

MOS FET Relays

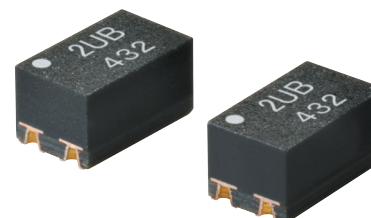
G3VM-41UR10/51UR

World's Smallest New VSON Package with Low Output Capacitance and Low ON Resistance (Low $C \times R$)

- RoHS Compliant

■ Application Examples

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



NEW

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

■ List of Models

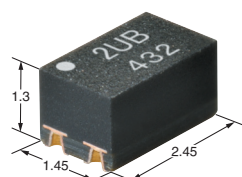
Package type	Contact form	Terminals	Load voltage (peak value)	Continuous Load Current (peak value)	Model	Minimum Packaging Quantity
VSON4	SPST-NO (1FormA)	Surface-mounting terminals	40 VAC or VDC	120 mA	G3VM-41UR10	---
					G3VM-41UR10(TR05)	500
			50 VAC or VDC	300 mA	G3VM-51UR	---
					G3VM-51UR(TR05)	500

Note: G3VM-41UR10 and G3VM-51UR, without "(TR05)", are provided as a Tape-cut versions, for sample purposes. Tape-cut VSON's are packaged without humidity resistance. Use manual soldering to mount them.

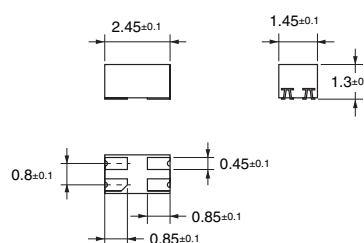
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-41UR10
G3VM-51UR



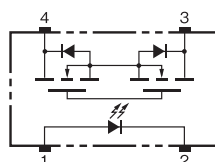
Note: The actual product is marked differently from the image shown here.



Weight: 0.01 g

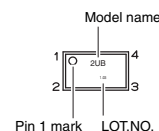
■ Terminal Arrangement/Internal Connections (Top View)

G3VM-41UR10
G3VM-51UR



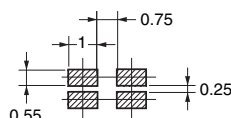
Note: The actual product is marked differently from the image shown here.

VSON (Very Small Outline Non-leaded)
VSON4



■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-41UR10
G3VM-51UR



■ Absolute Maximum Ratings (Ta = 25°C)

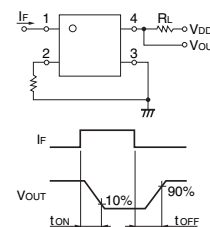
Item	Symbol	G3VM-41UR10	G3VM-51UR	Unit	Measurement Conditions
Input	LED forward current	I_F	30	mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	V_R	5	V	
	Connection temperature	T_J	125	°C	
Output	Load voltage (AC peak/DC)	V_{OFF}	40	50	V
	Continuous load current	I_O	120	300	mA
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-1.2	-3	mA/°C
	Pulse ON current	I_{OP}	360	900	mA
	Connection temperature	T_J	125	°C	$t=100\text{ms}$, Duty=1/10
Dielectric strength between input and output (See note 1.)		V_{I-O}	300	V_{rms}	AC for 1 min
Ambient operating temperature		T_a	-40 to +85	°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.

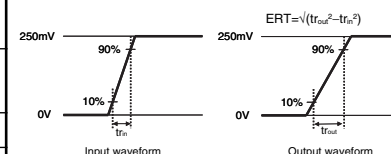
■ Electrical Characteristics (Ta = 25°C)

Item		Symbol		G3VM-41UR10		G3VM-51UR		Unit	Measurement conditions
Input	LED forward voltage	V _F	Minimum	1.1		V	I _F = 10 mA		
			Typical	1.27					
			Maximum	1.4					
	Reverse current	I _R	Maximum	10		μA	V _R = 5 V		
	Capacity between terminals	C _T	Typical	30		pF	V = 0, f = 1 MHz		
	Trigger LED forward current	I _{FT}	Maximum	3.0		mA	I _O = 100 mA		
	Release LED forward current	I _{FC}	Minimum	0.1		mA	I _{OFF} = 10 μA		
Output	Maximum resistance with output ON	R _{ON}	Typical	12	1	Ω	I _F = 5 mA, t < 1 s -41UR10 : I _O = 120 mA -51UR : I _O = 300 mA		
			Maximum	14	1.5				
	Current leakage when the relay is open	I _{LEAK}	Maximum	1		nA	-41UR10 : V _{OFF} = 40 V -51UR : V _{OFF} = 50 V		
	Capacity between terminals	C _{OFF}	Typical	0.45	12	pF	V = 0, f = 100 MHz, t < 1 s		
			Maximum	0.8	20				
Capacity between I/O terminals		C _{I-O}	Typical	1		pF	f = 1 MHz, V _S = 0 V		
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}	Maximum	0.2	0.5	ms	I _F = 5 mA, R _L = 200 Ω, V _{DD} = 20 V (See note 2.)		
Turn-OFF time		t _{OFF}	Maximum	0.3	0.4				
Equivalent rise time		ERT	Typical	-		ps	I _F = 5 mA, V _{DD} = 0.25 V Tr(in)=25ps (See note 3.)		
			Maximum	-					

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



Note: 3. Equivalent Rise Time



■ Recommended Operating Conditions

For usage with high reliability, the Recommended Operating Conditions are measures that takes into account the derating of the Absolute Maximum ratings and the Electrical Characteristics. Each item on this list is an independent condition, not simultaneously satisfying several conditions.

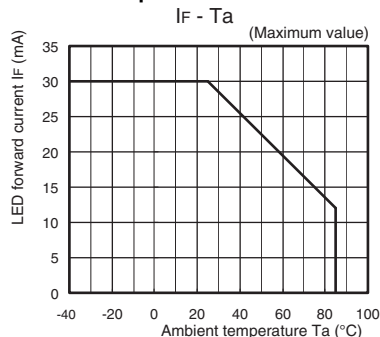
Item	Symbol	G3VM-41UR10	G3VM-51UR	Unit
Load voltage (AC peak/DC)	V_{DD}	Maximum	32	40
Operating LED forward current	I_F	Minimum	5	mA
		Typical	7.5	
		Maximum	20	
Continuous load current (AC peak/DC)	I_O	Maximum	120	300
Ambient Operating temperature	T_a	Minimum	-20	°C
		Maximum	65	

■ Approved Standards

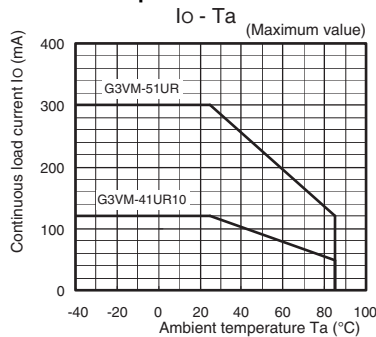
Applying for UL recognition

■ Engineering Data

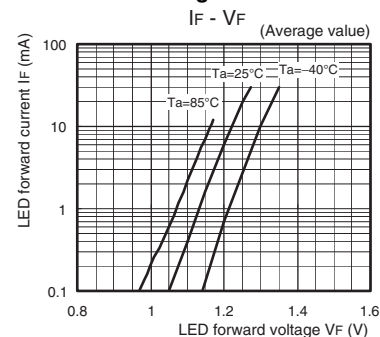
LED forward current vs. Ambient temperature



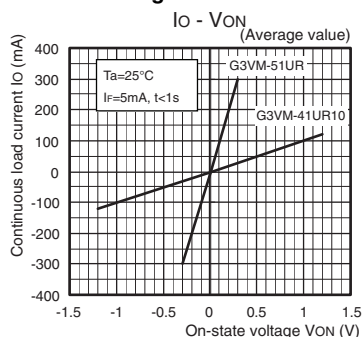
Continuous load current vs. Ambient temperature



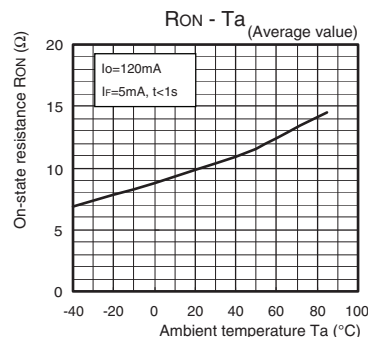
LED forward current vs. LED forward voltage



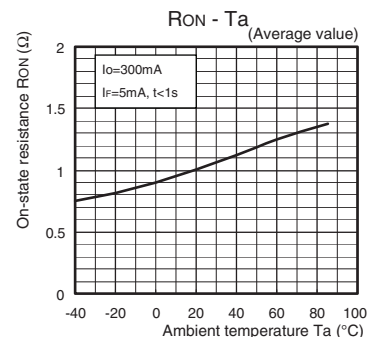
Continuous load current vs. On-state voltage



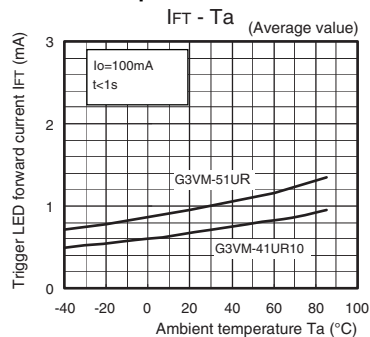
On-state resistance vs. Ambient temperature



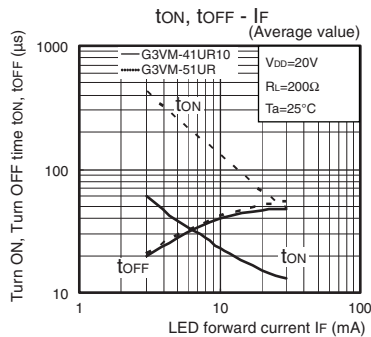
G3VM-51UR



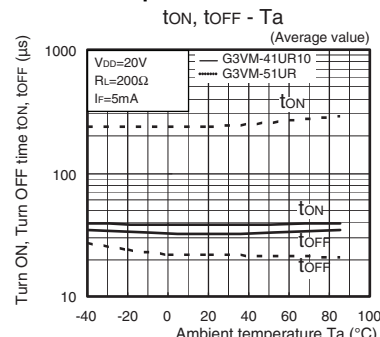
Trigger LED forward current vs. Ambient temperature



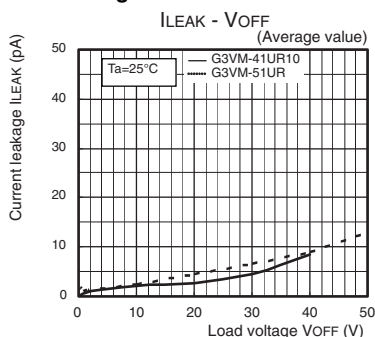
Turn ON, Turn OFF time vs. LED forward current



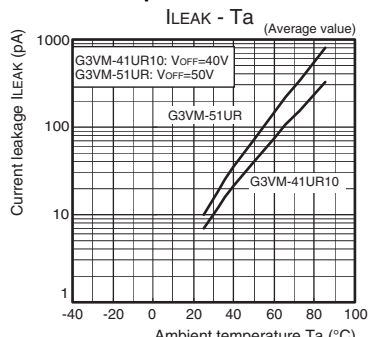
Turn ON, Turn OFF time vs. Ambient temperature



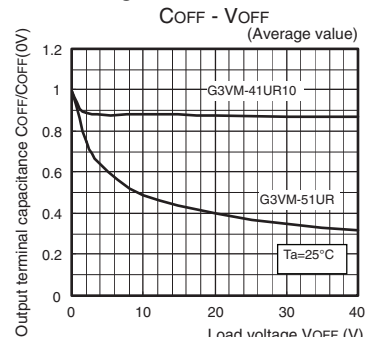
Current leakage vs. Load voltage



Current Leakage vs. Ambient Temperature



Output terminal capacitance vs. Load voltage



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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

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moschip.ru_9