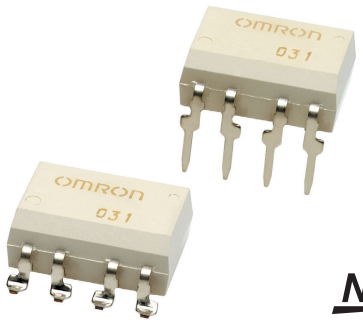
G3VM-□CR□/□FR□

MOS FET Relays DIP 8-pin, High-Current and Low-ON-resistance Type

The highest class load current of MOS FET Relays realized with DIP8 package

- **Contact form: 1a (SPST-NO)**
- **Load voltage: 60 V, 400 V, or 600 V**
- **60-V Relay: Continuous load current of 5 A (10 A) max. ✻**
- **600-V Relay: Continuous load current of 0.6 A (1.2 A) max. ✻**

✻ Values in parentheses are for connection C.



NEW

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

RoHS Compliant

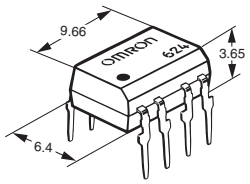
■Application Examples

- **Communication equipment**
- **Test & Measurement equipment**
- **Security equipment**
- **Industrial equipment**
- **Power circuit**

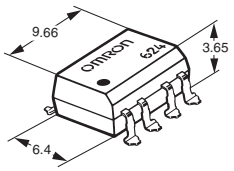
■Package (Unit : mm, Average)

DIP 8-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
6 : 60 V
40 : 400 V
60 : 600 V

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

3. Package
C : DIP 8-pin with PCB terminals
F : DIP 8-pin with surface-mounting terminals

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	Load voltage (peak value) ✻	Continuous load current (peak value) ✻	Stick packaging			Tape packaging	
				Model		Minimum package quantity	Model	Minimum package quantity
				PCB Terminals	Surface-mounting Terminals		Surface-mounting Terminals	
DIP8	1a (SPST-NO)	60 V	5 A	G3VM-61CR1	G3VM-61FR1	50 pcs.	G3VM-61FR1(TR05)	500 pcs.
		400 V	0.4 A	G3VM-401CR	G3VM-401FR		G3VM-401FR(TR05)	
		600 V	0.6 A	G3VM-601CR	G3VM-601FR		G3VM-601FR(TR05)	

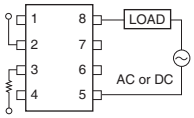
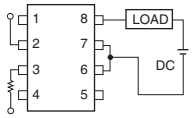
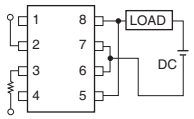
✻ The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for Relays with surface-mounting terminals, add “(TR05)” to the end of the model number.

■Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	G3VM-61CR1 G3VM-61FR1	G3VM-401CR G3VM-401FR	G3VM-601CR G3VM-601FR	Unit	Measurement conditions
Input	LED forward current		IF	30			mA	
	Repetitive peak LED forward current		IFP	1			A	100 μs pulses, 100 pps
	LED forward current reduction rate		ΔIF/°C	-0.3			mA/°C	Ta ≥ 25°C
	LED reverse voltage		VR	5			V	
	Connection temperature		TJ	125			°C	
Output	Load voltage (AC peak/DC)		VOFF	60	400	600	V	
	Continuous load current	Connection A	IO	5	0.4	0.6	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B		5	0.4	0.6		
		Connection C		10	0.8	1.2		
	ON current reduction rate	Connection A	ΔIO/°C	-50	-4	-6	mA/°C	Ta ≥ 25°C
		Connection B		-50	-4	-6		
		Connection C		-100	-8	-12		
	Pulse ON current		Iop	15	1.2	1.8	A	t=100 ms, Duty=1/10
	Connection temperature		TJ	125			°C	
Dielectric strength between I/O (See note 1.)			VI-O	2,500			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: 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.

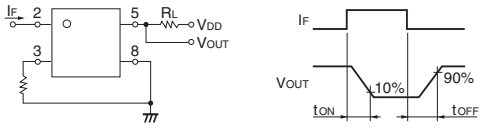
Connection Diagram

Connection A	
Connection B	
Connection C	

■Electrical Characteristics (Ta = 25°C)

Item			Symbol		G3VM-61CR1 G3VM-61FR1	G3VM-401CR G3VM-401FR	G3VM-601CR G3VM-601FR	Unit	Measurement conditions
Input	LED forward voltage		V_F	Minimum	1.5			V	I_F=10 mA
				Typical	1.64				
				Maximum	1.8				
	Reverse current		I_R	Maximum	10			μA	V_R=5 V
	Capacitance between terminals		C_T	Typical	70			pF	V=0, f=1MHz
	Trigger LED forward current		I_{FT}	Typical	0.28	0.2	0.23	mA	G3VM-61CR1/FR1 : I_O=1 A G3VM-401CR/FR : I_O=0.4 A G3VM-601CR/FR : I_O=0.6 A
				Maximum	5	1	5		
	Release LED forward current		I_{FC}	Minimum	0.01			mA	G3VM-61CR1/FR1 : I_{OFF}=1 μA G3VM-401CR/FR : I_{OFF}=10 μA G3VM-601CR/FR : I_{OFF}=1 μA
				Typical	0.19		0.17		
Output	Maximum resistance with output ON	Connection A	R_{ON}	Typical	0.022	3	1.3	Ω	G3VM-61CR1/FR1 : I_O=1 A, I_F=5 mA, t < 1 s G3VM-401CR/FR : I_O=0.4 A, I_F=2 mA, t < 1 s G3VM-601CR/FR : I_O=0.6 A, I_F=5 mA, t < 1 s
				Maximum	0.05	5	2		
		Connection B		Maximum	0.025	2.5	1		G3VM-61CR1/FR1 : I_O=1A, I_F=2 mA, t < 1 s G3VM-401CR/FR : I_O=0.4A, I_F=2 mA, t < 1 s G3VM-601CR/FR : I_O=0.6A, I_F=2 mA, t < 1 s
		Connection C		Maximum	0.013	1.3	0.5		G3VM-61CR1/FR1 : I_O=1 A, I_F=2 mA, t < 1 s G3VM-401CR/FR : I_O=0.8 A, I_F=2 mA, t < 1 s G3VM-601CR/FR : I_O=1.2 A, I_F=2 mA, t < 1 s
	Current leakage when the relay is open		I_{LEAK}	Typical	0.01	0.001	0.05	μA	V_{OFF}=Load Voltage Ratings
				Maximum	10	1	10		
	Capacitance between terminals		C_{OFF}	Typical	850	410	4,300	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	1,000			MΩ	V_{I-O}=500 VDC, R_{OH}=60%
				Typical	10^8				
Turn-ON time			t_{ON}	Typical	2.5	0.22	0.8	ms	I_F =5 mA, R_L =200 Ω, V_{DD}=20 V (See note 2.)
				Maximum	5	1	3		
Turn-OFF time			t_{OFF}	Typical	0.1	0.08	0.07		
				Maximum	1				

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.

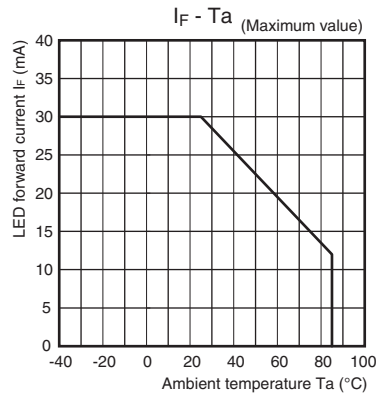
Item	Symbol		G3VM-61CR1 G3VM-61FR1	G3VM-401CR G3VM-401FR	G3VM-601CR G3VM-601FR	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	48	320	480	V
Operating LED forward current	I_F	Typical	5	2	5	mA
		Maximum	25			
Continuous load current (AC peak/DC)	I_O	Maximum	5	0.4	0.6	A
Ambient operating temperature	Ta	Minimum	-40			°C
		Maximum	85			

■Spacing and Insulation

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

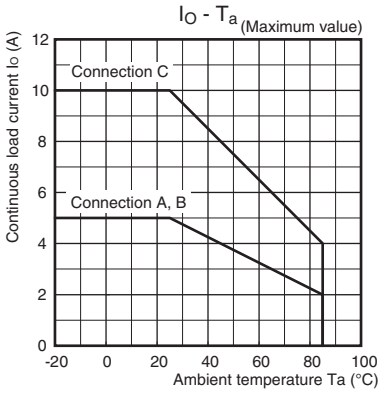
■Engineering Data

●LED forward current vs. Ambient temperature

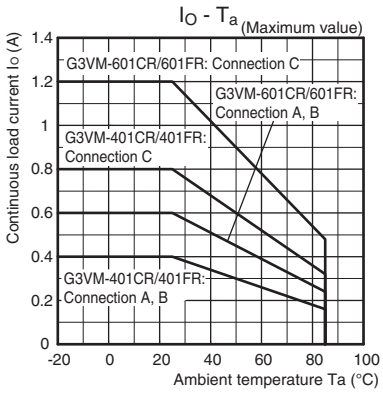


●Continuous load current vs. Ambient temperature

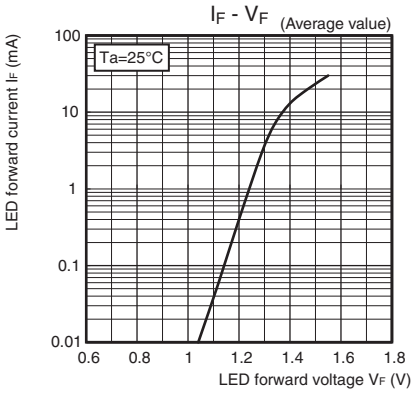
G3VM-61CR1/61FR1



G3VM-401CR/401FR/601CR/601FR

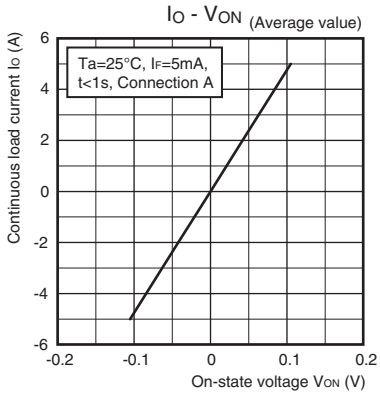


●LED forward current vs. LED forward voltage

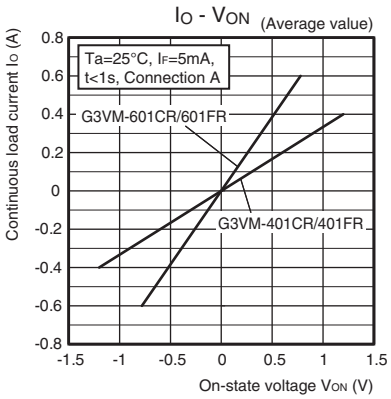


●Continuous load current vs. On-state voltage

G3VM-61CR1/61FR1

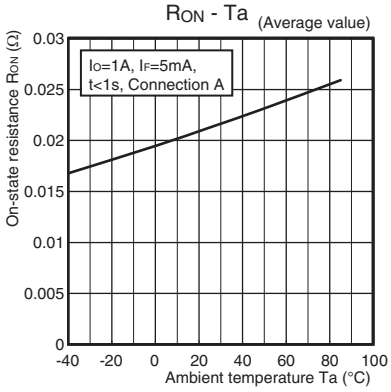


G3VM-401CR/401FR/601CR/601FR

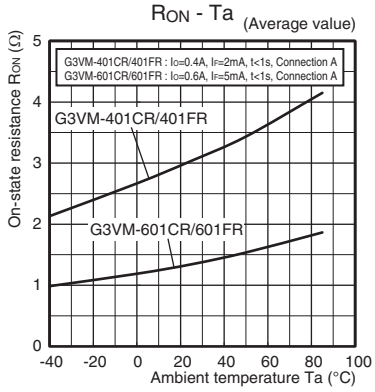


●On-state resistance vs. Ambient temperature

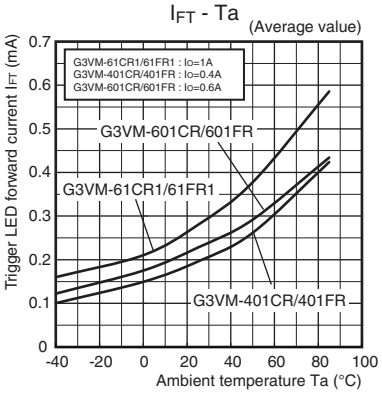
G3VM-61CR1/61FR1



G3VM-401CR/401FR/601CR/601FR

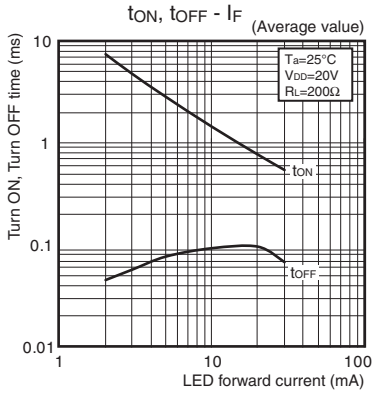


●Trigger LED forward current vs. Ambient temperature

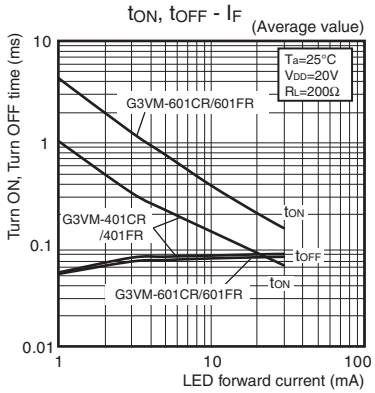


●Turn ON, Turn OFF time vs. LED forward current

G3VM-61CR1/61FR1



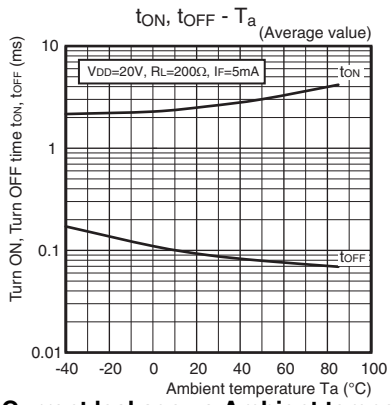
G3VM-401CR/401FR/601CR/601FR



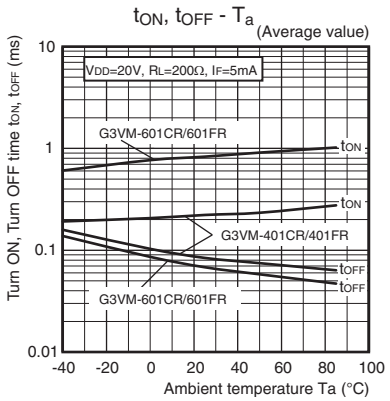
■Engineering Data

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

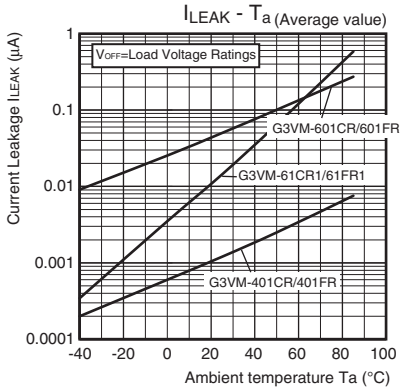
G3VM-61CR1/61FR1



G3VM-401CR/401FR/601CR/601FR



● **Current leakage vs.Ambient temperature**

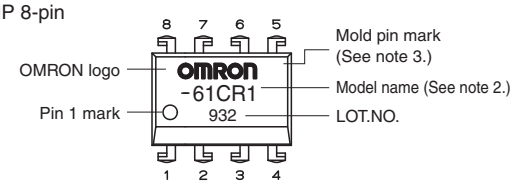


■Appearance / Terminal Arrangement / Internal Connections

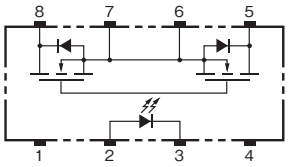
●Appearance

DIP (Dual Inline Package)

DIP 8-pin



●Terminal Arrangement/Internal Connections (Top View)



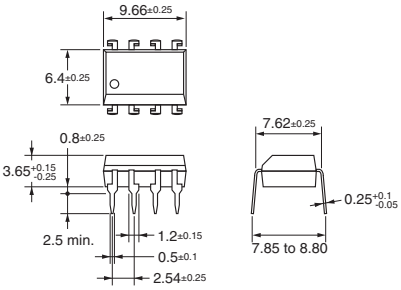
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

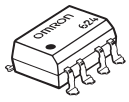
■Dimensions (Unit: mm)

DIP 8-pin

PCB Terminals

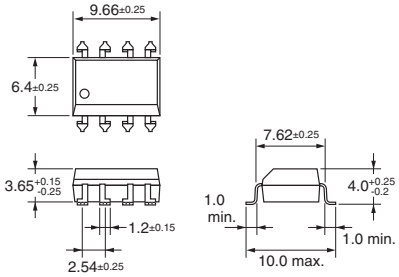
Weight: 0.54 g



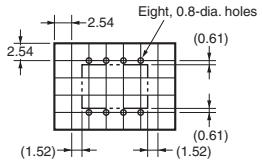


Surface-mounting Terminals

Weight: 0.54 g

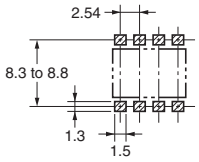


PCB Dimensions (BOTTOM VIEW)



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

■Approved Standards

UL recognized

Model	Approved Standards	Contact form	File No.
G3VM-61CR1 G3VM-61FR1	Applying for UL recognition		
G3VM-401CR G3VM-401FR			
G3VM-601CR G3VM-601FR			

■Safety Precautions

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

OMRON Corporation
Electronic and Mechanical Components Company **Contact: www.omron.com/ecb**
Cat. No. K285-E1-01
0416(0416)(O)