G3VM-31QV□/61QV□□

MOS FET Relays S-VSON(L), Voltage Driven Type

World's smallest * class S-VSON(L) package with voltage drive MOS FET relay with current limiting internal resistor on the input side



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

* As of January 2020 Survey by OMRON.

- **Operating input forward voltage: H/Recommendation 5 V(Typical), L/Recommendation2.5 V(Typical)**
- **Load voltage: 30 V/60 V**
  - **G3VM-31QVH/L: Continuous Load current of 1.5 A max.**
  - **G3VM-61QV2H/L: Continuous Load current of 1.0 A max.**
  - **G3VM-61QVH: Continuous Load current of 0.4 A max.**
- **High Ambient operating temperature: -40°C to +110°C**

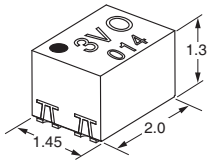
RoHS Compliant

■Application Examples

- **Semiconductor test equipment**
- **Test & measurement equipment**
- **Communication equipment**
- **Data loggers**

■Package (Unit : mm, Average)

S-VSON(L)4 pin



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

■Model Number Legend

G3VM-□□□□□□
1 2 3 4 5 6

1. Load Voltage
3: 30 V
6: 60 V

2. Contact form
1: 1a (SPST-NO)

3. Package
Q: S-VSON(L)4-pin

4. Additional functions
V: Voltage Driven Type

5. Serial code
When specifications overlap, serial code is added in the recorded order.

6. Input forward voltage
H: High voltage
L: Low voltage

■Ordering Information

Package	Contact form	Terminals	Load voltage (peak value) *	Continuous load current (peak value) *	Tape cut packaging		Tape packaging	
					Model	Minimum package quantity	Model	Minimum package quantity
S-VSON(L)4	1a (SPST-NO)	surface-mounting Terminals	30 V	1,500 mA	G3VM-31QVH	1 pc.	G3VM-31QVH(TR05)	500 pcs.
					G3VM-31QVL		G3VM-31QVL(TR05)	
			60 V	1,000 mA	G3VM-61QV2H		G3VM-61QV2H(TR05)	
					G3VM-61QV2L		G3VM-61QV2L(TR05)	
				400 mA	G3VM-61QVH		G3VM-61QVH(TR05)	

Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR05)" to the end of the model number.
Tape-cut S-VSON(L)s are packaged without humidity resistance. Use manual soldering to mount them.
Refer to common precautions.

* The AC peak and DC value are given for the load voltage and continuous load current.

■Absolute Maximum Ratings (Ta = 25°C)

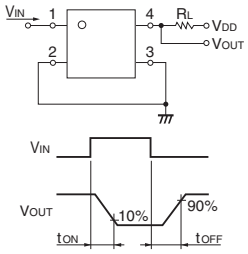
Item		Symbol	G3VM-31QVH	G3VM-31QVL	G3VM-61QV2H	G3VM-61QV2L	G3VM-61QVH	Unit	Measurement conditions
Input	Input forward voltage	V_{IN}	6	3	6	3	6	V	
	Input reverse voltage	V_{RIN}	6					V	
	Connection temperature	T_J	125					°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	30		60			V	
	Continuous load current (AC peak/DC)	I_O	1500		1000		400	mA	
	ON current reduction rate	ΔIo/°C	−15		−10		−4	mA/°C	Ta≥25°C
	Pulse ON current	Iop	4500		3000		1200	mA	t=100 ms, Duty=1/10
	Connection temperature	T_J	125					°C	
Dielectric strength between I/O ✻		V_{I-O}	500					Vrms	AC for 1 min
Ambient operating temperature		Ta	−40 to +110					°C	With no icing or condensation
Ambient storage temperature		Tstg	−40 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 on the LED side and all pins on the light-receiving side.

■Electrical Characteristics (Ta = 25°C)

Item		Symbol		G3VM-31QVH	G3VM-31QVL	G3VM-61QV2H	G3VM-61QV2L	G3VM-61QVH	Unit	Measurement conditions
Input	Reverse current	I_R	Maximum	10					μA	V_R=5 V
	Capacity between terminals	C_T	Typical	30					pF	V=0, f=1 MHz
	Input forward current	I_F	Typical	6.3	14.3	6.3	14.3	6.2	mA	V_{IN}=5 V (G3VM-31QVH/-61QVH/-61QV2H), V_{IN}=2.5 V (G3VM-31QVL/-61QV2L)
	Operate voltage	V_{FON}	Typical	1.4	1.2	1.4	1.2	1.5	V	I_O=100 mA
			Maximum	3	1.6	3	1.6	3		
	Release voltage	V_{FOFF}	Minimum	0.8					V	I_{OFF}=10 μA
			Typical	1.4	1.2	1.4	1.1	1.5		
Output	Maximum resistance with output ON	R_{ON}	Typical	0.1		0.2		1	Ω	Io=Continuous load current ratings, t<1 s, V_{IN}=5 V (G3VM-31QVH/-61QVH/ -61QV2H), V_{IN}=2 V (G3VM-31QVL/-61QV2L)
			Maximum	0.2		0.3		1.5		
	Current leakage when the relay is open	I_{LEAK}	Maximum	1					nA	V_{OFF}=20 V (G3VM-31QVH/L), V_{OFF}=50 V (G3VM-61QVH, -61QV2H/L)
	Capacity between terminals	C_{off}	Typical	120		80		-	pF	V=0, f=1 MHz, t<1 s
			Maximum	150				20		
Capacity between I/O terminals		C_{I-O}	Typical	1					pF	V_S=0 V, f=1 MHz
Insulation resistance between I/O terminals		R_{I-O}	Minimum	1000					MΩ	V_{I-O}=500 VDC, RoH≤60%
			Typical	10^8						
Turn-ON time		t_{ON}	Maximum	2.0			1.0	0.5	ms	V_{DD}=20 V, R_L=200 Ω V_{IN}=5 V (G3VM-31QVH/ -61QVH/ -61QV2H), V_{IN}=2 V (G3VM-31QVL/ -61QV2L)
Turn-OFF time		t_{OFF}	Maximum	0.2						

✻ Turn-ON and Turn-OFF Times



■Recommended Operating Conditions

To ensure highest reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

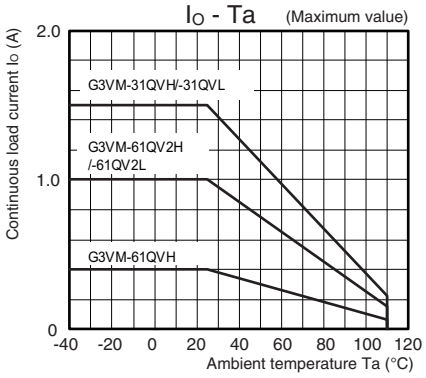
Each item on this list is an independent condition, so it is not simultaneously satisfy several conditions.

Item	Symbol		G3VM-31QVH	G3VM-31QVL	G3VM-61QV2H	G3VM-61QV2L	G3VM-61QVH	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	24		48			V
Operating input forward voltage	V_{IN}	Minimum	4	2	4	2	4	V
		Typical	5	2.5	5	2.5	5	
		Maximum	6	3	6	3	6	
Continuous load current (AC peak/DC)	I_O	Maximum	1500		1000		400	mA
Ambient operating temperature	Ta	Minimum	−20					°C
		Maximum	100					

■Engineering Data

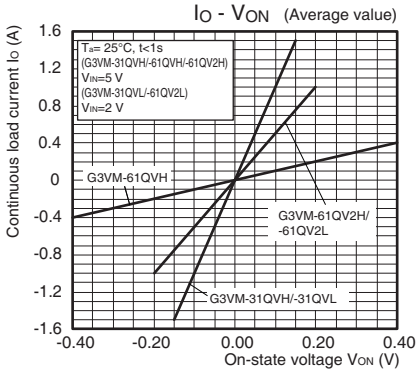
●Continuous load current vs. Ambient temperature

G3VM-31QVH/31QVL/61QVH/61QV2H/61QV2L



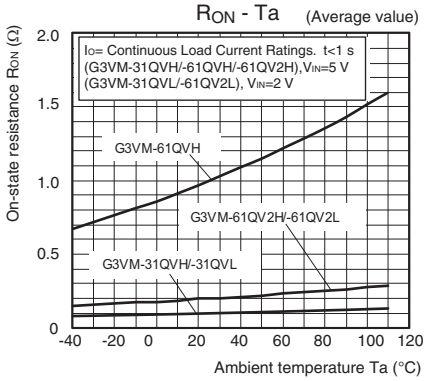
●Continuous load current vs. On-state voltage

G3VM-31QVH/31QVL/61QVH/61QV2H/61QV2L



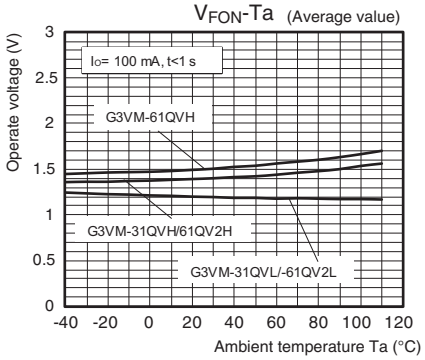
●On-state resistance vs. Ambient temperature

G3VM-31QVH/31QVL/61QVH/61QV2H/61QV2L



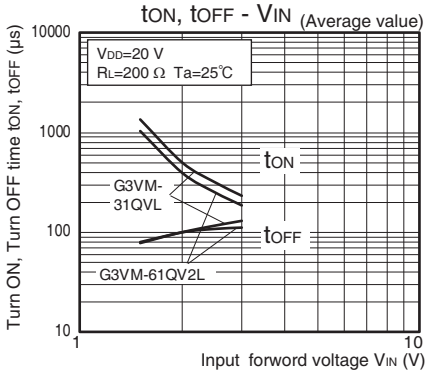
●Operate voltage vs. Ambient temperature

G3VM-31QVH/31QVL/61QVH/61QV2H/61QV2L

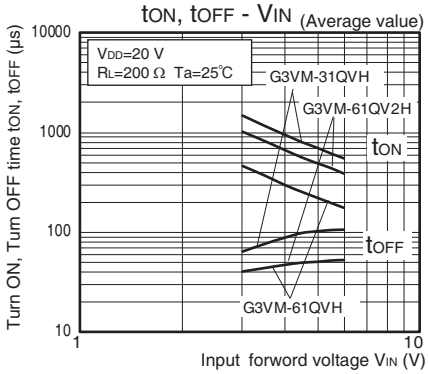


●Turn ON, Turn OFF time vs. Input forward voltage

G3VM-31QVL/61QV2L

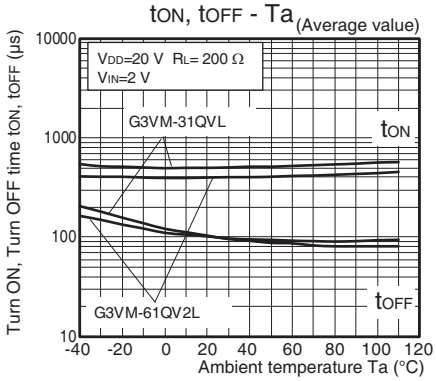


G3VM-31QVH/61QVH/61QV2H

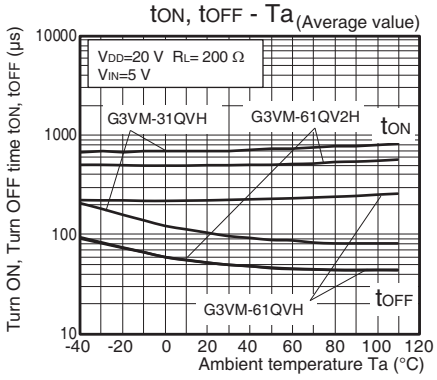


●Turn ON, Turn OFF time vs. Ambient temperature

G3VM-31QVL/61QV2L



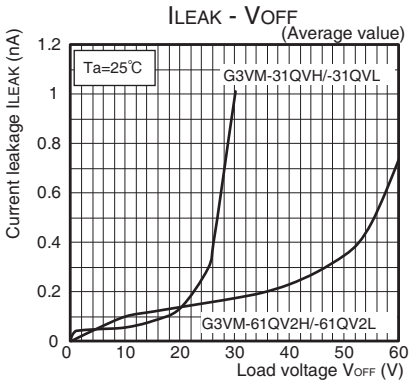
G3VM-31QVH/61QVH/61QV2H



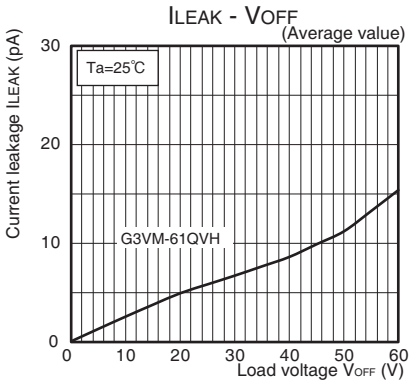
■Engineering Data

●Current leakage vs. Load voltage

G3VM-31QVH/31QVL/61QV2H/61QV2L

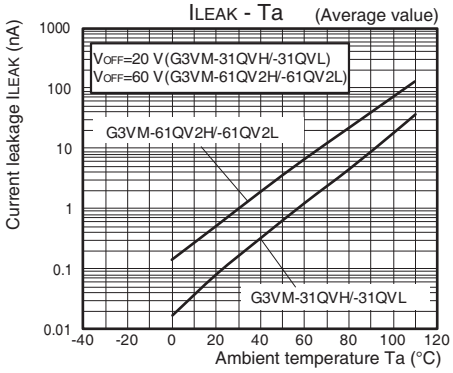


G3VM-61QVH

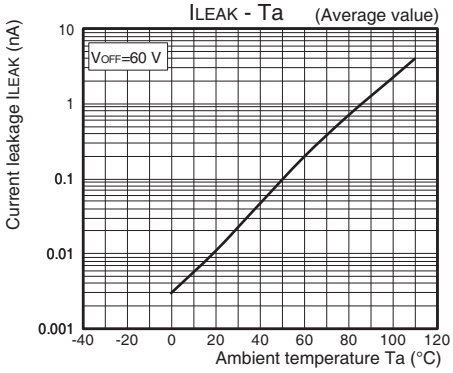


●Current leakage vs. Ambient temperature

G3VM-31QVH/31QVL/61QV2H/61QV2L

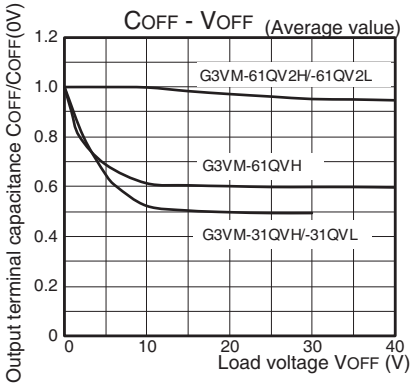


G3VM-61QVH



●Output terminal capacitance vs.Load voltage

G3VM-31QVH/31QVL/61QVH/61QV2H/61QV2L

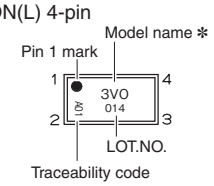


■Appearance / Terminal Arrangement / Internal Connections

●Appearance

S-VSON(L)
(Super-Very Small Outline Non-leaded)

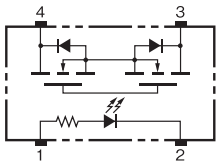
S-VSON(L) 4-pin



✻ Actual model name marking for each model

Model	Marking
G3VM-31QVH	3V1
G3VM-31QVL	3V0
G3VM-61QV2H	6V1
G3VM-61QV2L	6V0
G3VM-61QVH	6V2

●Terminal Arrangement/Internal Connections (Top View)

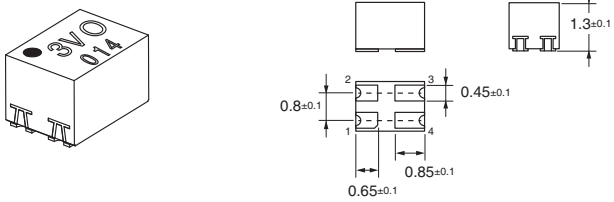


Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.

■Dimensions (Unit: mm)

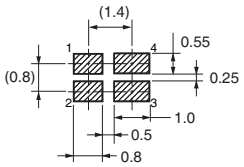
Surface-mounting Terminals

Weight: 0.01 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



Unless otherwise specified, the dimensional tolerance is ± 0.1 mm.

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

■Safety Precautions

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

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Cat. No. K319-E1-01
0220(0220)