

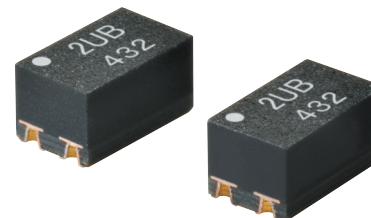
# MOS FET Relays G3VM-21UR11

**World's Smallest New VSON Package with Low Output Capacitance and Low ON Resistance (Low C × 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**

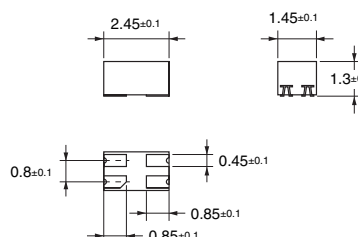
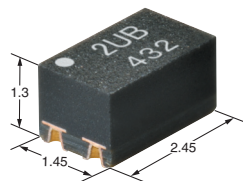
Package type	Contact form	Terminals	Load voltage (peak value)	Continuous Load Current (peak value)	Model	Minimum Packaging Quantity
VSON4	SPST-NO (1FormA)	Surface-mounting terminals	20 VAC or VDC	1,000 mA	G3VM-21UR11	---
					G3VM-21UR11(TR05)	500

**Note:** G3VM-21UR11, without "(TR05)", is provided as a Tape-cut version, 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-21UR11**

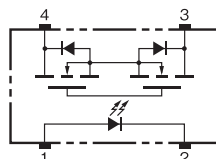


**Note:** The actual product is marked differently from the image shown here.

Weight: 0.01 g

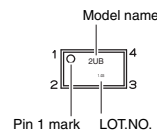
**Terminal Arrangement/Internal Connections (Top View)**

**G3VM-21UR11**



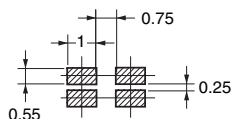
**Note:** The actual product is marked differently from the image shown here.

**VSON (Very Small Outline Non-leaded)**  
VSON4



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

**G3VM-21UR11**



■ Absolute Maximum Ratings (Ta = 25°C)

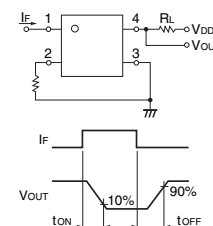
Item	Symbol	Rating	Unit	Measurement Conditions	
Input	LED forward current	$I_F$	30	mA	
	LED forward current reduction rate	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C	$T_a \geq 25^\circ\text{C}$
	LED reverse voltage	$V_R$	5	V	
	Connection temperature	$T_j$	125	°C	
Output	Load voltage (AC peak/DC)	$V_{OFF}$	20	V	
	Continuous load current	$I_O$	1,000	mA	
	ON current reduction rate	$\Delta I_{ON}/^\circ\text{C}$	-10.0	mA/°C	$T_a \geq 25^\circ\text{C}$
	Pulse ON current	$I_{OP}$	3	A	$t=100\text{ms}$ , Duty=1/10
	Connection temperature	$T_j$	125	°C	
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-21UR11	Unit	Measurement conditions	
Input	LED forward voltage	Minimum	1.1	V $I_F = 10\text{ mA}$	
		Typical	1.27		
		Maximum	1.4		
	Reverse current	$I_R$	Maximum	10	$\mu\text{A}$ $V_R = 5\text{ V}$
	Capacity between terminals	$C_T$	Typical	30	pF $V = 0$ , $f = 1\text{ MHz}$
	Trigger LED forward current	$I_{FT}$	Maximum	3.0	mA $I_O = 100\text{ mA}$
Release LED forward current	$I_{FC}$	Minimum	0.1	mA $I_{OFF} = 10\text{ }\mu\text{A}$	
Output	Maximum resistance with output ON	Typical	0.18	$\Omega$ $I_F = 5\text{ mA}$ , $I_O = 1,000\text{ mA}$ $t < 1\text{ s}$	
		Maximum	0.22		
	Current leakage when the relay is open	$I_{LEAK}$	Maximum	1	nA $V_{OFF} = 20\text{ V}$
Capacity between terminals	$C_{OFF}$	Typical	40	pF $V = 0$ , $f = 100\text{ MHz}$ , $t < 1\text{ s}$	
Capacity between I/O terminals	$C_{I-O}$	Typical	1	pF $f = 1\text{ MHz}$ , $V_s = 0\text{ V}$	
Insulation resistance between I/O terminals	$R_{I-O}$	Typical	$10^8$	$M\Omega$ $V_{I-O} = 500\text{ VDC}$ , $R_{OH} \leq 60\%$	
Turn-ON time	$t_{ON}$	Maximum	2	ms $I_F = 5\text{ mA}$ , $R_L = 200\text{ }\Omega$ , $V_{DD} = 10\text{ V}$ (See note 2.)	
Turn-OFF time	$t_{OFF}$	Maximum	1		

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



■ 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.

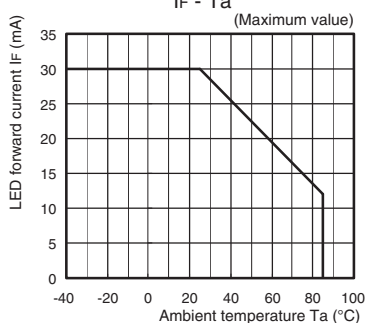
Item	Symbol	G3VM-21UR11	Unit
Load voltage (AC peak/DC)	$V_{DD}$	Maximum	16
Operating LED forward current	$I_F$	Minimum	5
		Typical	7.5
		Maximum	20
Continuous load current (AC peak/DC)	$I_O$	Maximum	1,000
Ambient Operating temperature	$T_a$	Minimum	-20
		Maximum	65

■ **Approved Standards**

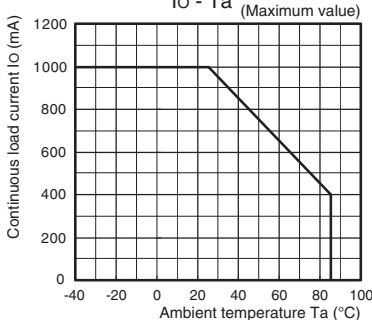
Applying for UL recognition

■ **Engineering Data**

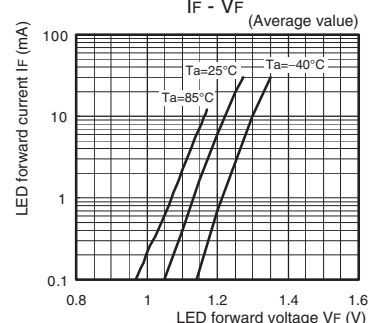
**LED forward current vs. Ambient temperature**  
 $I_F - T_a$  (Maximum value)



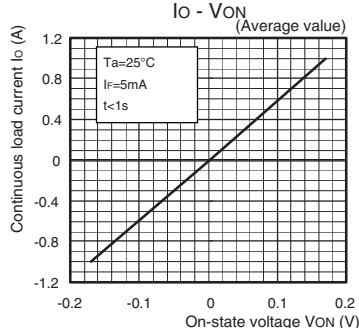
**Continuous load current vs. Ambient temperature**  
 $I_O - T_a$  (Maximum value)



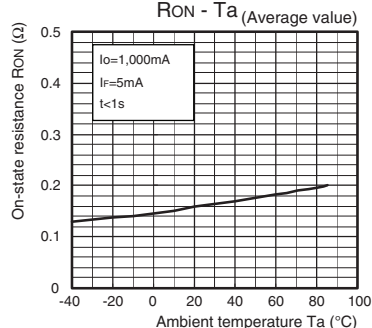
**LED forward current vs. LED forward voltage**  
 $I_F - V_F$  (Average value)



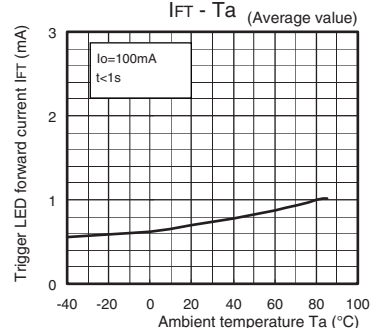
**Continuous load current vs. On-state voltage**  
 $I_O - V_{ON}$  (Average value)



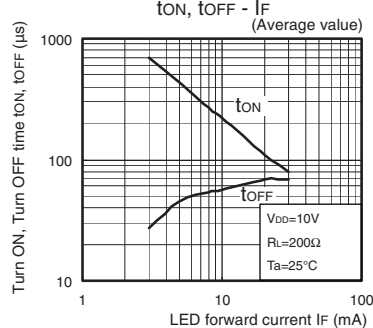
**On-state resistance vs. Ambient temperature**  
 $R_{ON} - T_a$  (Average value)



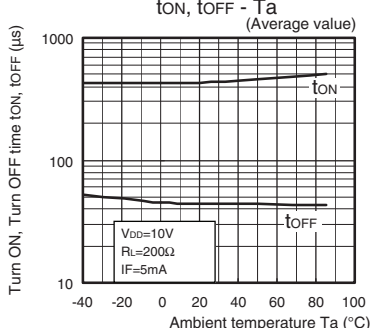
**Trigger LED forward current vs. Ambient temperature**  
 $I_{FT} - T_a$  (Average value)



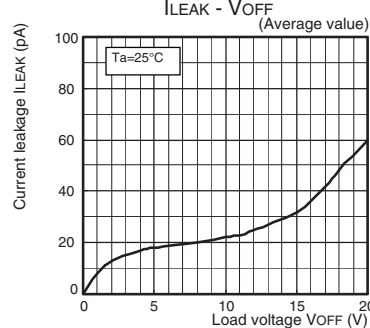
**Turn ON, Turn OFF time vs. LED forward current**  
 $t_{ON}, t_{OFF} - I_F$  (Average value)



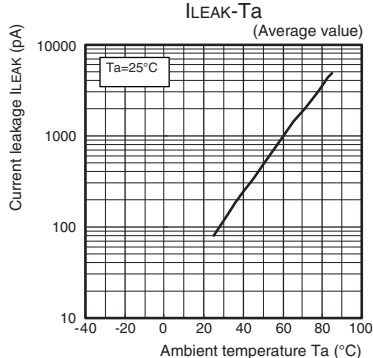
**Turn ON, Turn OFF time vs. Ambient temperature**  
 $t_{ON}, t_{OFF} - T_a$  (Average value)



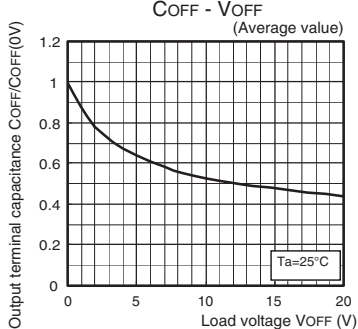
**Current leakage vs. Load voltage**  
 $I_{LEAK} - V_{OFF}$  (Average value)



**Current Leakage vs. Ambient Temperature**  
 $I_{LEAK} - T_a$  (Average value)



**Output terminal capacitance vs. Load voltage**  
 $C_{OFF} - V_{OFF}$  (Average value)



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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