

MOS FET Relays

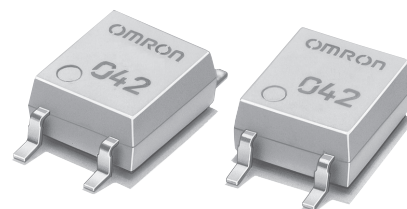
G3VM-21GR1

MOS FET Relay with Low Output Capacitance and ON Resistance ($C \times R = 5\text{pF} \cdot \Omega$) in a 20-V Load Voltage, SOP Package.

- ON resistance of $1\ \Omega$ (typical) suppresses output signal attenuation.
- Leakage current of $1.0\ \text{nA}$ max. ($0.2\ \text{nA}$ typ.) when relay is open.
- RoHS Compliant.

■ Application Examples

- Semiconductor inspection tools
- Measurement devices
- Broadband systems
- Data loggers



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

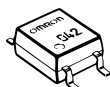
■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21GR1	100	
			G3VM-21GR1(TR)	---	2,500

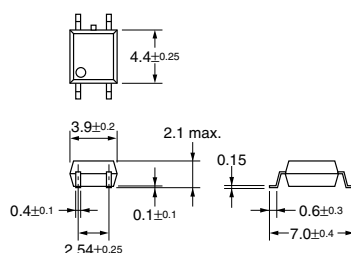
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21GR1



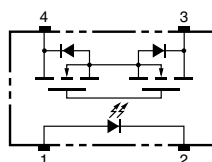
Note: The actual product is marked differently from the image shown here.



Weight: 0.1 g

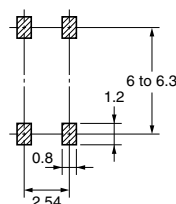
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-21GR1



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

G3VM-21GR1



Absolute Maximum Ratings (Ta = 25°C)

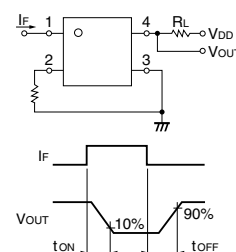
Item		Symbol	Rating	Unit	Measurement conditions
Input	LED forward current	I _F	50	mA	
	Repetitive peak LED forward current	I _{FP}	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate	Δ I _F /°C	−0.5	mA/°C	T _a ≥ 25°C
	LED reverse voltage	V _R	5	V	
	Connection temperature	T _J	125	°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	20	V	
	Continuous load current	I _O	300	mA	
	ON current reduction rate	Δ I _{ON} /°C	−3.0	mA/°C	T _a ≥ 25°C
	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	−20 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.

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage	V_F	1.0	1.15	1.3	V
	Reverse current	I_R	---	---	10	μA
	Capacity between terminals	C_T	---	15	---	pF
	Trigger LED forward current	I_{FT}	---	---	4	mA
Output	Maximum resistance with output ON	R_{ON}	---	1	1.5	Ω
	Current leakage when the relay is open	I_{LEAK}	---	0.2	1.0	nA
	Capacity between terminals	C_{OFF}	---	5.0	12.0	pF
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF
Insulation resistance		R_{I-O}	1,000	---	---	M Ω
Turn-ON time		t_{ON}	---	0.09	0.5	ms
Turn-OFF time		t_{OFF}	---	0.2	0.5	ms

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



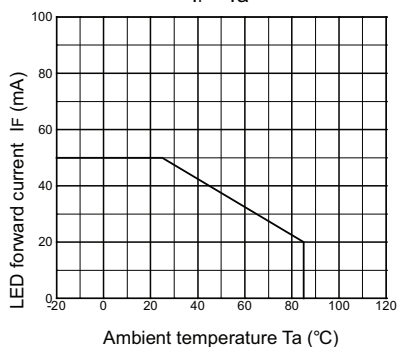
Recommended Operating Conditions

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

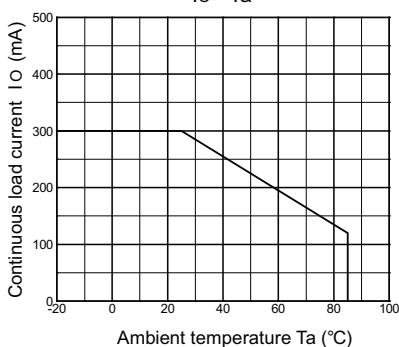
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	20	V
Operating LED forward current	I_F	7	---	30	mA
Continuous load current (AC peak/DC)	I_O	---	---	300	mA
Operating temperature	T_a	25	---	60	°C

■ Engineering Data

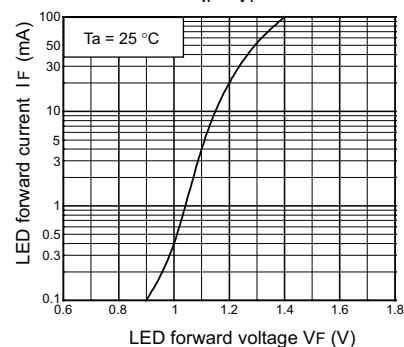
**LED forward current vs.
Ambient temperature**
IF - Ta



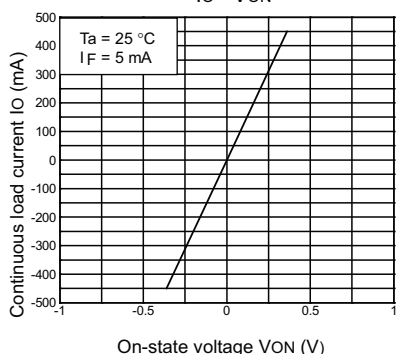
**Continuous load current vs.
Ambient temperature**
IO - Ta



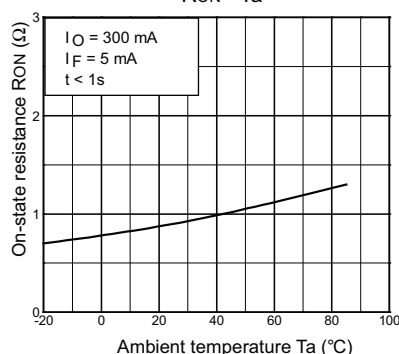
**LED forward current vs.
LED forward voltage**
IF - VF



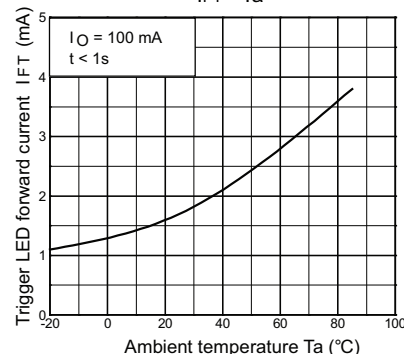
**Continuous load current vs.
On-state voltage**
IO - VON



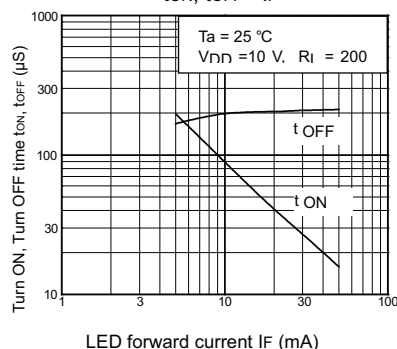
**On-state resistance vs.
Ambient temperature**
RON - Ta



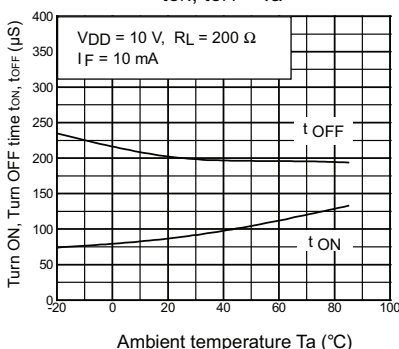
**Trigger LED forward current vs.
Ambient temperature**
IFT - Ta



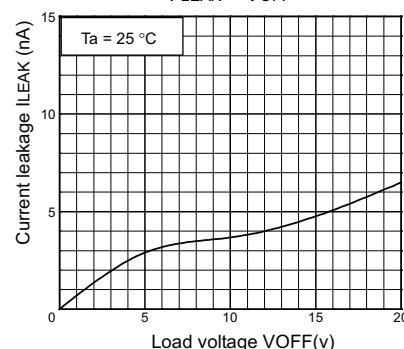
**Turn ON, Turn OFF time vs.
LED forward current**
tON, tOFF - IF



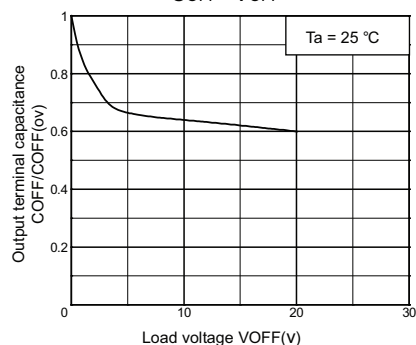
**Turn ON, Turn OFF time vs.
Ambient temperature**
tON, tOFF - Ta



**Current leakage vs.
Load voltage**
ILEAK - VOFF



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



MEMO

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