

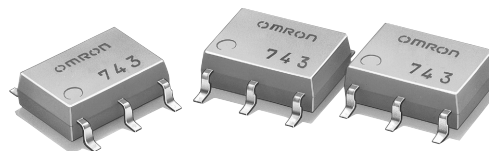
# MOS FET Relays G3VM-21HR

**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**

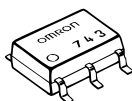
Contact form	Terminals	Load voltage (peak value) (See note.)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	20 V	G3VM-21HR	75	---
			G3VM-21HR(TR)	---	2,500

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

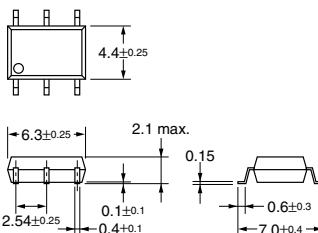
■ **Dimensions**

**Note:** All units are in millimeters unless otherwise indicated.

**G3VM-21HR**



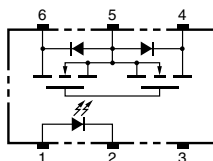
**Note:** The actual product is marked differently from the image shown here.



Weight: 0.13 g

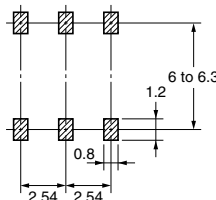
■ **Terminal Arrangement/Internal Connections (Top View)**

**G3VM-21HR**



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

**G3VM-81HR**

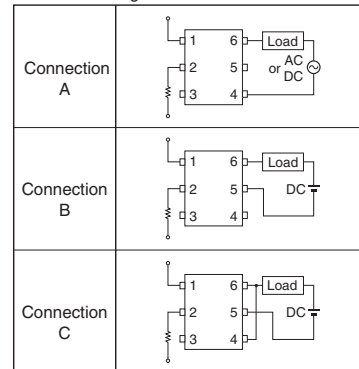


■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	30	mA		
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C	$T_a \geq 25^\circ\text{C}$	
	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	$\Delta I_O/^\circ\text{C}$	-33.3	mA/°C	$T_a \geq 50^\circ\text{C}$
		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.

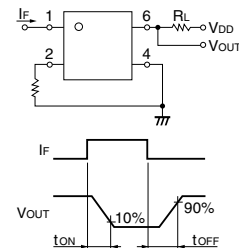
Connection Diagram



■ 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	$\mu\text{A}$	$V_R = 5 \text{ V}$	
	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	0.05	$\Omega$	$I_F = 5 \text{ mA}, I_O = 2 \text{ A}, t < 1 \text{ s}$
		Connection B		---	0.01	0.025	$\Omega$	$I_F = 5 \text{ mA}, I_O = 2 \text{ A}, t < 1 \text{ s}$
		Connection C		---	0.005	---	$\Omega$	$I_F = 5 \text{ mA}, I_O = 4 \text{ A}, t < 1 \text{ s}$
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	---	---	$\text{M}\Omega$	$V_{I-O} = 500 \text{ VDC}, R_{oh} \leq 60\%$	
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



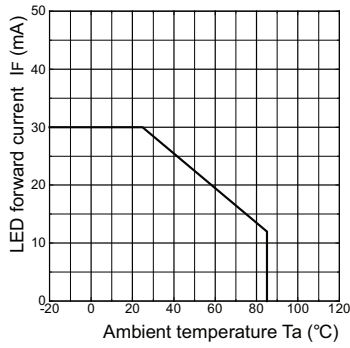
■ Recommended Operating Conditions

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

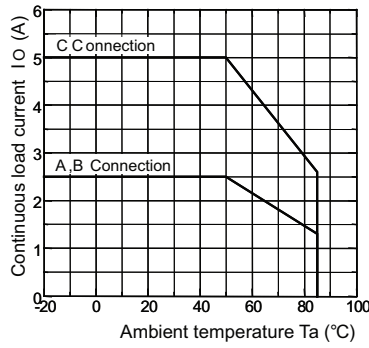
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{DD}$	---	---	20	V
Operating LED forward current	$I_F$	5	10	20	mA
Continuous load current (AC peak/DC)	$I_O$	---	---	2	A
Operating temperature	$T_a$	-20	---	65	°C

■ Engineering Data

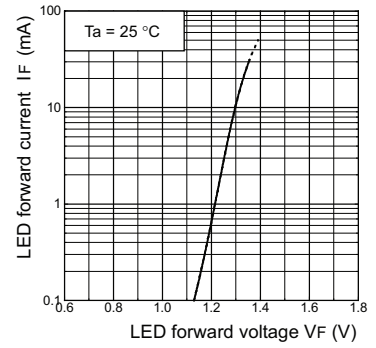
LED forward current vs. Ambient temperature  
IF - Ta



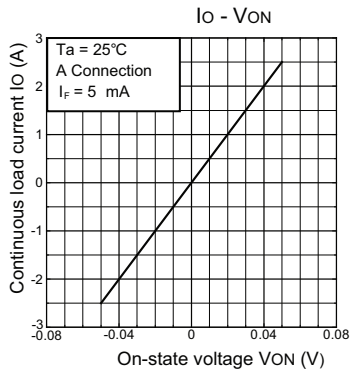
Continuous load current vs. Ambient temperature  
Io - Ta



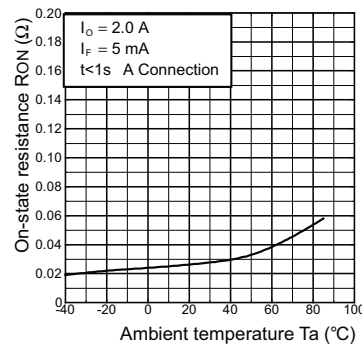
LED forward current vs. LED forward voltage  
IF - VF



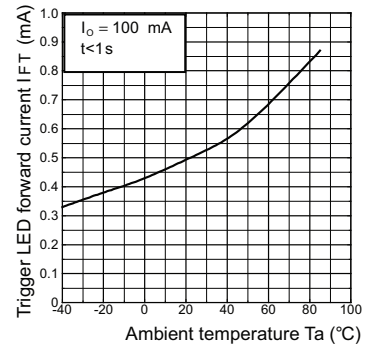
Continuous load current vs. On-state voltage  
Io - VON



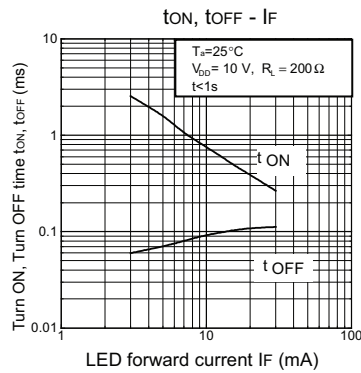
On-state resistance vs. Ambient temperature  
RON - Ta



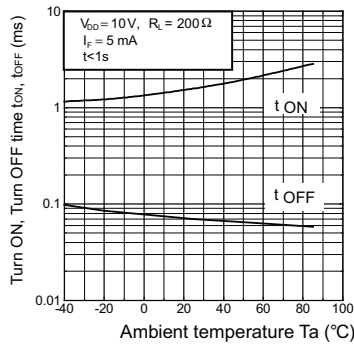
Trigger LED forward current vs. Ambient temperature  
IFT - Ta



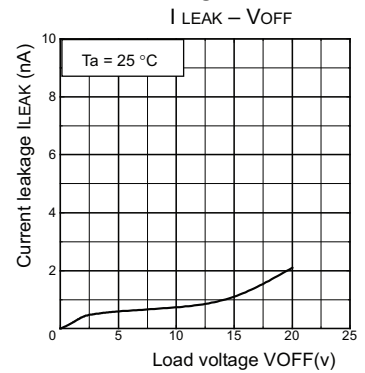
Turn ON, Turn OFF time vs. LED forward current  
tON, tOFF - IF



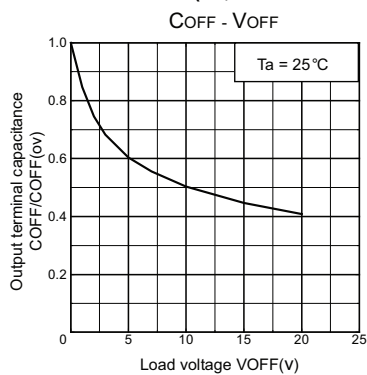
Turn ON, Turn OFF time vs. Ambient temperature  
tON, tOFF - Ta



Current leakage vs. Load voltage  
I LEAK - VOFF



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



MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows of small squares.

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  - Including:** Including without limitation
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  - Delivery and shipping dates are estimates only; and
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- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier or any claim related to pricing or other charges must be presented in detail in writing to Seller within 30 days of receipt of shipment.

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