G3VM-63BR/63ER

MOS FET Relays DIP 6-pin, High Current and Low ON-Resistance Type

MOS FET Relays in DIP 6-pin Packages with SPST-NC Contacts That Achieve Low ON-Resistance and High Switching Capacity of a Mechanical Relay

- Contact form: 1b
- Load voltage: 60 V
- Continuous load current (peak value): 1.2 A (2.4 A) ✻

✻ Values in parentheses are for connection C.

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

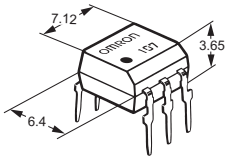
Application Examples

- Industrial equipment (PLC, Temperature controller, Power supply, etc.)
- Security equipment
- Test & measurement equipment
- Communication equipment

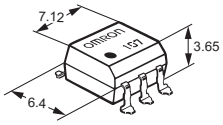
Package (Unit : mm, average)

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

1. Load voltage
6 : 60 V

2. Contact form
3 : 1b (SPST-NC)

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

4. Additional functions
R: Low ON resistance

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	1b	60 V	1.2 A	2.4 A	**G3VM-63BR**	**G3VM-63ER**	50 pcs.	**G3VM-63ER(TR05)**	500 pcs.

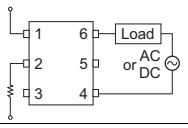
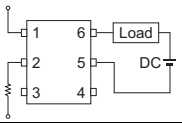
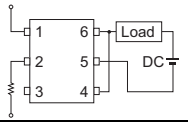
✻ The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for relays with surface-mounting terminals, add “(TR05)” to the end of the model number.

Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	G3VM-63BR G3VM-63ER	Unit	Measurement conditions
Input	LED forward current		I_F	20	mA	
	LED forward current reduction rate		ΔI_F/°C	-0.3	mA/°C	Ta ≥ 58°C
	LED reverse voltage		V_R	6	V	
	Junction temperature		T_J	125	°C	
Output	Load voltage (AC peak/DC)		V_{OFF}	60	V	
	Continuous load current	Connection A	I_O	1.2	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B				
		Connection C		2.4		
	ON current reduction rate	Connection A	ΔI_O/°C	-12	mA/°C	Ta ≥ 25°C
		Connection B				
		Connection C		-24		
	Pulse ON current		Iop	3	A	t=100 ms, Duty=1/10
	Junction temperature		T_J	125	°C	
Dielectric strength between I/O ✻			V_{I-O}	5,000	Vrms	AC for 1 min
Ambient operating temperature			Ta	-40 to +110	°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.

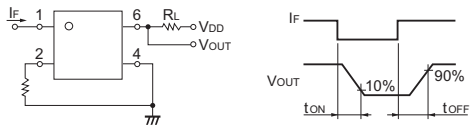
Connection Diagram

Connection A	
Connection B	
Connection C	

Electrical Characteristics (Ta = 25°C)

Item			Symbol		G3VM-63BR G3VM-63ER	Unit	Measurement conditions
Input	LED forward voltage		V_F	Minimum	1.1	V	I_F=10 mA
				Typical	1.27		
				Maximum	1.4		
	Reverse current		I_R	Maximum	10	μA	V_R=6 V
	Capacitance between terminals		C_T	Typical	70	pF	V=0 V, f=1 MHz
	Trigger LED forward current		I_{FC}	Typical	0.3	mA	I_{OFF}=10 μA
				Maximum	2		
	Release LED forward current		I_{FT}	Minimum	0.01	mA	I_O=1.2 A
Output	Maximum resistance with output ON	Connection A	R_{ON}	Typical	0.3	Ω	I_O=1.2 A
				Maximum	0.6		
		Connection B		Typical	0.2		
		Connection C		Typical	0.1		I_O=2.4 A
	Current leakage when the relay is open		I_{LEAK}	Maximum	10	μA	V_{OFF}=60 V, I_F=5 mA
					1		V_{OFF}=40 V, I_F=2 mA
	Capacitance between terminals		C_{OFF}	Typical	550	pF	V=0 V, f=1 MHz, I_F=5 mA
Capacitance between I/O terminals			C_{I-O}	Typical	0.9	pF	V_S=0 V, f=1 MHz
Insulation resistance between I/O terminals			R_{I-O}	Minimum	1,000	MΩ	V_{I-O}=500 VDC, RoH ≤ 60%
				Typical	10^8		
Turn-ON time			t_{ON}	Typical	0.3	ms	I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻
				Maximum	2		
Turn-OFF time			t_{OFF}	Typical	2		
				Maximum	3		

✻Turn-ON and Turn-OFF times



Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions are measures that take into account the derating of Absolute Maximum Ratings and Electrical Characteristics.
Each item on this list is an independent condition, so they do not simultaneously satisfy several conditions.

Item	Symbol		G3VM-63BR G3VM-63ER	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	48	V
Operating LED forward current	I_F	Typical	5	mA
		Maximum	10	
Continuous load current (AC peak/DC)	I_O	Maximum	1.2	A
Ambient operating temperature	Ta	Minimum	-20	°C
		Maximum	85	

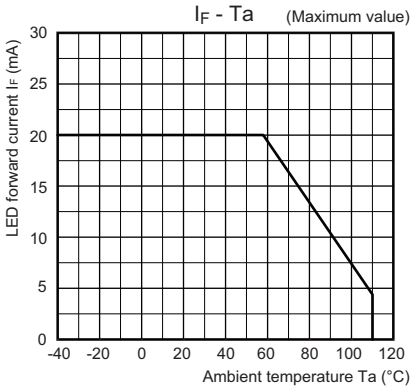
Spacing and Insulation

Item	Minimum	Unit
Creepage distance	7.0	mm
Clearance distance	7.0	
Internal isolation thickness	0.3	

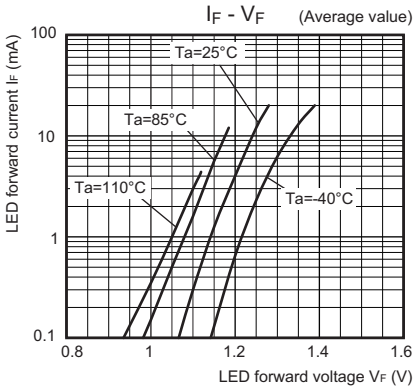
G3VM-63BR/63ER

Engineering Data

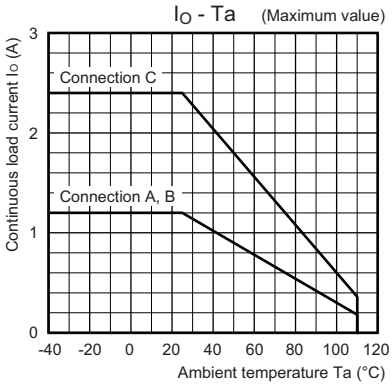
LED forward current vs. Ambient temperature



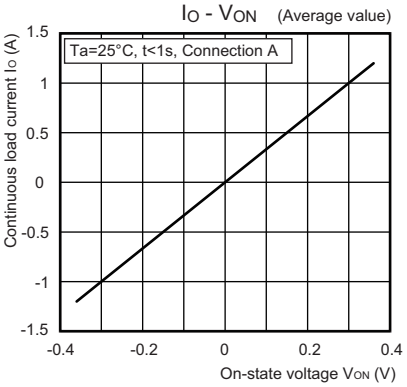
LED forward current vs. LED forward voltage



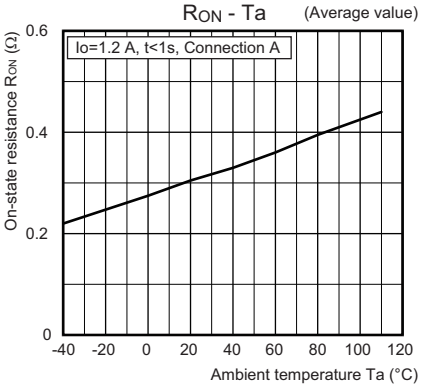
Continuous load current vs. Ambient temperature



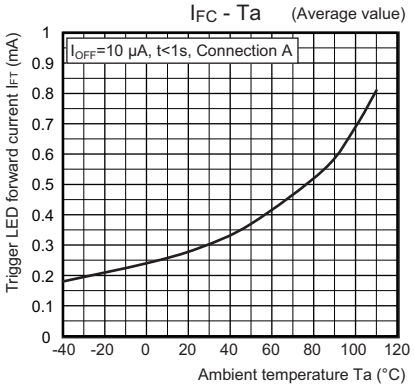
Continuous load current vs. On-state voltage



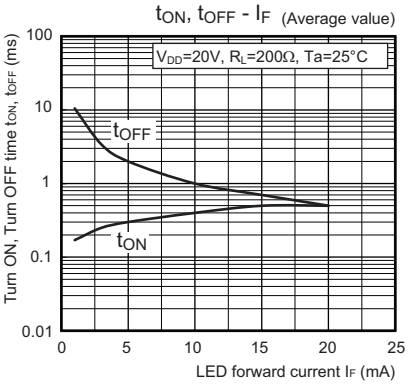
On-state resistance vs. Ambient temperature



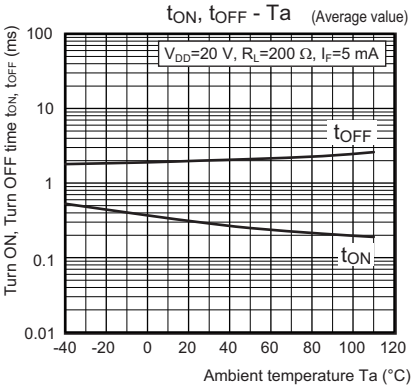
Trigger LED forward current vs. Ambient temperature



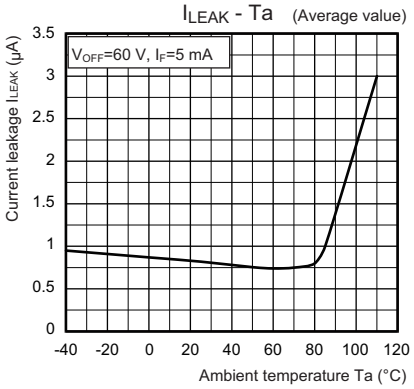
Turn ON, Turn OFF time vs. LED forward current



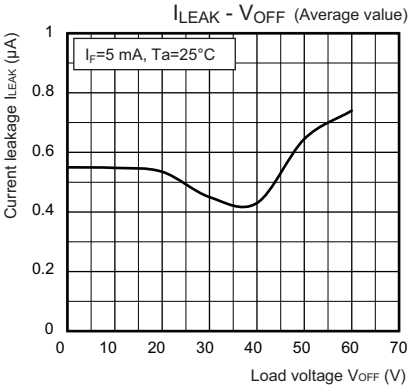
Turn ON, Turn OFF time vs. Ambient temperature



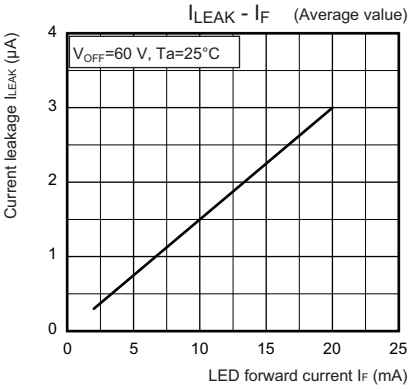
Current leakage vs. Ambient temperature



Current leakage vs. Load voltage



Current leakage vs. LED forward current



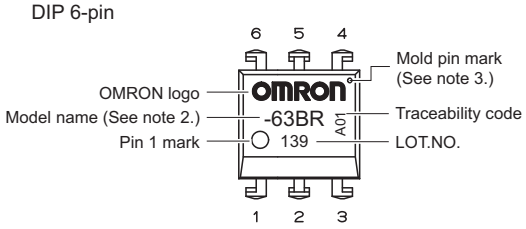
Note: About the "Current leakage vs. LED forward current" graph:
Take note that the current leakage is affected by the LED forward current input due to the internal mechanism of this model.

Appearance / Terminal Arrangement / Internal Connections

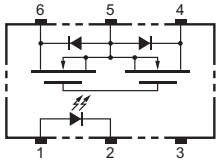
Appearance

DIP (Dual Inline Package)

DIP 6-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.

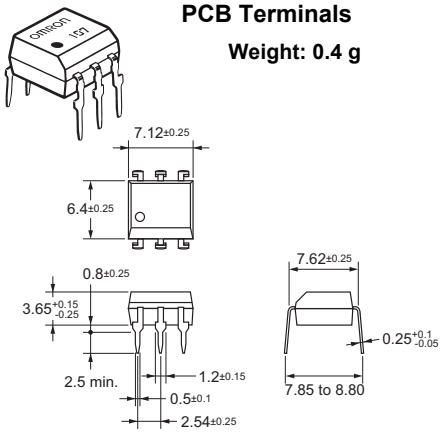
Dimensions

CAD Data marked products, 2D drawings and 3D CAD models are available.
For CAD information, please visit our website, which is noted on the last page.

(Unit: mm)

PCB Terminals

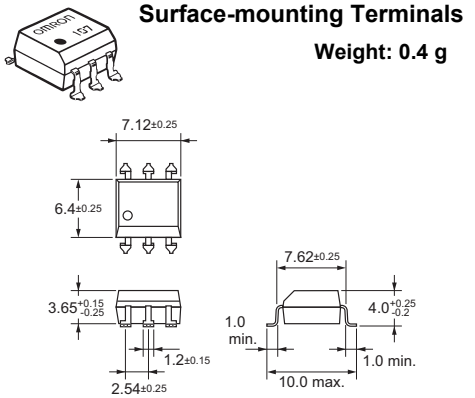
Weight: 0.4 g



CAD Data

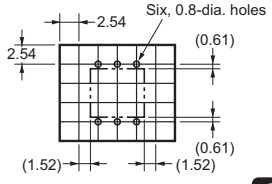
Surface-mounting Terminals

Weight: 0.4 g



CAD Data

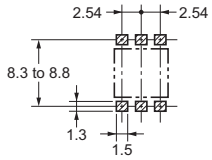
PCB Dimensions (BOTTOM VIEW)



CAD Data

Actual Mounting Pad Dimensions

(Recommended Value, Top View)



CAD Data

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

Safety Precautions

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

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