

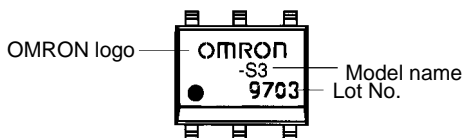
Relay Incorporating a MOS FET Optically Coupled with an Infrared LED in a Miniature Out-line Package

- MOS FET of the output circuit has a high dielectric strength.
- Ideal replacement for the dial-pulse relay or hook relay of each modem or facsimile machine.
- Ideal for application to the line interface blocks of PBX and telephone exchange systems.
- Thin, flat, and extremely compact.
- Can be applied to hybrid IC circuits and card-type modems conforming to PCMCIA standards to make them even more compact and lightweight.



Ordering Information

■ Appearance



Note: "G3VM" is not printed on the actual product

Contact form	Terminals	Load voltage (peak value)	Model
SPST-NO	Surface-mounting terminals (see note)	350 VAC	G3VM-S3

Note: Surface-mounting terminal models are also available on tape.

Application Examples

- PBX subscriber interfaces
- Multi-functional telephones
- Card-type modems and fax modems
- Gauging systems

Specifications

■ General Specifications

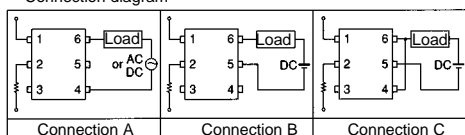
- Output dielectric strength: 350 V min.
- Trigger LED current: 3 mA max.
- Continuous load current: 120 mA max. (connected to normally open contact)
- Output ON resistance: 35 Ω max. (connected to normally open contact)
- Insulation resistance between I/O pins: 1,500 V_{rms} min.

■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rating	Unit	
Input	LED forward current	I_F	50	mA	
	LED forward current reduction rate (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	
	Repetitive peak LED forward current (100 μs pulse, 100 pps)	I_{FP}	1	A	
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_j	125	°C	
Output	Output dielectric strength	V_{OFF}	350	V	
	Continuous load current (see note 1)	Connection A	I_O	120	mA
		Connection B			
		Connection C			
	ON current reduction rate (Ta ≥ 25°C)	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C
	Connection temperature	T_j	125	°C	
Storage temperature		T_{stg}	-55 to 100	°C	
Operating temperature		T_a	-20 to 85	°C	
Soldering temperature (10 s)		T_{sol}	260	°C	
Dielectric strength (AC for 1 min with ambient humidity of 60% or less) (see note 2)		V_{I-O}	1,500	V_{rms}	

- Note:** 1. The output load current varies depending on the ambient temperature. Refer to *Engineering Data*.
2. Impose voltage between a group of pins 1, 2, and 3 and that of pins 4, 5, and 6.

Connection diagram



■ Recommended Operating Conditions

Item	Symbol	Minimum	Typical	Maximum	Unit
Operating voltage	V_{DD}	---	---	280	V
Forward current	I_F	5	10	25	mA
Continuous load current	I_O	---	---	100	mA
Operating temperature	T_{opr}	-20	---	65	°C

■ Electrical Characteristics (Ta = 25°C)

Item		Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Input	LED forward current	V_F	$I_F=10\text{ mA}$	1.0	1.15	1.3	V
	Reverse current	I_R	$V_R=5\text{ V}$	---	---	10	μA
	Capacity between terminals	C_T	$V=0, f=1\text{ MHz}$	---	30	---	pF
Output	Current leakage when the relay is open	I_{LEAK}	$V_{OFF}=350\text{ V}$	---	---	1	μA

■ Connection Characteristics (Ta = 25°C)

Item		Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Maximum resistance with output ON	Connection A	R_{ON}	$I_{ON}=120\text{ mA}, I_F=10\text{ mA}$	---	22	35	Ω
			$I_{ON}=20\text{ to }120\text{ mA}, I_F=10\text{ mA}$	---	26	40	
	Connection B		---	---	---		
	Connection C		---	---	---		

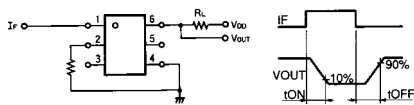
■ Insulation Characteristics (Ta = 25°C)

Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Floating capacity between I/O terminals	C_{I-O}	$V_{I-O}=0, f=1\text{MHz}$	---	0.8	---	pF
Insulation resistance	R_{I-O}	$V_{I-O}=500\text{ V}$, operating ambient humidity: $\leq 60\%$	5×10^{10}	10^{14}	---	Ω
Dielectric strength	V_{I-O}	AC for 1 min	1,500	---	---	V_{rms}
		AC for 1 s in oil	---	3,000	---	
		DC for 1 min in oil	---	3,000	---	V_{dc}

■ Switching Characteristics (Ta = 25°C)

Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Turn-on time	t_{ON}	$R_L=200\ \Omega$ $V_{DD}=20\ \text{V}$, $I_F=10\ \text{mA}$ (see note)	---	---	1	ms
Turn-off time	t_{OFF}		---	---	1	

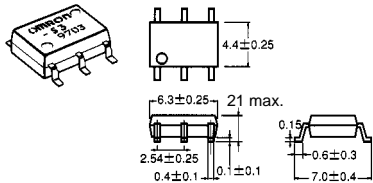
Note: Switching Time Measuring Circuit



Dimensions

Note: All units are in millimeters unless otherwise indicated.

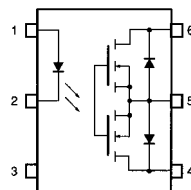
G3VM-S3



Unit: mm
Weight: 0.13 g

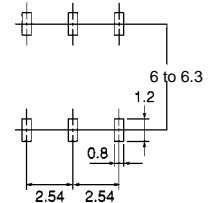
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Terminal Arrangement/
Internal Connections
(Top View)



- 1: Anode
- 2: Cathode
- 4: Drain D1
- 5: Source
- 6: Drain D2

Actual Mounting Pad Dimensions
(Recommended Value, Bottom View)



Precautions

■ Correct Use

Recommended Operating Conditions

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

Item	Min.	Type	Max.
Operating LED forward current	5 mA	7.5 mA	25 mA
Releasing LED forward current	0 V	---	0.8 V

Note: Refer to page 35 for precautions common to all G3VM models.