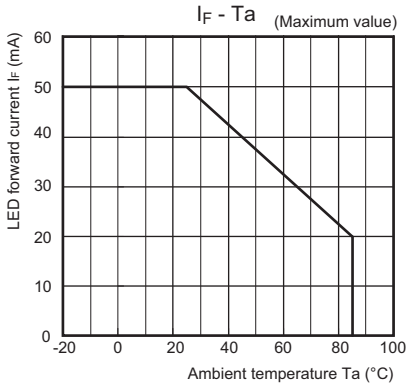
Item	Symbol		G3VM-41GR6	G3VM-41GR5	G3VM-81GR1	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32		64	V
Operating LED forward current	I_F	Minimum	10		5	mA
		Maximum	30			
Continuous load current (AC peak/DC)	I_O	Maximum	120	300	200	
Ambient operating temperature	Ta	Minimum	-20			°C
		Maximum	60			

■Spacing and Insulation

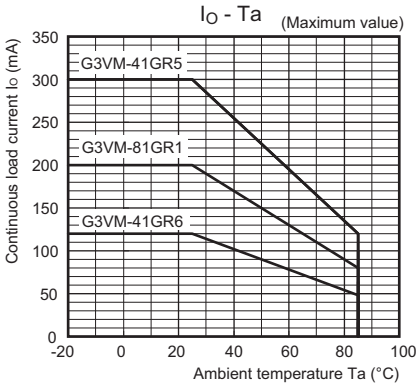
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

■Engineering Data

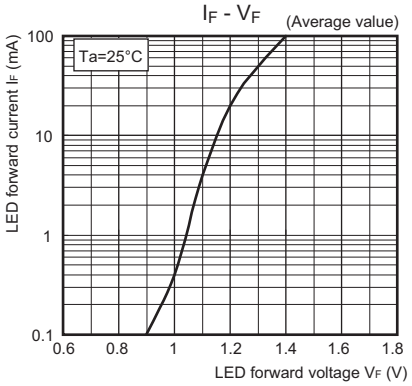
● **LED forward current vs. Ambient temperature**



● **Continuous load current vs. Ambient temperature**

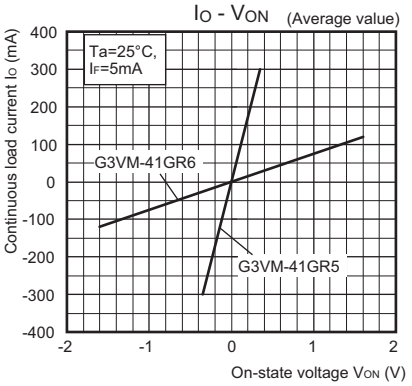


● **LED forward current vs. LED forward voltage**

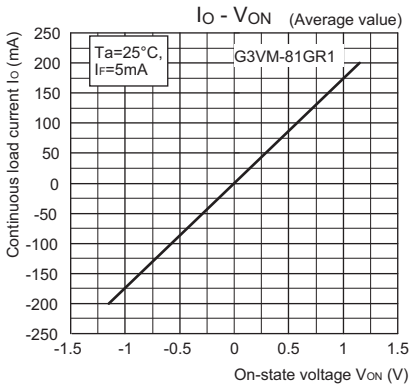


● **Continuous load current vs. On-state voltage**

G3VM-41GR6/41GR5

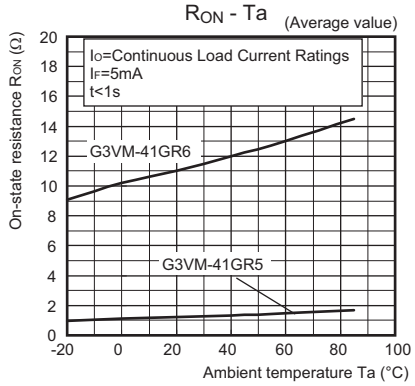


G3VM-81GR1

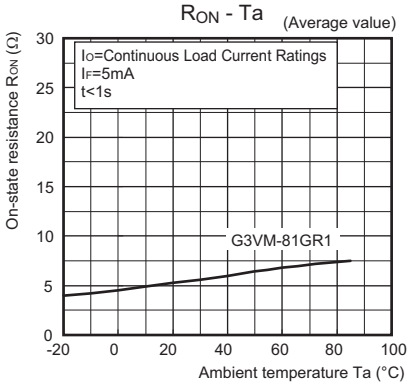


● **On-state resistance vs. Ambient temperature**

G3VM-41GR6/41GR5

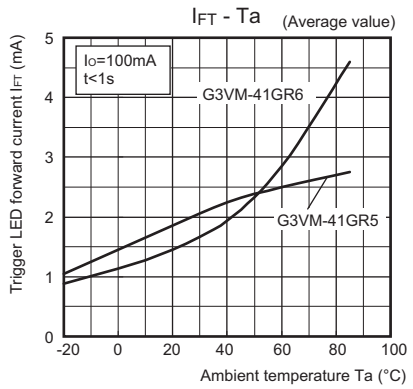


G3VM-81GR1

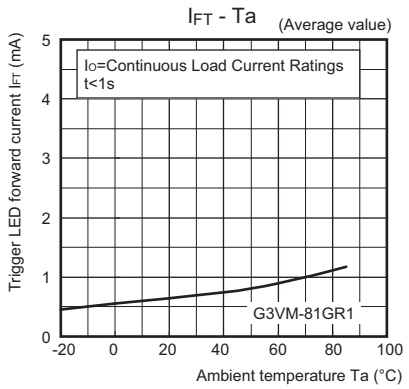


● **Trigger LED forward current vs. Ambient temperature**

G3VM-41GR6/41GR5



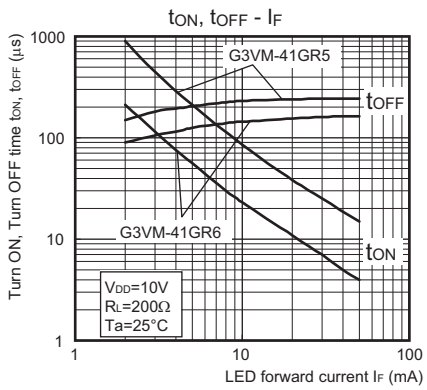
G3VM-81GR1



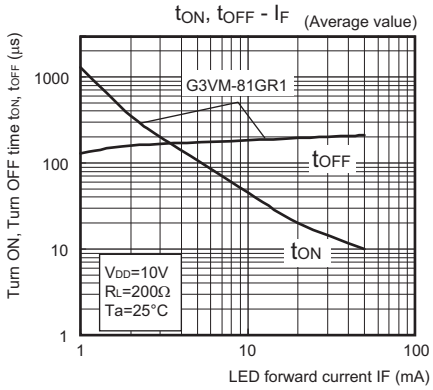
■Engineering Data

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

G3VM-41GR6/41GR5

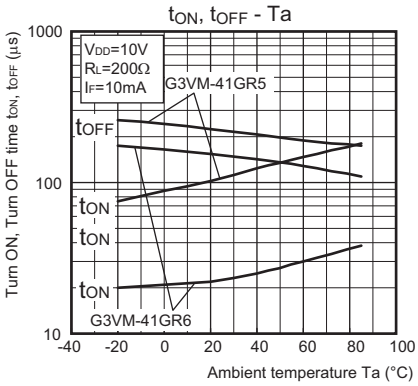


G3VM-81GR1

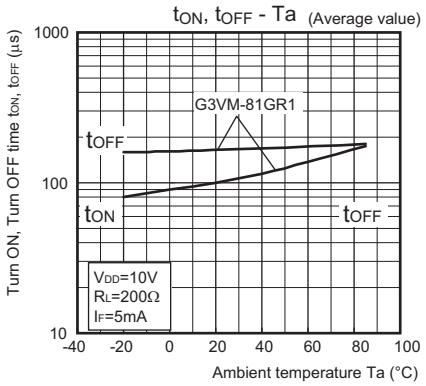


● **Turn ON, Turn OFF time vs. Ambient temperature**

G3VM-41GR6/41GR5

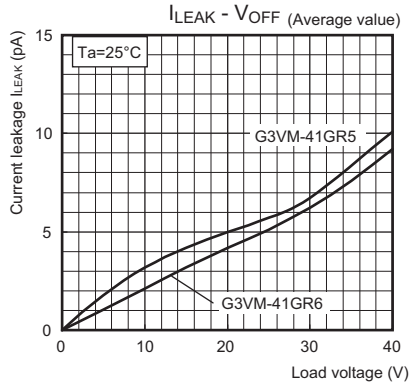


G3VM-81GR1

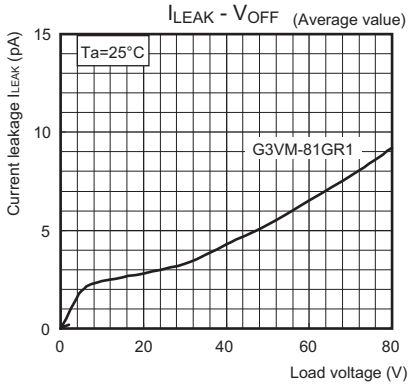


● **Current leakage vs. Load voltage**

G3VM-41GR6/41GR5

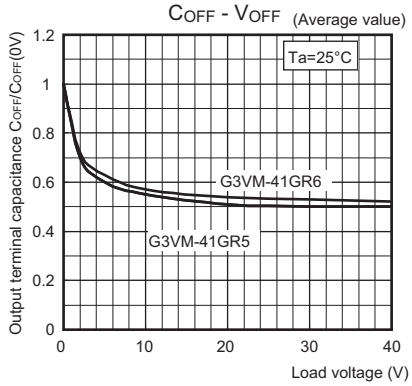


G3VM-81GR1

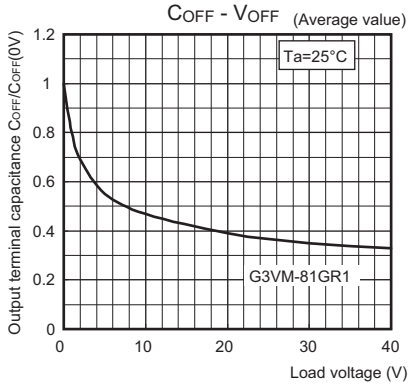


● **Output terminal capacitance vs. Load voltage**

G3VM-41GR6/41GR5



G3VM-81GR1

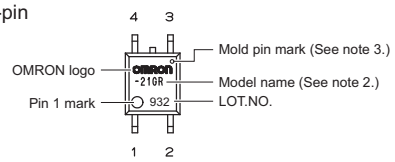


■ Appearance / Terminal Arrangement / Internal Connections

● Appearance

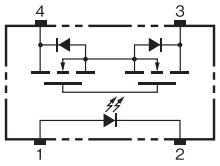
SOP (Small Outline Package)

SOP 4-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)

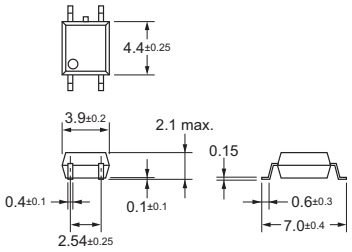


■ Dimensions (Unit: mm)



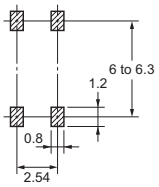
Surface-mounting Terminals

Weight: 0.1 g



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 MOSFET Relays* for precautions that apply to all MOSFET Relays.

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

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0326 (0318)