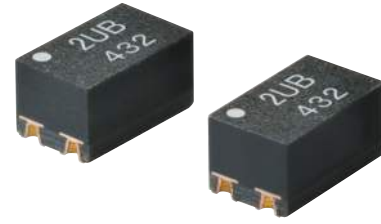


G3VM-41UR□/51UR

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

A Lineup of Compact VSONs with a Mounting Area of 3.55 mm² MOS FET Relays with Low Output Capacitance and Low ON Resistance

- Load voltage: 40 V or 50 V
- G3VM-41UR12: Low C × R = 4.5 pF·Ω, C_{OFF} (standard) = 0.3 pF, R_{ON} (standard) = 15 Ω
- G3VM-41UR10: Low C × R = 5.4 pF·Ω, C_{OFF} (standard) = 0.45 pF, R_{ON} (standard) = 12 Ω
- G3VM-41UR11: Low C × R = 4.9 pF·Ω, C_{OFF} (standard) = 0.7 pF, R_{ON} (standard) = 7 Ω
- G3VM-41UR4: Low C × R = 10 pF·Ω, C_{OFF} (standard) = 5 pF, R_{ON} (standard) = 2 Ω
- G3VM-51UR: Low C × R = 12 pF·Ω, C_{OFF} (standard) = 12 pF, R_{ON} (standard) = 1 Ω
- High Ambient operating temperature: -40°C to +110°C



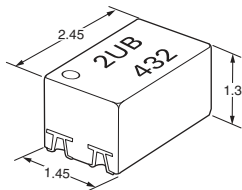
Note: The actual product is marked differently from the image shown here.

Application Examples

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

Package (Unit : mm, Average)

VSON 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: 40 V
- 5: 50 V

2. Contact form

- 1: 1a (SPST-NO)

3. Package

- U: VSON 4-pin

4. Additional functions

- R: Low On-resistance

5. Other informations

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
VSON4	1a (SPST-NO)	Surface-mounting Terminals	40 V	100 mA	G3VM-41UR12	1 pc.	G3VM-41UR12(TR05)	500 pcs.
				120 mA	G3VM-41UR10		G3VM-41UR10(TR05)	
				140 mA	G3VM-41UR11		G3VM-41UR11(TR05)	
				250 mA	G3VM-41UR4		G3VM-41UR4(TR05)	
			50 V	300 mA	G3VM-51UR		G3VM-51UR(TR05)	

Note: To order tape packaging for Relays with surface-mounting terminals, add "(TR05)" to the end of the model number.

Tape-cut VSONs are packaged without humidity resistance. Use manual soldering to mount them. Refer to common precautions.

* The AC peak and DC value are given for the load voltage and continuous load current.

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-41UR4	G3VM-51UR	Unit	Measurement conditions	
Input	LED forward current	30						mA	
	LED forward current reduction rate	-0.3						mA/°C	Ta≥25°C
	LED reverse voltage	5		6		5	V		
	Junction temperature	125						°C	
Output	Load voltage (AC peak/DC)	40				50	V		
	Continuous load current (AC peak/DC)	100	120	140	250	300	mA		
	ON current reduction rate	-1.0	-1.2	-1.4	-2.5	-3	mA/°C	Ta≥25°C	
	Pulse ON current	300	360	420	750	900	mA	t=100 ms, Duty=1/10	
Junction temperature	125						°C		
Dielectric strength between I/O *1 *2	V _{I-O}	500					V _{rms}	AC for 1 min	
Ambient operating temperature	Ta	-40 to +110					°C	With no icing or condensation	
Ambient storage temperature	Tstg	-40 to +125							
Soldering temperature	-	260							10 s

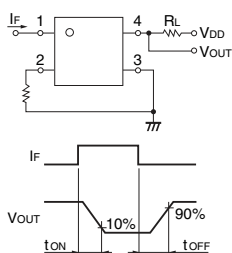
*1. In terms of its structure, this product is sensitive to static electricity. Therefore, be sure to take measures against static electricity for the workbenches, people, soldering iron, solder mounting equipment, etc.

*2. 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.

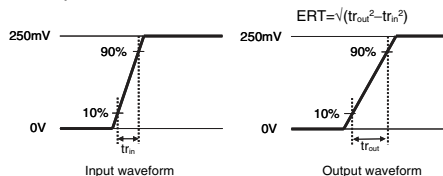
Electrical Characteristics (Ta = 25°C)

Item	Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-41UR4	G3VM-51UR	Unit	Measurement conditions	
Input	LED forward voltage	Minimum	1.1				V	If=10 mA	
		Typical	1.27						
		Maximum	1.4						
	Reverse current	I _R	Maximum				μA	V _R =5 V	
	Capacitance between terminals	C _T	Typical				pF	V=0 V, f=1 MHz	
	Trigger LED forward current	I _{FT}	Typical	0.9	-	0.7	0.8	-	mA
Maximum			3						
Release LED forward current	I _{FC}	Minimum				0.1	mA	I _{OFF} =10 μA	
Output	Maximum resistance with output ON	Typical	15	12	5	2	1	Ω	If=5 mA, t<1 s, I _o =Continuous load current ratings
		Maximum	20	14	10	3	1.5		
	Current leakage when the relay is open	I _{LEAK}	Maximum				1	nA	G3VM-41UR12/41UR10/ 41UR11/51UR: V _{OFF} =Load voltage ratings, G3VM-41UR4: V _{OFF} =30 V, Ta=50°C
Capacitance between terminals	C _{OFF}	Typical	0.3	0.45	0.7	5	12	pF	G3VM-41UR12/41UR10/ 41UR11/51UR: V=0 V, f=100 MHz, t<1 s G3VM-41UR4: V=0 V, f=1 MHz
		Maximum	0.6	0.8	1.3	7	20		
Capacitance between I/O terminals	C _{I-O}	Typical				1	pF	V _s =0 V, 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	0.05	-	0.06	0.08	-	ms	If=5 mA, R _L =200 Ω, V _{DD} =20 V *1
		Maximum	0.2		0.3		0.5		
Turn-OFF time	t _{OFF}	Typical	0.03	-	0.03	0.04	-	ms	If=5 mA, R _L =200 Ω, V _{DD} =20 V *1
		Maximum	0.2	0.3	0.2	0.3	0.4		
Equivalent rise time	ERT	Typical	-				40	ps	If=5 mA, V _{DD} =0.25 V, Tr(in)=25 ps *2
		Maximum	-				90		

*1. Turn-ON and Turn-OFF Times



*2. Equivalent Rise Time



Recommended Operating Conditions

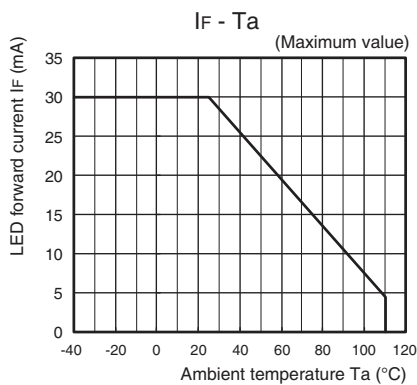
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

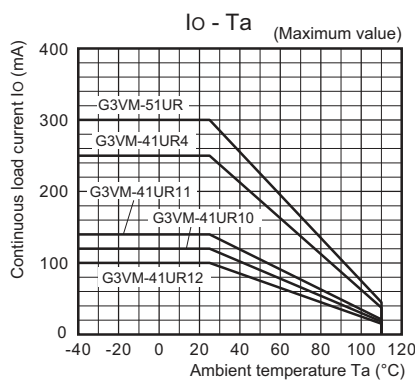
Item	Symbol		G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-41UR4	G3VM-51UR	Unit	
Load voltage (AC peak/DC)	V _{DD}	Maximum	32					40	V
Operating LED forward current	I _F	Minimum	5			–	5	mA	
		Typical	7.5			5	7.5		
		Maximum	20						
Continuous load current (AC peak/DC)	I _O	Maximum	100	120	140	250	300		
Ambient operating temperature	T _a	Minimum	–20						°C
		Maximum	85						

Engineering Data

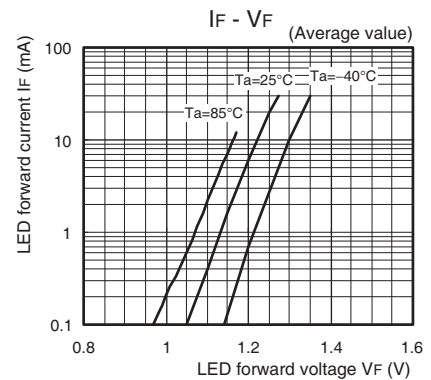
LED forward current vs. Ambient temperature



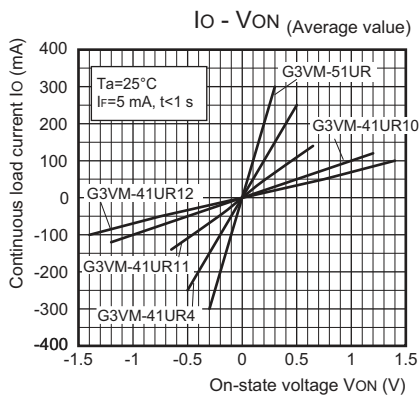
Continuous load current vs. Ambient temperature



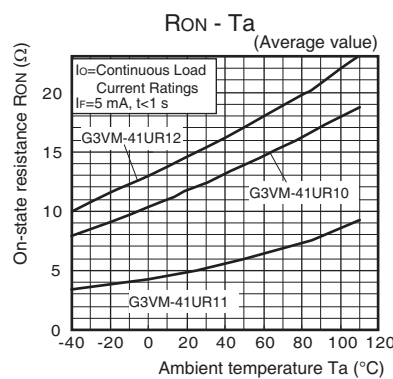
LED forward current vs. LED forward voltage



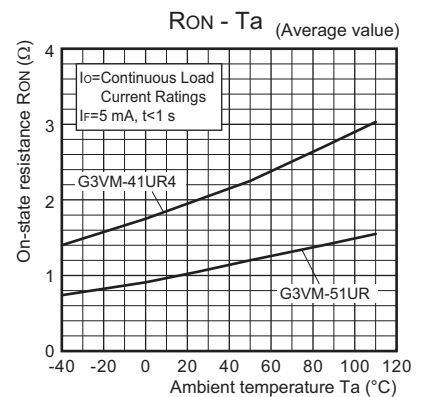
Continuous load current vs. On-state voltage



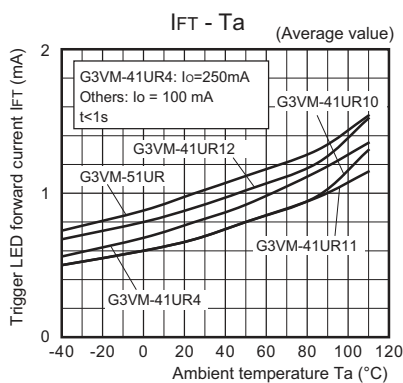
On-state resistance vs. Ambient temperature



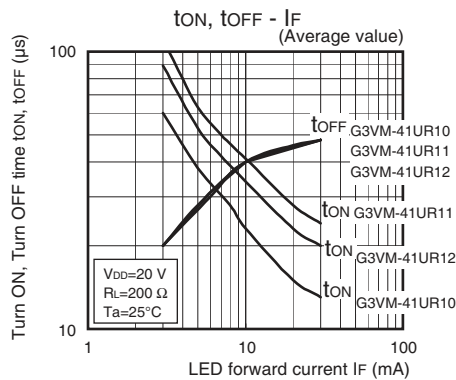
G3VM-51UR/41UR4



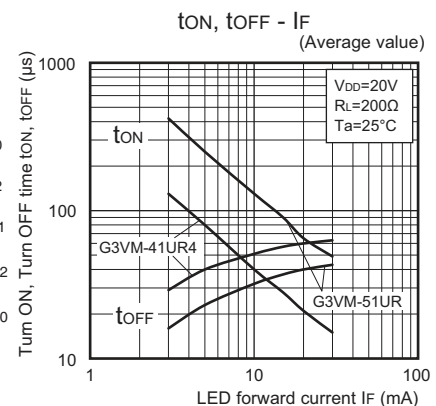
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current

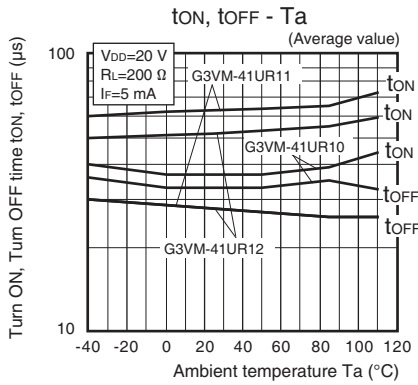


G3VM-51UR/41UR4

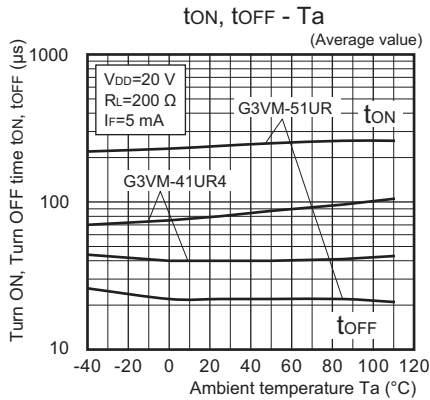


Engineering Data

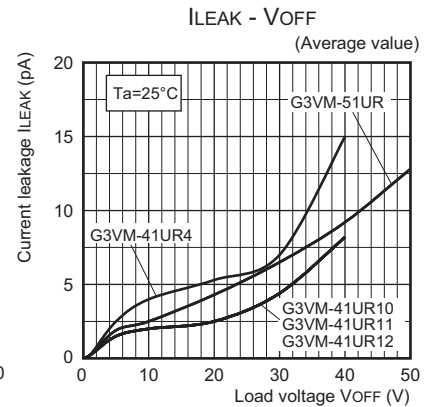
Turn ON, Turn OFF time vs. Ambient temperature G3VM-41UR12/41UR10/41UR11



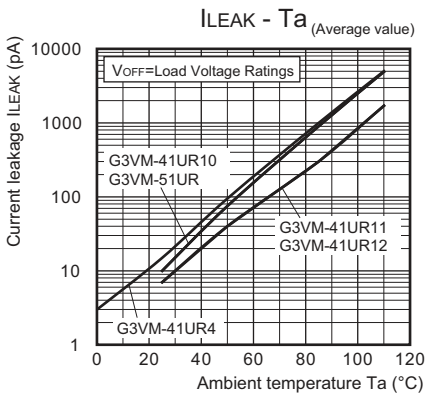
G3VM-51UR/41UR4



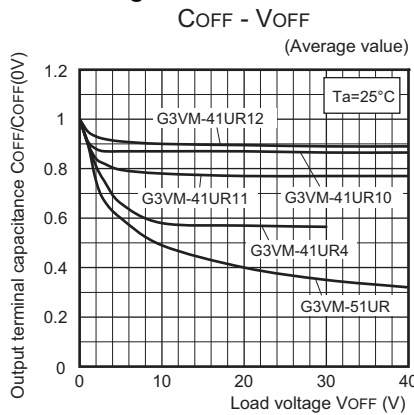
Current leakage vs. Load voltage



Current leakage vs. Ambient temperature



Output terminal capacitance vs. Load voltage

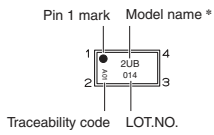


Appearance / Terminal Arrangement / Internal Connections

●Appearance

VSON (Very Small Outline Non-led)

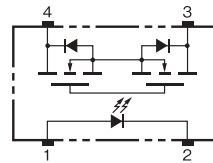
VSON 4-pin



* Actual model name marking for each model

Model	Marking
G3VM-41UR12	4UC
G3VM-41UR10	4UA
G3VM-41UR11	4UB
G3VM-41UR4	4U4
G3VM-51UR	5U0

●Terminal Arrangement/Internal Connections (Top View)



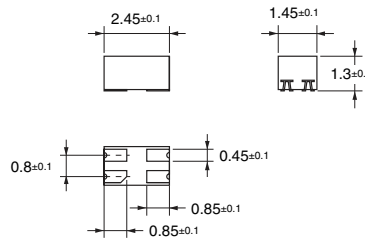
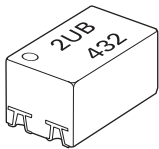
Note: 1. The actual product is marked differently from the image shown here.

Note: 2. "G3VM" does not appear in the model number on the Relay.

■Dimensions (Unit: mm)

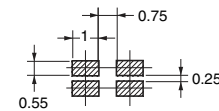
Surface-mounting Terminals

Weight: 0.01 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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

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

■Safety Precautions

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

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