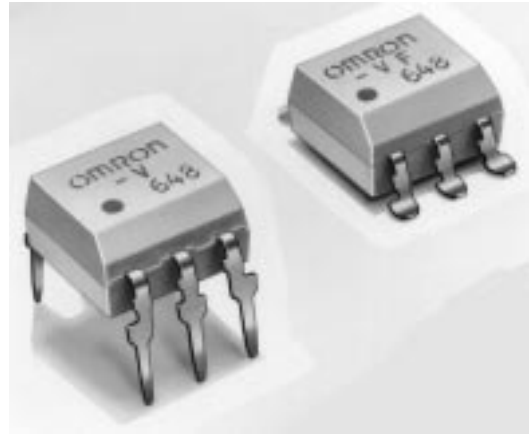


MOS FET Relay

G3VM-V/VF

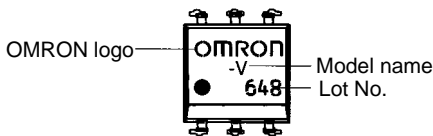
Relay Incorporating a MOS FET Coupled with a GaAlAs Infrared LED

- Six-pin DIP package
- Low offset voltage when the Relay is OFF.
- Ideal for minute-signal scanning circuits and the subscriber circuits of digital telephone exchange systems for switching analog signals.



Ordering Information

■ Appearance



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

Contact form	Terminals	Load voltage (peak value)	Model
SPST-NO	PCB terminals	60 VAC	G3VM-V
	Surface-mounting terminals (see note)		G3VM-VF

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

■ Model Number Legend

G3VM-□□
1 2

1. Load Voltage

V: Load voltage, 60 VDC or 60 VAC min.

2. Terminal

F: Surface-mounting terminals

None: PCB terminals

Application Examples

- Electronic automatic exchange systems
- Gauging control systems
- Data management systems
- Gauging systems

Specifications

■ General Specifications

- Output dielectric strength: 60 V min.
- Trigger LED current: 5 mA max.
- Continuous load current: 300 mA max.
- Output ON resistance: 2 Ω max.
- UL approval: UL1577, file number E67349
- Classification of trigger LED current: Ta of 25°C

Class name (see note)	Trigger LED current (mA)		Marks on product
	@ ION = 300 mA		
	Min.	Max.	
None	---	5	No marks

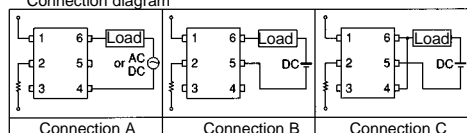
Note: Applicable product: G3VM-V and G3VM-VF

■ 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}	60	V	
	Continuous load current (see note 1)	Connection A	I_O	300	mA
		Connection B		450	
		Connection C		600	
	ON current reduction rate (Ta ≥ 25°C)	Connection A	$\Delta I_{ON}/^\circ\text{C}$	-3	mA/°C
		Connection B		-4.5	
		Connection C		-6	
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}	2,500	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}	---	---	48	V
Forward current	I_F	7.5	15	25	mA
Continuous load current	I_O	---	---	300	mA
Operating temperature	T_a	-20	---	80	°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 closed	I_{LEAK}	$V_{OFF}=60\text{ V}$	---	---	1	μA

■ Connection Characteristics (Ta = 25°C)

Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Maximum resistance with output ON	Connection A	R_{ON}	$I_{ON}=300\text{ mA}, I_F=10\text{ mA}$	---	1.4	Ω
	Connection B				0.7	
	Connection C				0.35	
			$I_{ON}=450\text{ mA}, I_F=10\text{ mA}$	---	1	
			$I_{ON}=600\text{ mA}, I_F=10\text{ mA}$	---	0.5	

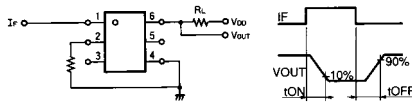
■ Insulation Characteristics (Ta = 25°C)

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	2,500	---	---	V_{rms}
		AC for 1 s in oil	3,000	5,000	---	
		DC for 1 min in oil	---	5,000	---	V_{dc}

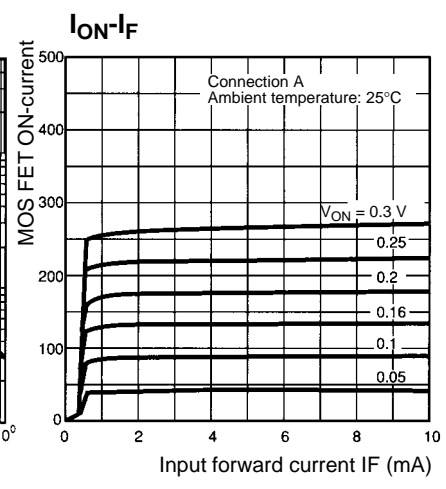
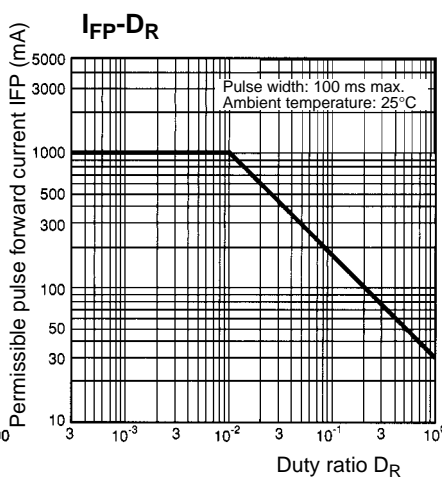
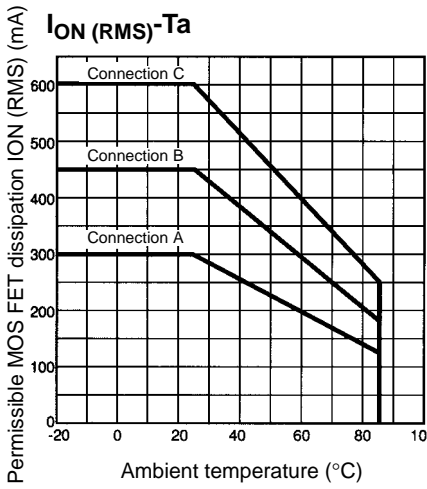
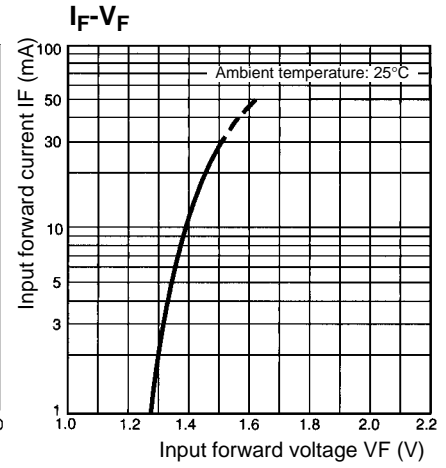
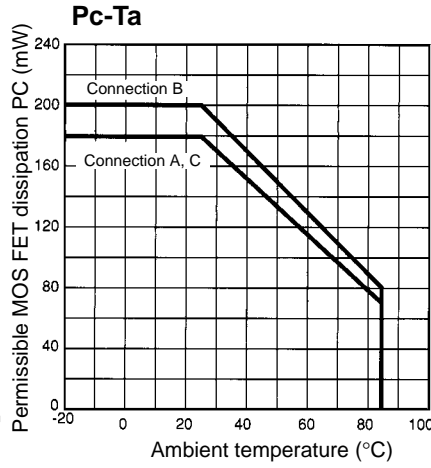
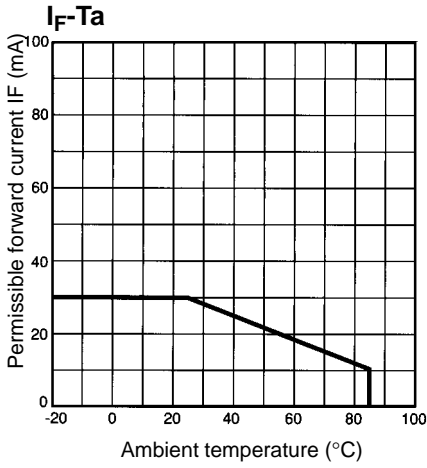
■ Switching Characteristics (Ta = 25°C)

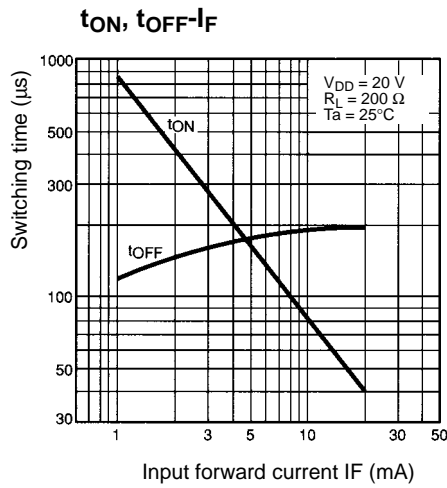
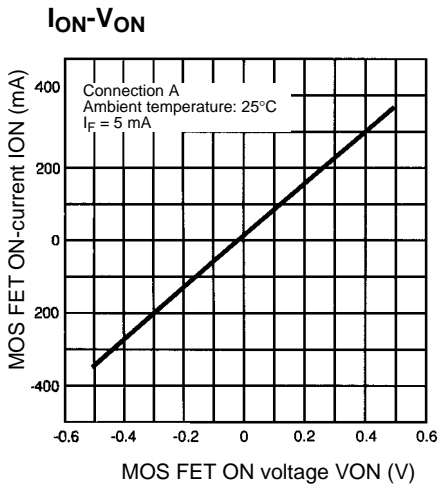
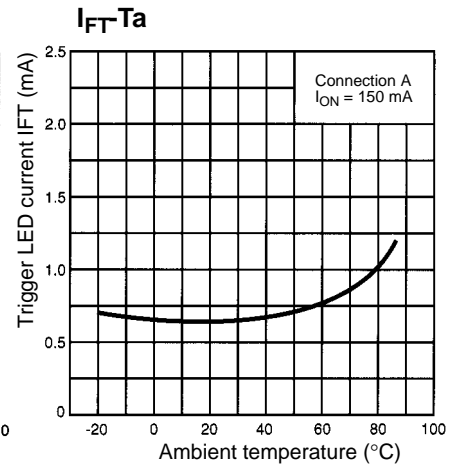
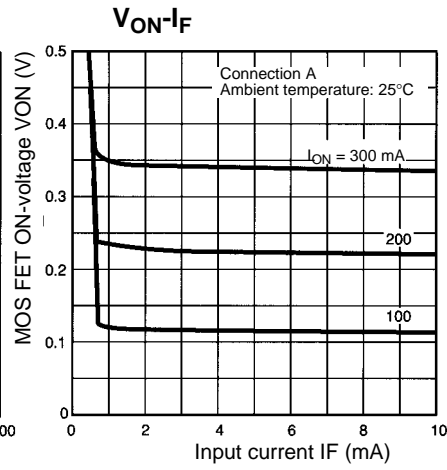
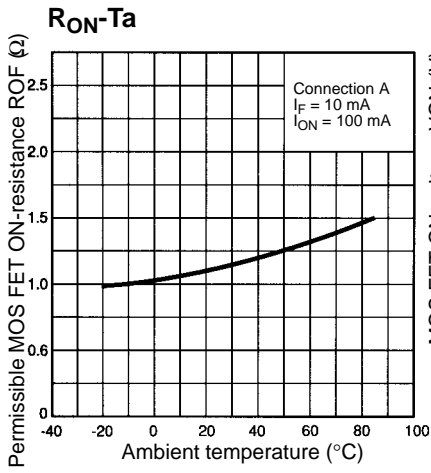
Item	Symbol	Measurement conditions	Minimum	Typical	Maximum	Unit
Turn-on time	t_{ON}	$R_L=200\ \Omega$ $V_{DD}=20\text{ V}$, $I_F=10\text{ mA}$ (see note)	---	---	1	ms
Turn-off time	t_{OFF}		---	---	1	

Note: Switching Time Measuring Circuit



Engineering Data

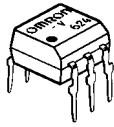




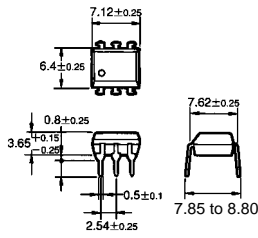
Dimensions

Note: All units are in millimeters unless otherwise indicated.

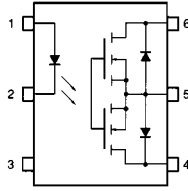
G3VM-V



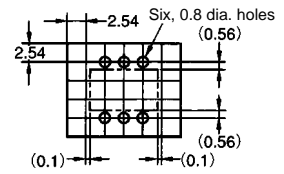
Note: "G3VM" is not printed on the actual product.



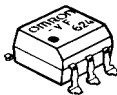
Terminal Arrangement/ Internal Connections (Top View)



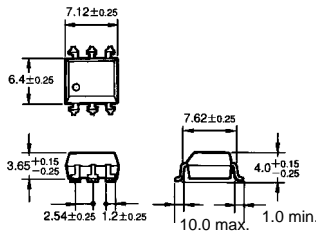
PCB Dimensions (Bottom View)



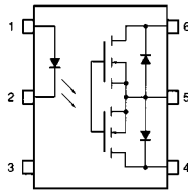
G3VM-VF



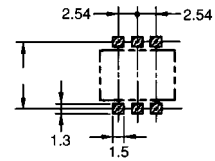
Note: "G3VM" is not printed on the actual product.



Terminal Arrangement/ Internal Connections (Top View)



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	7.5 mA	15 mA	25 mA
Releasing LED forward current	0 V	---	0.8 V

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