

A wide range of contact forms and functions  
Over 160 different models available

# G3VM MOSFET RELAY

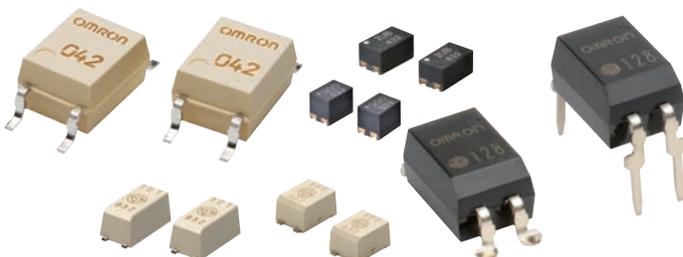
## *Selection Guide*

### What's **NEW!**

World's smallest class\* (for mount area) new S-VSON package

DIP 8-pin type is added to the lineup of High-current and Low-ON-resistance Type

Expansion of the 60 V SOP package series

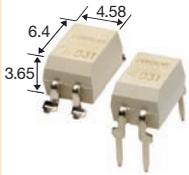


MOS FET Relays  
**G3VM**

# Package of MOS FET Relays

## DIP

Bottom surface  
100%



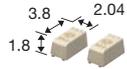
## SOP

Bottom surface  
59%



## SSOP

Bottom surface  
26%



## USOP

Bottom surface  
21%



## VSON

Bottom surface  
12%



## S-VSON

Bottom surface  
10%

\* 82% of VSON



# MOS FET Relay Lineup

## General Purpose Type



## High Current & Low On-resistance Type



Best-selling products suitable for various applications  
Ideal for AC/DC load, Micro analog signal

Offers High Current & Low On-resistance in the same level as the mechanical relay

Package	Model	Contact form	Load voltage (V) Max.	Continuous load current (mA) Max.	Dielectric strength between I/O (Vrms)
DIP	G3VM-61A1/D1	1a	60	500	2500
	G3VM-61B1/E1	1a	60	500(1000) <sup>1)</sup>	2500
	G3VM-62C1/F1	2a	60	500	2500
	G3VM-351A/D	1a	350	120	2500
	G3VM-351B/E	1a	350	120(240) <sup>1)</sup>	2500
	G3VM-352C/F	2a	350	120	2500
SOP	G3VM-61G1	1a	60	400	1500
	G3VM-61VY1 <sup>2)</sup>	1a	60	100	3750
	G3VM-61VY2 <sup>2)</sup> <b>NEW</b>	1a	60	500	3750
	G3VM-63G <b>NEW</b>	1b	60	500	1500
	G3VM-61H1	1a	60	400(800) <sup>1)</sup>	1500
	G3VM-62J1	2a	60	400	1500
	G3VM-81G1	1a	80	350	1500
	G3VM-351G	1a	350	110	1500
	G3VM-351VY <sup>2)</sup> <b>NEW</b>	1a	350	110	3750
	G3VM-351H	1a	350	110(220) <sup>1)</sup>	1500
	G3VM-352J	2a	350	110	1500

<sup>1)</sup> Load current in case of connection C is shown in parentheses (DC load only)

<sup>2)</sup> VY, VY1, and VY2 types: Special SOP4 pin package

Package	Model	Load voltage (V) Max.	Continuous load current (A) Max.	Maximum resistance with output ON(Ω) Typ.	
DIP	G3VM-21AR/DR	20	3	0.04	
	G3VM-21BR/ER	20	4(8)*	0.02(0.005)*	
	G3VM-41AR/DR	40	2.5	0.05	
	G3VM-41BR/ER	40	3.5(7)*	0.03(0.008)*	
	G3VM-61AR/DR	60	2	0.08	
	G3VM-61BR/ER	60	2.5	0.065	
	G3VM-61BR1/ER1	60	3(6)*	0.04(0.01)*	
	G3VM-61CR1/FR1 <b>NEW</b>	60	5(10)*	0.022(0.013)*	
	G3VM-101AR/DR	100	1	0.25	
	G3VM-101BR/ER	100	2(4)*	0.1(0.025)*	
	G3VM-401CR/FR <b>NEW</b>	400	0.4(0.8)*	3(1.3)*	
	G3VM-601CR/FR <b>NEW</b>	600	0.6(1.2)*	1.3(0.5)*	
	SOP	G3VM-21HR	20	2.5(5)*	0.02(0.005)*
		G3VM-41GR8	40	1	0.1
G3VM-41HR		40	2.5(5)*	0.03(0.008)*	
G3VM-61GR1		60	1	0.25	
G3VM-61GR2 <b>NEW</b>		60	1.7	0.08	
G3VM-61HR		60	2.3(4.6)*	0.04(0.01)*	
G3VM-61HR1 <b>NEW</b>		60	3.3(6.6)*	0.03(0.008)*	
G3VM-81HR		80	1.25(2.5)*	0.11(0.03)*	
G3VM-101HR		100	1.4(2.8)*	0.1(0.025)*	
S-VSON		G3VM-31QR <b>NEW</b>	30	1.5	0.1

\* Load current in case of connection C is shown in parentheses (DC load only)

# MOS FET Relay Lineup

## Ultrasensitive Type



Ideal for energy saving, various battery-driven devices  
**Ultrasensitive Driving current\* 0.2 mA (Max.)**  
 with SOP4 available

\*Driving current = LED forward current

Model	Load voltage (V) Max.	Continuous load current (mA) Max.	Trigger LED forward current (mA) Max.	Recommended Trigger LED forward current (mA) Max.
G3VM-61G2	60	400	1	2
G3VM-61G3	60	400	0.2	0.5
G3VM-201G1	200	200	1	2
G3VM-201G2	200	200	0.2	0.5
G3VM-351G1	350	100	1	2
G3VM-401G1	400	100	0.2	0.5
G3VM-601G1	600	70	0.2	0.5
G3VM-601G	600	90	1	2

## Small & High Dielectric Strength Type



**Dielectric Strength between I/O 5,000 Vrms with small DIP4.**

Package	Model	Load voltage (V) Max.	Continuous load current (mA) Max.	Recommended Trigger LED forward current (mA) Max.	Dielectric strength between I/O (Vrms)
DIP4	G3VM-41AY1/DY1	40	2000	7.5	5000
	G3VM-61AY1/DY1	60	500	7.5	5000
	G3VM-201AY1/DY1	200	250	7.5	5000
	G3VM-351AY1/DY1	350	100	7.5	5000
	G3VM-401AY1/DY1	400	120	7.5	5000
	G3VM-601AY1/DY1	600	90	7.5	5000

## Low Output Capacitance and ON Resistance Type (Low CxR)

Ideal for semi-conductor test equipment.  
**low C(capacitance between terminals)**  
**× R(output on-resistance) type**



### ■ SSOP package

Model	Load voltage (V) Max.	Continuous load current (mA) Max.	Maximum resistance with output ON(Ω) Typ.	Capacitance between terminals (pF) Typ.
G3VM-21LR	20	160	5	1
G3VM-21LR1	20	450	0.8	5
G3VM-21LR10	20	200	3	0.8
G3VM-41LR4	40	250	2	5
G3VM-41LR5	40	300	1	10
G3VM-41LR6	40	120	10	1
G3VM-41LR10	40	120	12	0.45
G3VM-41LR11	40	140	7	0.7

### ■ USOP package

Model	Load voltage (V) Max.	Continuous load current (mA) Max.	Maximum resistance with output ON(Ω) Typ.	Capacitance between terminals (pF) Typ.
G3VM-21PR1	20	450	0.6	5
G3VM-21PR10	20	200	3	0.8
G3VM-21PR11	20	900	0.18	40
G3VM-41PR12	40	100	15	0.3
G3VM-41PR6	40	120	10	1
G3VM-41PR10	40	120	12	0.45
G3VM-41PR11	40	140	7	0.7
G3VM-61PR1	60	120	10	0.7

### ■ VSON package

Model	Load voltage (V) Max.	Continuous load current (mA) Max.	Maximum resistance with output ON(Ω) Typ.	Capacitance between terminals (pF) Typ.
G3VM-21UR10	20	200	3	0.8
G3VM-21UR1	20	450	0.8	5
G3VM-21UR11	20	1000	0.18	40
G3VM-41UR12	40	100	15	0.3
G3VM-41UR10	40	120	12	0.45
G3VM-41UR11	40	140	7	0.7
G3VM-61UR1	60	120	10	0.7

## G3VM Model Number Legend

G3VM-□□□□□

① Load voltage	② Contact form	③ Package type	④ Additional functions	⑤ Other information
2: 20 V    8: 80 V 3: 30 V    10: 100 V 4: 40 V    20: 200 V 5: 50 V    35: 350 V 6: 60 V    40: 400 V 7: 75 V    60: 600 V	1: 1a(SPST-NO) 2: 2a(DPST-NO) 3: 1b(SPST-NC) 4: 2b(DPST-NC) 5: 1a1b (SPST-NO/SPST-NC)	A: DIP 4pin PCB Terminals B: DIP 6pin PCB Terminals C: DIP 8pin PCB Terminals D: DIP 4pin Surface-mounting Terminals E: DIP 6pin Surface-mounting Terminals F: DIP 8pin Surface-mounting Terminals	G: SOP 4pin H: SOP 6pin J: SOP 8pin L: SSOP 4pin P: USOP 4pin Q: S-VSON 4pin U: VSON 4pin V: SOP 4pin (Special)	L: Current limit R: Low ON-resistance type Y: Dielectric strength between I/O above 2.5 kV type
				When specifications overlap, serial code is added in the recorded order.

Note 1 : Some products may have a different model number structure.

Note 2 : In order to avoid the confusion of l (English letter) and 1 (number), l (English letter) is not used here.

Note 3 : For 4-pin SOP models, where the available marking space is insufficient to clearly differentiate model numbers with 6 or more suffix digits, the package type code ③ is omitted.

# Product lineup of MOS FET Relays

Please refer to our web site or datasheet for more information such as measurement conditions.

## DIP (Dual Inline Package)

Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)
20	G3VM-21AR/DR	4	1a	3000	0.04	1000	300	5.0	1.0	2500
20	G3VM-21BR/ER	6	1a	4000 (8000) <sup>*1</sup>	0.02	1000	1000	5.0	1.0	2500
40	G3VM-41AY/DY	4	1a	2000	0.09	1000	300	5.0	1.0	5000
40	G3VM-41AY1/DY1	4	1a	2000	0.09	1000	300	5.0	1.0	5000
40	G3VM-41AR/DR	4	1a	2500	0.05	1000	300	5.0	1.0	2500
40	G3VM-41BR/ER	6	1a	3500 (7000) <sup>*1</sup>	0.03	1000	1000	5.0	1.0	2500
60	G3VM-61A1/D1	4	1a	500	1	1000	130	2.0	0.5	2500
60	G3VM-61AY/DY	4	1a	500	0.6	1000	130	1.0	1.0	5000
60	G3VM-61AY1/DY1	4	1a	500	0.6	1000	130	3.0	1.0	5000
60	G3VM-61AR/DR	4	1a	2000	0.08	1000	250	5.0	1.0	2500
60	G3VM-61B1/E1	6	1a	500 (1000) <sup>*1</sup>	1	1000	130	2.0	0.5	2500
60	G3VM-61BR/ER	6	1a	2500	0.065	10	400	1.5	0.4	2500
60	G3VM-61BR1/ER1	6	1a	3000 (6000) <sup>*1</sup>	0.04	1000	1000	5.0	1.0	2500
60	G3VM-61CR1/FR1 <b>NEW</b>	8	1a	5000(10000) <sup>*1</sup>	0.022	10000	850	5.0	1.0	2500
60	G3VM-62C1/F1	8	2a	500	1	1000	130	2.0	0.5	2500
100	G3VM-101AR/DR	4	1a	1000	0.25	1000	200	5.0	1.0	2500
100	G3VM-101BR/ER	6	1a	2000 (4000) <sup>*1</sup>	0.1	1000	1000	5.0	1.0	2500
200	G3VM-201AY/DY	4	1a	250	5	1000	90	1.0	1.0	5000
200	G3VM-201AY1/DY1	4	1a	250	5	1000	90	3.0	1.0	5000
350	G3VM-351AY/DY	4	1a	100	35	1000	30	1.0	1.0	5000
350	G3VM-351AY1/DY1	4	1a	100	35	1000	30	2.0	1.0	5000
350	G3VM-2L/2FL	4	1a	120 <sup>*2</sup>	22	1000	40	1.0	1.0	2500
350	G3VM-351A/D	4	1a	120	35	1000	30	1.0	1.0	2500
350	G3VM-353A/D	4	1b	150	15	1000	85	1.0	3.0	2500
350	G3VM-351B/E	6	1a	120 (240) <sup>*1</sup>	35	1000	30	1.0	1.0	2500
350	G3VM-353B/E	6	1b	150 (300) <sup>*1</sup>	15	1000	85	1.0	3.0	2500
350	G3VM-355CR/FR	8	1a1b	120	15	1000	65	1.0	3.0	2500
350	G3VM-352C/F	8	2a	120	35	1000	30	1.0	1.0	2500
350	G3VM-WL/WFL	8	2a	120 <sup>*2</sup>	22	1000	40	1.0	1.0	2500
350	G3VM-354C/F	8	2b	150	15	1000	85	1.0	3.0	2500
400	G3VM-401A/D	4	1a	120	18	1000	40	1.0	1.0	2500
400	G3VM-401AY/DY	4	1a	120	22	1000	80	1.0	1.0	5000
400	G3VM-401AY1/DY1	4	1a	120	22	1000	80	2.0	1.0	5000
400	G3VM-401B/E	6	1a	120 (240) <sup>*1</sup>	17	1000	40	1.0	1.0	2500
400	G3VM-401BY/EY	6	1a	120 (240) <sup>*1</sup>	17	1000	40	1.0	1.0	5000
400	G3VM-401CR/FR <b>NEW</b>	8	1a	400(800) <sup>*1</sup>	3	1000	410	1.0	1.0	2500
400	G3VM-402C/F	8	2a	120	18	1000	40	1.0	1.0	2500
600	G3VM-601AY/DY	4	1a	90	45	1000	75	1.0	1.0	5000
600	G3VM-601AY1/DY1	4	1a	90	45	1000	75	2.0	1.0	5000
600	G3VM-601BY/EY	6	1a	100 (200) <sup>*1</sup>	30	1000	120	1.5	1.0	5000
600	G3VM-601CR/FR <b>NEW</b>	8	1a	600(1200) <sup>*1</sup>	1.3	10000	4300	3.0	1.0	2500

\*1. Load current in case of connection C is shown in parentheses (DC load only) \*2. Current-Limiting function (Limit current 150 mA Min. 300 mA Max.) Ambient operating temperature: ○: -20 to +85°C, others: -40 to +85°C

# Product lineup of MOS FET Relays

SOP (Small Outline Package)												
Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)		
20	G3VM-21GR	4	1a	160	5	1	1	0.5	0.5	1500	○	
20	G3VM-21GR1	4	1a	300	1	1	5	0.5	0.5	1500	○	
20	G3VM-21HR	6	1a	2500 (5000) <sup>*1</sup>	0.02	10	1000	5.0	1.0	1500		
40	G3VM-41GR6	4	1a	120	10	1	1	0.5	0.5	1500	○	
40	G3VM-41GR4	4	1a	250	2	1	5	0.5	0.5	1500	○	
40	G3VM-41GR5	4	1a	300	1	1	10	0.5	0.5	1500	○	
40	G3VM-41GR8	4	1a	1000	0.1	1	300	3.0	0.5	1500		
40	G3VM-41HR	6	1a	2500 (5000) <sup>*1</sup>	0.03	10	1000	5.0	1.0	1500		
60	G3VM-61VY1 <sup>*3</sup>	4	1a	100	25	1000	10	5.0	5.0	3750		
60	G3VM-61G1	4	1a	400	1	1000	130	2.0	0.5	1500		
60	G3VM-61G2	4	1a	400	1	1000	130	8.0	3.0	1500		
60	G3VM-61G3	4	1a	400	1	1000	130	10.0	5.0	1500		
60	G3VM-61VY2 <sup>*3</sup>	<b>NEW</b>	4	1a	500	1	1000	20	2.0	0.5	3750	★
60	G3VM-61GR1	4	1a	1000	0.25	100	90	3.0	1.0	1500	○	
60	G3VM-61GR2	<b>NEW</b>	4	1a	1700	0.08	10	250	3.0	0.5	1500	
60	G3VM-63G	<b>NEW</b>	4	1b	500	1	1000	100	1.0	3.0	1500	◆
60	G3VM-61H1	6	1a	400 (800) <sup>*1</sup>	1	1000	130	2.0	0.5	1500		
60	G3VM-61HR	6	1a	2300 (4600) <sup>*1</sup>	0.04	10	1000	5.0	1.0	1500		
60	G3VM-61HR1	<b>NEW</b>	6	1a	3300(6600) <sup>*1</sup>	0.03	20	700	5.0	1.0	1500	
60	G3VM-62J1	8	2a	400	1	1000	130	2.0	0.5	1500		
80	G3VM-81GR	4	1a	40	16	1	2.5	0.5	0.5	1500	○	
80	G3VM-81GR1	4	1a	200	5	1	6.5	0.5	0.5	1500	○	
80	G3VM-81G1	4	1a	350	1	1	30	0.5	0.5	1500	○	
80	G3VM-81HR	6	1a	1250 (2500) <sup>*1</sup>	0.11	1.5	460	3.0	1.0	1500	○	
100	G3VM-101HR	6	1a	1400 (2800) <sup>*1</sup>	0.1	10	1000	5.0	1.0	1500		
200	G3VM-201G	4	1a	50	40	1	15	0.5	0.2	1500		
200	G3VM-201G1	4	1a	200	5	1000	90	8.0	3.0	1500		
200	G3VM-201G2	4	1a	200	5	1000	90	10.0	5.0	1500		
200	G3VM-S5	4	1a	200	5	1000	100	1.5	1.0	1500		
200	G3VM-201H1	6	1a	200 (400) <sup>*1</sup>	5	1000	100	1.5	1.0	1500		
200	G3VM-202J1	8	2a	200	5	1000	100	1.5	1.0	1500		
350	G3VM-351G1	4	1a	100	35	1000	35	5.0	3.0	1500		
350	G3VM-351G	4	1a	110	35	1000	30	1.0	1.0	1500		
350	G3VM-351VY <sup>*3</sup>	<b>NEW</b>	4	1a	110	35	1000	60	1.0	0.5	3750	★
350	G3VM-351GL	4	1a	120 <sup>*2</sup>	15	1000	70	1.0	1.0	1500		
350	G3VM-353G	4	1b	120	15	1000	65	1.0	3.0	1500		
350	G3VM-351H	6	1a	110 (220) <sup>*1</sup>	35	1000	30	1.0	1.0	1500		
350	G3VM-353H	6	1b	120 (240) <sup>*1</sup>	15	1000	65	1.0	3.0	1500		
350	G3VM-355JR	8	1a1b	120	15	1000	65	1.0	3.0	1500		
350	G3VM-352J	8	2a	110	35	1000	30	1.0	1.0	1500		
350	G3VM-354J	8	2b	120	15	1000	65	1.0	3.0	1500		
400	G3VM-401G1	4	1a	100	18	1000	70	10.0	5.0	1500		
400	G3VM-401G	4	1a	120	17	1000	70	1.0	1.0	1500		
400	G3VM-401H	6	1a	120 (240) <sup>*1</sup>	17	1000	70	1.0	1.0	1500		
400	G3VM-402J	8	2a	120	17	1000	70	1.0	1.0	1500		
600	G3VM-601G1	4	1a	70	35	1000	75	10.0	5.0	1500		
600	G3VM-601G	4	1a	90	45	1000	75	8.0	3.0	1500		

\*1. Load current in case of connection C is shown in parentheses (DC load only) \*2. Current-Limiting function (Limit current 150 mA Min. 300 mA Max.) \*3. VY, VY1, and VY2 types: Special SOP4 pin package  
 Ambient operating temperature: ★ -40 to +110°C ◆ -40 to +105°C ○ -20 to +85°C, others: -40 to +85°C

# Product lineup of MOS FET Relays

## SSOP (Shrink Small Outline Package)

Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)
20	G3VM-21LR	4	1a	160	5	1	1	0.5	0.5	1500
20	G3VM-21LR10	4	1a	200	3	0.2	0.8	0.2	0.2	1500
20	G3VM-21LR1	4	1a	450	0.8	1	5	0.5	0.5	1500
20	G3VM-21LR11	4	1a	900	0.18	1	40	2.0	1.0	1500
40	G3VM-41LR6	4	1a	120	10	1	1	0.5	0.5	1500
40	G3VM-41LR10	4	1a	120	12	0.2	0.45	0.2	0.3	1500
40	G3VM-41LR11	4	1a	140	7	0.2	0.7	0.2	0.2	1500
40	G3VM-41LR4	4	1a	250	2	1	5	0.5	0.5	1500
40	G3VM-41LR5	4	1a	300	1	1	10	0.5	0.5	1500
60	G3VM-61LR	4	1a	400	1	1000	20	1.0	1.0	1500
80	G3VM-81LR	4	1a	120	7.5	0.2	5	0.25	0.2	1500
100	G3VM-101LR	4	1a	80	8	0.2	6	0.3	0.3	1500

Ambient operating temperature: -20 to +85°C

## USOP (Ultra Small Outline Package)

Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)
20	G3VM-21PR10	4	1a	200	3	1	0.8	0.2	0.2	500
20	G3VM-21PR1	4	1a	450	0.6	1	5	0.5	0.5	500
20	G3VM-21PR11	4	1a	900	0.18	1	40	2.0	1.0	500
40	G3VM-41PR12	4	1a	100	15	1	0.3	0.2	0.2	500
40	G3VM-41PR10	4	1a	120	12	1	0.45	0.2	0.3	500
40	G3VM-41PR6	4	1a	120	10	0.2	1	0.2	0.3	500
40	G3VM-41PR11	4	1a	140	7	1	0.7	0.2	0.2	500
40	G3VM-41PR5	4	1a	300	1	1	10	0.5	0.3	500
50	G3VM-51PR	4	1a	300	1	1	12	0.5	0.4	500
60	G3VM-61PR1	4	1a	120	10	1	0.7	0.2	0.2	500
60	G3VM-61PR	4	1a	400	1	1	20	0.5	0.5	500
75	G3VM-71PR	4	1a	400	1	1	30	2.0	1.0	500
80	G3VM-81PR	4	1a	120	7	0.02	5	0.5	0.2	500
100	G3VM-101PR	4	1a	100	8	0.2	6	0.3	0.3	500

Ambient operating temperature: -40 to +85°C

## VSON (Very Small Outline Package Non-leaded)

Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)
20	G3VM-21UR10	4	1a	200	3	1	0.8	0.2	0.2	500
20	G3VM-21UR1	4	1a	450	0.8	1	5	0.4	0.4	500
20	G3VM-21UR11	4	1a	1000	0.18	1	40	2.0	1.0	500
40	G3VM-41UR12	4	1a	100	15	1	0.3	0.2	0.2	500
40	G3VM-41UR10	4	1a	120	12	1	0.45	0.2	0.3	500
40	G3VM-41UR11	4	1a	140	7	1	0.7	0.2	0.2	500
50	G3VM-51UR	4	1a	300	1	1	12	0.5	0.4	500
60	G3VM-61UR1	4	1a	120	10	1	0.7	0.2	0.2	500
60	G3VM-61UR	4	1a	400	1	1	20	0.5	0.5	500
80	G3VM-81UR	4	1a	120	7	0.02	5	0.5	0.2	500
80	G3VM-81UR1	4	1a	200	6	1	6.5	0.4	0.4	500
100	G3VM-101UR	4	1a	100	8	0.2	6	0.3	0.3	500

Ambient operating temperature: -40 to +110°C

## S-VSON (Super - Very Small Outline Package Non-leaded)

Load Voltage (V) Max.	Model	Number of terminals	Contact form	Continuous load current (mA) Max.	Maximum resistance with output ON (Ohm) Typ.	Current leakage when the relay is open (nA) Max.	Capacitance between terminals (pF) Typ.	Turn-ON time (ms) Max.	Turn-OFF time (ms) Max.	Dielectric strength between I/O (Vrms)
30	G3VM-31QR <b>NEW</b>	4	1a	1500	0.1	1	120	2.0	1.0	500

Ambient operating temperature: -40 to +110°C

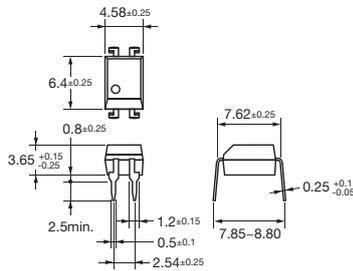
# Package dimensions/Appearance

(Unit:mm)

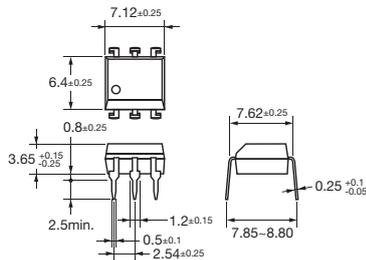
## DIP (Dual Inline Package)

### PCB Terminals

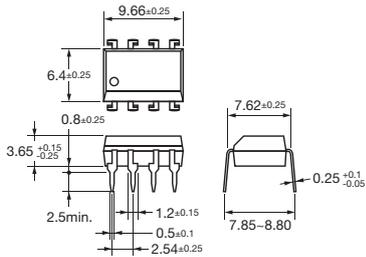
■ DIP4 weight : 0.25 g



■ DIP6 weight : 0.4 g

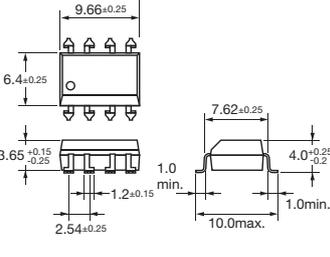
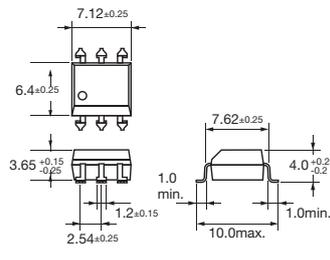


■ DIP8 weight : 0.54 g



### Surface-mounting Terminals

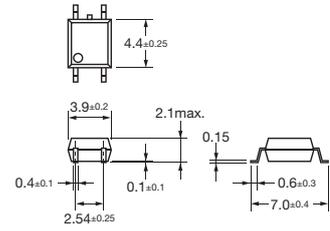
(Exclude G3VM-61BR/ER)



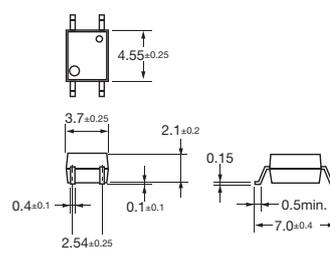
## SOP (Small Outline Package)

### Surface-mounting Terminals

■ SOP4 weight : 0.1 g

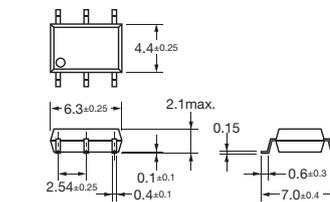


■ Special SOP4 pin weight : 0.1 g



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

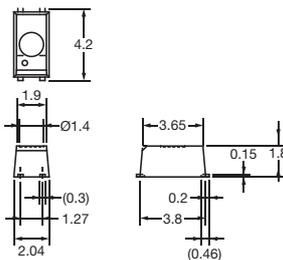
■ SOP6 weight : 0.13 g



## SSOP (Shrink Small Outline Package)

### Surface-mounting Terminals

■ SSOP4 weight : 0.03 g

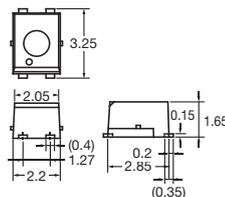


Unless otherwise specified, the dimensional tolerance is ± 0.1 mm.

## USOP (Ultra Small Outline Package)

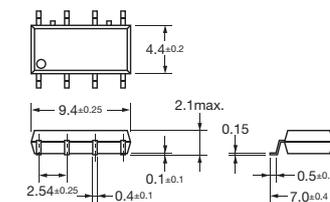
### Surface-mounting Terminals

■ USOP4 weight : 0.03 g



Unless otherwise specified, the dimensional tolerance is ± 0.2 mm.

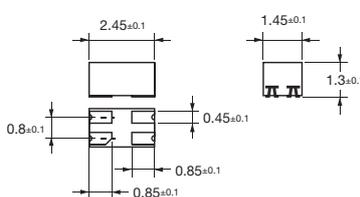
■ SOP8 weight : 0.2 g



## VSON (Very Small Outline Non-leaded)

### Surface-mounting Terminals

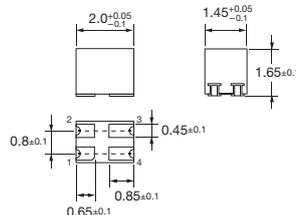
■ VSON4 weight : 0.01 g



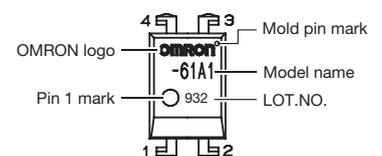
## S-VSON (Super Very Small Outline Non-leaded)

### Surface-mounting Terminals

■ S-VSON4 weight : 0.01 g

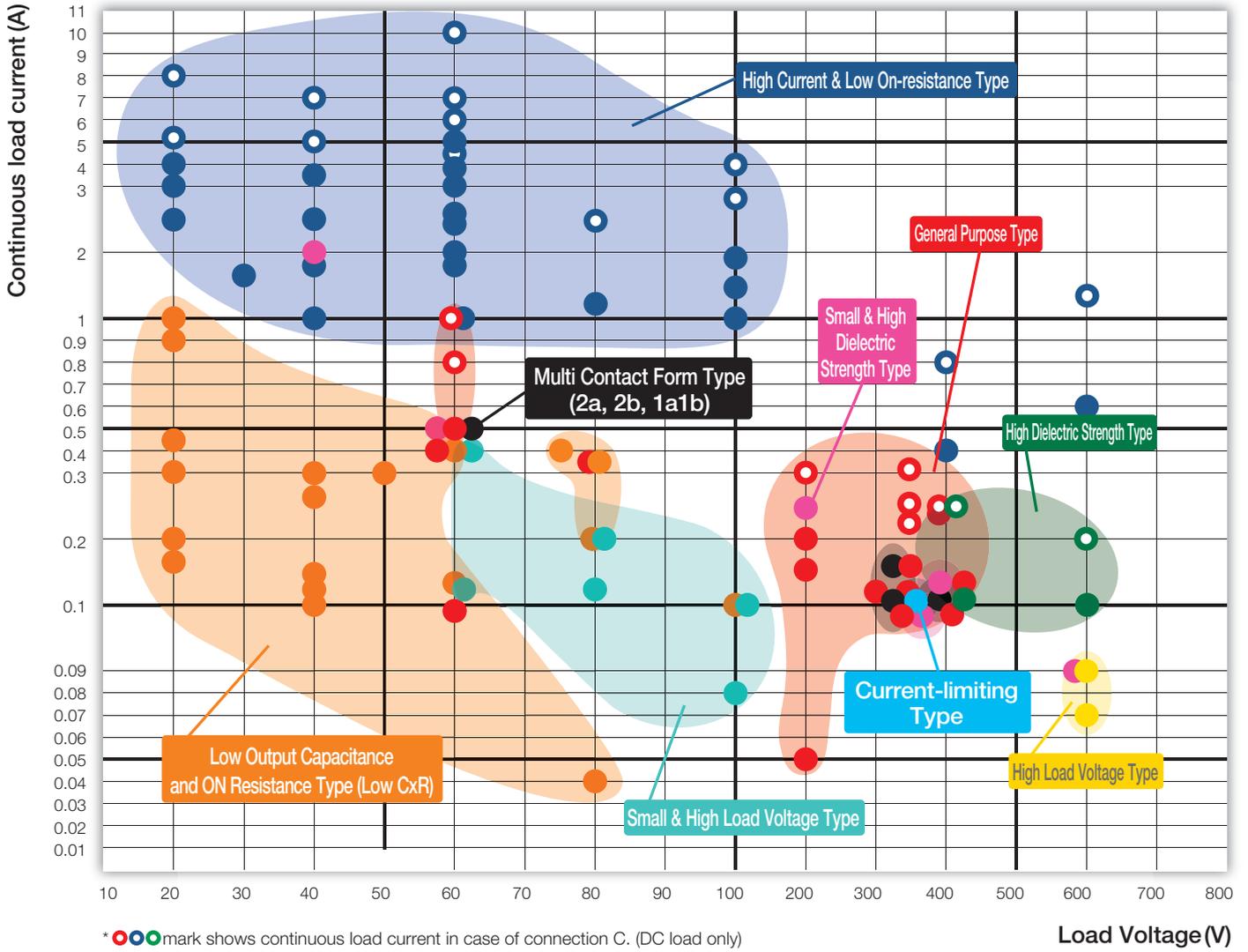


## Appearance Example



1. The actual product is marked differently from the image shown here.
  2. "G3VM" is not marked on the package.
- \* The indentation may appear in the corner diagonally opposite from the pin 1 mark due to extrusion by metal casting.

# Product Map by features



## About MOS FET relays

OMRON's MOS FET Relays lead the industry in Solid State Relay technology, utilizing an input LED, Photodiode Dome Array (PDA) used as photocoupler and MOS FET chip in the load switching current.

In addition to being maintenance free, the MOS FET relay features high-speed operation and compact size, further promoting the replacement of mechanical relays.

Omron is expanding our wide range of products, from the industry's smallest class\* new package (S-VSON/VSON) to our high current, high dielectric strength, and high sensitivity models.

\*As of November, 2016.

## Advantages of MOS FET relays

### Ultra Small Size and Weight

In addition to the SSOP and USOP, we have introduced the ultra-compact VSON and S-VSON packages, contributing to downsizing of equipment.

### Low driving current

Realizing energy saving with standard driving current of 2-15mA. Ultrasensitive models are also available featuring Drive Currents as low as 0.2mA (max).

### Long operating life

MOS FET Relays use light signal instead of moveable contacts; avoiding reduction of life caused by contact wear, substantially increasing operational life.

### Small leakage current

Can withstand external surge current without addition of snubber circuit. Under normal conditions, the typical leakage current is about 1 nA or below.

### Excellent shock resistance

All the internal parts use casting method, and there is no movable parts in it, so it has excellent shock and vibration resistance.

### High Insulation

MOS FET relays offer great I/O isolation due to its operational principle. It turns the voltage into the light and transfers by the light signal; Therefore input and output are isolated. The standard models offer 2,500 Vrms between input and output. Superior 5,000 VAC products are also available. 3,750 VAC products have also been added to the SOP package series.

### Silent operation

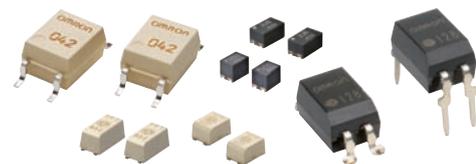
As MOS FET Relays do not have mechanical contacts, by using a MOS FET instead of an electromechanical relay, it is possible to eliminate switching noise in your applications.

### High-speed switching

Comparing with the switching time of 3 to 5 ms of a mechanical relay, its switching time is shortened to 0.2 ms(SSOP, USOP, VSON). Achieving quick response performance.

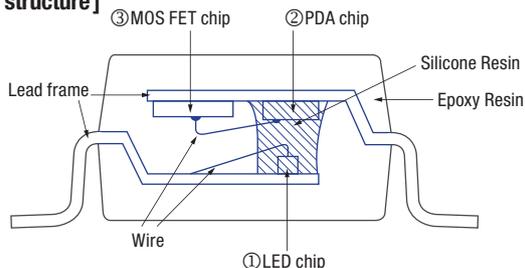
### Control the micro analog signal correctly

Comparing with the triac, MOS FET greatly reduces the dead zone. The input waveform of micro analog signal does not suffer distortion as it does with a triac and is basically converted into output waveform without distortion.



## Structure and operational principle of MOS FET relays

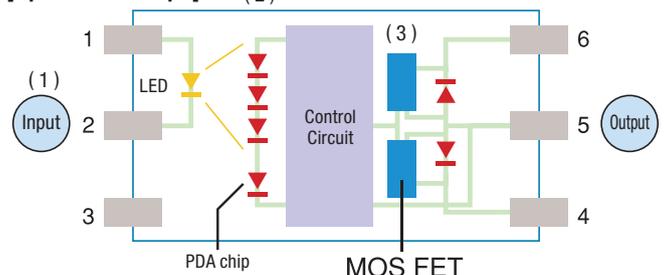
### [ Internal structure ]



MOS FET relay consists of the following three components:

- ① LED (light emitting diode)
- ② Photodiode dome array (PDA)
- ③ MOS FET

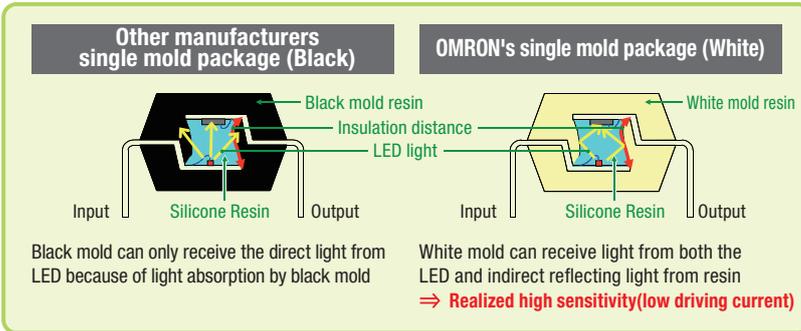
### [ Operational Principle ]



- ( 1 ) The LED lights up when the current is connected at the input side.
- ( 2 ) The light sent by the LED will be converted into voltage when it is received by the photodiode.
- ( 3 ) This voltage will be the gate voltage to drive the MOS FET via control circuit.

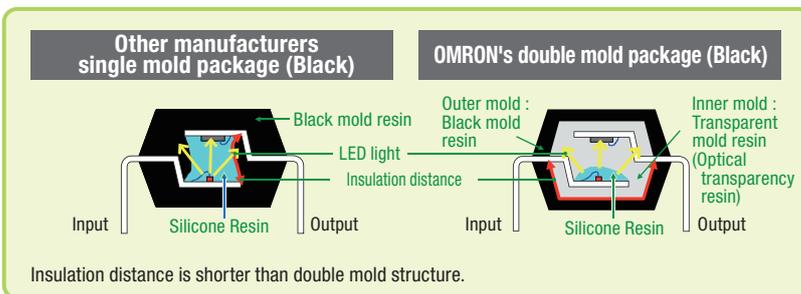
# Features of OMRON's MOS FET Relays

## Feature 1 Achieves high sensitivity (low driving current) with white mold resin package!



Many models of OMRON's MOS FET Relays are made with white mold resin in order to achieve high sensitivity.

## Feature 2 High dielectric strength is achieved with the black package!



High Dielectric Strength types adopted a black package (black mold resin). And High Dielectric Strength was achieved by the double mold structure. Black package models have been added to the DIP and SOP series.  
DIP: 5,000 VAC, SOP: 3,750 VAC

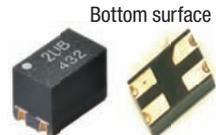
## Feature 3 Good solderability with small package!

● SSOP/USOP Package    . . .    Lead type

● VSON/S-VSON Package    . . .    Non-lead type



Offers High Visibility with side solder joints



Achieves high solder bond strength with large solder joints in the bottom surface

# 3 Selection Tips

### Tip 1 Take note of voltage and current values

Load voltage and continuous load current values are the maximum values. Take particular note in the case of AC load.

$$\text{Effective value} \times \sqrt{2} = \text{maximum value}$$

Ex. Commercial power 100 VAC (effective value) → select from maximum value of 141 V or above

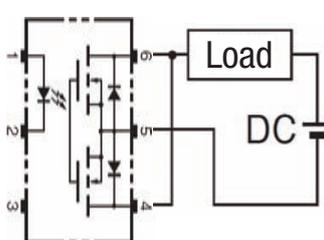
### Tip 2 Load with inrush current

Guide for inrush current:  
up to 3x the continuous load current (100 ms)  
(Listed in the catalog as "Pulse ON current")

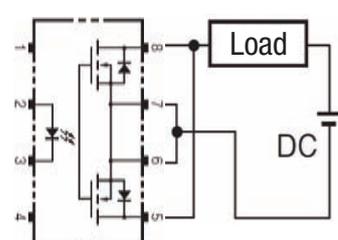
### Tip 3 Double the current volume with connection C (DC load only)

Types compatible with connection C (parallel connection of two MOS FET elements) offer switching with double the continuous load current.

DIP/SOP 6-pin package



DIP 8-pin package (for □CR□/□FR□ types only)



# MOS FET Relay Application Examples

## FA/Industrial Equipment

- Machine tool/ Customized power supply Factory autoation (PLC/Thermostat/Timer)



Function	Features	Recommended products
Status output Signal output	General purpose	G3VM-61G1/VY1/VY2 G3VM-351G/351VY G3VM-351A/D
Switching power supply of small solenoid valve, small motor External output	High current	G3VM-41GR8/61GR□ G3VM-□BR/DR G3VM-□CR□/□FR□ G3VM-□HR/61HR1
	High dielectric strength	G3VM-□AY/DY/AY1/DY1

## Security Equipment

- Smoke detector/Home security panel/PIR/ Video intercom systems



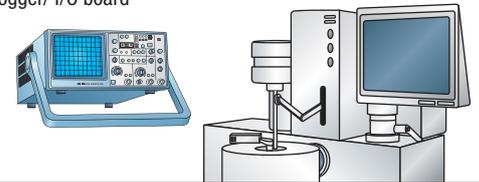
Function	Features	Recommended products
Status output Signal output	General purpose	G3VM-61G1/VY1/VY2 G3VM-351G/351VY
	High sensitivity	G3VM-61G2/G3 G3VM-351G1/G2
	b contact	G3VM-63G/353G
Switching power supply of small solenoid valve, small light External output	High current	G3VM-41GR8/61GR□ G3VM-□BR/DR G3VM-□CR□/□FR□ G3VM-□HR/61HR1
	High dielectric strength	G3VM-□AY/DY/AY1/DY1

## Medical Equipment

## Office automation/AV Equipment

## Test & Measurement Equipment

- Semi-conductor test equipment(ATE)/  
Semi-conductor test equipment Interface board/  
Oscilloscope/Data logger/ I/O board



Function	Features	Recommended products
Switching test signal	Low CxR	G3VM-□GR□ G3VM-□LR□/□PR□/□UR□/□QR
Switching power supply	High current	G3VM-41GR8/61GR□ G3VM-21LR11/21PR11/21UR11 G3VM-31QR

## Amusement Equipment

- Currency Sensing Modules  
Coin dispenser / Information system



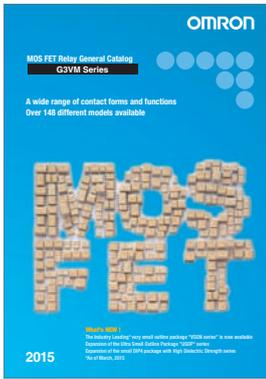
Function	Features	Recommended products
Status output Signal output	General purpose	G3VM-61A1/D1 G3VM-61G1/VY1/VY2 G3VM-351A/D G3VM-351G/351VY
	b contact	G3VM-63G/353G

There are many other usages beyond the above applications.

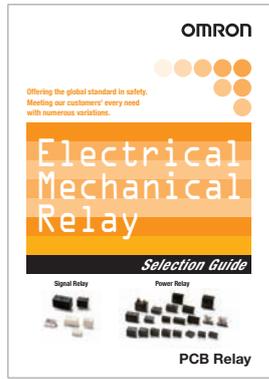
## Broadcasting Equipment

## Communication Equipment

For more detailed information,  
please contact your local OMRON Representative.



G3VM Series MOS FET Relay  
General Catalog  
(Cat. No. X083)



PCB Relay  
Selection Guide  
(Cat. No. Y225)

- 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.**