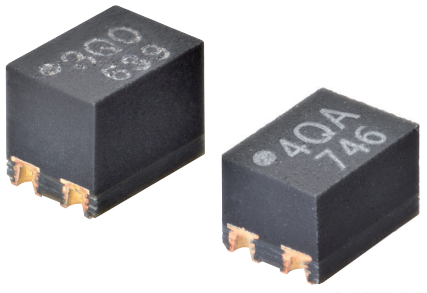
G3VM-41QR10/61QR

MOS FET Relays S-VSON 4-pin, Low-output-capacitance and Low-ON-resistance Type (with Low C × R)

World's smallest class* New S-VSON Package with Low Output Capacitance and Low ON Resistance

- **Load voltage: 40 V / 60 V.**
- **G3VM-41QR10: Low C × R = 4.95 pF·Ω, C_{OFF} (standard) = 0.45 pF, R_{ON} (standard) = 11 Ω**
- **G3VM-61QR: Low C × R = 13.2 pF·Ω, C_{OFF} (standard) = 12 pF, R_{ON} (standard) = 1.1 Ω**
- **High Ambient operating temperature: -40°C to +110°C**

✻ As of January 2018 Survey by OMRON.



NEW

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

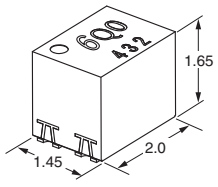
RoHS Compliant

■Application Examples

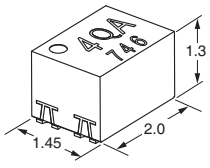
- **Semiconductor test equipment**
- **Communication equipment**
- **Test & measurement equipment**
- **Data loggers**

■Package (Unit: mm, Average)

S-VSON4 pin



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

1. Load Voltage
4: 40V
6: 60 V

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

3. Package type
Q: S-VSON 4 pin
S-VSON(L)✻ 4 pin
✻ (L): Low profile type

4. Additional functions
R: Low On-resistance

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

■Ordering Information

Package type	Contact form	Terminals	Load voltage (peak value) ✻	Continuous load current (peak value) ✻	Packing/Tape cut		Packing/Tape & reel	
					Model	Minimum package quantity	Model	Minimum package quantity
S-VSON4(L)4	1a (SPST-NO)	Surface-mounting Terminals	40 V	120 mA	**G3VM-41QR10**	1 pc.	**G3VM-41QR10 (TR05)**	500 pcs.
S-VSON4			60 V	400 mA	**G3VM-61QR**		**G3VM-61QR (TR05)**	

✻ The AC peak and DC value are given for the load voltage and continuous load current.
Note: When ordering tape packing, add "(TR05)" (500 pcs/reel) to the model number.
Ask your OMRON representative for orders under 500 pcs. We can supply products with the tape already cut.
Tape-cut S-VSON is packaged without humidity resistance. Use manual soldering to mount them.
Refer to common precautions.

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

■Absolute Maximum Ratings (Ta = 25°C)

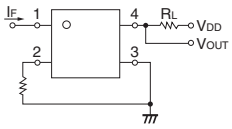
	Item	Symbol	G3VM-41QR10	G3VM-61QR	Unit	Measurement conditions
Input	LED forward current	I_F	30		mA	
	LED forward current reduction rate	ΔI_F/°C	–0.3		mA/°C	Ta≥25°C
	LED reverse voltage	V_R	6		V	
	Connection temperature	T_J	125		°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	40	60	V	
	Continuous load current (AC peak/DC)	I_O	120	400	mA	
	ON current reduction rate	ΔI_O/°C	–1.2	–4	mA/°C	Ta≥25°C
	Pulse ON current	I_{OP}	0.36	1.2	A	t = 100 ms, Duty = 1/10
	Connection temperature	T_J	125		°C	
Dielectric strength between I/O (See note 1.)		V_{I-O}	500		Vrms	AC for 1 min
Ambient operating temperature		T_a	–40 to +110		°C	With no icing or condensation
Ambient storage temperature		T_{stg}	–40 to +125		°C	
Soldering temperature		–	260		°C	10 s

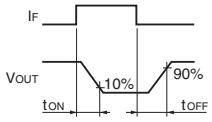
Note: 1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

■Electrical Characteristics (Ta = 25°C)

	Item	Symbol		G3VM-41QR10	G3VM-61QR	Unit	Measurement conditions
Input	LED forward voltage	V_F	Minimum	1.1		V	I_F = 10 mA
			Typical	1.21			
			Maximum	1.4			
	Reverse current	I_R	Maximum	10		?A	V_R = 5 V
	Capacity between terminals	C_T	Typical	30		pF	V = 0, f = 1 MHz
	Trigger LED forward current	I_{FT}	Typical	0.8	–	mA	I_O = 100 mA
			Maximum	3			
	Release LED forward current	I_{FC}	Minimum	0.1		mA	I_{OFF} = 10 μA
Output	Maximum resistance with output ON	R_{ON}	Typical	11	1.1	Ω	G3VM-41QR10: I_F = 5 mA, t<1s, I_O = 120 mA G3VM-61QR: I_F = 5 mA, t<1s, I_O = 400 mA
			Maximum	14	1.5		
	Current leakage when the relay is open	I_{LEAK}	Maximum	1	1000 (1)	nA	G3VM-41QR: V_{OFF} = 40 V G3VM-61QR: V_{OFF} = 60 V (V_{OFF} = 50 V)
	Capacity between terminals	C_{off}	Typical	0.45	12	pF	V = 0, f = 100 MHz, t<1s
			Maximum	0.8	20		
Capacity between I/O terminals		C_{I-O}	Typical	1	0.9	pF	f = 1 MHz, V_S = 0V
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	0.08	–	ms	I_F = 5 mA, R_L = 200, V_{DD} = 20 V (I_F = 10 mA, R_L = 200, V_{DD} = 20 V) (See note 2.)
			Maximum	0.2	0.5 (0.25)		
Turn-OFF time		t_{OFF}	Typical	0.04	–	ms	
			Maximum	0.3	0.3 (0.3)		

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





■Recommended Operating Conditions

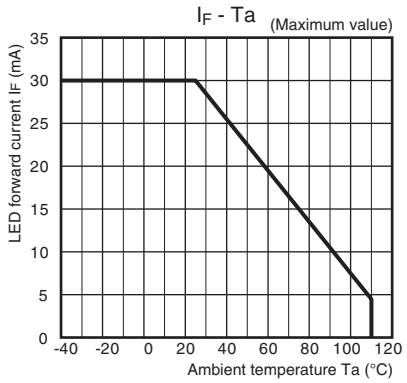
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

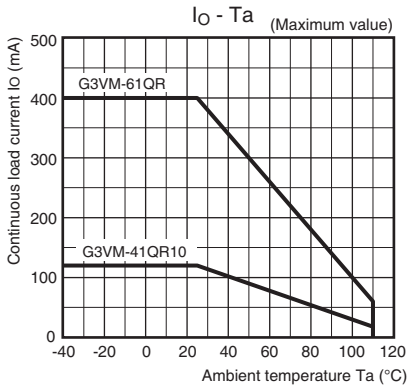
Item	Symbol		G3VM-41QR10	G3VM-61QR	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32	48	V
Operating LED forward current	I_F	Minimum	5		mA
		Typical	7.5		
		Maximum	20		
Continuous load current (AC peak/DC)	I_O	Maximum	120	400	
Ambient operating temperature	T_a	Minimum	–20		°C
		Maximum	85	100	

■Engineering Data

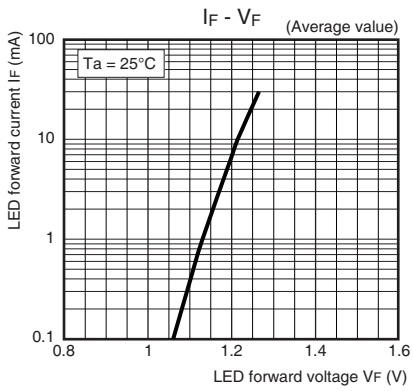
●LED forward current vs. Ambient temperature



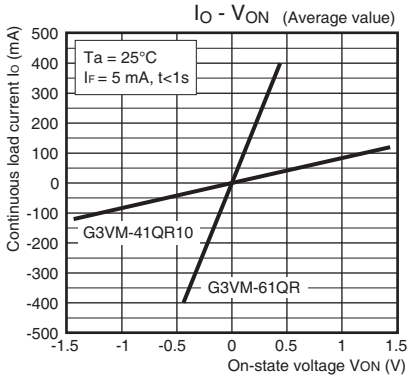
●Continuous load current vs. Ambient temperature



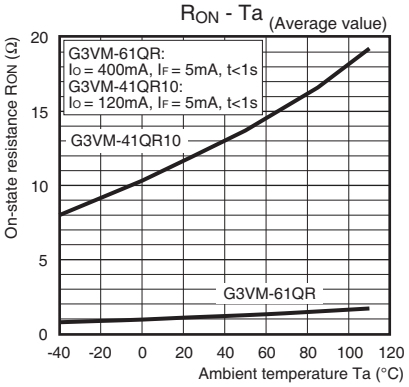
●LED forward current vs. LED forward voltage



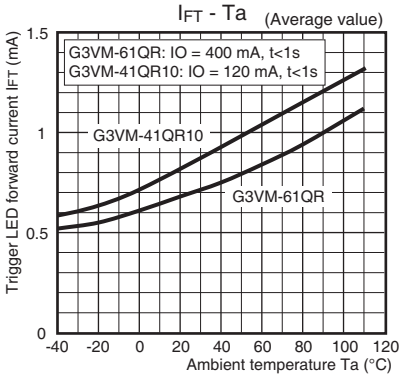
●Continuous load current vs. On-state voltage



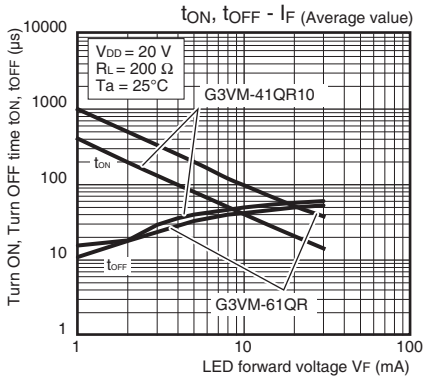
●On-state resistance vs. Ambient temperature



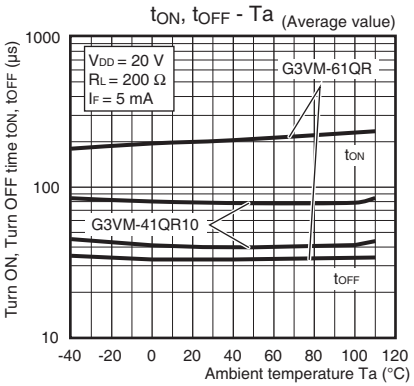
●Trigger LED forward current vs. Ambient temperature



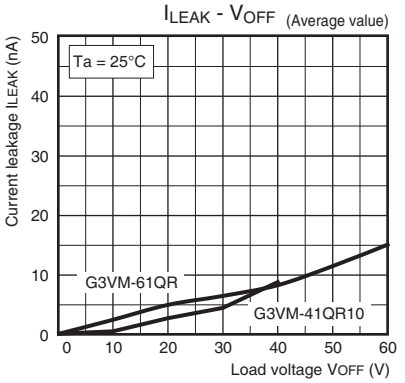
●Turn ON, Turn OFF time vs. LED forward current



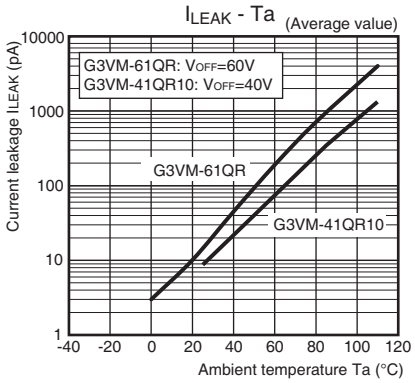
●Turn ON, Turn OFF time vs. Ambient temperature



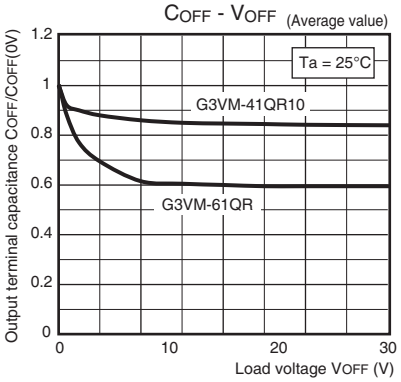
●Current leakage vs. Load voltage



●Current leakage vs. Ambient temperature



●Output terminal capacitance vs. Load voltage

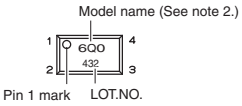


■Appearance / Terminal Arrangement / Internal Connections

■Appearance

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

S-VSON4 pin / S-VSON(L)4 pin

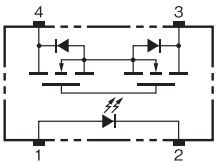


✻ Actual model name marking for each model

Model	Marking
G3VM-41QR10	4QA
G3VM-61QR	6Q0

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

■Terminal Arrangement/Internal Connections (Top View)



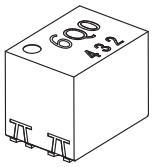
■Dimensions (Unit: mm)

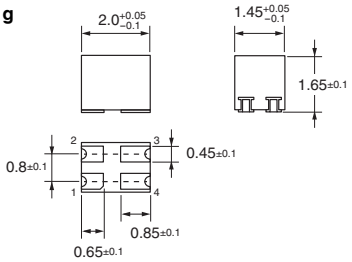
S-VSON (Super-Very Small Outline Non-leaded)

S-VSON4 pin

Surface-mounting Terminals

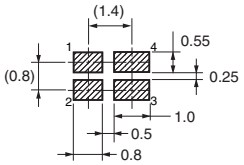
Weight: 0.01 g





Actual Mounting Pad Dimensions

(Recommended Value, Top View)



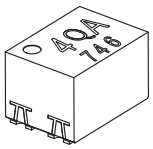
Unless otherwise specified, the dimensional tolerance is ± 0.1 mm.

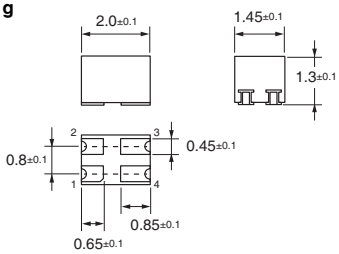
Note: The actual product is marked differently from the image shown here.

S-VSON(L)4 pin

Surface-mounting Terminals

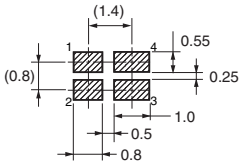
Weight: 0.01 g





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 "**Common Precautions**" for all G3VM models.

- 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.

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Cat. No. K291-E1-02
0118(0717)(O)

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G3VM-61QR(TR05)