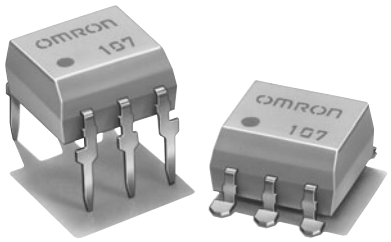
G3VM-21BR/ER

MOS FET Relays

Higher power, 4-A switching with a 20-V load voltage, DIP package. Low 20 mΩ ON Resistance.

- Continuous load current of 4 A. (Connection C: 8 A)
- Switches minute analog signals.
- Dielectric strength of 2,500 Vrms between I/O.



NEW

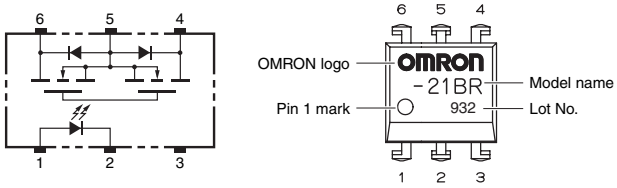
Note: The actual product is marked differently from the image shown here.

RoHS compliant

■Application Examples

- Communication equipment
- Test & Measurement equipment
- Security equipment
- Factory Automation equipment
- Power circuit

■Terminal Arrangement/Internal Connections



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■List of Models

Package type	Contact form	Terminals	Load voltage (peak value) ✻	Model	Minimum package quantity	
					Number per stick	Number per tape and reel
DIP6	1a (SPST-NO)	PCB terminals	20 V	G3VM-21BR	50	---
		Surface-mounting terminals		G3VM-21ER		
				G3VM-21ER (TR)	---	1,500

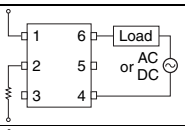
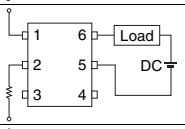
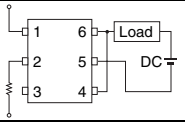
✻ The AC peak and DC value are given for the load voltage.

■Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	Rating	Unit	Measurement conditions
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	20	V	
	Continuous load current	Connection A	IO	4	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B		4		
		Connection C		8		
	ON current reduction rate	Connection A	ΔIO/°C	−40	mA/°C	Ta ≥ 25°C
		Connection B		−40		
		Connection C		−80		
	Pulse ON current		Iop	12	A	t = 100 ms, Duty = 1/10
	Connection temperature		TJ	125	°C	
Dielectric strength between I/O (See note 1.)			VI-O	2500	Vrms	AC for 1 min
Operating temperature			Ta	−40 to +85	°C	With no icing or condensation
Storage temperature			Tstg	−55 to +125	°C	With no icing or condensation
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.

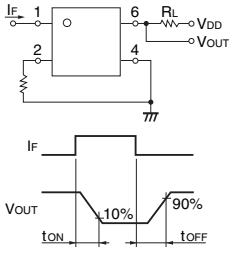
Connection Diagram

Connection A	
Connection B	
Connection C	

■Electrical Characteristics (Ta = 25°C)

Item			Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage		VF	1.18	1.33	1.48	V	IF = 10 mA
	Reverse current		IR	---	---	10	μA	VR = 5 V
	Capacity between terminals		CT	---	70	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current		IFT	---	0.5	3	mA	IO = 1 A
Output	Maximum resistance with output ON	Connection A	RON	---	20	50	mΩ	IF = 5 mA, IO = 2 A, t < 1s
		Connection B		---	10	---	mΩ	IF = 5 mA, IO = 2 A, t < 1s
		Connection C		---	5	---	mΩ	IF = 5 mA, IO = 4 A, t < 1s
	Current leakage when the relay is open		ILEAK	---	---	1.0	μA	VOFF = 20 V
	Capacity between terminals		COFF	---	1000	---	pF	V = 0, f = 1 MHz
Capacity between I/O terminals			CI-O	---	0.8	---	pF	f = 1 MHz, VS = 0 V
Insulation resistance between I/O terminals			RI-O	1000	---	---	MΩ	VI-O = 500 VDC, RoH ≤ 60%
Turn-ON time			tON	---	2.5	5	ms	IF = 5 mA, RL = 200 Ω, VDD = 20 V (See note 2.)
Turn-OFF time			tOFF	---	0.1	1	ms	

Note: 2. Turn-ON and Turn-OFF Times



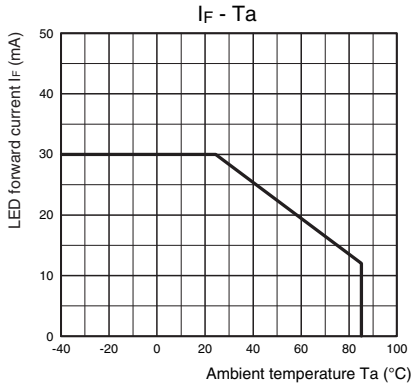
■Recommended Operating Conditions

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

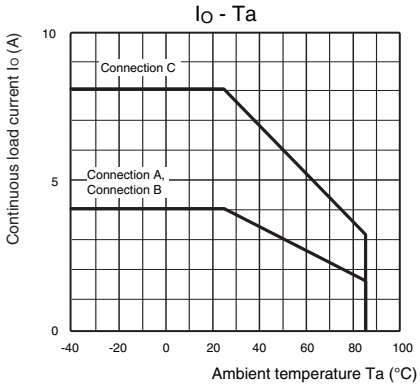
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	16	V
Operating LED forward current	I_F	5	10	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	4	A
Operating temperature	Ta	–20	---	65	°C

■Engineering Data

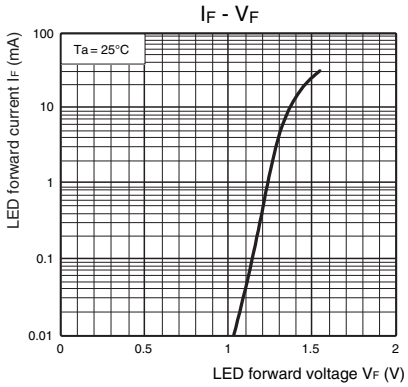
LED forward current vs. Ambient temperature



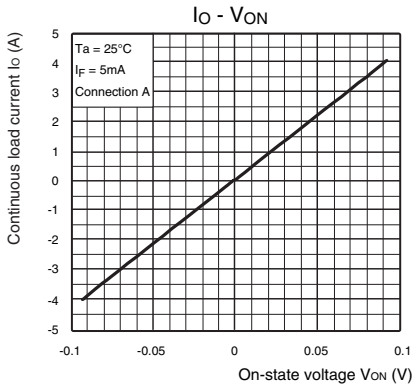
Continuous load current vs. Ambient temperature



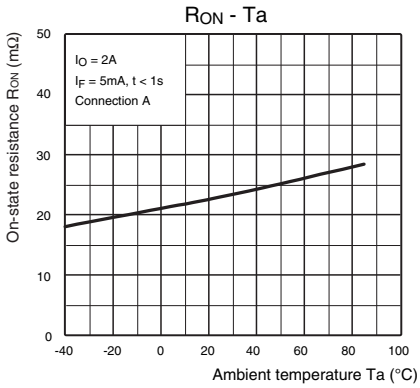
LED forward current vs. LED forward voltage



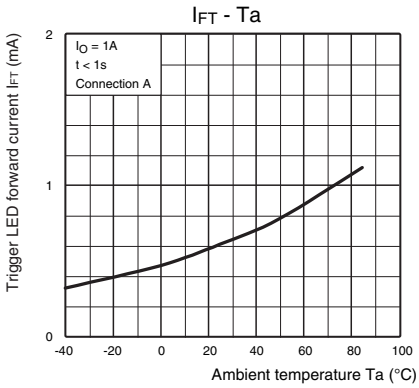
Continuous load current vs. On-state voltage



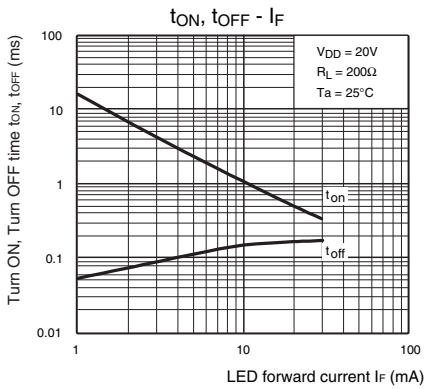
On-state resistance vs. Ambient temperature



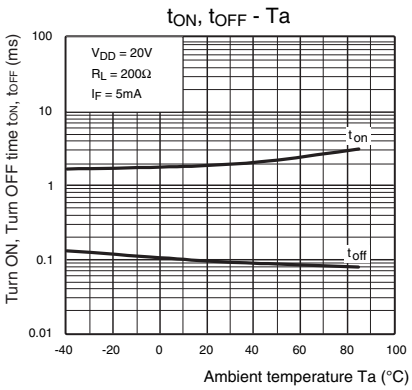
Trigger LED forward current vs. Ambient temperature



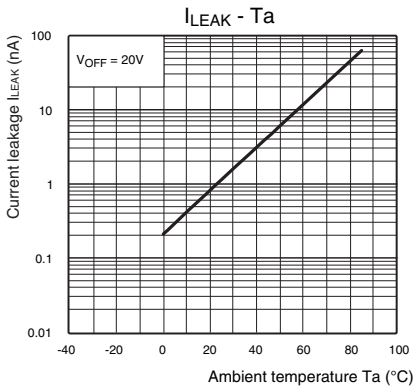
Turn ON, Turn OFF time vs. LED forward current



Turn ON, Turn OFF time vs. Ambient temperature



Current leakage vs. Ambient temperature



■Safety Precautions

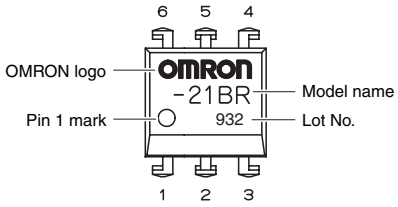
- Refer to **"Common Precautions"** for all G3VM models.

Appearance/Dimensions DIP6

■ Appearance

DIP (Dual Inline Package)

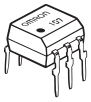
DIP6



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

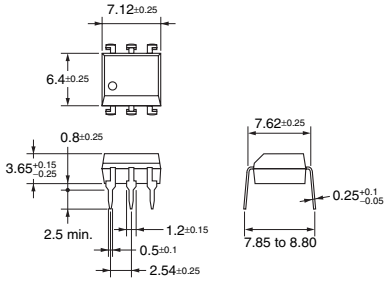
■ Dimensions

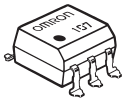
(Unit: mm)



PCB Terminals

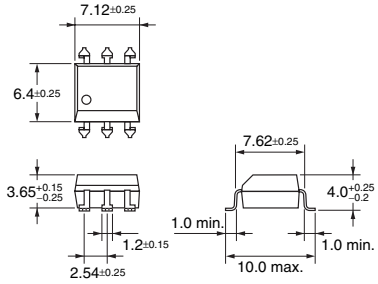
Weight: 0.4 g



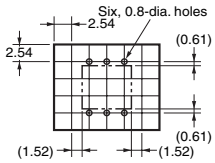


Surface-mounting Terminals

Weight: 0.4 g

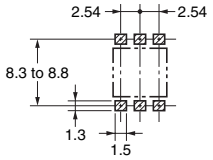


PCB Dimensions (Bottom View)



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

- 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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Cat. No. K136-E1-02
0412(0412)(O)

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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