

Introduction
 General purpose
 High-load-voltage
 Multi-contact pair
 (2a, 2b, and 1a1)
 High-current and
 Low-ON-resistance
 Small and High-
 dielectric-strength
 High-dielectric-
 strength
 Current-limiting
 Low-voltage-resistance
 and Low-ON-resistance
 Small and High-
 -voltage
 Certified Models with
 Japanese Certification
 DIP
 SSOP
 USOP
 VSON
 G3VM-□AR/□DR

G3VM-□AR/□DR

MOS FET Relays DIP 4-pin, High-current and Low-ON-resistance Type

MOS FET Relays in DIP 4-pin packages that achieve the low ON resistance and high switching capacity of a mechanical relay

- Load voltage: 20 V, 40 V, 60 V, or 100 V
- 20-V Relay: Continuous load current of 3 A max.
- 40-V Relay: Continuous load current of 2.5 A max.
- 60-V Relay: Continuous load current of 2 A max.
- 100-V Relay: Continuous load current of 1 A max.



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

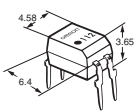
RoHS Compliant

Application Examples

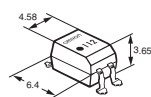
- Communication equipment
- Security equipment
- Power circuit
- Test & Measurement equipment
- Industrial equipment

Package (Unit : mm, Average)

DIP 4-pin
PCB Terminals



Surface-mounting Terminals



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

- 1. Load Voltage**
2 : 20 V
4 : 40 V
6 : 60 V
10 : 100 V
- 2. Contact form**
1 : 1a (SPST-NO)
- 3. Package**
A : DIP 4-pin with PCB terminals
D : DIP 4-pin with surface-mounting terminals
- 4. Additional functions**
R: Low ON resistance
- 5. Other informations**
When specifications overlap, serial code is added in the recorded order.

Ordering Information

Package	Contact form	Load voltage (peak value) *	Continuous load current (peak value) *	Stick packaging			Tape packaging	
				Model		Minimum package quantity	Model	Minimum package quantity
				PCB Terminals	Surface-mounting Terminals			
DIP4	1a (SPST-NO)	20 V	3 A	G3VM-21AR	G3VM-21DR	100 pcs.	G3VM-21DR(TR)	1,500 pcs.
		40 V	2.5 A	G3VM-41AR	G3VM-41DR		G3VM-41DR(TR)	
		60 V	2 A	G3VM-61AR	G3VM-61DR		G3VM-61DR(TR)	
		100 V	1 A	G3VM-101AR	G3VM-101DR		G3VM-101DR(TR)	

* The AC peak and DC value are given for the load voltage and continuous load current.
Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR)" to the end of the model number.

■ Absolute Maximum Ratings (Ta = 25°C)

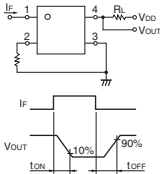
Item	Symbol	G3VM-21AR G3VM-21DR				G3VM-41AR G3VM-41DR		G3VM-61AR G3VM-61DR		G3VM-101AR G3VM-101DR		Unit	Measurement conditions
Input	LED forward current	IF	30								mA		
	Repetitive peak LED forward current	IFP	1								A	100 μs pulses, 100 pps	
	LED forward current reduction rate	ΔIF/°C	-0.3								mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR	5								V		
	Connection temperature	TJ	125								°C		
Output	Load voltage (AC peak/DC)	VoFF	20	40	60	100	V						
	Continuous load current (AC peak/DC)	Io	3	2.5	2	1	A						
	ON current reduction rate	ΔIo/°C	-30	-25	-20	-10	mA/°C						
	Pulse ON current	Iop	9	7.5	6	3	A						
	Connection temperature	TJ	125								°C		
	Dielectric strength between I/O (See note 1.)	Vi-o	2,500								Vrms	AC for 1 min	
	Ambient operating temperature	Ta	-40 to +85								°C	With no icing or condensation	
Ambient storage temperature	Tstg	-55 to +125								°C			
Soldering temperature	-	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	G3VM-21AR G3VM-21DR	G3VM-41AR G3VM-41DR	G3VM-61AR G3VM-61DR	G3VM-101AR G3VM-101DR	Unit	Measurement conditions	
Input	LED forward voltage	V _F	1.18				V	I _F =10 mA	
		Minimum	1.33						
		Typical	1.48						
	Reverse current	I _R	10				μA	V _R =5 V	
		Maximum							
Capacitance between terminals	C _T	Typical	70				pF	V=0, f=1 MHz	
Trigger LED forward current	I _{FT} (I _{FC})	Typical	0.7	0.5			mA	I _o =1 A	
		Maximum	3						
Release LED forward current	I _{FC} (I _{FT})	Minimum	0.1				mA	I _{OFF} =10 μA	
Output	Maximum resistance with output ON	R _{ON}	Typical	40	50	80	250	mΩ	G3VM-21AR/21DR/41AR/41DR/61AR/61DR : I _F =5 mA, t < 1 s, I _o =2 A G3VM-101AR/DR : I _F =5 mA, t < 1 s, I _o =1 A
		Maximum	80	150	200	700			
	Current leakage when the relay is open	I _{LEAK}	Maximum	1				μA	V _{OFF} =Load voltage ratings
	Capacitance between terminals	C _{OFF}	Typical	300		250	200	pF	V=0, f=1 MHz
Capacitance between I/O terminals	C _{I-O}	Typical	0.8				pF	f=1 MHz, V _S =0 V	
Insulation resistance between I/O terminals	R _{I-O}	Minimum	1000				MΩ	V _{I-O} =500 VDC, R _{oH} ≤60%	
		Typical	10 ⁸						
Turn-ON time	t _{ON}	Typical	1		0.8		ms	I _F =5 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.)	
		Maximum	5						
Turn-OFF time	t _{OFF}	Typical	0.3				ms		
		Maximum	1						

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



■Recommended Operating Conditions

For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

Each item on this list is an independent condition, so it is not simultaneously satisfy several conditions.

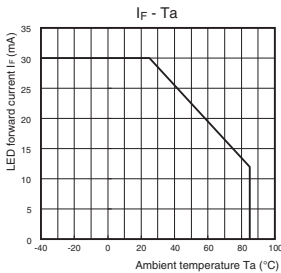
Item	Symbol	G3VM-21AR G3VM-21DR	G3VM-41AR G3VM-41DR	G3VM-61AR G3VM-61DR	G3VM-101AR G3VM-101DR	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum	16	32	48	80	V
		Minimum	5				
Operating LED forward current	I _F	Typical	10				mA
		Maximum	25				
		Minimum					
Continuous load current (AC peak/DC)	I _o	3	2.5	2	1	A	
Ambient operating temperature	T _a	Minimum	-20				°C
		Maximum	65				

■Spacing and Insulation

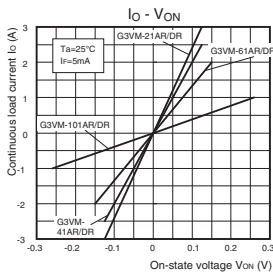
Item	Minimum	Unit
Creepage distances	7.0	mm
Clearance distances	7.0	
Internal isolation thickness	0.4	

Engineering Data

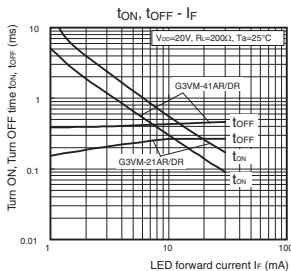
LED forward current vs. Ambient temperature



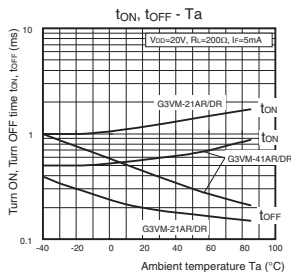
Continuous load current vs. On-state voltage



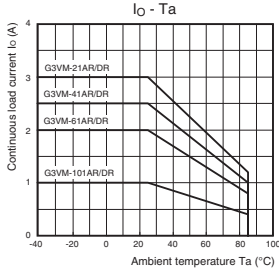
Turn ON, Turn OFF time vs. LED forward current



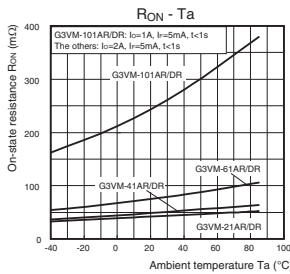
Turn ON, Turn OFF time vs. Ambient temperature



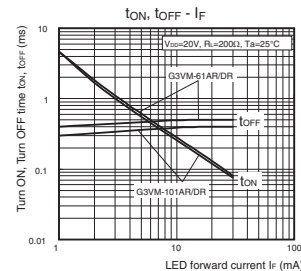
Continuous load current vs. Ambient temperature



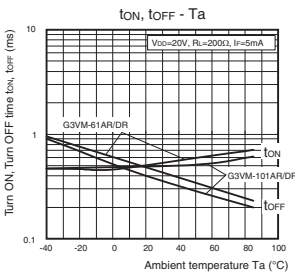
On-state resistance vs. Ambient temperature



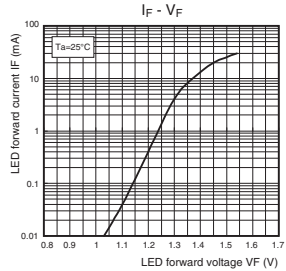
G3VM-61AR/61DR/101AR/101DR



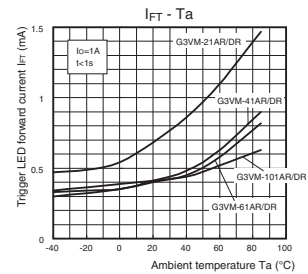
G3VM-61AR/61DR/101AR/101DR



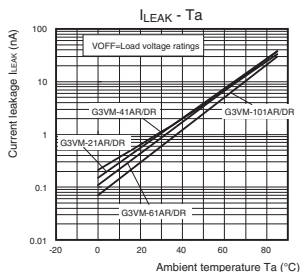
LED forward current vs. LED forward voltage



Trigger LED forward current vs. Ambient temperature



Current leakage vs. Ambient temperature

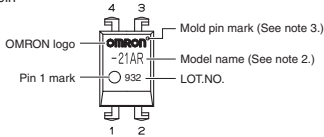


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

DIP (Dual Inline Package)

DIP 4-pin

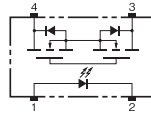


Note: 1. The actual product is marked differently from the image shown here.

Note: 2. "G3VM" does not appear in the model number on the Relay.

Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections (Top View)

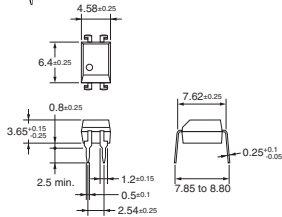


■Dimensions (Unit: mm)



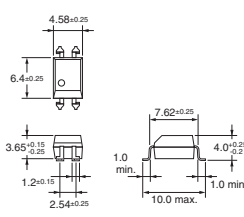
PCB Terminals

Weight: 0.25 g

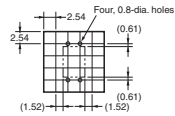


Surface-mounting Terminals

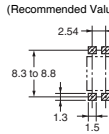
Weight: 0.25 g



PCB Dimensions (BOTTOM VIEW)




Actual Mounting Pad Dimensions (Recommended Value, Top View)



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

■Approved Standards

UL recognized 

Approved Standards	Contact form	File No.
UL (recognized)	1a (SPST-NO)	E80555

■Safety Precautions

- Refer to the *Common Precautions for All MOS FET Relays* for precautions that apply to all MOS FET Relays.