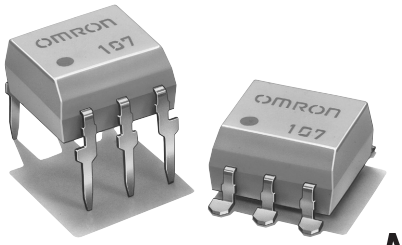
MOS FET Relays
G3VM-21BR/ER

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

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



NEW

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

■ Application Examples

- Communication equipment and Measurement devices
- Security systems and Power circuits
- Factory Automation equipment

■ List of Models

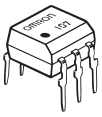
Package Type	Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
DIP6	SPST-NO	PCB terminals	20 V	**G3VM-21BR**	50	---
		Surface-mounting terminals		**G3VM-21ER**		
				G3VM-21ER(TR)	---	1,500

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

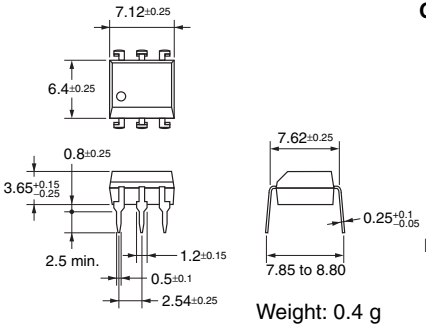
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21BR

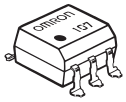


Note: The actual product is marked differently from the image shown here.

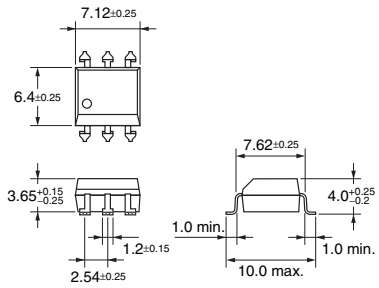


Weight: 0.4 g

G3VM-21ER



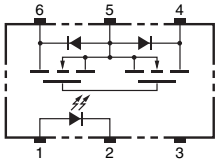
Note: The actual product is marked differently from the image shown here.



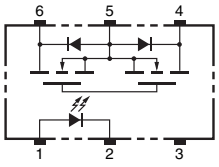
Weight: 0.4 g

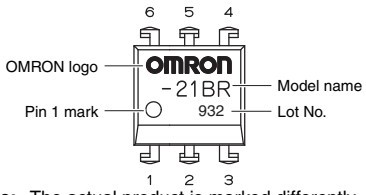
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21BR



G3VM-21ER

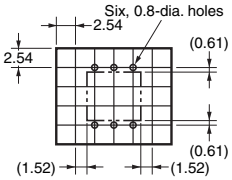




Note: The actual product is marked differently from the image shown here.

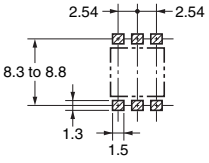
■ PCB Dimensions (Bottom View)

G3VM-21BR



■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-21ER

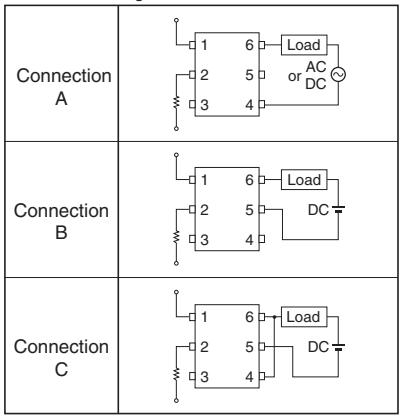


■ Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current		I_F	30	mA	
	Repetitive peak LED forward current		I_{FP}	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate		ΔI_F/°C	–0.3	mA/°C	$T_a \geq 25$°C
	LED reverse voltage		V_R	5	V	
	Connection temperature		T_j	125	°C	
Output	Load voltage (AC peak/DC)		V_{OFF}	20	V	
	Continuous load current	Connection A	I_O	4	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B		4		
		Connection C		8		
	ON current reduction rate	Connection A	ΔI_O/°C	–40	mA/°C	$T_a \geq 25$°C
		Connection B		–40		
		Connection C		–80		
	Pulse on current		I_{OP}	12	A	t=100 ms, Duty = 1/10
	Connection temperature		T_j	125	°C	
Dielectric strength between input and output (See note 1.)			V_{I-O}	2,500	V_{rms}	AC for 1 min
Operating temperature			T_a	–40 to +85	°C	With no icing or condensation
Storage temperature			T_{stg}	–55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)			---	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.

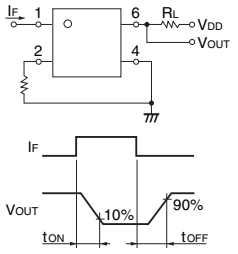
Connection Diagram



■ Electrical Characteristics (Ta = 25°C)

Item			Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage		V_F	1.18	1.33	1.48	V	I_F = 10 mA
	Reverse current		I_R	---	---	10	μA	V_R = 5 V
	Capacity between terminals		C_T	---	70	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current		I_{FT}	---	0.5	3	mA	I_O = 1 A
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	20	50	mΩ	I_F = 5 mA, I_O = 2 A, t < 1s
		Connection B		---	10	---	mΩ	I_F = 5 mA, I_O = 2 A, t < 1s
		Connection C		---	5	---	mΩ	I_F = 5 mA, I_O = 4 A, t < 1s
	Current leakage when the relay is open		I_{LEAK}	---	---	1.0	μA	V_{OFF} = 20 V
	Capacity between terminals		C_{OFF}	---	1,000	---	pF	V = 0, f = 1 MHz
Capacity between I/O terminals			C_{I-O}	---	0.8	---	pF	f = 1 MHz, V_s = 0 V
Insulation resistance between I/O terminals			R_{I-O}	1,000	---	---	MΩ	V_{I-O} = 500 VDC, $R_{oH} \leq 60\%$
Turn-ON time			t_{ON}	---	2.5	5.0	ms	I_F = 5 mA, R_L = 200 Ω, V_{DD} = 20 V (See note 2.)
Turn-OFF time			t_{OFF}	---	0.1	1.0	ms	

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



■ Recommended Operating Conditions

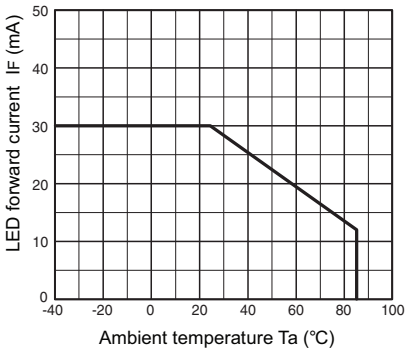
Use the G3VM under the following conditions so that the Relay will operate properly.

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	T_a	– 20	---	65	°C

■ Engineering Data

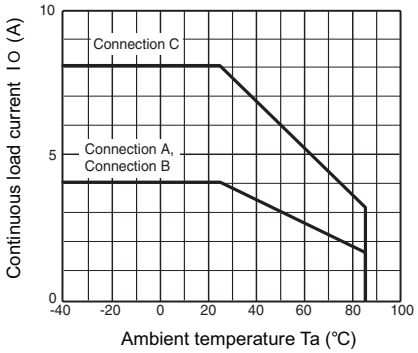
LED forward current vs. Ambient temperature

I_F - Ta



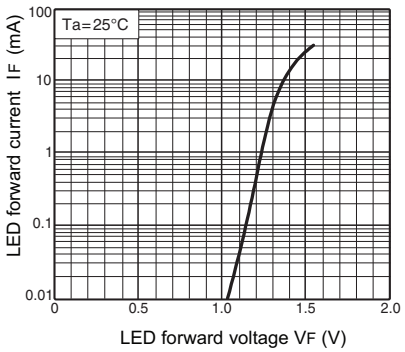
Continuous load current vs. Ambient temperature

I_O - Ta



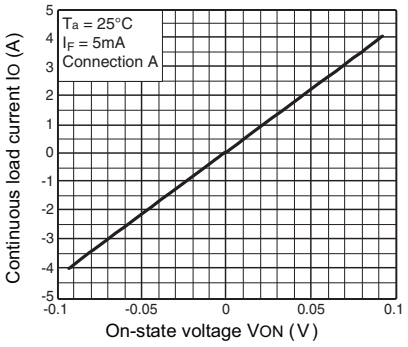
LED forward current vs. LED forward voltage

I_F - V_F



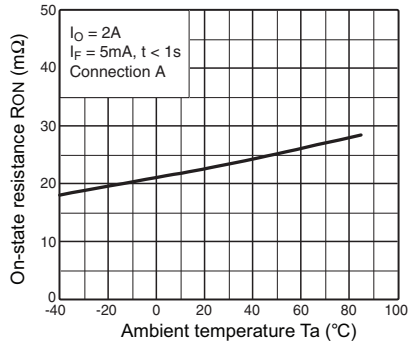
Continuous load current vs. On-state voltage

I_O - V_{ON}



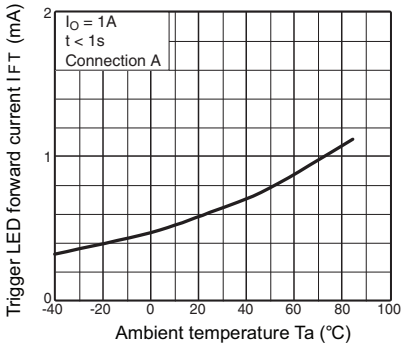
On-state resistance vs. Ambient temperature

R_{ON} - Ta



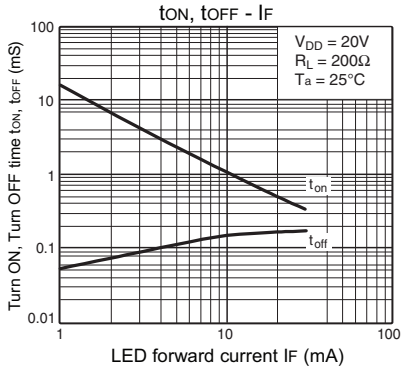
Trigger LED forward current vs. Ambient temperature

I_{FT} - Ta



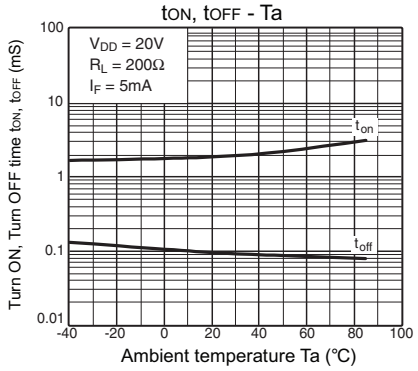
Turn ON, Turn OFF time vs. LED forward current

t_{ON}, t_{OFF} - I_F



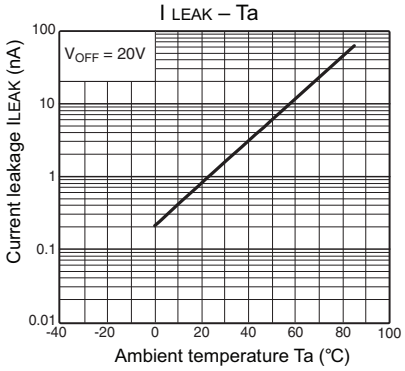
Turn ON, Turn OFF time vs. Ambient temperature

t_{ON}, t_{OFF} - Ta



Current leakage vs. Ambient temperature

I_{LEAK} – Ta



Precautions

Be sure to read the precautions and information common to all G3VM MOS FET relays, contained in the Technical User's Guide, "MOSFET Relays, Technical Information" for correct use.

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