

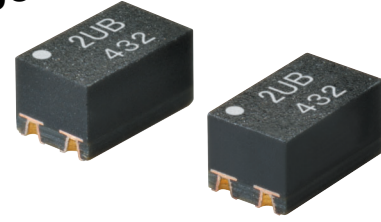
G3VM-41UR□/51UR

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

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

* As of November 2016 Survey by OMRON.

- 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-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.

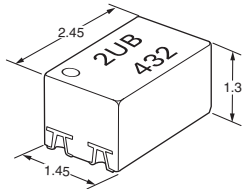
RoHS Compliant

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) *	Tape cut 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)			
			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.

VSON
G3VM-41UR□/51UR

Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-51UR	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	5				V	
	Connection temperature	TJ	125				°C	
Output	Load voltage (AC peak/DC)	V _{OFF}	40			50	V	
	Continuous load current (AC peak/DC)	Io	100	120	140	300	mA	
	ON current reduction rate	ΔIo/°C	-1.0	-1.2	-1.4	-3	mA/°C	Ta≥25°C
	Pulse ON current	Iop	300	360	420	900	mA	t=100 ms, Duty=1/10
	Connection temperature	TJ	125				°C	
Dielectric strength between I/O #1 *2		Vi-o	500				Vrms	AC for 1 min
Ambient operating temperature		Ta	-40 to +110				°C	With no icing or condensation
Ambient storage temperature		Tstg	-40 to +125				°C	
Soldering temperature		-	260				°C	10 s

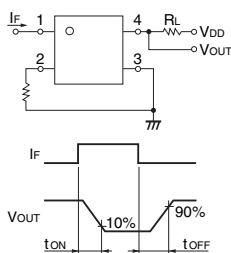
*1. The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

*2. Dielectric strength between I/O 500Vrms is applied from production in December 2016. (Before changes are 300Vrms.)

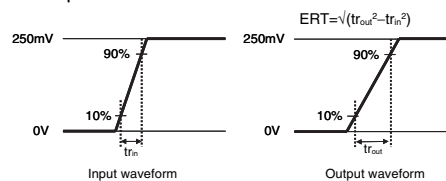
Electrical Characteristics (Ta = 25°C)

Item		Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-51UR	Unit	Measurement conditions	
Input	LED forward voltage	VF	Minimum 1.1				V	IF=10 mA	
			Typical 1.27						
			Maximum 1.4						
	Reverse current	IR	Maximum 10				μA	VR=5 V	
	Capacitance between terminals	CT	Typical 30				pF	V=0, f=1 MHz	
Output	Trigger LED forward current	IFT	0.9	-	0.7	-	mA	Io=100 mA	
			Maximum 3						
	Release LED forward current	IFC	Minimum 0.1				mA	IoFF=10 μA	
	Maximum resistance with output ON	RON	15	12	5	1	Ω	IF=5 mA, t<1 s, Io=Continuous load current ratings	
			20	14	10	1.5			
Current leakage when the relay is open	ILEAK	Maximum 1				nA	V _{OFF} = Load voltage ratings		
Capacitance between terminals	COFF	Typical	0.3	0.45	0.7	12	pF	V=0, f=100 MHz, t<1 s	
		Maximum	0.6	0.8	1.3	20			
Capacitance between I/O terminals		CI-O	Typical 1				pF	f=1 MHz, Vs=0 V	
Insulation resistance between I/O terminals		RI-O	Typical 10 ⁸				MΩ	Vi-o=500 VDC, RoH≤60%	
Turn-ON time	t _{ON}	Typical	0.05	-	0.06	-	ms	IF=5 mA, RL=200 Ω, VDD=20 V *1	
		Maximum	0.2						
Turn-OFF time	t _{OFF}	Typical	0.03	-	0.03	-	ms	IF=5 mA, RL=200 Ω, VDD=20 V *1	
		Maximum	0.2	0.3	0.2	0.4			
Equivalent rise time	ERT	Typical	-				40	ps	IF=5 mA, VDD=0.25 V, Tr(in)=25 ps *2
		Maximum	-				90		

*1. Turn-ON and Turn-OFF Times



*2. Equivalent Rise Time



Recommended Operating Conditions

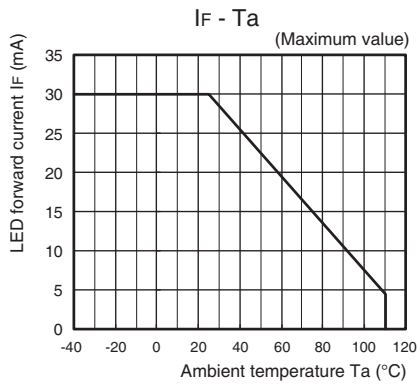
For usage with high reliability, Recommended Operation Conditions is a measure that takes into account the derating of Absolute Maximum Ratings and Electrical Characteristics.

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

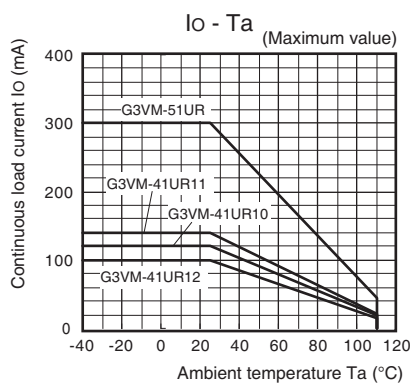
Item	Symbol	G3VM-41UR12	G3VM-41UR10	G3VM-41UR11	G3VM-51UR	Unit	
Load voltage (AC peak/DC)	VDD	Maximum	32			40	V
Operating LED forward current	IF	Minimum	5				mA
		Typical	7.5				
		Maximum	20				
Continuous load current (AC peak/DC)	Io	Maximum	100	120	140	300	
Ambient operating temperature	Ta	Minimum	-20				°C
		Maximum	85				

Engineering Data

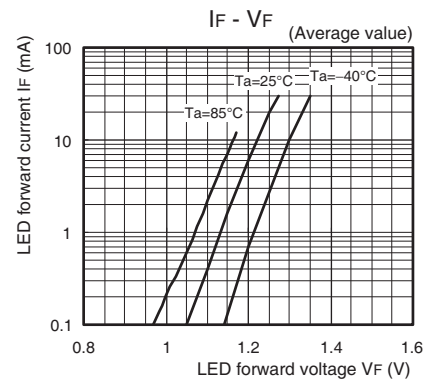
LED forward current vs. Ambient temperature



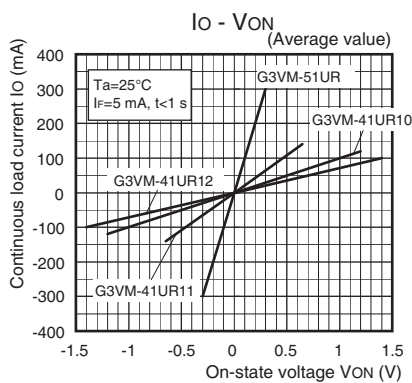
Continuous load current vs. Ambient temperature



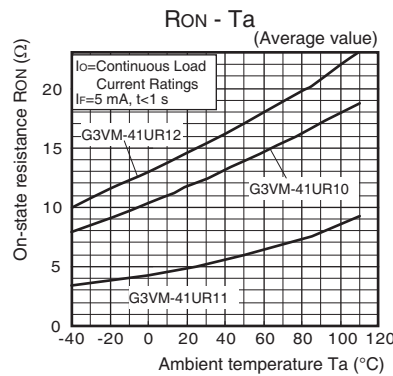
LED forward current vs. LED forward voltage



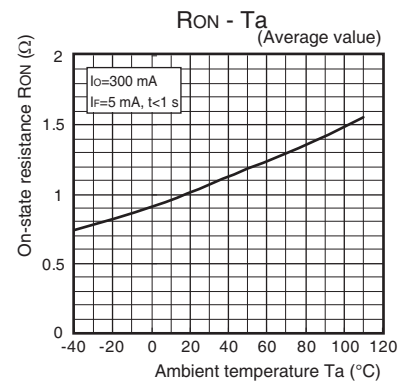
Continuous load current vs. On-state voltage



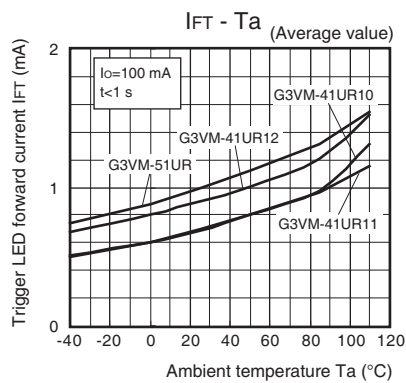
On-state resistance vs. Ambient temperature



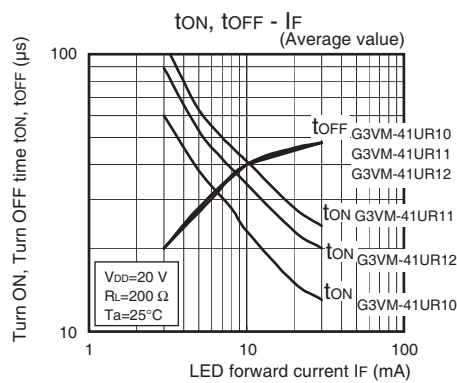
G3VM-51UR



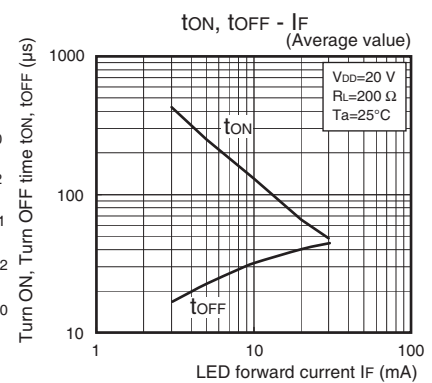
Trigger LED forward current vs. Ambient temperature



Turn ON, Turn OFF time vs. LED forward current



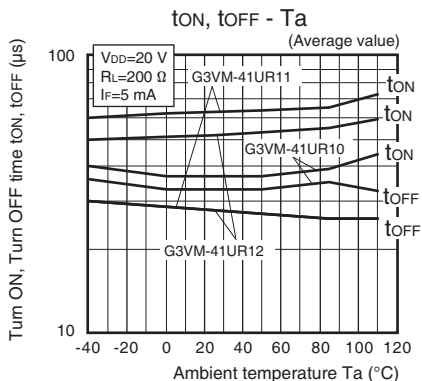
G3VM-51UR



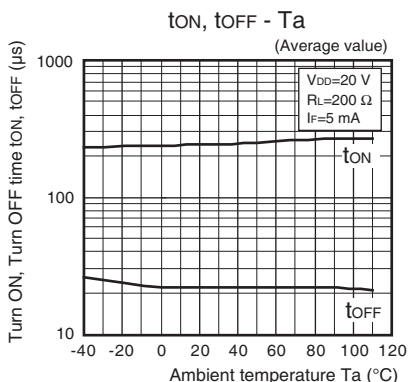
Engineering Data

Turn ON, Turn OFF time vs. Ambient temperature

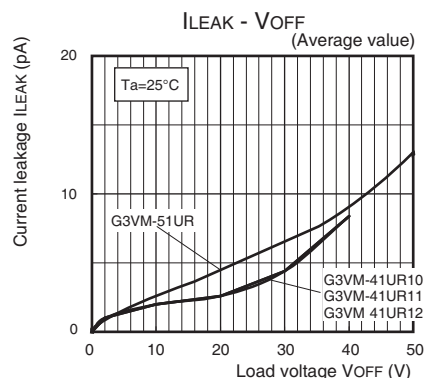
G3VM-41UR12/41UR10/41UR11



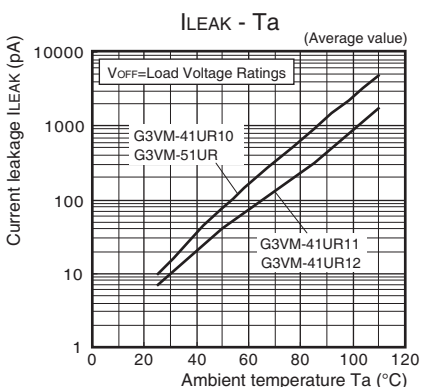
G3VM-51UR



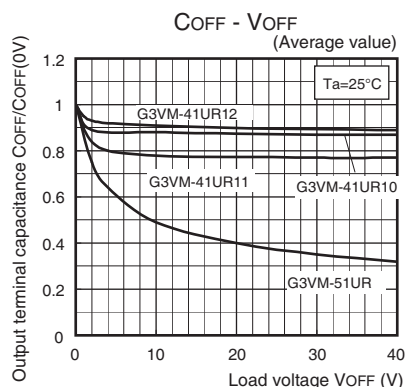
Current leakage vs. Load voltage



Current leakage vs. Ambient temperature



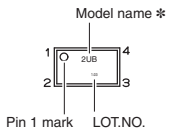
Output terminal capacitance vs. Load voltage



Appearance / Terminal Arrangement / Internal Connections

●Appearance

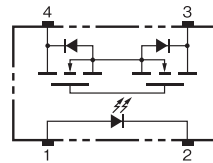
VSON (Very Small Outline Non-leaded)
VSON 4-pin



* Actual model name marking for each model

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

●Terminal Arrangement/Internal Connections (Top View)

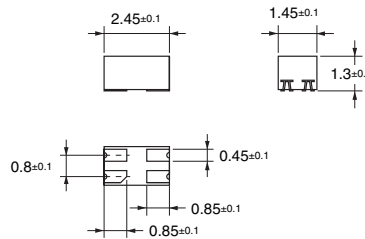
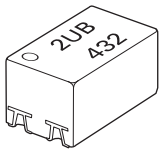


Note: 1. The actual product is marked differently from the image shown here.
Note: 2. "G3VM" does not appear in the model number on the Relay.

■Dimensions (Unit: mm)

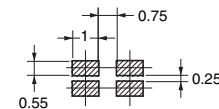
Surface-mounting Terminals

Weight: 0.01 g



Actual Mounting Pad Dimensions

(Recommended Value, Top View)



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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