

MOS FET Relays

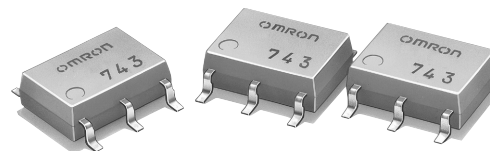
G3VM-21HR

Low 20-mΩ ON Resistance.
High-power, 2.5-A Switching with SOP Package.

- Continuous load current of 2.5 A (connection C = 5 A).
- Dielectric strength of 1,500 Vrms between I/O.
- RoHS Compliant

■ Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Industrial equipment



NEW

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

■ List of Models

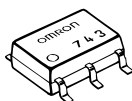
Contact form	Terminals	Load voltage (peak value) (See note.)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	20 V	G3VM-21HR	75	---
			G3VM-21HR(TR)	---	2,500

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

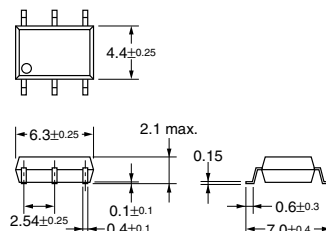
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21HR



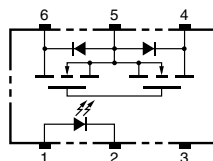
Note: The actual product is marked differently from the image shown here.



Weight: 0.13 g

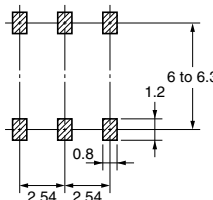
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21HR



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

G3VM-81HR

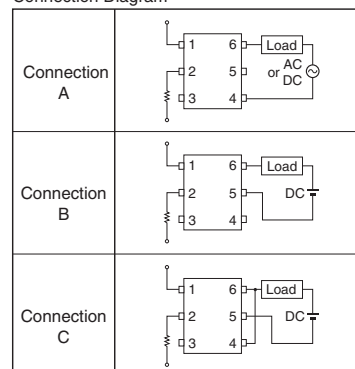


Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current		I _F	30	mA	
	LED forward current reduction rate		Δ I _F /°C	−0.3	mA/°C	T _a ≥ 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	2.5	A	Connection A: AC peak/DC Connection B and C: DC
		Connection B		2.5		
		Connection C		5		
	ON current reduction rate	Connection A	Δ I _O /°C	−33.3	mA/°C	T _a ≥ 50°C
		Connection B		−33.3		
		Connection C		−66.6		
	Connection temperature		T _j	125	°C	
Dielectric strength between input and output (See note 1.)			V _{I-O}	1,500	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.

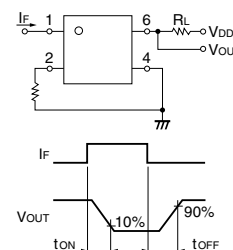
Connection Diagram



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	$I_F = 10 \text{ mA}$
	Reverse current	I_R	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	C_T	---	70	---	pF	$V = 0, f = 1 \text{ MHz}$
	Trigger LED forward current	I_{FT}	---	---	3	mA	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	0.02	Ω	$I_F = 5 \text{ mA}, I_O = 2 \text{ A}, t < 1 \text{ s}$
		Connection B		---	0.01	Ω	$I_F = 5 \text{ mA}, I_O = 2 \text{ A}, t < 1 \text{ s}$
		Connection C		---	0.005	Ω	$I_F = 5 \text{ mA}, I_O = 4 \text{ A}, t < 1 \text{ s}$
	Current leakage when the relay is open	I_{LEAK}	---	2	10	nA	$V_{OFF} = 20 \text{ V}$
	Capacity between terminals A Connection	C_{OFF}	---	1,000	1,500	pF	$V = 0, f = 1 \text{ MHz}$
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF	$f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance		R_{I-O}	1,000	---	---	M Ω	$V_{I-O} = 500 \text{ VDC}, R_{oh} \leq 60\%$
Turn-ON time		t_{ON}	---	1.5	5.0	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega, V_{DD} = 10 \text{ V}$ (See note 2.)
Turn-OFF time		t_{OFF}	---	0.1	1.0	ms	

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



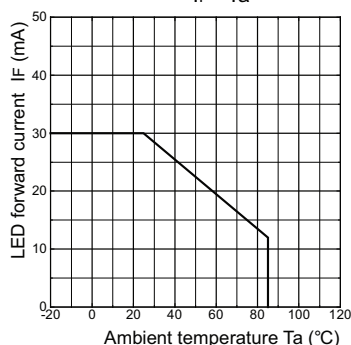
Recommended Operating Conditions

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

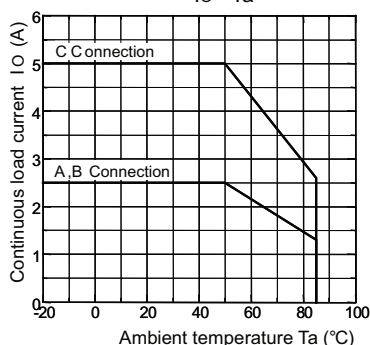
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	20	V
Operating LED forward current	I_F	5	10	20	mA
Continuous load current (AC peak/DC)	I_O	---	---	2	A
Operating temperature	T_a	-20	---	65	°C

■ Engineering Data

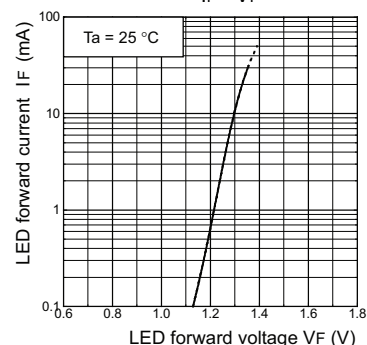
**LED forward current vs.
Ambient temperature**
IF - Ta



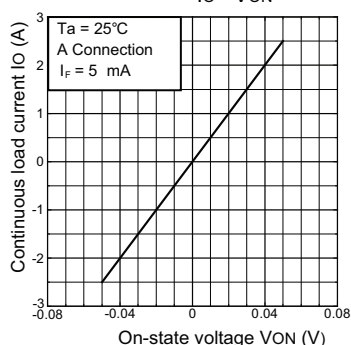
**Continuous load current vs.
Ambient temperature**
Io - Ta



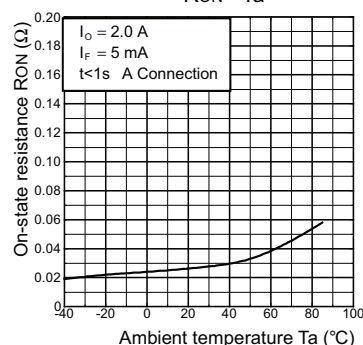
**LED forward current vs.
LED forward voltage**
IF - VF



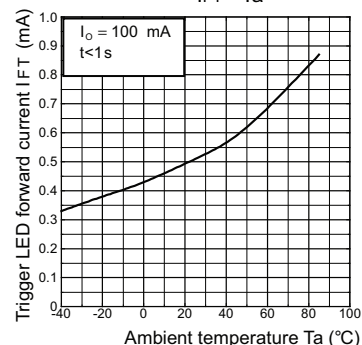
**Continuous load current vs.
On-state voltage**
Io - VON



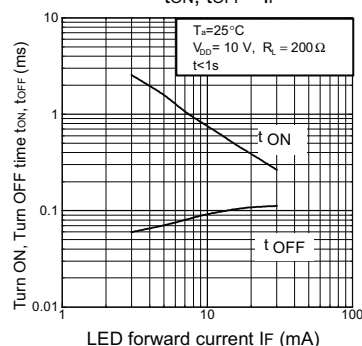
**On-state resistance vs.
Ambient temperature**
RON - Ta



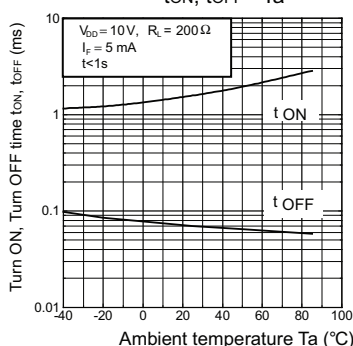
**Trigger LED forward current vs.
Ambient temperature**
IFT - Ta



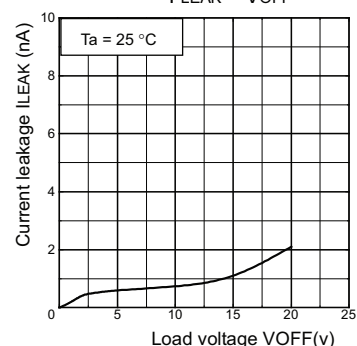
**Turn ON, Turn OFF time vs.
LED forward current**
tON, tOFF - IF



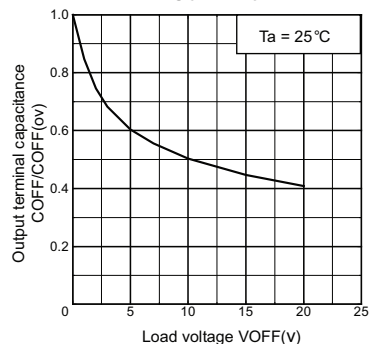
**Turn ON, Turn OFF time vs.
Ambient temperature**
tON, tOFF - Ta



**Current leakage vs.
Load voltage**
I LEAK - VOFF



**Output terminal capacitance
COFF/COFF(ov) vs. Load voltage**
COFF - VOFF



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