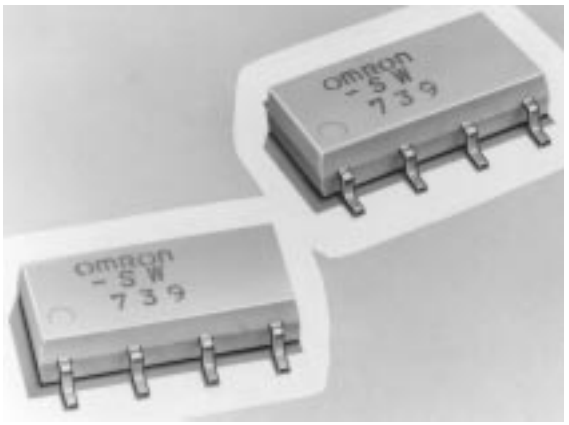
MOS FET Relay

G3VM-SW

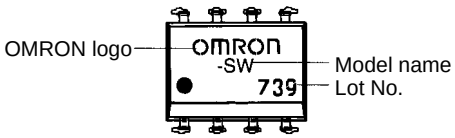
Relay Incorporating a MOS FET Optically Coupled with an Infrared LED in a Miniature Flat Package



- 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
DPST-ND	Surface-mounting terminals (see note)	350 VAC	G3VM-SW

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

Application Examples

- Electronic automatic exchange systems
- Multi-functional telephones
- Cordless telephones
- Card-type modems and fax modems

Specifications

General Specifications

- Eight-pin SOP with two circuits (DPST-NO)
- Output dielectric strength: 350 V min.
- Trigger LED current: 3 mA max.
- Continuous load current: 120 mA max.
- Output ON resistance: 35 Ω max.
- 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)		ΔI_F/°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)	With current flowing to both channels simultaneously	I_O	100	mA
		With current flowing to single channel only		120	
	ON current reduction rate (Ta≧25°C)	With current flowing to both channels simultaneously	ΔI_{ON}/°C	–1.0	mA/°C
		With current flowing to single channel only		–1.2	
	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 all input pins and output pins.

■ 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 mA	1.0	1.15	1.3	V
	Reverse current	I_R	V_R=5 V	---	---	10	μA
	Capacity between terminals	C_T	V=0, , f=1MHZ	---	30	---	pF
Output	Current leakage when the relay is open	I_{LEAK}	V_{OFF}=350 V	---	---	1	μA

■ Connection Characteristics (Ta = 25°C)

Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Maximum resistance with output ON	R_{ON}	I_{ON}=120 mA, I_F=10 mA	---	22	35	Ω

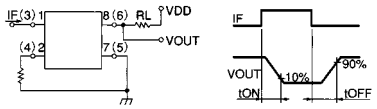
■ Insulation Characteristics (Ta = 25°C)

Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Floating capacity between I/O terminals	C_{I-O}	V_{I-O}=0, f=1MH$_Z$	---	0.8	---	pF
Insulation resistance	R_{I-O}	V_{I-O}=500 V, operating ambient humidity: ≦60%	5 x 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 Ω V_{DD}=20 V, I_F=10 mA (see note)	---	---	1	ms
Turn-off time	t_{OFF}		---	---	1	

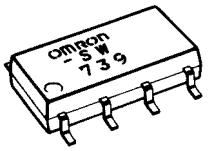
Note: Switching Time Measuring Circuit

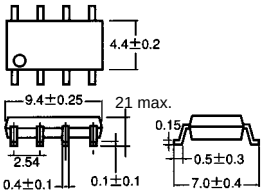


Dimensions

Note: All units are in millimeters unless otherwise indicated.

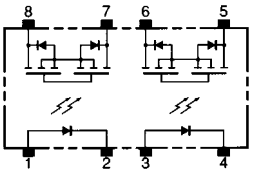
G3VM-SW

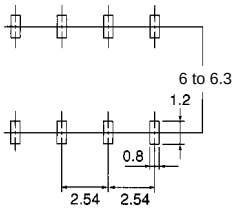




Unit: mm
Weight: 0.2 g

Terminal Arrangement/ Internal Connections (Top 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	10 mA	25 mA
Releasing LED forward current	0 V	---	0.8 V

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