

MOS FET Relays

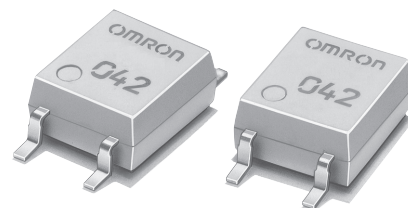
G3VM-41GR7

New MOS FET Relays with Low Output Capacitance and ON Resistance ($C_{\text{OFF}} \times R = 10.7 \text{ pF} \cdot \Omega$) in a 40-V Load Voltage, SOP Package.

- $C_{\text{OFF}} = 1.65 \text{ pF}$ (typical), $R_{\text{ON}} = 6.5 \Omega$ (typical)
- Leakage current of 1.0 nA max. (0.2 nA typ.) when relay is open.
- RoHS compliant

Application Examples

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



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 stick	Number per tape
SPST-NO	Surface-mounting terminals	40 VAC	G3VM-41GR7	100	---
			G3VM-41GR7(TR)	---	2,500

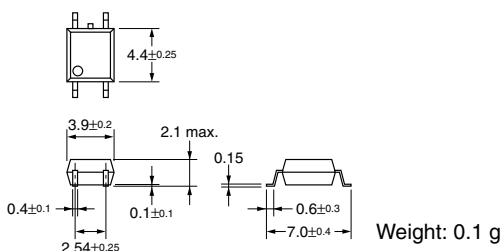
Dimensions

Note: All units are in millimeters unless otherwise indicated.

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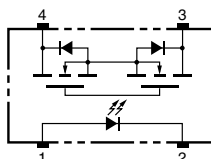


Note: The actual product is marked differently from the image shown here.



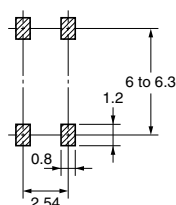
Terminal Arrangement/Internal Connections (Top View)

G3VM-41GR7



Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-41GR7



Absolute Maximum Ratings (Ta = 25°C)

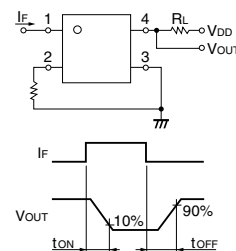
Item	Symbol	Rating	Unit	Measurement Conditions
Input	LED forward current	I_F	50	mA
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C $T_a \geq 25^\circ\text{C}$
	LED reverse voltage	V_R	5	V
	Connection temperature	T_j	125	°C
Output	Load voltage (AC peak/DC)	V_{OFF}	40	V
	Continuous load current	I_O	120	mA
	ON current reduction rate	$\Delta I_O/^\circ\text{C}$	-1.2	mA/°C $T_a \geq 25^\circ\text{C}$
	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}	-40 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 $I_F = 10 \text{ mA}$
	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}	---	---	4	mA $I_O = 100 \text{ mA}$
Output	Maximum resistance with output ON	R_{ON}	---	6.5	9.5	Ω $I_F = 5 \text{ mA}, I_O = 120 \text{ mA}, t = 10 \text{ ms}$
	Current leakage when the relay is open	I_{LEAK}	---	0.2	1.0	nA $V_{OFF} = 30 \text{ V}, T_a = 50^\circ\text{C}$
	Capacity between terminals	C_{OFF}	---	1.65	3.0	pF $V = 0, f = 100 \text{ MHz}, t < 1 \text{ s}$
Capacity between I/O terminals		C_{I-O}	---	0.8	---	pF $f = 1 \text{ MHz}, V_s = 0 \text{ V}$
Insulation resistance between I/O terminals		R_{I-O}	1,000	---	---	M Ω $V_{I-O} = 500 \text{ VDC}, R_{RH} \leq 60\%$
Turn-ON time		t_{ON}	---	0.03	0.5	ms $I_F = 10 \text{ mA}, R_L = 200 \Omega, V_{DD} = 10 \text{ V}$ (See note 2.)
Turn-OFF time		t_{OFF}	---	0.15	0.5	ms

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



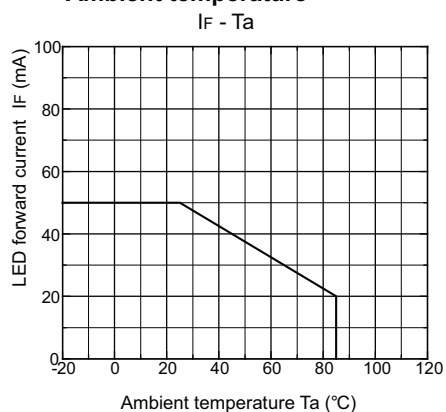
Recommended Operating Conditions

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

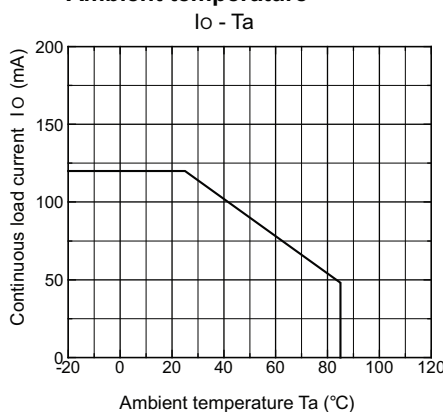
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V_{DD}	---	---	32	V
Operating LED forward current	I_F	10	---	30	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_a	25	---	60	°C

Engineering Data

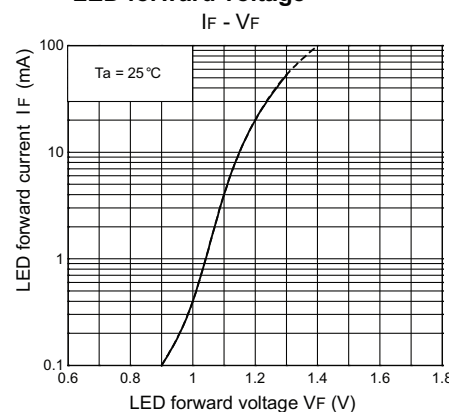
LED forward current vs.
Ambient temperature



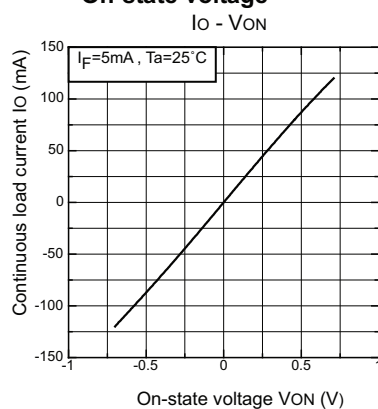
Continuous load current vs.
Ambient temperature



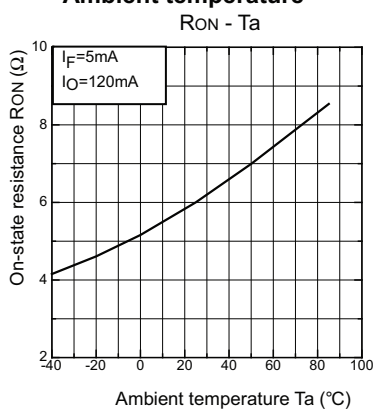
LED forward current vs.
LED forward voltage



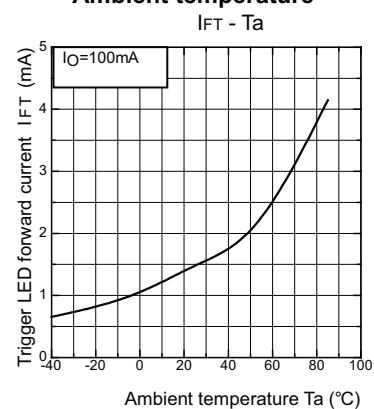
Continuous load current vs.
On-state voltage



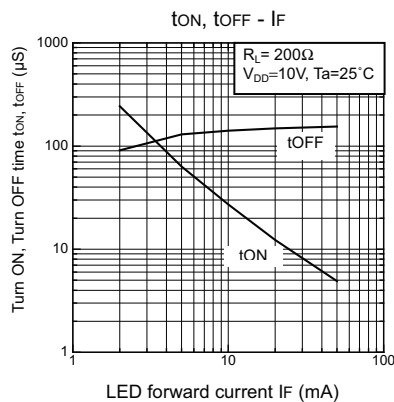
On-state resistance vs.
Ambient temperature



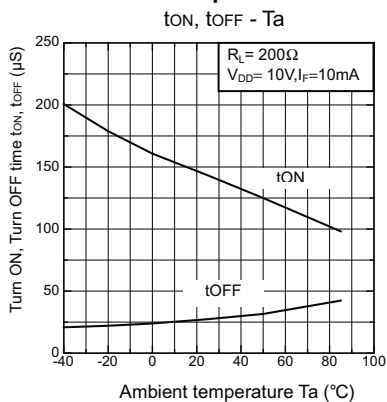
Trigger LED forward current vs.
Ambient temperature



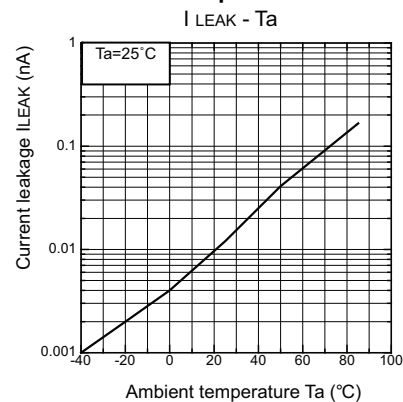
Turn ON, Turn OFF time vs.
LED forward current



Turn ON, Turn OFF time vs.
Ambient temperature



Current leakage vs.
Ambient temperature



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

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