

MOS FET Relays

G3VM-41LR10

SSOP Package MOS FET Relays with Low Leakage Current, Output Capacitance and ON Resistance ($C \times R = 5.4 \text{ pF} \cdot \Omega$) in a 40-V Load Voltage Model.

- Output capacitance of 0.45 pF (typical) allows high frequency applications.
- Leakage current of 0.2 nA max. (10 pA typ.) when relay is open
- Turn-on time = 0.026 ms (typ.)
- RoHS compliant

Application Examples

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



NEW

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

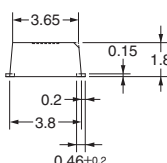
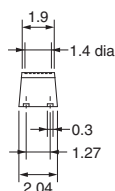
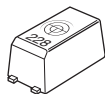
List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41LR10	---
			G3VM-41LR10(TR05)	500
			G3VM-41LR10(TR)	1,500

Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41LR10



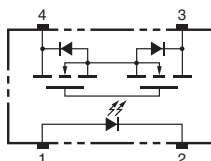
Note: A tolerance of $\pm 0.1 \text{ mm}$ applies to all dimensions unless otherwise specified.

Weight: 0.03 g

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

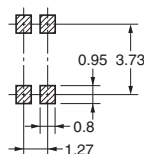
Terminal Arrangement/Internal Connections (Top View)

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Actual Mounting Pad Dimensions (Recommended Value, Top View)

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Absolute Maximum Ratings (Ta = 25°C)

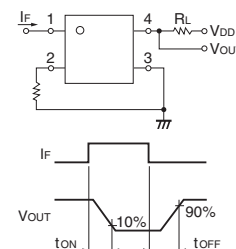
Item		Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I _F	30	mA	
	LED forward current reduction rate	Δ I _F /°C	−0.3	mA/°C	T _a ≥ 25°C
	LED reverse voltage	V _R	5	V	
	Connection temperature	T _j	125	°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	40	V	
	Continuous load current	I _O	120	mA	
	ON current reduction rate	Δ I _{ON} /°C	−1.2	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
Ambient operating temperature		T _a	−20 to +85	°C	With no icing or condensation
Storage temperature		T _{stg}	−40 to +125	°C	With no icing or condensation
Soldering temperature		---	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	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions
Input	LED forward voltage	V _F	1.15	1.35	1.45	V	I _F = 5 mA
	Reverse current	I _R	---	---	10	μA	V _R = 5 V
	Capacity between terminals	C _T	---	70	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current	I _{FT}	---	---	3	mA	I _O = 100 mA
Output	Maximum resistance with output ON	R _{ON}	---	12	14	Ω	I _F = 5 mA, I _O = 120 mA, t < 1 s
	Current leakage when the relay is open	I _{LEAK}	---	10	200	pA	V _{OFF} = 35 V, T _a = 25°C
	Capacity between terminals	C _{OFF}	---	0.45	0.8	pF	V = 0, f = 100 MHz, t = < 1 s
Capacity between I/O terminals		C _{I-O}	---	0.3	---	pF	f = 1 MHz, V _s = 0 V
Insulation resistance between I/O terminals		R _{I-O}	1,000	---	---	MΩ	V _{I-O} = 500 VDC, R _{oH} ≤ 60%
Turn-ON time		t _{ON}	---	0.026	0.2	ms	I _F = 5 mA, R _L = 200 Ω, V _{DD} = 10 V (See note 2.)
Turn-OFF time		t _{OFF}	---	0.14	0.3	ms	

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



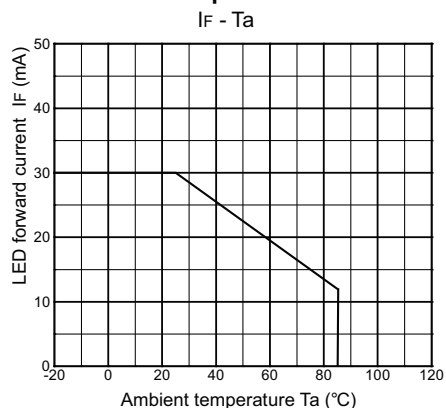
Recommended Operating Conditions

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

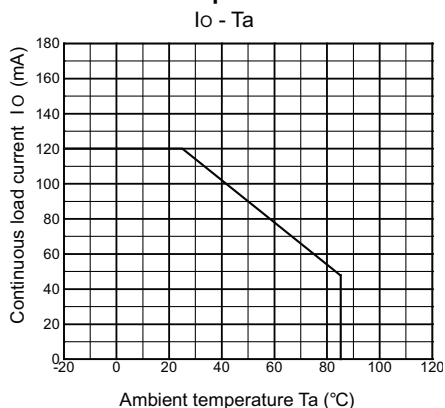
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	32	V
Operating LED forward current	I_F	---	---	20	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_a	25	---	60	°C

■ Engineering Data

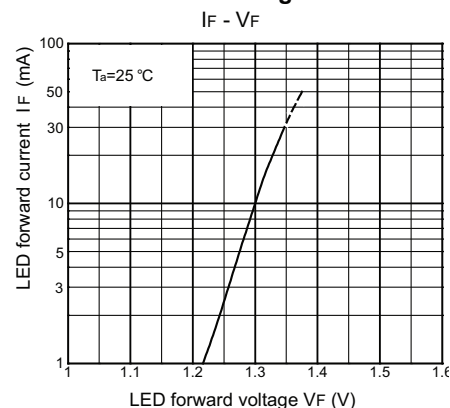
LED forward current vs.
Ambient temperature



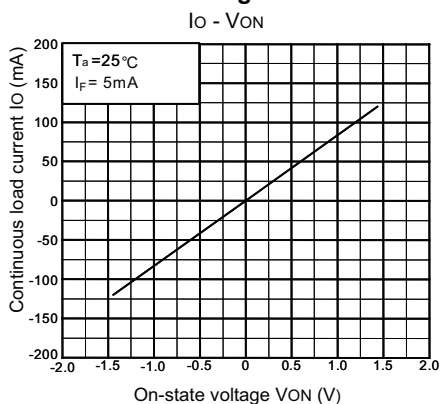
Continuous load current vs.
Ambient temperature



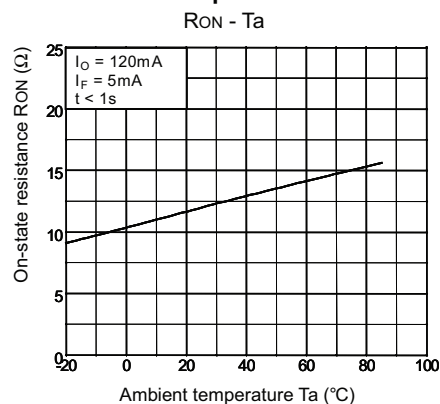
LED forward current vs.
LED forward voltage



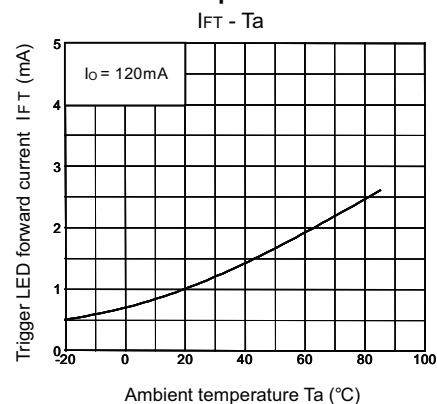
Continuous load current vs.
On-state voltage



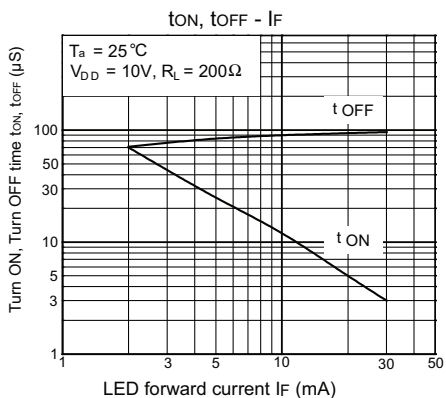
On-state resistance vs.
Ambient temperature



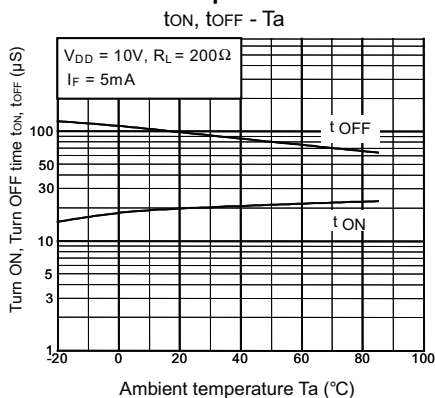
Trigger LED forward current vs.
Ambient temperature



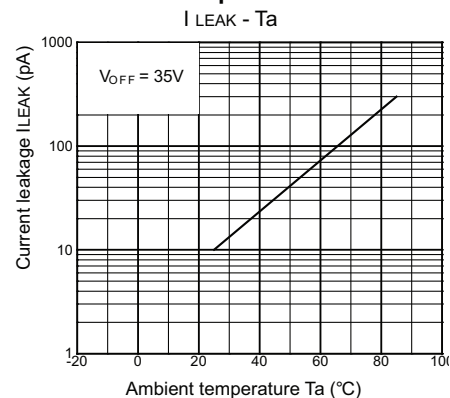
Turn ON, Turn OFF time vs.
LED forward current



Turn ON, Turn OFF time vs.
Ambient temperature



Current leakage vs.
Ambient temperature



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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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