

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.

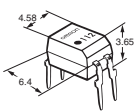
RoHS Compliant

Application Examples

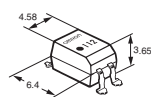
- Communication equipment
- Security equipment
- Power circuit
- Test & Measurement equipment
- Industrial equipment

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)

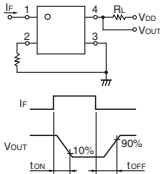
Item	Symbol	G3VM-21AR G3VM-21DR				G3VM-41AR G3VM-41DR		G3VM-61AR G3VM-61DR		G3VM-101AR G3VM-101DR		Unit	Measurement conditions
		20		40		60		100					
Input	LED forward current	IF	30								mA		
	Repetitive peak LED forward current	IFP	1								A	100 μs pulses, 100 pps	
	LED forward current reduction 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	Minimum				1.18	V	I _F =10 mA	
			Typical				1.33			
			Maximum				1.48			
	Reverse current	I _R	Maximum				10	μA	V _R =5 V	
	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	I _F =5 mA, R _L =200 Ω, V _{DD} =20 V (See note 2.)			
		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.

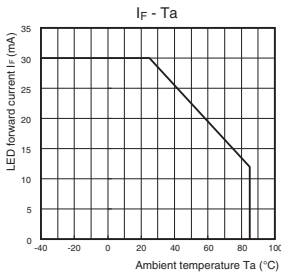
Item	Symbol	G3VM-21AR G3VM-21DR	G3VM-41AR G3VM-41DR	G3VM-61AR G3VM-61DR	G3VM-101AR G3VM-101DR	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum	16	32	48	80	V
		Minimum	5				
Operating LED forward current	I _F	Typical	10			mA	
		Maximum	25				
		Minimum	5				
Continuous load current (AC peak/DC)	I _o	3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

Spacing and Insulation

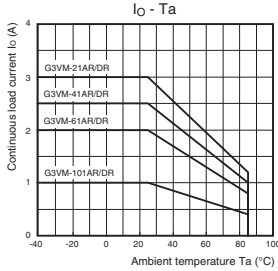
Item	Minimum	Unit
Creepage distances	7.0	mm
Clearance distances	7.0	
Internal isolation thickness	0.4	

Engineering Data

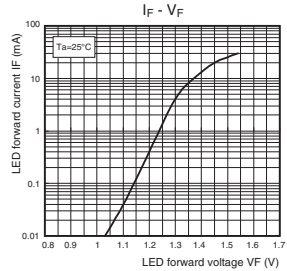
LED forward current vs. Ambient temperature



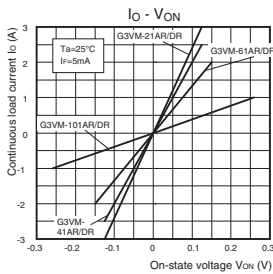
Continuous load current vs. Ambient temperature



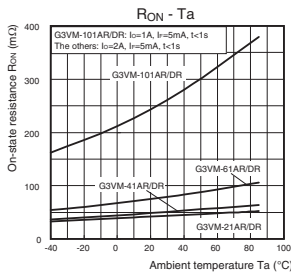
LED forward current vs. LED forward voltage



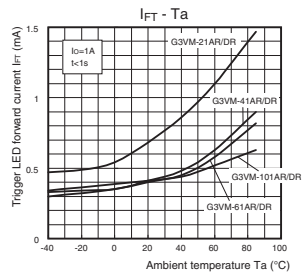
Continuous load current vs. On-state voltage



On-state resistance vs. Ambient temperature

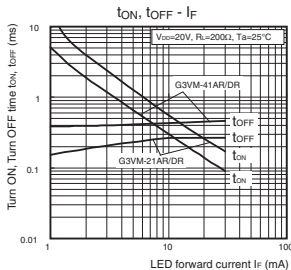


Trigger LED forward current vs. Ambient temperature

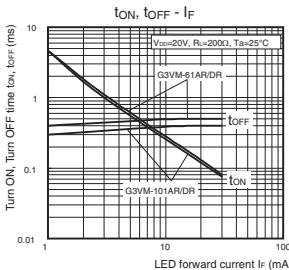


Turn ON, Turn OFF time vs. LED forward current

G3VM-21AR/21DR/41AR/41DR

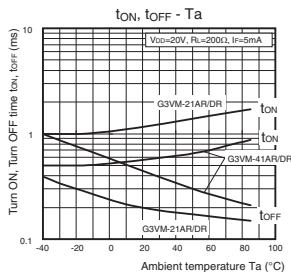


G3VM-61AR/61DR/101AR/101DR

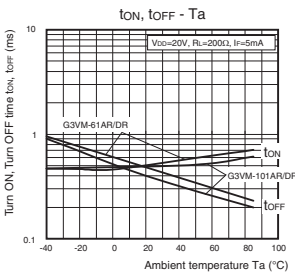


Turn ON, Turn OFF time vs. Ambient temperature

G3VM-21AR/21DR/41AR/41DR



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



Current leakage vs. Ambient temperature

