

G3VM-35□G□/351VY/401G□

MOS FET Relays SOP 4-pin, General-purpose Type

General-purpose MOS FET Relays in SOP 4-pin packages for a wide range of applications

- Contact form: 1a (SPST-NO) or 1b (SPST-NC)
- Load voltage: 350 V or 400 V



NEW

RoHS Compliant

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

Application Examples

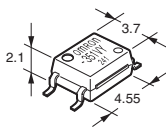
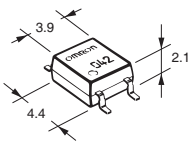
- Semiconductor test equipment
- Test & Measurement equipment
- Communication equipment
- Various battery-driven devices
- Security equipment
- Industrial equipment
- Power circuit
- Amusement equipment

Package

(Unit : mm, Average)

SOP 4-pin

Special SOP 4-pin



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

Model Number Legend

G3VM-□□□□□
1 2 3 4 5

- 1. Load Voltage**
35 : 350 V
40 : 400 V
- 2. Contact form**
1 : 1a (SPST-NO)
3 : 1b (SPST-NC)

- 4. Additional functions**
None: Dielectric strength between I/O 1500 V
Y: Dielectric strength between I/O 3750 V

- 3. Package**
G : SOP 4-pin
V : Special SOP 4-pin

- 5. Other informations**
When specifications overlap, serial code is added in the recorded order.

Ordering Information

Package	Contact form	Terminals	Load voltage (peak value) *	Continuous load current (peak value) *	Stick packaging		Tape packaging	
					Model	Minimum package quantity	Model	Minimum package quantity
SOP4	1a (SPST-NO)	Surface-mounting Terminals	350 V	100 mA	G3VM-351G1	100 pcs.	G3VM-351G1(TR)	2,500 pcs.
Special SOP 4-PIN				G3VM-351G	G3VM-351G(TR)			
SOP4	1b (SPST-NC)			110 mA	G3VM-351VY	125 pcs.	G3VM-351VY(TR05)	500 pcs.
	1a (SPST-NO)			120 mA	G3VM-353G	100 pcs.	G3VM-353G(TR)	3,000 pcs.
SOP4	1a (SPST-NO)	100 mA	G3VM-401G1	G3VM-401G1(TR)	2,500 pcs.			
		120 mA	G3VM-401G	G3VM-401G(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)", "(TR05)" to the end of the model number.

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	G3VM-351G1	G3VM-351G	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	Unit	Measurement conditions	
Input	LED forward current	IF	50	30	50	30	50	mA		
	LED forward current reduction rate	ΔIF/°C	-0.5	-0.3	-0.5	-0.3	-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR	5	6	5	5	5	V		
	Connection temperature	TJ	125						°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	350			400		V		
	Continuous load current (AC peak/DC)	Io	100	110	120	100	120	mA		
	ON current reduction rate	ΔIo/°C	-1.0	-1.1	-1.2	-1.0	-1.2	mA/°C	Ta ≥ 25°C	
	Pulse ON current	I _{op}	300	330	360	300	360	mA	t=100 ms, Duty=1/10	
	Connection temperature	TJ	125						°C	
	Dielectric strength between I/O (See note 1.)	V _{I-O}	1500		3750	1500		V _{rms}	AC for 1 min	
Ambient operating temperature	Ta	-40 to +85		-40 to +110	-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.

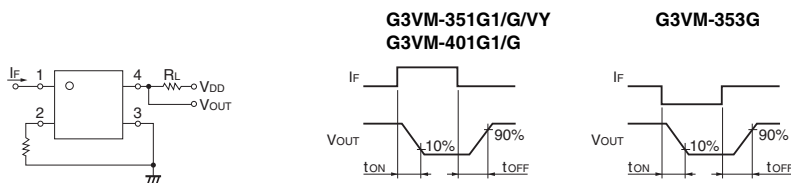
SOP

G3VM-35□G□/351VY/401G□

■Electrical Characteristics (Ta = 25°C)

Item	Symbol		G3VM-351G1	G3VM-351G	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	Unit	Measurement conditions	
Input	LED forward voltage	Minimum	1.0		1.1	1.0	1.1	1.0	V	If=10 mA	
		Typical	1.15		1.27	1.15	1.27	1.15			
		Maximum	1.3		1.4	1.3	1.4	1.3			
	Reverse current	IR	Maximum		10					μA	VR=5 V
	Capacitance between terminals	CT	Typical	30					pF	V=0, f=1 MHz	
Trigger LED forward current	IFT (IFC) (See note 3.)	Typical	0.4	1	0.8	1	–	1	mA	G3VM-351G1/351G/401G1 : Io=100 mA G3VM-351VY : Io=110 mA G3VM-353G : IoFF=10 μA G3VM-401G : Io=120 mA	
		Maximum	1	3			0.2	3			
Release LED forward current	IFC (IFT) (See note 3.)	Minimum	0.1				–	0.1	mA	G3VM-351G1/351VY/351G/401G1/401G : IoFF=100 μA G3VM-353G : Io=120 mA	
		Typical	–		0.4	–	0.001	–			
Output	Maximum resistance with output ON	Typical	35 (25)		35 (22)	15	18	17	Ω	G3VM-351G1 : If=2 mA, Io=100 mA Values in parentheses are for t < 1 s. G3VM-351G : If=5 mA, Io=110 mA Values in parentheses are for t < 1 s. G3VM-351VY : If=5 mA, Io=110 mA Values in parentheses are for t < 1 s. G3VM-353G : Io=120 mA G3VM-401G1 : If=0.5 mA, Io=100 mA, t < 1 s G3VM-401G : If=5 mA, Io=120 mA	
		Maximum	50 (35)		25	35					
	Current leakage when the relay is open	I _{LEAK}	Typical	1	–	1	–	1	–		nA
Maximum	1,000										
Capacitance between terminals	COFF	Typical	35	30	60	65	70		pF	G3VM-351G1/351VY/351G/401G1/401G : V=0, f=1 MHz G3VM-353G : V=0, f=1 MHz, I _F =5 mA	
Capacitance between I/O terminals	CI-O	Typical	0.8					pF	f=1 MHz, Vs=0 V		
Insulation resistance between I/O terminals	RI-O	Minimum	1000					MΩ	Vi-o=500 VDC, RoH≤60%		
		Typical	10 ⁸								
Turn-ON time	t _{ON}	Typical	1	0.3	0.5	–	2	0.3	ms	G3VM-351G1 : If=2 mA, RL=200 Ω, VDD=20 V G3VM-401G1 : If=0.5 mA, RL=200 Ω, VDD=20 V Others : If=5 mA, RL=200 Ω, VDD=20 V (See note 2.)	
		Maximum	5	1			10	1			
Turn-OFF time	t _{OFF}	Typical	1	0.1		–	1	0.1	ms		
		Maximum	3	1	0.5	3	5	1			

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



Note: 3. These values are for Relays with NC contacts

■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.

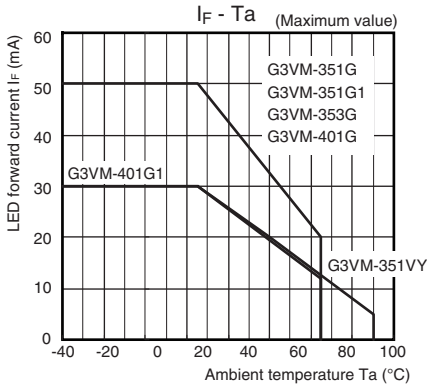
Item	Symbol		G3VM-351G1	G3VM-351G	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	Unit	
Load voltage (AC peak/DC)	VDD	Maximum	280				320		V	
		Minimum	–		5		–	5		
Operating LED forward current	IF	Typical	2	7.5			–	0.5	mA	
		Maximum	25							
		Maximum	80	100	110	120	80	120		
Ambient operating temperature	Ta	Minimum	-20						°C	
		Maximum	65		100		65			

■Spacing and Insulation

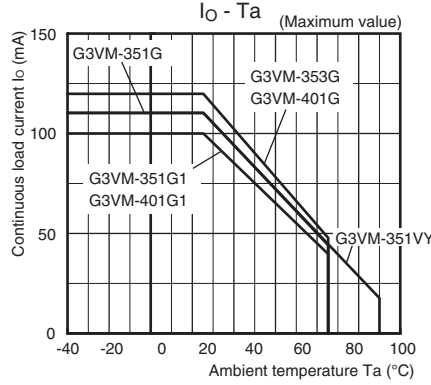
Item	G3VM-35□G□/401G□		G3VM-351VY		Unit
	Minimum				
Creepage distances	4.0		5.0		mm
Clearance distances	4.0		5.0		
Internal isolation thickness	0.1		0.2		

Engineering Data

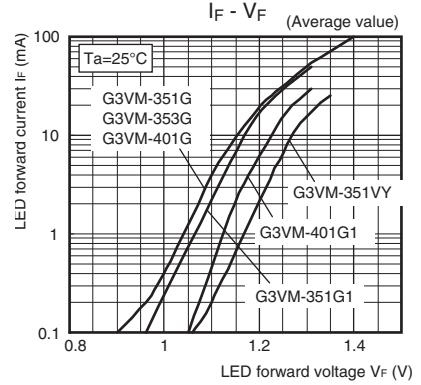
LED forward current vs. Ambient temperature



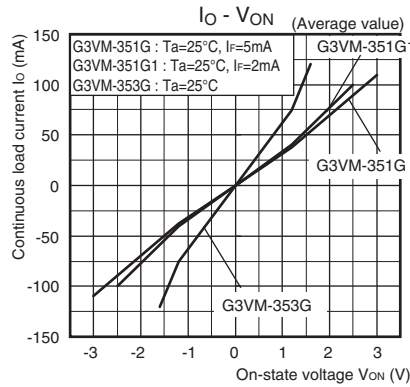
Continuous load current vs. Ambient temperature



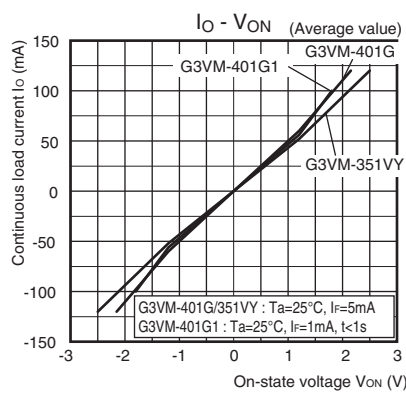
LED forward current vs. LED forward voltage



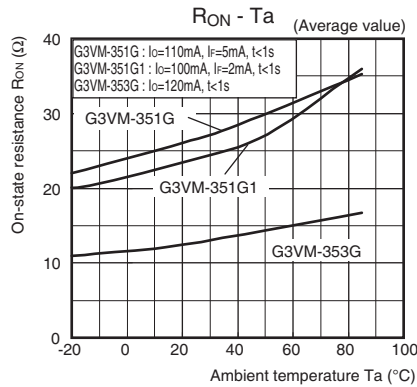
Continuous load current vs. On-state voltage



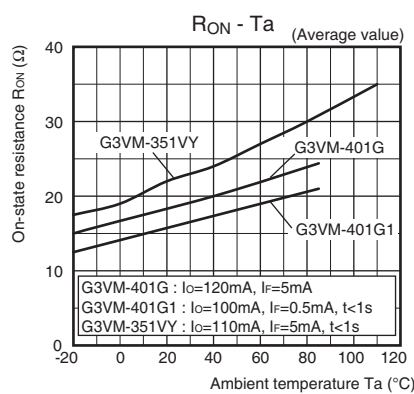
G3VM-351VY/401G/401G1



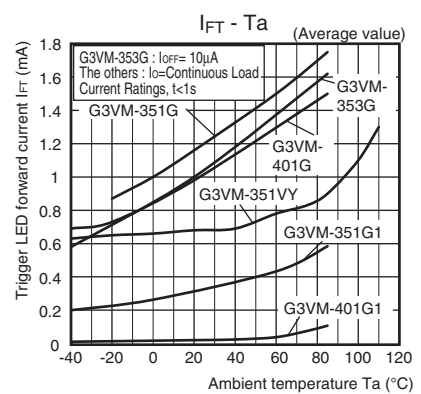
On-state resistance vs. Ambient temperature



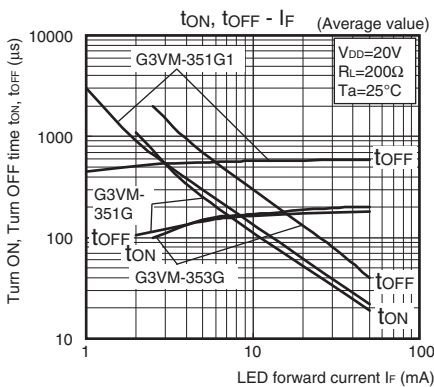
G3VM-351VY/401G/401G1



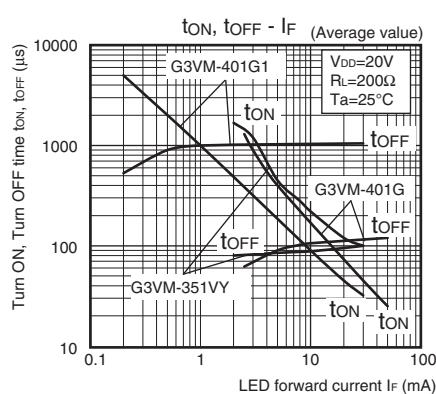
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current

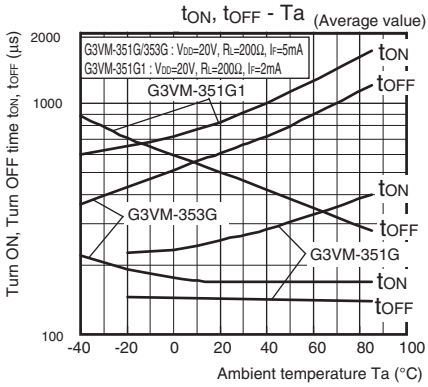


G3VM-351VY/401G/401G1

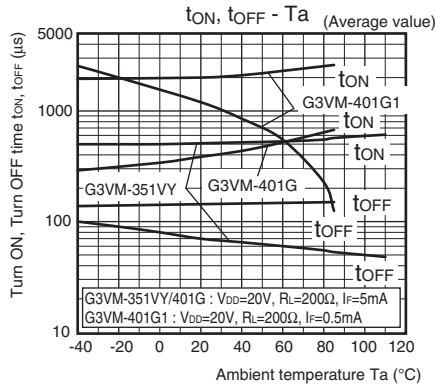


Engineering Data

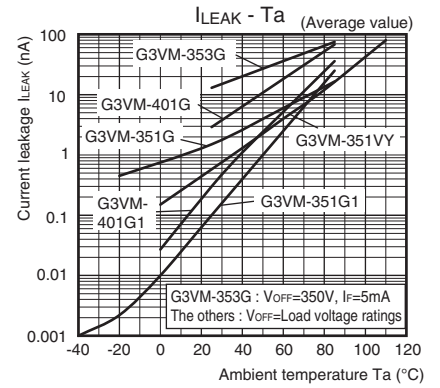
● Turn ON, Turn OFF time vs. Ambient temperature G3VM-351G/351G1/353G



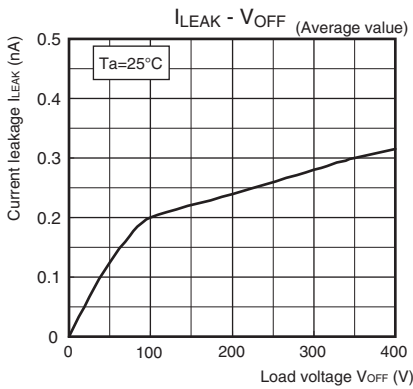
G3VM-351VY/401G/401G1



● Current leakage vs. Ambient temperature



● Current leakage vs. Load voltage

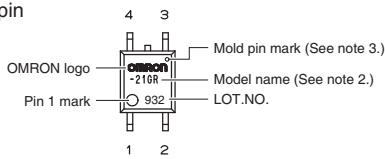


■ Appearance / Terminal Arrangement / Internal Connections

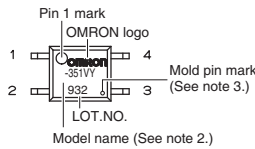
● Appearance

SOP (Small Outline Package)

SOP 4-pin



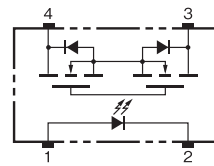
Special SOP 4-pin (G3VM-351VY)



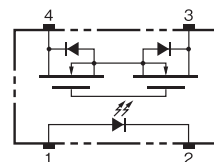
- Note: 1.** The actual product is marked differently from the image shown here.
- Note: 2.** "G3VM" does not appear in the model number on the Relay.
- Note: 3.** The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

● Terminal Arrangement/Internal Connections (Top View)

G3VM-351G1/G/VY
G3VM-401G1/G



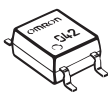
G3VM-353G



■ Dimensions (Unit: mm)

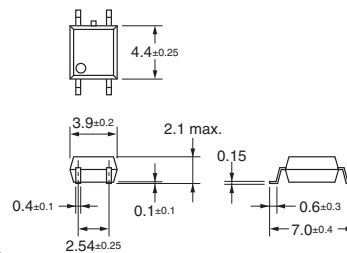
SOP (Small Outline Package)

SOP 4-pin



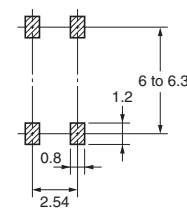
Surface-mounting Terminals

Weight: 0.1 g



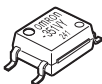
Actual Mounting Pad Dimensions

(Recommended Value, Top View)



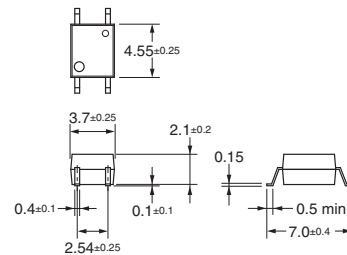
Note: The actual product is marked differently from the image shown here.

Special SOP 4-pin *(G3VM-351VY)



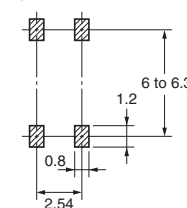
Surface-mounting Terminals

Weight: 0.1 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



* The external dimensions are different from those of the standard SOP 4-pin, but the mounting pad dimensions are the same.

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

■ Approved Standards

UL recognized

Model	Approved Standards	Contact form	File No.
G3VM-351G1 G3VM-351G G3VM-401G G3VM-351VY	UL (recognized)	1a (SPST-NO)	E80555
G3VM-353G		1b (SPST-NC)	
G3VM-401G1	UL certification is pending.		

Models Certified by BSI for EN/IEC Standards

Model	Approved Standards	Contact form	File No.
G3VM-401G	EN 60950/EN 60065 (BSI certified)	1a (SPST-NO)	8884 8885

■ Safety Precautions

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

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.