# High Voltage Switching Diode

#### **Features**

- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices

#### **MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Continuous Reverse Voltage	$V_R$	250	V
Repetitive Peak Reverse Voltage	$V_{RRM}$	250	V
Peak Forward Current	lF	200	mA
Repetitive Peak Forward Current	I <sub>FRM</sub>	500	mA
Non-Repetitive Peak Forward Surge Current, 60 Hz	I <sub>FSM(surge)</sub>	2.5	Α
Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^{\circ}\text{C}$ prior to surge) $t = 1 \ \mu\text{s}$ $t = 10 \ \mu\text{s}$ $t = 100 \ \mu\text{s}$ $t = 1 \ m\text{s}$ $t = 1 \ s$	I <sub>FSM</sub>	20 20 10 4 1	А

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board, (Note 1) T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	200 1.57	mW mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{ heta JA}$	635	°C/W
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	–55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-5 Minimum Pad

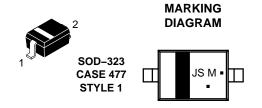


## ON Semiconductor®

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# HIGH VOLTAGE SWITCHING DIODE





JS = Device Code

M = Date Code\*

Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

#### **ORDERING INFORMATION**

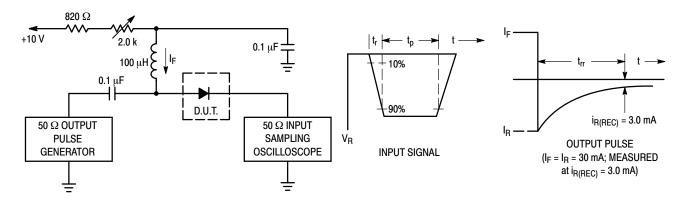
Device	Package	Shipping <sup>†</sup>
BAS21HT1G, NSVBAS21HT1G	SOD-323 (Pb-Free)	3000 / Tape & Reel
BAS21HT3G, NSVBAS21HT3G	SOD-323 (Pb-Free)	10000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Reverse Voltage Leakage Current $(V_R = 200 \text{ Vdc})$ $(V_R = 200 \text{ Vdc}, T_J = 150^{\circ}\text{C})$	IR	- -	0.1 100	μAdc	
Reverse Breakdown Voltage (I <sub>BR</sub> = 100 μAdc)	V <sub>(BR)</sub>	250	-	Vdc	
Forward Voltage (I <sub>F</sub> = 100 mAdc) (I <sub>F</sub> = 200 mAdc)	V <sub>F</sub>	- -	1000 1250	mV	
Diode Capacitance (V <sub>R</sub> = 0, f = 1.0 MHz)	C <sub>D</sub>	_	5.0	pF	
Reverse Recovery Time $(I_F = I_R = 30 \text{ mAdc}, R_L = 100 \Omega)$	t <sub>rr</sub>	_	50	ns	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



Notes: 1. A 2.0  $k\Omega$  variable resistor adjusted for a Forward Current (I<sub>F</sub>) of 30 mA.

- 2. Input pulse is adjusted so I<sub>R(peak)</sub> is equal to 30 mA.
- 3.  $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

#### **TYPICAL CHARACTERISTICS**

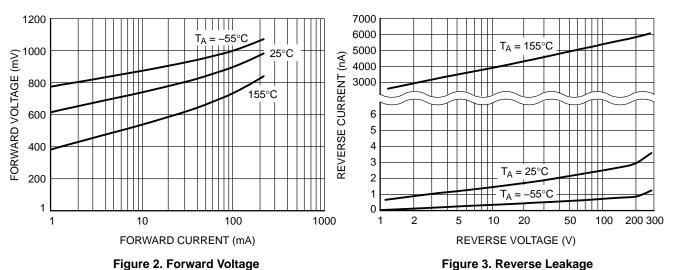


Figure 2. Forward Voltage

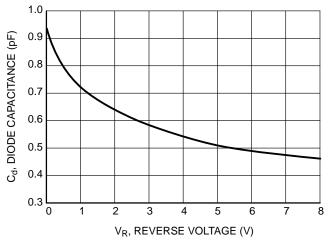


Figure 4. Diode Capacitance

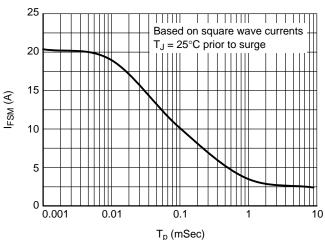
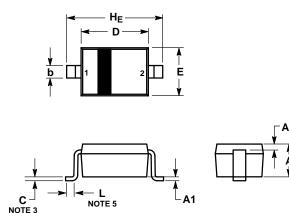


Figure 5. Maximum Non-repetitive Peak Forward Current as a Function of Pulse **Duration, Typical Values** 

#### PACKAGE DIMENSIONS

SOD-323 CASE 477-02 **ISSUE H** 



#### NOTES:

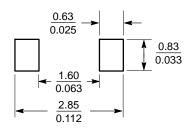
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: MILLIMETERS. LEAD THICKNESS SPECIFIED PER L/F DRAWING
- WITH SOLDER PLATING.

  4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
- 5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS			INCHES			
DIM	MIN	NOM	MAX	MIN	NOM	MAX	
Α	0.80	0.90	1.00	0.031	0.035	0.040	
A1	0.00	0.05	0.10	0.000	0.002	0.004	
A3	0.15 REF		0.006 REF				
b	0.25	0.32	0.4	0.010	0.012	0.016	
С	0.089	0.12	0.177	0.003	0.005	0.007	
D	1.60	1.70	1.80	0.062	0.066	0.070	
Е	1.15	1.25	1.35	0.045	0.049	0.053	
L	0.08			0.003			
HE	2.30	2.50	2.70	0.090	0.098	0.105	

STYLE 1: PIN 1. CATHODE 2. ANODE

### **SOLDERING FOOTPRINT\***



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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