

Introduction  
 General purpose  
 High-voltage  
 Multi-contact pair (2a, 2b and 1a1b)  
 High-current and low-ON-resistance  
 Small and high-precision strength  
 High-dielectric strength  
 Current-limiting  
 Low-output-capacitance and low-ON-resistance  
 Small and High-precision  
 Certified models with SMD terminals  
 DIP  
 SOP  
 SSOP  
 USOP  
 VSOP  
 G3VM-□□□□

# G3VM-□□J□□

MOS FET Relays SOP 8-pin, Multi-contact-pair Type

## MOS FET Relays in SOP 8-pin packages with multiple contact pairs for a wide range of circuits

- Contact form: 2a (DPST-NO), 2b (DPST-NC), 1a1b (SPST-NO/SPST-NC)
- Load voltage: 60 V, 200 V, 350 V, or 400 V



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

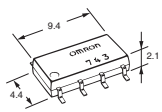
**RoHS Compliant**

### Application Examples

- Semiconductor test equipment
- Security equipment
- Amusement equipment
- Test & Measurement equipment
- Industrial equipment
- Power circuit
- Communication equipment

### Package (Unit : mm, Average)

SOP 8-pin



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

### Model Number Legend

G3VM-□□□□□  
 1 2 3 4 5

- |   |  |                                    |
|---|--|------------------------------------|
| <b>1. Load Voltage</b><br>6 : 60 V<br>20 : 20 V<br>35 : 350 V<br>40 : 400 V | <b>2. Contact form</b><br>2 : 2a (DPST-NO)<br>4 : 2b (DPST-NC)<br>5 : 1a1b (SPST-NO/SPST-NC)             | <b>3. Package</b><br>J : SOP 8-pin |
| <b>4. Additional functions</b><br>R: Low ON resistance                      | <b>5. Other informations</b><br>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
SOP8	2a (DPST-NO)	Surface-mounting Terminals	60 V	400 mA	G3VM-62J1	50 pcs.	G3VM-62J1(TR)	2,500 pcs.
			200 V	200 mA	G3VM-202J1		G3VM-202J1(TR)	
	350 V		120 mA	G3VM-355JR	G3VM-355JR(TR)			
			110 mA	G3VM-352J	G3VM-352J(TR)			
	400 V		120 mA	G3VM-354J	G3VM-354J(TR)			
				G3VM-402J	G3VM-402J(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)

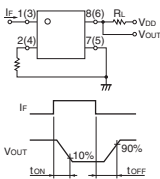
Item	Symbol	G3VM-62J1	G3VM-202J1	G3VM-355JR	G3VM-352J	G3VM-354J	G3VM-402J	Unit	Measurement conditions		
Input	LED forward current	IF						50	mA		
	LED forward current reduction rate	ΔI <sub>F</sub> /°C						-0.5	mA/°C	Ta ≥ 25°C	
	LED reverse voltage	VR						5	V		
	Connection temperature	TJ						125	°C		
Output	Load voltage (AC peak/DC)	VoFF		60	200	350		400	V		
	Continuous load current (AC peak/DC)	Io		400	200	120	110	120	mA		
	ON current reduction rate	ΔIo/°C		-4.0	-2.0	-1.2	-1.1	-1.2	mA/°C	Ta ≥ 25°C	
	Pulse ON current	Iop		1,200	600	360	330	360	mA	t=100 ms, Duty=1/10	
	Connection temperature	TJ						125	°C		
	Dielectric strength between I/O (See note 1.)	Vi-o		1500						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-62J1	G3VM-202J1	G3VM-355JR	G3VM-352J	G3VM-354J	G3VM-402J	Unit	Measurement conditions
Input	LED forward voltage	Minimum	1.0						V	If=10 mA
		Typical	1.15							
		Maximum	1.3							
	Reverse current	IR	10						μA	VR=5 V
	Capacitance between terminals	CT	30						pF	V=0, f=1 MHz
Trigger LED forward current	IFT (IFC) (See note 3.)	Typical	1.6	1				mA	G3VM-62J1/202J1/352J/402J : Io=Continuous load current ratings G3VM-355JR : 1a : Io=120 mA, 1b : IOFF=10 μA G3VM-354J : IOFF=10 μA	
		Maximum	3							
Release LED forward current	IFC (IFR) (See note 3.)	Minimum	0.1						mA	G3VM-62J1/202J1/352J/402J : IOFF=100 μA G3VM-355JR : 1a : IOFF=10 μA, 1b : Io=120 mA G3VM-354J : Io=120 mA
Output	Maximum resistance with output ON	Typical	1	5	15	35 (25)	15	17	Ω	G3VM-62J1/202J1/352J/402J : If=5 mA, Io=Continuous load current ratings G3VM-355JR : 1a : If=5 mA, Io=120 mA, 1b : If=0, Io=120 mA G3VM-352J : If=5 mA, Io=110 mA, Values in parentheses are for t < 1 s. G3VM-354J : Io=120 mA
		Maximum	2	8	25	50 (35)	25	35		
	Current leakage when the relay is open	I <sub>LEAK</sub>	Maximum	1						μA
Capacitance between terminals	COFF	Typical	130	100	65	30	65	70	pF	G3VM-62J1/202J1/352J/402J : V=0, f=1 MHz G3VM-355JR : 1a : V=0, f=1 MHz, F=5 mA G3VM-354J : V=0, f=1 MHz, If=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, RoHS60%
		Typical	10 <sup>8</sup>							
Turn-ON time	ton	Typical	0.8	0.6	–	0.3	–	0.3	ms	If=0.5 mA, RL=200 Ω, VDD=20 V (See note 2.)
Maximum	2	1.5	1a : 1 1b : 1	1						
Turn-OFF time	toff	Typical	0.1		–	0.1	–	0.1		
		Maximum	0.5	1	1a : 1 1b : 3	1	3	1		

**Note 2:** 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.

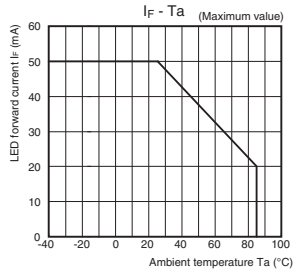
Item	Symbol		G3VM-62J1	G3VM-202J1	G3VM-355JR	G3VM-352J	G3VM-354J	G3VM-402J	Unit
Load voltage (AC peak/DC)	VDD	Maximum	48	200	280			320	V
Operating LED forward current	If	Minimum	5						mA
		Typical	7.5		–	10	–	7.5	
		Maximum	25						
Continuous load current (AC peak/DC)	Io	Maximum	400	130	120	100	120		
Ambient operating temperature	Ta	Minimum	-20						°C
		Maximum	65						

## ■ Spacing and Insulation

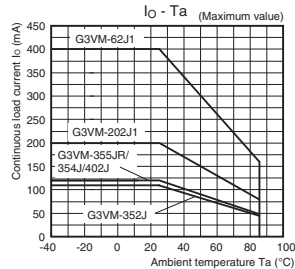
Item	Minimum	Unit
Creepage distances	4.0	mm
Clearance distances	4.0	
Internal isolation thickness	0.1	

## ■ Engineering Data

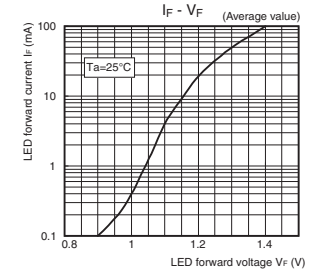
### ● LED forward current vs. Ambient temperature



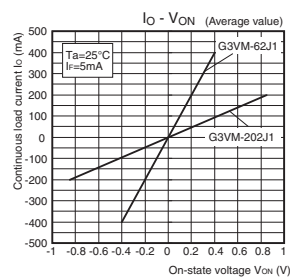
### ● Continuous load current vs. Ambient temperature



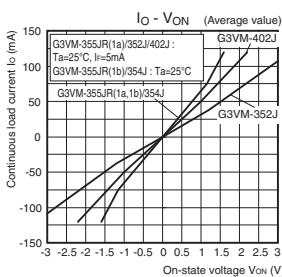
### ● LED forward current vs. LED forward voltage



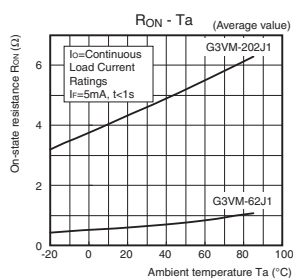
### ● Continuous load current vs. On-state voltage



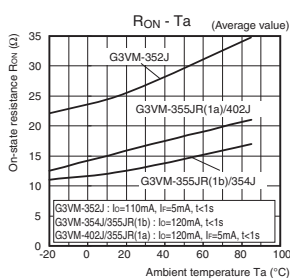
### G3VM-355JR/352J/354J/402J



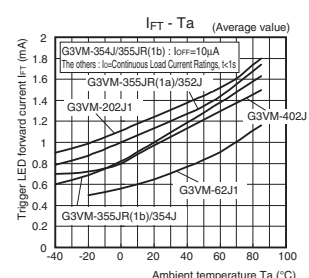
### ● On-state resistance vs. Ambient temperature



### G3VM-355JR/352J/354J/402J

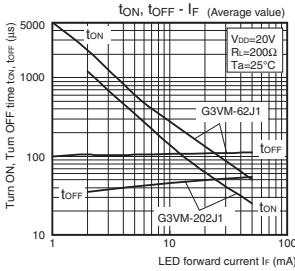


### ● Trigger LED forward current vs. Ambient temperature

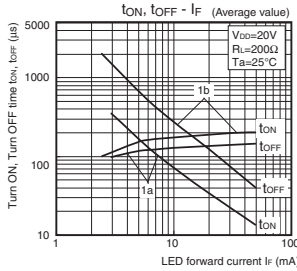


## Engineering Data

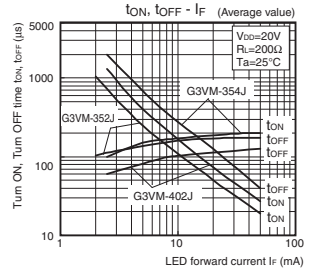
### Turn ON, Turn OFF time vs. LED forward current G3VM-62J1/202J1



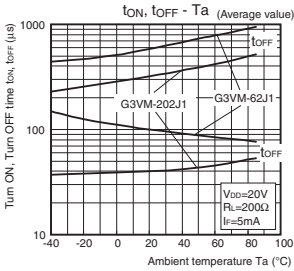
G3VM-355JR



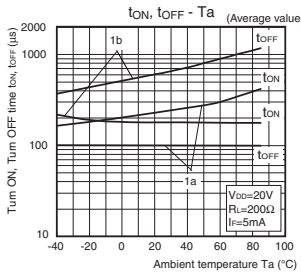
G3VM-352J/354J/402J



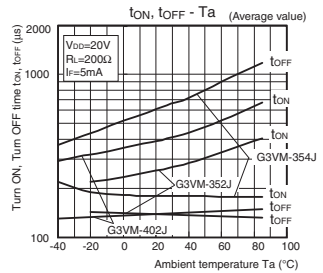
### Turn ON, Turn OFF time vs. Ambient temperature G3VM-62J1/202J1



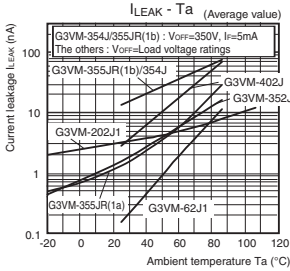
G3VM-355JR



G3VM-352J/354J/402J



### Current leakage vs. Ambient temperature



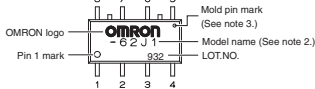
Introduction  
 General purpose  
 High-side-voltage  
 Multi-contact-pair  
 Low-ON-resistance  
 High-current and  
 inductive-strength  
 Small and high-  
 High-dielectric-  
 strength  
 Current-limiting  
 Low-output-impedance  
 and Low-ON-resistance  
 Small and High-  
 Voltage  
 Certified Models with  
 Standards Certification  
 DIP  
 SOP  
 SSOP  
 USOP  
 VSON  
 G3VM-□J□

## ■ Appearance / Terminal Arrangement / Internal Connections

### ● Appearance

#### SOP (Small Outline Package)

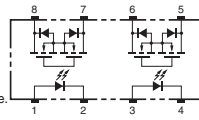
SOP 8-pin



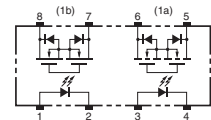
- Note:** 1. The actual product is marked differently from the image shown here.  
**Note:** 2. "G3VM" does not appear in the model number on the Relay.  
**Note:** 3. The indentation in the corner diagonally opposite from the pin 1 mark is from a pin on the mold.

### ● Terminal Arrangement/Internal Connections (Top View)

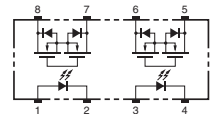
G3VM-62J1/202J1/352J/402J



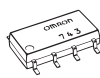
G3VM-355JR



G3VM-354J

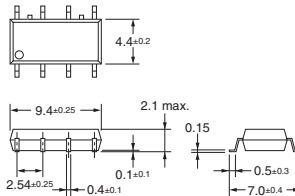


### ■ Dimensions (Unit: mm)



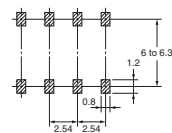
#### Surface-mounting Terminals

Weight: 0.2 g




#### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

### ■ Approved Standards

UL recognized 

Model	Approved Standards	Contact form	File No.
G3VM-62J1	UL (recognized)	2a (DPST-NO)	E80555
G3VM-202J1		1a1b (SPST-NO/SPST-NC)	
G3VM-355JR		2a (DPST-NO)	
G3VM-352J		2b (DPST-NC)	
G3VM-354J		2a (DPST-NO)	
G3VM-402J		2a (DPST-NO)	

Models Certified by BSI for EN/IEC Standards

Model	Approved Standards	Contact form	File No.
G3VM-402J	EN 60950/EN 60065 (BSI certified)	2a (DPST-NO)	8884 8885

### ■ Safety Precautions

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