MOS FET Relays G3VM-81G1

Relay Incorporating a MOS FET Optically Coupled with an Infrared LED has a 4-pin SOP Package and 80-V Load Voltage

- Continuous load current of 350 mA.
- Dielectric strength of 1,500 Vrms between I/O.
- RoHS Compliant.

■ Application Examples

- Broadband systems
- Measurement devices
- Data loggers
- Amusement machines



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	80 VAC	G3VM-81G1	100		
terminals			G3VM-81G1(TR)		2,500	

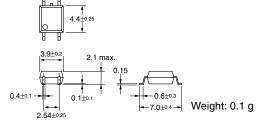
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-81G1

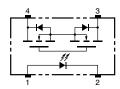


Note: The actual product is marked differently from the image shown here.



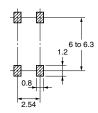
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-81G1



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

G3VM-81G1



■ Absolute Maximum Ratings (Ta = 25°C)

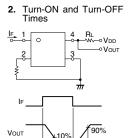
Item		Symbol	Rating Unit		Measurement conditions		
Input	LED forward current	I _F	50	mA			
	Repetitive peak LED forward current	I _{FP}	1	Α	100 μs pulses, 100 pps		
	LED forward current reduction rate	Δ I _F /°C	-0.5	mA/°C	$T_a \ge 25^{\circ}C$		
	LED reverse voltage	V_R	5	٧			
	Connection temperature	T _j	125	°C			
Output	Load voltage (AC peak/DC)	V_{OFF}	80	٧			
	Continuous load current	Io	350	mA			
	ON current reduction rate	Δ I _{ON} /°C	-3.5	mA/°C	$T_a \ge 25^{\circ}C$		
	Connection temperature	T _j	125	°C			
	ric strength between input and (See note 1.)	V _{I-O}	1,500	Vrms	AC for 1 min		
Operati	ng temperature	T _a	-40 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.

Note:

■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Mini- mum	Typical	Maxi- mum	Unit	Measurement conditions	
Input	LED forward voltage	V _F	1.0	1.15	1.3	٧	I _F = 10 mA	
	Reverse current	I _R			10	μΑ	V _R = 5 V	
	Capacity between terminals	C _T		15		pF	V = 0, f = 1 MHz	
	Trigger LED forward current	I _{FT}		1.0	4.0	mA	I _O = 350 mA	
	Maximum resistance with output ON	R _{ON}		1.0	1.2	Ω	I _F = 5 mA, I _O = 350 mA	
	Current leakage when the relay is open	I _{LEAK}		0.2	1.0	nA	V _{OFF} = 30 V, Ta = 50°C	
	Capacity between terminals	C _{OFF}		30	40	pF	V = 0, f = 100 MHz	
Capacit	ty between I/O terminals	C _{I-O}		0.8		pF	f = 1 MHz, Vs = 0 V	
Insulation resistance		R _{I-O}	1,000			ΜΩ	$V_{I-O} = 500 \text{ VDC},$ $R_{oH} \le 60\%$	
Turn-ON time		t _{ON}		0.3	0.5	ms	$I_F = 5 \text{ mA}, R_L = 200 \Omega,$ $V_{DD} = 20 \text{ V (See note 2.}$	
Turn-OFF time		t _{OFF}		0.3	0.5	ms		



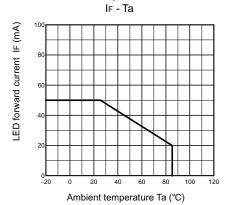
■ Recommended Operating Conditions

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

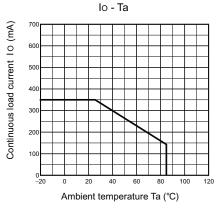
Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	V _{DD}			64	V
Operating LED forward current	I _F	5		30	mA
Continuous load current (AC peak/DC)	Io			350	mA
Operating temperature	T _a	25		60	°C

■ Engineering Data

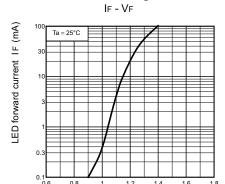
LED forward current vs. Ambient temperature



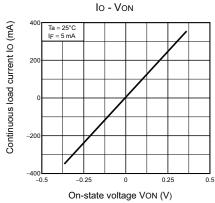
Continuous load current vs. **Ambient temperature**



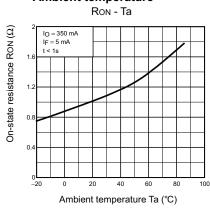
LED forward current vs. LED forward voltage



Continuous load current vs. On-state voltage

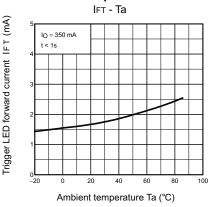


On-state resistance vs. **Ambient temperature**

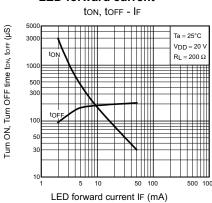


Trigger LED forward current vs. Ambient temperature

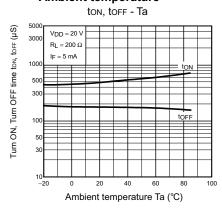
LED forward voltage VF (V)



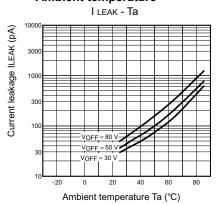
Turn ON, Turn OFF time vs. **LED forward current**



Turn ON, Turn OFF time vs. **Ambient temperature**



Current leakage vs. **Ambient temperature**





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