

MOS FET Relays G3VM-21PR11

Smallest Class in market, USOP Package
MOS FET Relay with High-power, 0.9A Switching
in a 20-V Load Voltage Model.

- Dielectric strength of 500 Vrms between I/O
- $C_{OFF} = 0.8 \text{ pF}$ (typical) and $R_{ON} = 0.18 \Omega$ (typical).
- RoHS compliant.

■ **Application Examples**

- Semiconductor inspection tools
- Measurement devices and Data loggers
- Communication equipment



NEW

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

■ **List of Models**

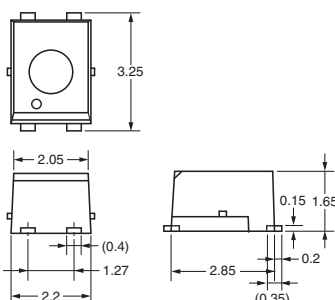
Package Type	Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
USOP4	SPST-NO	Surface-mounting terminals	20 VAC or VDC	G3VM-21PR11	---
				G3VM-21PR11(TR05)	500
				G3VM-21PR11(TR)	1,500

Note: Tape-cut USOP's are packaged without humidity resistance. Use manual soldering to mount them. Refer to the common precautions contained in the Technical Users Guide, "MOS FET Relays, Technical Information".

■ **Dimensions**

Note: All units are in millimeters unless otherwise indicated.

G3VM-21PR11

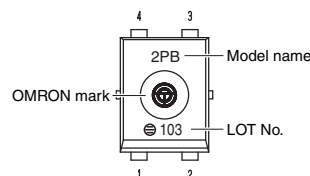
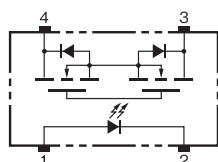


Note: The actual product is marked differently from the image shown here.

Weight: 0.03 g

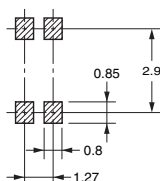
■ **Terminal Arrangement/Internal Connections (Top View)**

G3VM-21PR11



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

G3VM-21PR11



■ Absolute Maximum Ratings (Ta = 25°C)

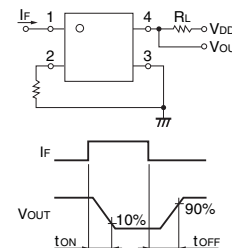
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/ $^\circ\text{C}$	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	$^\circ\text{C}$	
Output	Load voltage (AC peak/DC)	V_{OFF}	20	V	
	Continuous load current (AC peak/DC)	I_O	900	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-12	mA/ $^\circ\text{C}$	$T_a \geq 25^\circ\text{C}$
	Pulse ON current	I_{OP}	2,700	mA	$t=100\text{ms}$, Duty=1/10
	Connection temperature	T_J	125	$^\circ\text{C}$	
Dielectric strength between input and output (See note 1.)		V_{I-O}	500	V_{rms}	AC for 1 min
Ambient operating temperature		T_a	-40 to +85	$^\circ\text{C}$	With no icing or condensation
Ambient Storage temperature		T_{stg}	-40 to +125	$^\circ\text{C}$	With no icing or condensation
Soldering temperature		---	260	$^\circ\text{C}$	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	$I_F = 10 \text{ mA}$
	Reverse current	I_R	---	---	10	μA	$V_R = 5 \text{ V}$
	Capacity between terminals	C_T	---	15	---	pF	$V = 0$, $f = 1 \text{ MHz}$
	Trigger LED forward current	I_{FT}	---	0.6	3	mA	$I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	---	0.18	0.22	Ω	$I_F = 5 \text{ mA}$, $I_O = 900 \text{ mA}$ $t < 1 \text{ s}$
	Current leakage when the relay is open	I_{LEAK}	---	---	1	nA	$V_{OFF} = 20 \text{ V}$, $T_a = 25^\circ\text{C}$
	Capacity between terminals	C_{OFF}	---	0.8	1.1	pF	$V = 0$, $f = 100 \text{ MHz}$, $t < 1 \text{ s}$
Capacity between I/O terminals		C_{I-O}	---	0.4	---	pF	$f = 1 \text{ MHz}$, $V_s = 0 \text{ V}$
Insulation resistance between I/O terminals		R_{I-O}	1,000	---	---	M Ω	$V_{I-O} = 500 \text{ VDC}$, $R_{oh} \leq 60\%$
Turn-ON time		t_{ON}	---	0.5	2	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	ms	

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



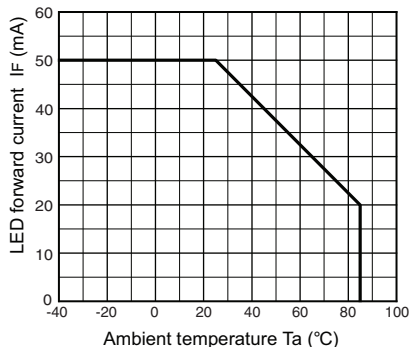
■ Recommended Operating Conditions

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

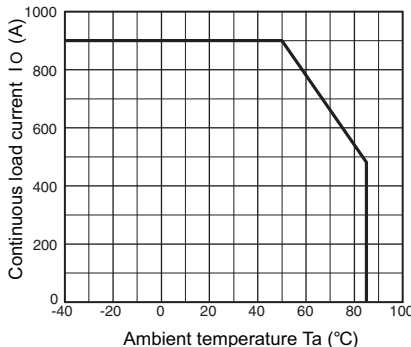
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	16	V
Operating LED forward current	I_F	5	7.5	20	mA
Continuous load current (AC peak/DC)	I_O	---	---	700	mA
Ambient Operating temperature	T_a	-20	---	65	$^\circ\text{C}$

■ Engineering Data

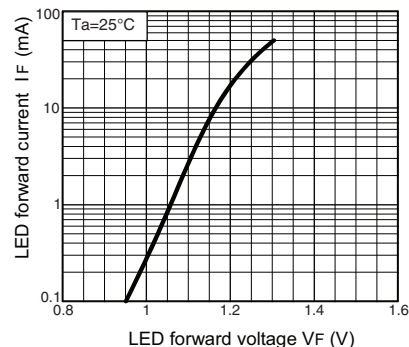
LED forward current vs. Ambient temperature
IF - Ta



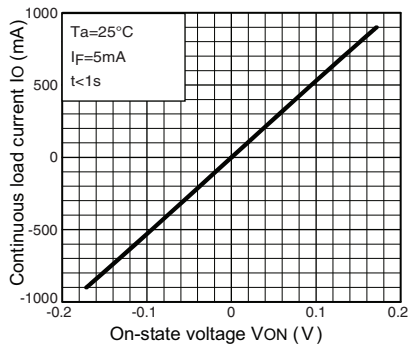
Continuous load current vs. Ambient temperature
Io - Ta



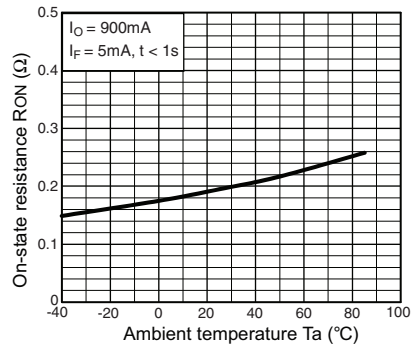
LED forward current vs. LED forward voltage
IF - VF



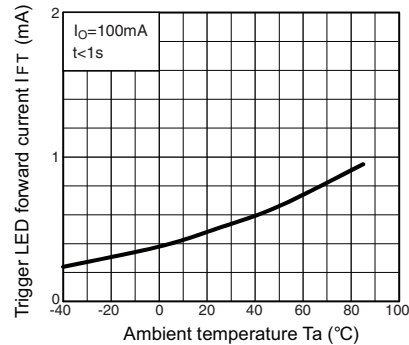
Continuous load current vs. On-state voltage
Io - VON



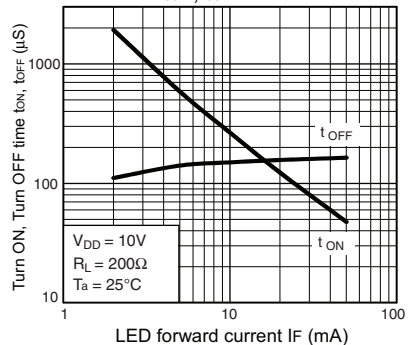
On-state resistance vs. Ambient temperature
RON - Ta



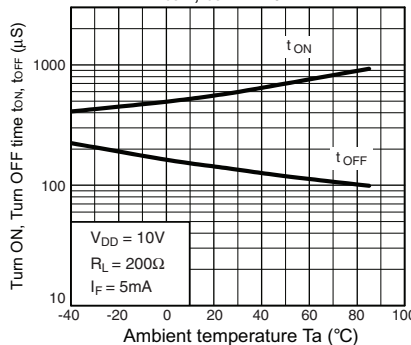
Trigger LED forward current vs. Ambient temperature
IFT - Ta



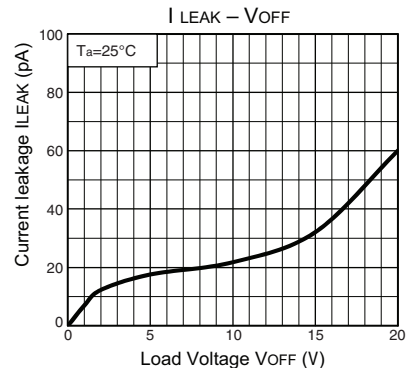
Turn ON, Turn OFF time vs. LED forward current
tON, tOFF - IF



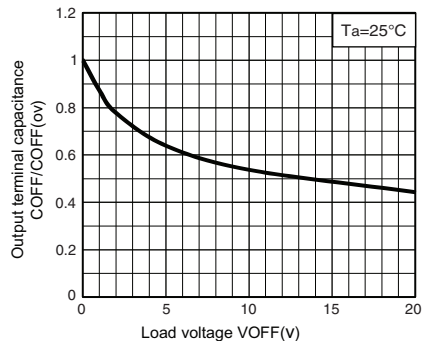
Turn ON, Turn OFF time vs. Ambient temperature
tON, tOFF - Ta



Current leakage vs. Load voltage
ILEAK - VOFF



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



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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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