

MOS FET Relays

G3VM-21LR

World's Smallest SSOP Package MOS FET Relay* with Low Output Capacitance and ON Resistance ($C \times R = 5\text{pF} \cdot \Omega$) in a 20-V Load Voltage Model

- Output capacitance of 1 pF (typical) allows high frequency applications.
- RoHS Compliant.

*Information correct as of May, 2007, according to data obtained by OMRON.

Application Examples

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



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

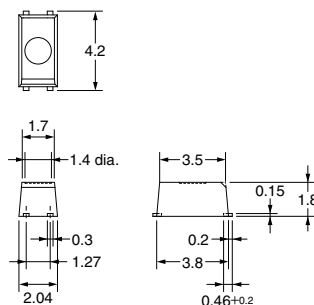
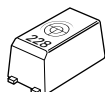
List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	20 VAC	G3VM-21LR	---
			G3VM-21LR(TR)	1,500
			G3VM-21LR(TR05)	500
			G3VM-21LR(TR10)	1,000

Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-21LR



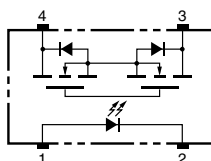
Note: The actual product is marked differently from the image shown here.

Note: A tolerance of ± 0.1 mm applies to all dimensions unless otherwise specified.

Weight: 0.03 g

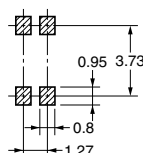
Terminal Arrangement/Internal Connections (Top View)

G3VM-21LR



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-21LR



Absolute Maximum Ratings (Ta = 25°C)

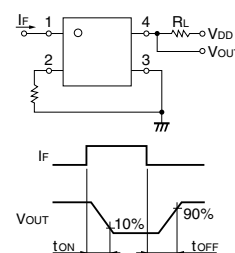
Item	Symbol	Rating	Unit	Measurement conditions
Input	LED forward current	I_F	50	mA
	Repetitive peak LED forward current	I_{FP}	1	A
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	LED reverse voltage	V_R	5	V
	Connection temperature	T_j	125	°C
Output	Load voltage (AC peak/DC)	V_{OFF}	20	V
	Continuous load current	I_O	160	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.6	mA/°C
	Connection temperature	T_j	125	°C
Dielectric strength between input and output (See note 1.)		V_{I-O}	1,500	V_{rms}
Operating temperature		T_a	-20 to +85	°C
Storage temperature		T_{stg}	-40 to +125	°C
Soldering temperature (10 s)		---	260	°C

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}	---	5	8	Ω
	Current leakage when the relay is open	I_{LEAK}	---	0.2	1.0	nA
	Capacity between terminals	C_{OFF}	---	1.0	2.5	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}	---	0.06	0.5	ms
Turn-OFF time		t_{OFF}	---	0.12	0.5	ms

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



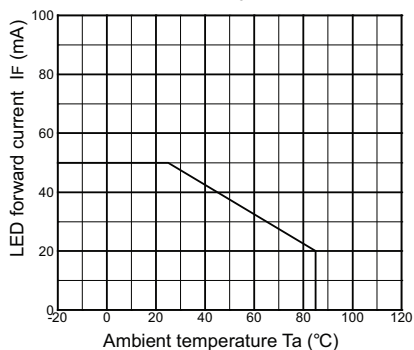
Recommended Operating Conditions

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

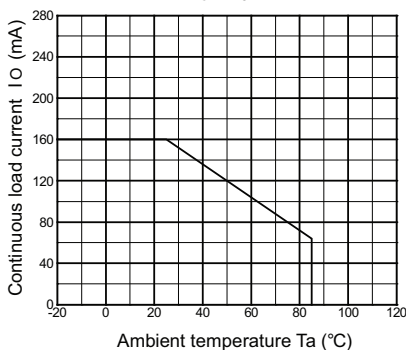
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	20	V
Operating LED forward current	I_F	7	---	30	mA
Continuous load current (AC peak/DC)	I_O	---	---	160	mA
Operating temperature	T_a	25	---	60	°C

■ Engineering Data

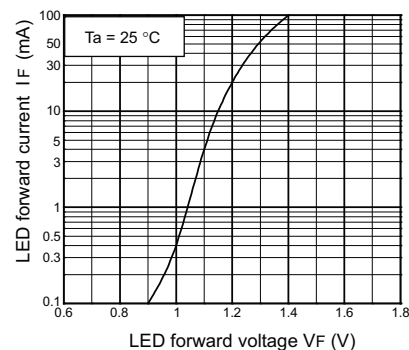
**LED forward current vs.
Ambient temperature**
 $I_F - T_a$



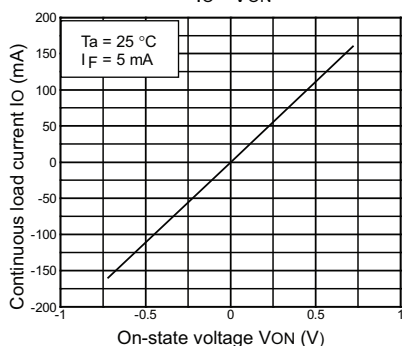
**Continuous load current vs.
Ambient temperature**
 $I_O - T_a$



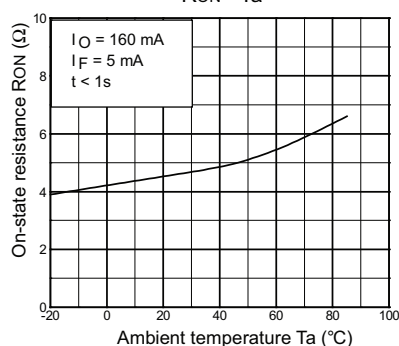
**LED forward current vs.
LED forward voltage**
 $I_F - V_F$



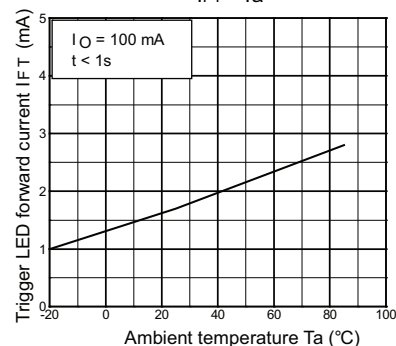
**Continuous load current vs.
On-state voltage**
 $I_O - V_{ON}$



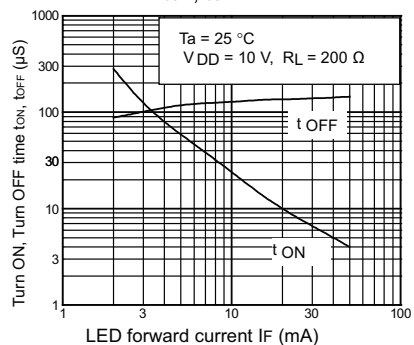
**On-state resistance vs.
Ambient temperature**
 $R_{ON} - T_a$



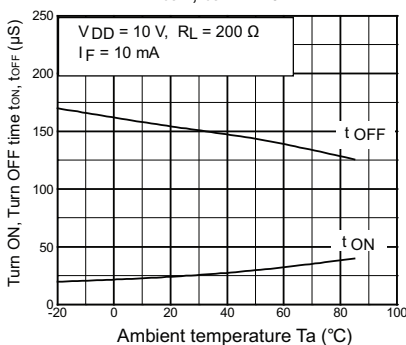
**Trigger LED forward current vs.
Ambient temperature**
 $I_{FT} - T_a$



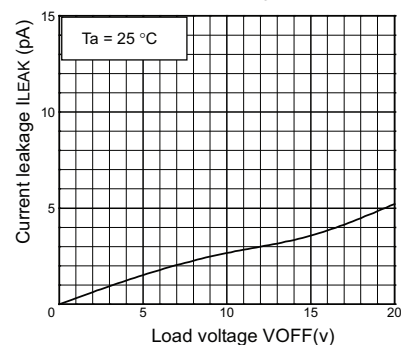
**Turn ON, Turn OFF time vs.
LED forward current**
 $t_{ON}, t_{OFF} - I_F$



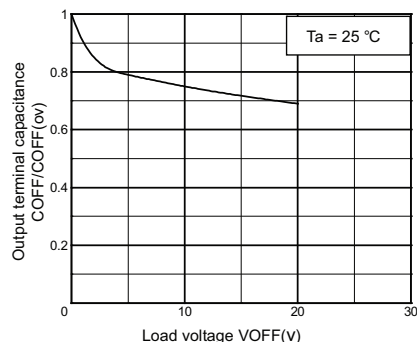
**Turn ON, Turn OFF time vs.
Ambient temperature**
 $t_{ON}, t_{OFF} - T_a$



**Current leakage vs.
Load voltage**
 $I_{LEAK} - V_{OFF}$



**Output terminal capacitance
COFF/COFF(ov) vs. Load voltage**
 $COFF - V_{OFF}$



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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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