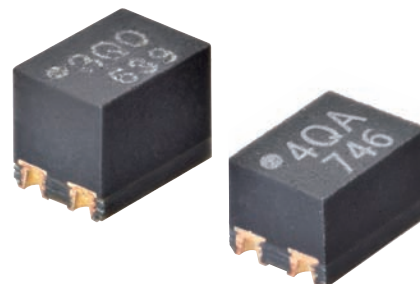


G3VM-41QR10/61QR/61QR3

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_{OFF} (standard) = 0.45 pF, R_{ON} (standard) = 11 Ω, providing excellent output characteristics in the high-frequency domain
- G3VM-61QR/61QR3: Low C × R = 13.2 pF/Ω, C_{OFF} (standard) = 12 pF, R_{ON} (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)

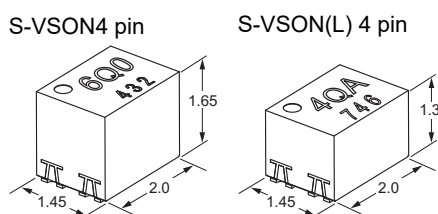


Note: The actual product is marked differently from the image shown here.

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.
			60 V	400 mA	G3VM-61QR3		G3VM-61QR3 (TR05)	
S-VSON4					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.

■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	G3VM-41QR10	G3VM-61QR	G3VM-61QR3	Unit	Measurement conditions
Input	LED forward current	I _F	30		mA	Ta ≥ 25°C
	LED forward current reduction rate	ΔI _F /°C	-0.3		mA/°C	
	LED reverse voltage	V _R	6		V	
	Junction temperature	T _J	125		°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	40	60	V	Ta ≥ 25°C
	Continuous load current (AC peak/DC)	I _O	120	400	mA	
	ON current reduction rate	ΔI _O /°C	-1.2	-4	mA/°C	
	Pulse ON current	I _{OP}	0.36	1.2	A	
	Junction temperature	T _J	125		°C	
Dielectric strength between I/O *1		V _{I-O}	500		V _{rms}	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

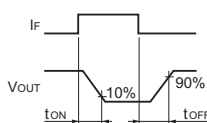
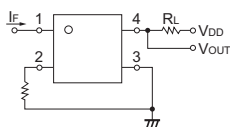
*1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

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	V _F	Minimum	1.1			V	I _F = 10 mA
			Typical	1.21		1.24		
			Maximum	1.4				
	Reverse current	I _R	Maximum	10			μA	V _R = 5 V
	Capacitance between terminals	C _T	Typical	30		80	pF	V = 0 V, 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	I _F = 5 mA, t<1 s, I _O = Continuous load current maximum value
			Maximum	14	1.5			
	Current leakage when the relay is open	I _{LEAK}	Maximum	1	1000 (1)		nA	V _{OFF} = 60 V (V _{OFF} = 50 V)
	Capacitance between terminals	C _{off}	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 _{I-O}	Typical	1	0.9		pF	V _S = 0V, f = 1 MHz
	Insulation resistance between I/O terminals	R _{I-O}	Typical	10 ⁸			MΩ	V _{I-O} = 500 VDC, R _{oH} ≤60%
Turn-ON time	t _{ON}	Typical	0.08	---	0.1 (0.05)	ms	I _F = 5 mA, R _L = 200 Ω, V _{DD} = 20 V *1 (I _F =10 mA, R _L = 200 Ω, V _{DD} = 20 V) *1	
		Maximum	0.2	0.5 (0.25)	0.25 (0.13)			
	Turn-OFF time	t _{OFF}	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

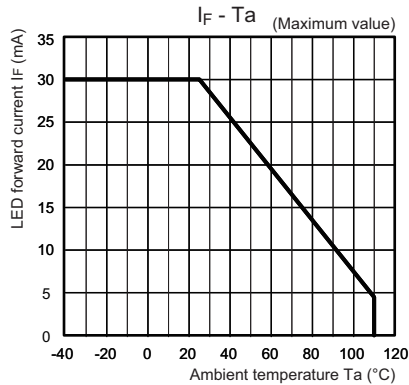
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

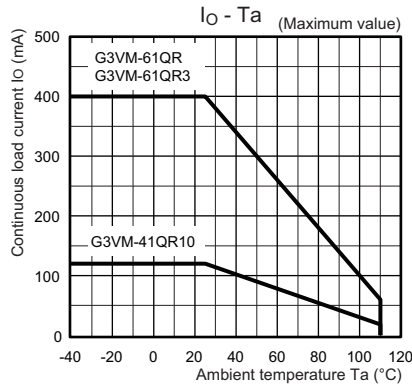
Item	Symbol		G3VM-41QR10	G3VM-61QR	G3VM-61QR3	Unit
Load voltage (AC peak/DC)	V _{DD}	Maximum	32	48		V
Operating LED forward current	I _F	Minimum	5			mA
		Typical	7.5			
		Maximum	20			
Continuous load current (AC peak/DC)	I _o	Maximum	120	400		
Ambient operating temperature	T _a	Minimum	-20			°C
		Maximum	85	100		

Engineering Data

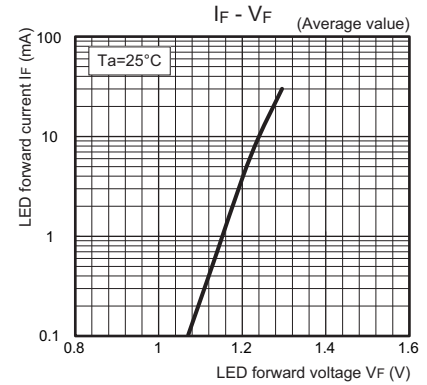
LED forward current vs. Ambient temperature



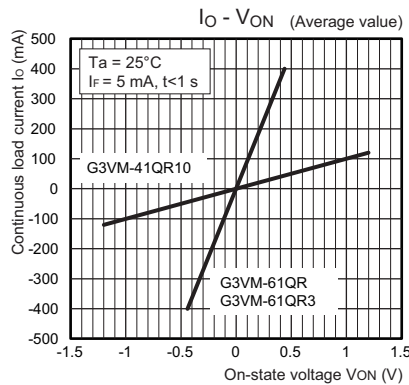
Continuous load current vs. Ambient temperature



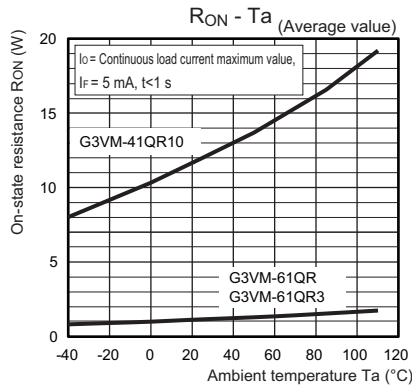
LED forward current vs. LED forward voltage



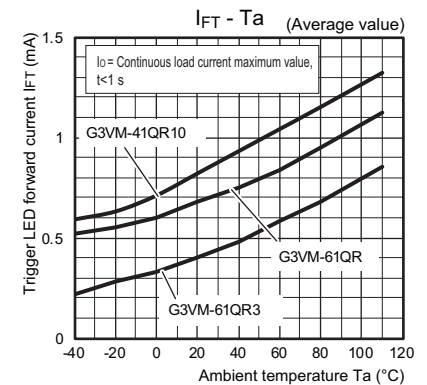
Continuous load current vs. On-state voltage



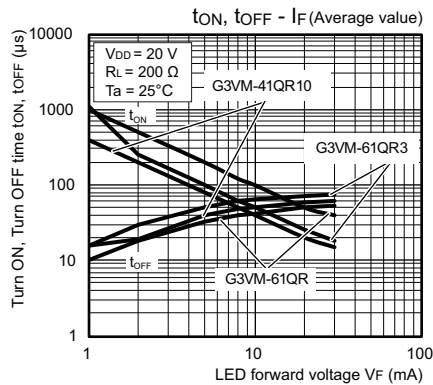
On-state resistance vs. Ambient temperature



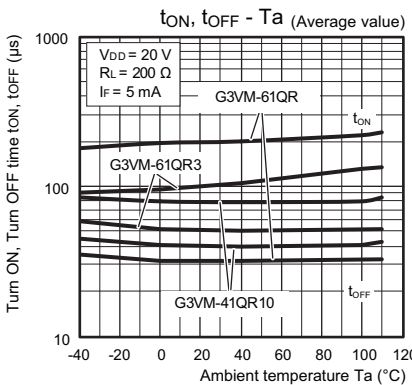
Trigger LED forward current vs. Ambient temperature



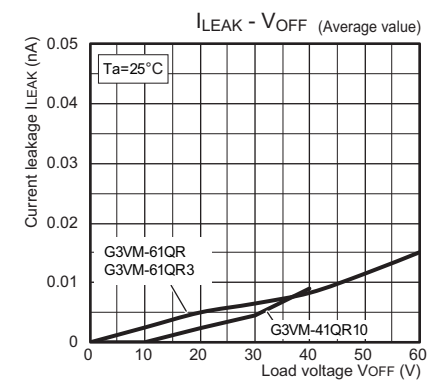
Turn ON, Turn OFF time vs. LED forward current



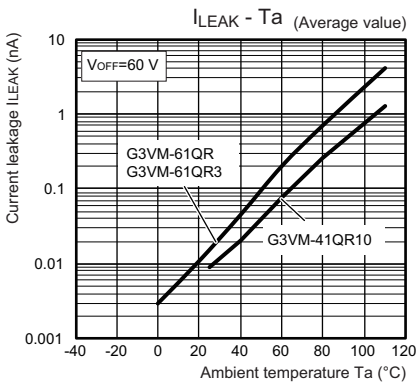
Turn ON, Turn OFF time vs. Ambient temperature



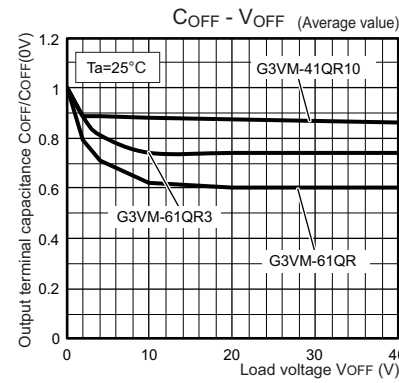
Current leakage vs. Load voltage



Current leakage vs. Ambient temperature



Output terminal capacitance vs. Load voltage

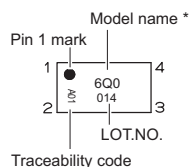


■Appearance / Terminal Arrangement / Internal Connections

■Appearance

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

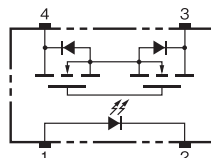
S-VSON4 pin / S-VSON(L)4 pin



* Actual model name marking for each model

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

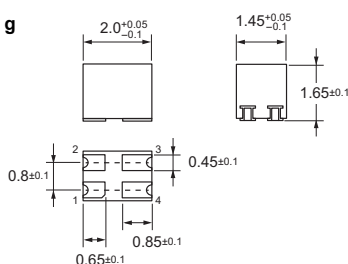
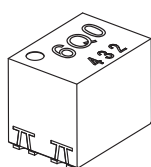
(Unit: mm)

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

S-VSON4 pin

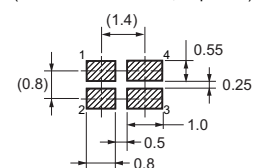
Surface-mounting Terminals

Weight: 0.01 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

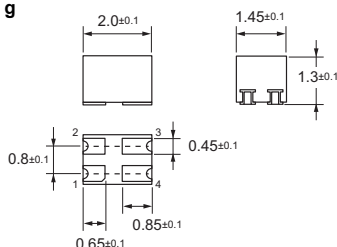
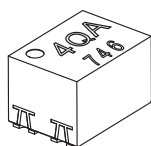
CAD Data

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

S-VSON(L)4 pin

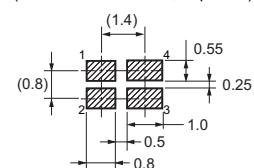
Surface-mounting Terminals

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.

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