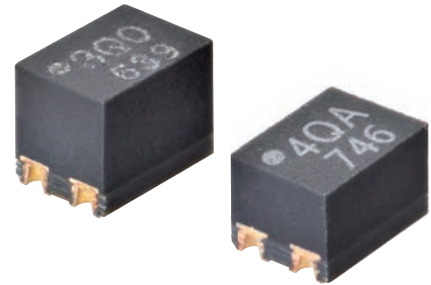


# G3VM-41QR10/61QR/61QR3

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

## Compact S-VSON package MOS FET Relays with Low Output Capacitance and Low ON Resistance

- A compact, lightweight 1.3 × 2.0 × 1.45 mm S-VSON (L) package weighing just 0.01 g helps to reduce the space required by circuit boards
- G3VM-41QR10: Low C × R = 4.95 pF/Ω, C<sub>OFF</sub> (standard) = 0.45 pF, R<sub>ON</sub> (standard) = 11 Ω, providing excellent output characteristics in the high-frequency domain
- G3VM-61QR/61QR3: Low C × R = 13.2 pF/Ω, C<sub>OFF</sub> (standard) = 12 pF, R<sub>ON</sub> (standard) = 1.1 Ω, providing excellent output characteristics in the high-frequency domain
- G3VM-61QR3: Rapid response, with an operation time of 0.25 ms (max.) and recovery time of 0.2 ms (max.)
- High-temperature capable (usable ambient operating temperature range: -40°C to 110°C)

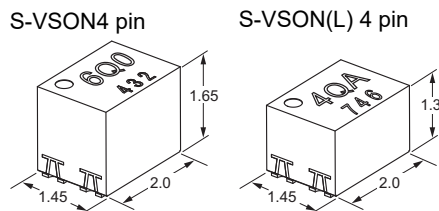


Note: The actual product is marked differently from the image shown here.

### Application Examples

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

### Package (Unit: mm, Average)



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

#### 4. Additional functions

- R: Low On-resistance

#### 2. Contact form Package type

- 1: SPST-NO (1a)

#### 5. Other informations

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

#### 3. Package type

- Q: S-VSON 4 pin
- S-VSON(L)\* 4 pin
- \* (L): Low profile type

### Ordering Information

Package type	Contact form	Terminals	Load voltage (peak value) *1	Continuous load current (peak value) *1	Packing/Tape cut		Packing/Tape & reel	
					Model	Minimum package quantity	Model	Minimum package quantity
S-VSON (L)4	SPST-NO (1a)	Surface-mounting Terminals	40 V	120 mA	G3VM-41QR10	1 pc.	G3VM-41QR10 (TR05)	500 pcs.
S-VSON4			60 V	400 mA	G3VM-61QR3		G3VM-61QR3 (TR05)	
					G3VM-61QR		G3VM-61QR (TR05)	

\*1. 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.

Tape-cut S-VSON is packaged without humidity resistance. Use manual soldering to mount them. Refer to common precautions.

G3VM-41QR10/61QR/61QR3

S-VSON

## Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	G3VM-41QR10	G3VM-61QR	G3VM-61QR3	Unit	Measurement conditions
Input	LED forward current	IF	30			mA	
	LED forward current reduction rate	ΔIF/°C	-0.3			mA/°C	Ta ≥ 25°C
	LED reverse voltage	VR	6			V	
	Junction temperature	TJ	125			°C	
Output	Load voltage (AC peak/DC)	V <sub>OFF</sub>	40	60		V	
	Continuous load current (AC peak/DC)	Io	120	400		mA	
	ON current reduction rate	ΔIo/°C	-1.2	-4		mA/°C	Ta ≥ 25°C
	Pulse ON current	I <sub>OP</sub>	0.36	1.2		A	t = 100 ms, Duty = 1/10
	Junction temperature	TJ	125			°C	
	Dielectric strength between I/O *1	V <sub>I-O</sub>	500			V <sub>rms</sub>	AC for 1 min
Ambient operating temperature		Ta	-40 to +110			°C	With no icing or condensation
Ambient storage temperature		T <sub>stg</sub>	-40 to +125			°C	
Soldering temperature		---	260			°C	10 s

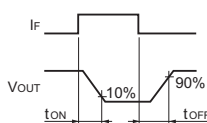
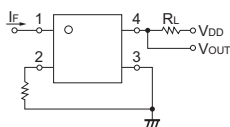
\*1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

**Note:** In terms of its structure, this product is sensitive to static electricity. Therefore, be sure to take measures against static electricity for the workbenches, people, soldering iron, solder mounting equipment, etc.

## Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-41QR10	G3VM-61QR	G3VM-61QR3	Unit	Measurement conditions
Input	LED forward voltage	Minimum	1.1			V	IF = 10 mA
		Typical	1.21	1.24			
		Maximum	1.4				
	Reverse current	IR	10			μA	VR = 5 V
	Capacitance between terminals	CT	30		80	pF	V = 0 V, f = 1 MHz
	Trigger LED forward current	Typical	0.8	---		mA	Io = 100 mA
Maximum		3					
Release LED forward current	IFC	0.1			mA	I <sub>OFF</sub> = 10 μA	
Output	Maximum resistance with output ON	Typical	11	1.1		Ω	IF = 5 mA, t < 1 s, Io = Continuous load current maximum value
		Maximum	14	1.5			
	Current leakage when the relay is open	I <sub>LEAK</sub>	1	1000 (1)		nA	V <sub>OFF</sub> = 60 V (V <sub>OFF</sub> = 50 V)
Capacitance between terminals	Typical	0.45	12		pF	G3VM-41QR10/G3VM-61QR: V = 0V, f = 100 MHz, t < 1 s G3VM-61QR3: V = 0V, f = 1 MHz, t < 1 s	
	Maximum	0.8	20				
Capacitance between I/O terminals	C <sub>I-O</sub>	1	0.9		pF	V <sub>S</sub> = 0V, f = 1 MHz	
Insulation resistance between I/O terminals	R <sub>I-O</sub>	10 <sup>8</sup>			MΩ	V <sub>I-O</sub> = 500 VDC, R <sub>oHs</sub> = 60%	
Turn-ON time	Typical	0.08	---	0.1 (0.05)		ms	IF = 5 mA, RL = 200 Ω, V <sub>DD</sub> = 20 V *1 (IF = 10 mA, RL = 200 Ω, V <sub>DD</sub> = 20 V) *1
	Maximum	0.2	0.5 (0.25)	0.25 (0.13)			
Turn-OFF time	Typical	0.04	---	0.05 (0.06)		ms	
	Maximum	0.3	0.3 (0.3)	0.2 (0.2)			

\*1. Turn-ON and Turn-OFF Times



## Recommended Operating Conditions

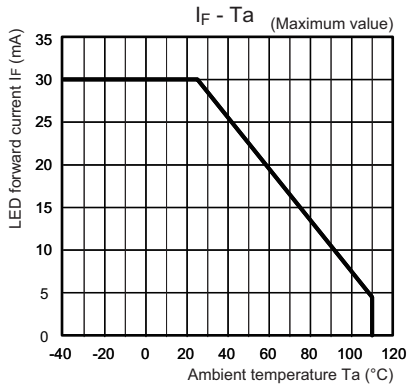
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

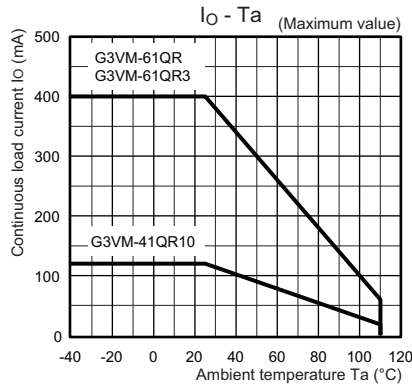
Item	Symbol	G3VM-41QR10	G3VM-61QR	G3VM-61QR3	Unit
Load voltage (AC peak/DC)	V <sub>DD</sub>	Maximum	32	48	V
		Minimum	5		
Operating LED forward current	IF	Typical	7.5		mA
		Maximum	20		
		Maximum	120	400	
Ambient operating temperature	Ta	Minimum	-20		°C
		Maximum	85	100	

## Engineering Data

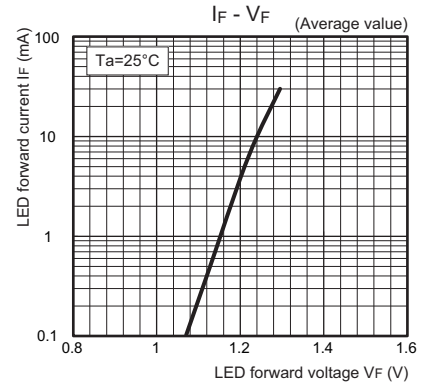
● LED forward current vs. Ambient temperature



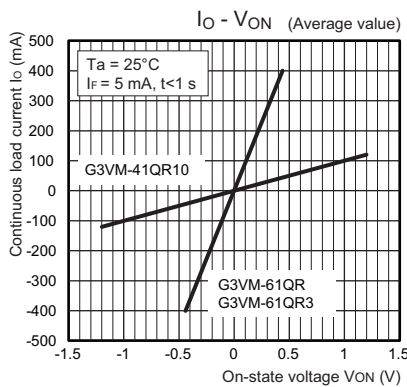
● Continuous load current vs. Ambient temperature



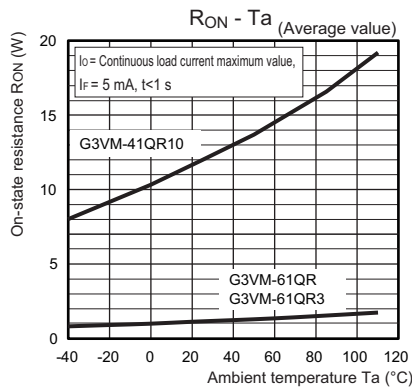
● LED forward current vs. LED forward voltage



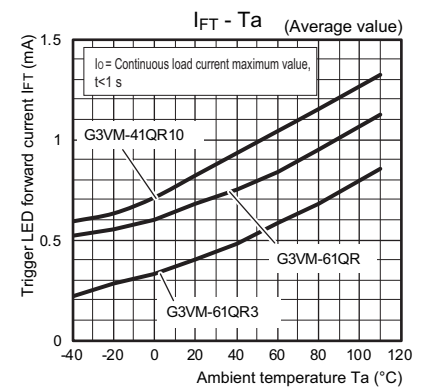
● Continuous load current vs. On-state voltage



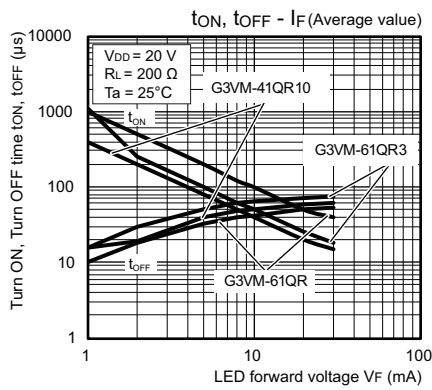
● On-state resistance vs. Ambient temperature



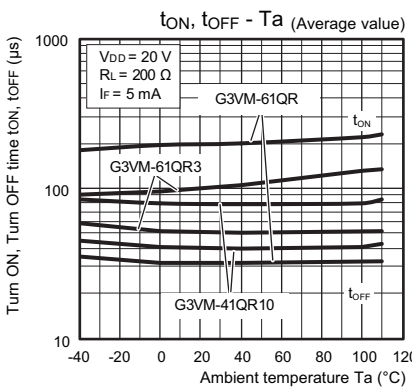
● Trigger LED forward current vs. Ambient temperature



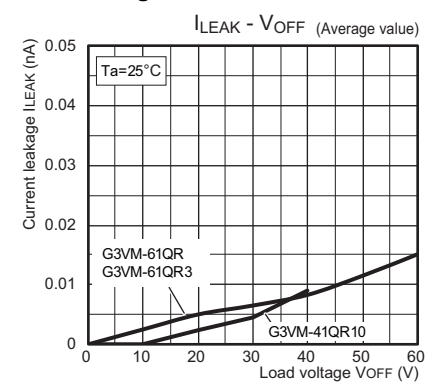
● Turn ON, Turn OFF time vs. LED forward current



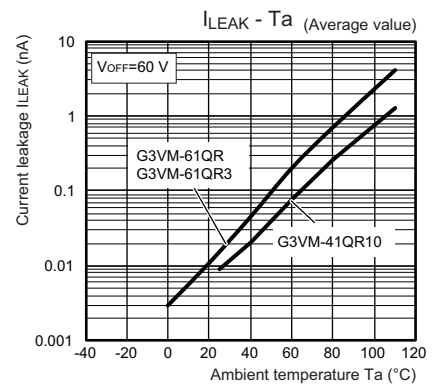
● Turn ON, Turn OFF time vs. Ambient temperature



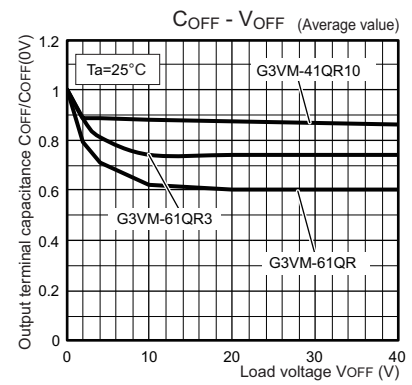
● Current leakage vs. Load voltage



● Current leakage vs. Ambient temperature



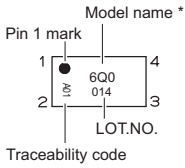
● Output terminal capacitance vs. Load voltage



## Appearance / Terminal Arrangement / Internal Connections

### Appearance

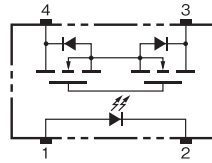
S-VSON (Super-Very Small Outline Non-leaded)  
S-VSON4 pin / S-VSON(L)4 pin



\* Actual model name marking for each model

Model	Marking
G3VM-41QR10	4QA
G3VM-61QR	6Q0
G3VM-61QR3	6Q3

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



**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.

### Dimensions

**CAD Data** marked products, 2D drawings and 3D CAD models are available. For CAD information, please visit our website, which is noted on the last page.

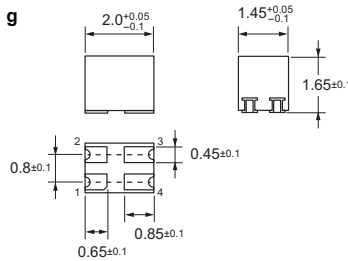
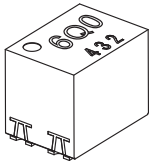
(Unit: mm)

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

S-VSON4 pin

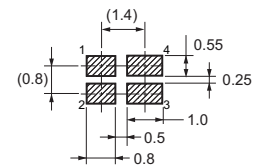
##### Surface-mounting Terminals

Weight: 0.01 g



#### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

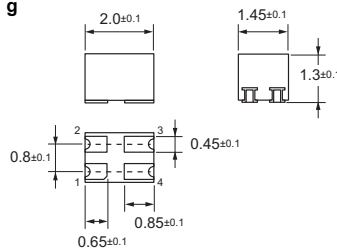
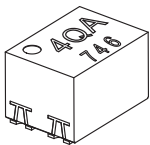
**CAD Data**

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

S-VSON(L)4 pin

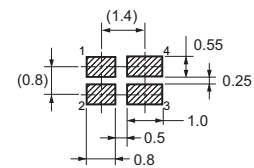
##### Surface-mounting Terminals

Weight: 0.01 g



#### Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

**CAD Data**

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

### Safety Precautions

- Refer to "Common Precautions" for all G3VM models.

A large grid of dashed lines for writing, enclosed in a red dashed border. The grid consists of 20 columns and 20 rows of small squares, suitable for technical drawing or detailed notes.

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