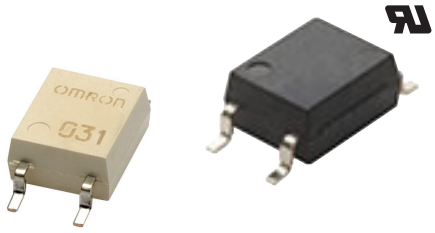
G3VM-35□G□/351VY/401G□/401VY

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**

RoHS Compliant



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

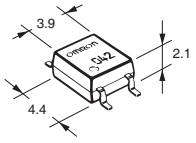
■Application Examples

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

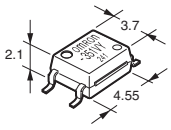
■Package

(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)

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

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

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				110 mA	**G3VM-351VY**	125 pcs.	**G3VM-351VY(TR05)**	500 pcs.
							G3VM-351VY(TR)	3,000 pcs.
SOP4	1b (SPST-NC)			120 mA	**G3VM-353G**	100 pcs.	**G3VM-353G(TR)**	2,500 pcs.
	1a (SPST-NO)		400 V	100 mA	**G3VM-401G1**		**G3VM-401G1(TR)**	
				120 mA	**G3VM-401G**		**G3VM-401G(TR)**	
Special SOP 4-PIN				110mA	**G3VM-401VY**	125 pcs.	**G3VM-401VY(TR05)**	500 pcs.

✻ 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.

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■Absolute Maximum Ratings (Ta = 25°C)

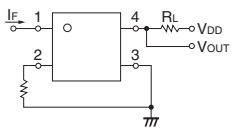
	Item	Symbol	G3VM-351G1	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	G3VM-401VY	Unit	Measurement conditions
Input	LED forward current	I_F	50	30	50	30	50	30	mA	
Input	LED forward current reduction rate	ΔI_F/°C	-0.5	-0.3	-0.5	-0.3	-0.5	-0.3	mA/°C	Ta ≥ 25°C
Input	LED reverse voltage	V_R	5	6	5			6	V	
Input	Connection temperature	T_J	125						°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	350			400			V	
Output	Continuous load current (AC peak/DC)	I_O	100	110	120	100	120	110	mA	
Output	ON current reduction rate	ΔI_O/°C	-1.0	-1.1	-1.2	-1.0	-1.2	-1.1	mA/°C	Ta ≥ 25°C
Output	Pulse ON current	I_{op}	300	330	360	300	360	330	mA	t=100 ms, Duty=1/10
Output	Connection temperature	T_J	125						°C	
Dielectric strength between I/O ✻		V_{I-O}	1500	3750	1500			3750	Vrms	AC for 1 min
Ambient operating temperature		Ta	-40 to +85	-40 to +110	-40 to +85			-40 to +110	°C	With no icing or condensation
Ambient storage temperature		Tstg	-55 to +125						°C	
Soldering temperature		–	260						°C	10 s

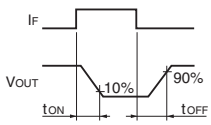
✻ The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

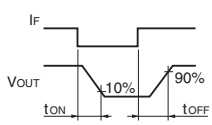
■Electrical Characteristics (Ta = 25°C)

	Item	Symbol		G3VM-351G1	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	G3VM-401VY	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.0	1.1	1.0	1.1	1.0	1.1	V	I_F=10 mA
Input	LED forward voltage	V_F	Typical	1.15	1.27	1.15	1.27	1.15	1.27	V	I_F=10 mA
Input	LED forward voltage	V_F	Maximum	1.3	1.4	1.3	1.4	1.3	1.4	V	I_F=10 mA
Input	Reverse current	I_R	Maximum	10						μA	V_R=5 V
Input	Capacitance between terminals	C_T	Typical	30						pF	V=0, f=1 MHz
Input	Trigger LED forward current	I_{FT} (I_{FC}) ✻2	Typical	0.4	0.8	1	–	1	0.8	mA	G3VM-351G1/401G1 : I_O=100 mA G3VM-351VY/401VY : I_O=110 mA G3VM-353G : I_{OFF}=10 μA G3VM-401G : I_O=120 mA
Input	Trigger LED forward current	I_{FT} (I_{FC}) ✻2	Maximum	1	3		0.2	3		mA	G3VM-351G1/401G1 : I_O=100 mA G3VM-351VY/401VY : I_O=110 mA G3VM-353G : I_{OFF}=10 μA G3VM-401G : I_O=120 mA
Input	Release LED forward current	I_{FC} (I_{FT}) ✻2	Minimum	0.1			–	0.1		mA	G3VM-351G1/351VY/401G1/401G/401VY : I_{OFF}=100 μA G3VM-353G : I_O=120 mA
Input	Release LED forward current	I_{FC} (I_{FT}) ✻2	Typical	–	0.4	–	0.001	–	0.5	mA	G3VM-351G1/351VY/401G1/401G/401VY : I_{OFF}=100 μA G3VM-353G : I_O=120 mA
Output	Maximum resistance with output ON	R_{ON}	Typical	35 (25)	35 (22)	15	18	17	40 (30)	Ω	G3VM-351G1 : I_F=2 mA, I_O=100 mA Values in parentheses are for t < 1 s. G3VM-351VY/401VY: I_F=5 mA, I_O=110 mA Values in parentheses are for t < 1 s. G3VM-353G : I_O=120 mA G3VM-401G1 : I_F=0.5 mA, I_O=100 mA, t < 1 s G3VM-401G : I_F=5 mA, I_O=120 mA
Output	Maximum resistance with output ON	R_{ON}	Maximum	50 (35)		25	35		65 (45)	Ω	G3VM-351G1 : I_F=2 mA, I_O=100 mA Values in parentheses are for t < 1 s. G3VM-351VY/401VY: I_F=5 mA, I_O=110 mA Values in parentheses are for t < 1 s. G3VM-353G : I_O=120 mA G3VM-401G1 : I_F=0.5 mA, I_O=100 mA, t < 1 s G3VM-401G : I_F=5 mA, I_O=120 mA
Output	Current leakage when the relay is open	I_{LEAK}	Typical	1	1	–	1	–	1	nA	G3VM-351G1/351VY : V_{OFF}=350 V G3VM-353G : V_{OFF}=350 V, I_F=5 mA G3VM-401G1/401G/401VY : V_{OFF}=400 V
Output	Current leakage when the relay is open	I_{LEAK}	Maximum	1,000						nA	G3VM-351G1/351VY : V_{OFF}=350 V G3VM-353G : V_{OFF}=350 V, I_F=5 mA G3VM-401G1/401G/401VY : V_{OFF}=400 V
Output	Capacitance between terminals	C_{OFF}	Typical	35	30	65	70		30	pF	G3VM-351G1/351VY/401G1/401G/401VY : V=0, f=1 MHz G3VM-353G : V=0, f=1 MHz, I_F=5 mA
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, RoH≤60%
Insulation resistance between I/O terminals		R_{I-O}	Typical	10^8						MΩ	V_{I-O}=500 VDC, RoH≤60%
Turn-ON time		t_{ON}	Typical	1	0.5	–	2	0.3	0.5	ms	G3VM-351G1 : I_F=2 mA, R_L=200 Ω, V_{DD}=20 V G3VM-401G1 : I_F=0.5 mA, R_L=200 Ω, V_{DD}=20 V Others : I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1
Turn-ON time		t_{ON}	Maximum	5	1		10	1		ms	G3VM-351G1 : I_F=2 mA, R_L=200 Ω, V_{DD}=20 V G3VM-401G1 : I_F=0.5 mA, R_L=200 Ω, V_{DD}=20 V Others : I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1
Turn-OFF time		t_{OFF}	Typical	1	0.1	–	1	0.1		ms	G3VM-351G1 : I_F=2 mA, R_L=200 Ω, V_{DD}=20 V G3VM-401G1 : I_F=0.5 mA, R_L=200 Ω, V_{DD}=20 V Others : I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1
Turn-OFF time		t_{OFF}	Maximum	3	0.5	3	5	1	0.5	ms	G3VM-351G1 : I_F=2 mA, R_L=200 Ω, V_{DD}=20 V G3VM-401G1 : I_F=0.5 mA, R_L=200 Ω, V_{DD}=20 V Others : I_F=5 mA, R_L=200 Ω, V_{DD}=20 V ✻1

✻1. Turn-ON and Turn-OFF Times







✻2. 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.

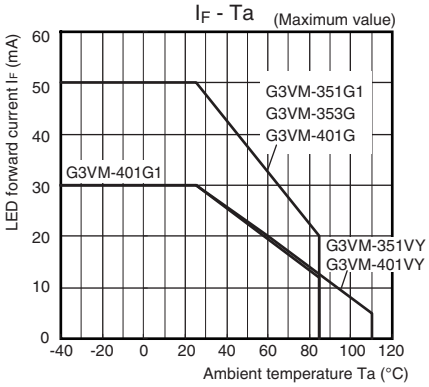
Item	Symbol		G3VM-351G1	G3VM-351VY	G3VM-353G	G3VM-401G1	G3VM-401G	G3VM-401VY	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	280			320			V
Operating LED forward current	I_F	Minimum	–	5		–	5		mA
		Typical	2	7.5	–	0.5	7.5		
		Maximum	25						
Continuous load current (AC peak/DC)	I_O	Maximum	80	110	120	80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

■Spacing and Insulation

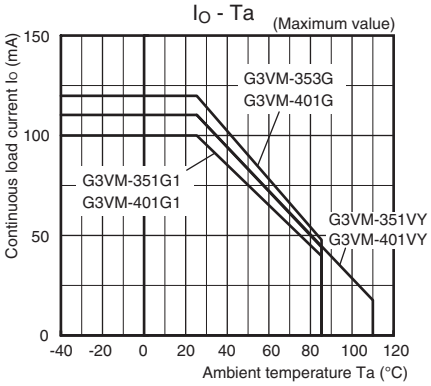
Item	G3VM-35□G□/401G□	G3VM-351VY/401VY	Unit
	Minimum		
Creepage distances	4.0	5.0	mm
Clearance distances	4.0	5.0	
Internal isolation thickness	0.1	0.2	

■Engineering Data

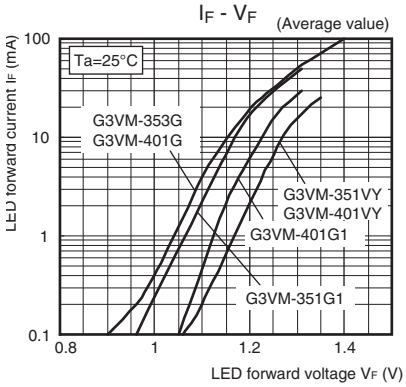
● **LED forward current vs. Ambient temperature**



● **Continuous load current vs. Ambient temperature**

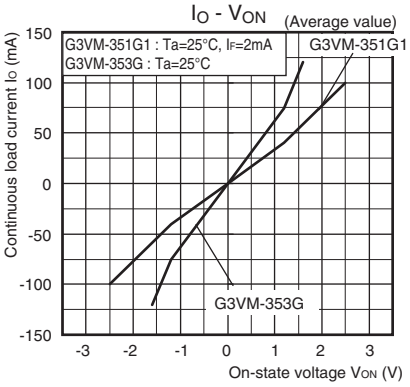


● **LED forward current vs. LED forward voltage**

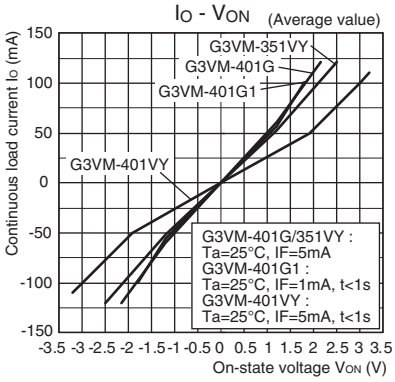


● **Continuous load current vs. On-state voltage**

G3VM-351G1/353G

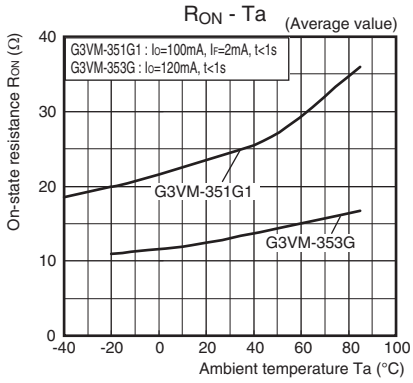


G3VM-351VY/401G/401G1/401VY

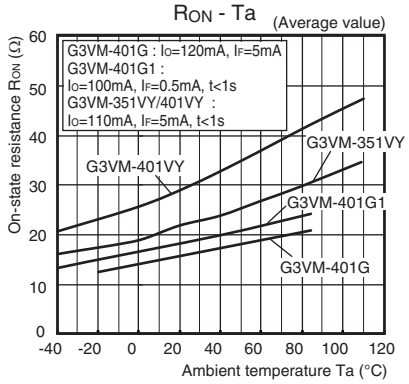


● **On-state resistance vs. Ambient temperature**

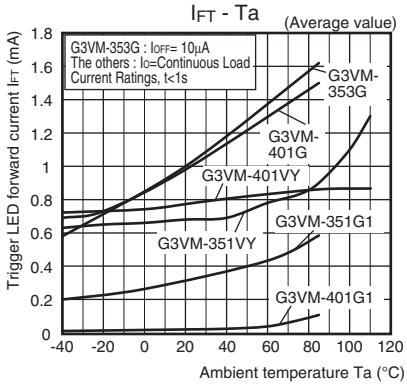
G3VM-351G1/353G



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

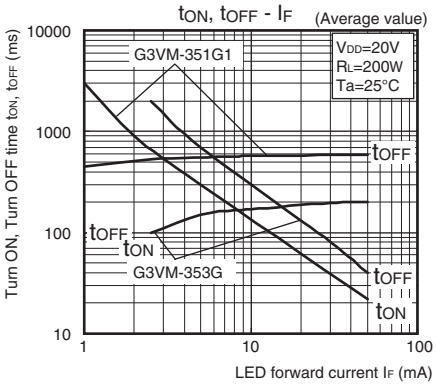


● **Trigger LED forward current vs. Ambient temperature**

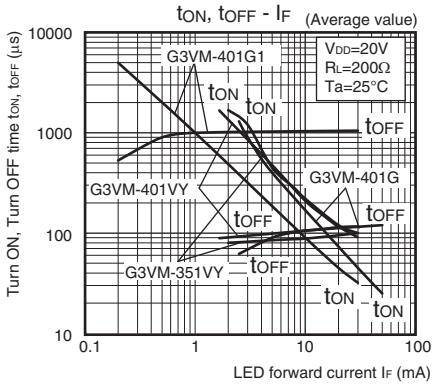


● **Turn ON, Turn OFF time vs. LED forward current**

G3VM-351G1/353G



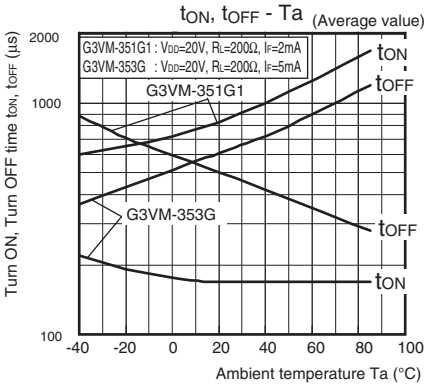
G3VM-351VY/401G/401G1/401VY



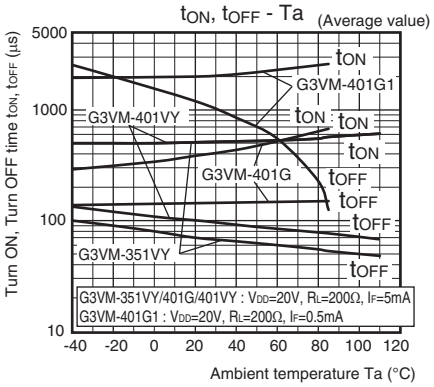
■Engineering Data

● **Turn ON, Turn OFF time vs. Ambient temperature**

G3VM-351G1/353G

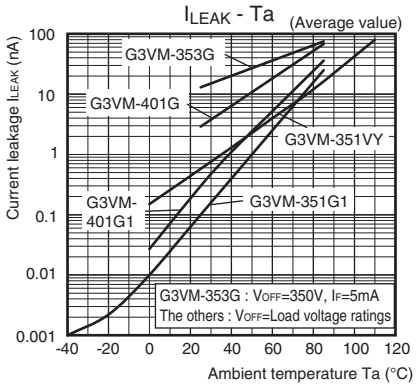


G3VM-351VY/401G/401G1/401VY

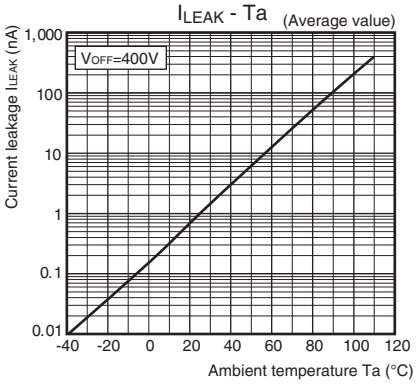


● **Current leakage vs. Ambient temperature**

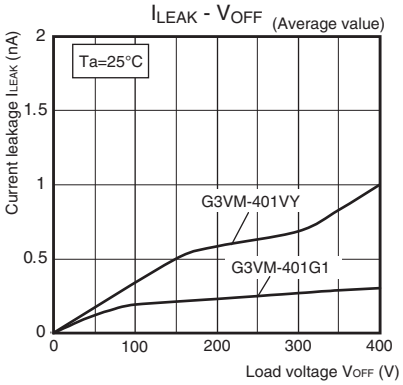
G3VM-351G1/353G/351VY/401G/401G1



G3VM-401VY



● **Current leakage vs. Load voltage**



SOP

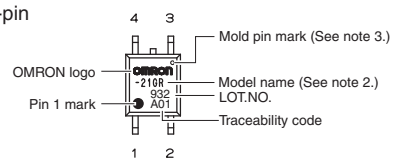
G3VM-35□G□/351VY/401G□/401VY

■Appearance / Terminal Arrangement / Internal Connections

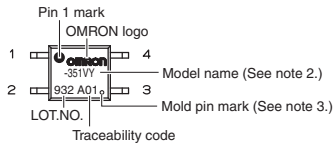
●Appearance

SOP (Small Outline Package)

SOP 4-pin



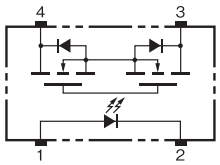
Special SOP 4-pin (G3VM-351VY/401VY)



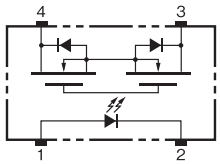
Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.
Note: 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

●Terminal Arrangement/Internal Connections (Top View)

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



G3VM-353G



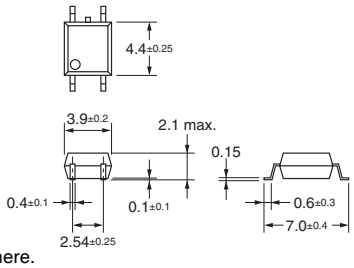
■Dimensions (Unit: mm)

SOP (Small Outline Package)

SOP 4-pin

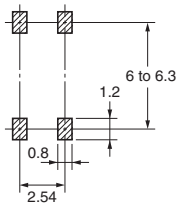
Surface-mounting Terminals

Weight: 0.1 g



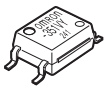
Actual Mounting Pad Dimensions

(Recommended Value, Top View)



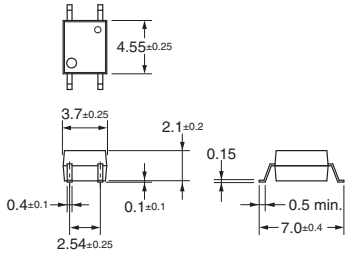
Note: The actual product is marked differently from the image shown here.

Special SOP 4-pin ✻ (G3VM-351VY/401VY)



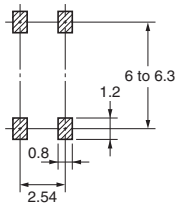
Surface-mounting Terminals

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-401G G3VM-351VY G3VM-401VY	UL (recognized)	1a (SPST-NO)	E80555
G3VM-353G		1b (SPST-NC)	

Models Certified by BSI for EN/IEC Standards

Model	Approved Standards	Contact form	File No.
G3VM-401G	EN62368-1 (BSI certified)	1a (SPST-NO)	VC669262

■Safety Precautions

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

Please check each region's Terms & Conditions by region website.

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Cat. No. K286-E1-07
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