

# High Voltage Switching Diode

## BAS21XV2

The BAS21XV2 Switching Diode is a spin-off of our popular SOT-23 three-leaded device. It is designed for switching applications and is housed in the SOD-523 surface mount package. This device is ideal for low-power surface mount applications, where board space is at a premium.

### Features

- Extremely Small SOD-523 Package
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage	$V_R$	250	Vdc
Repetitive Peak Reverse Voltage	$V_{RRM}$	250	Vdc
Continuous Forward Current	$I_F$	200	mAdc
Peak Forward Surge Current	$I_{FM(surge)}$	625	mAdc
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	$I_{FRM}$	500	mA
Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^\circ\text{C}$ prior to surge)	$I_{FSM}$		A
$t = 1 \mu\text{s}$		5.0	
$t = 1 \text{ms}$		2.0	
$t = 1 \text{s}$		0.5	

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board $T_A = 25^\circ\text{C}$	$P_D$	250	mW
Thermal Resistance Junction-to-Ambient (Note 1)	$R_{\theta JA}$	500	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

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.

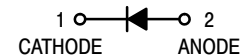
1. Mounted onto a 4 in square FR-4 board 10 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.



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## HIGH VOLTAGE SWITCHING DIODE



### MARKING DIAGRAM



XX = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
BAS21XV2T5G	SOD-523 (Pb-Free)	8000 / Tape & Reel
NSVBAS21XV2T5G	SOD-523 (Pb-Free)	8000 / Tape & Reel

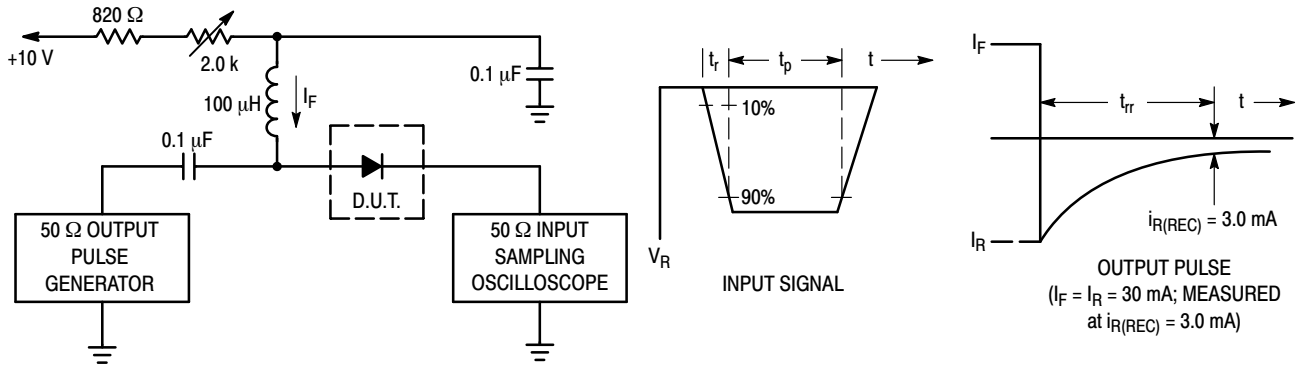
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Reverse Voltage Leakage Current ( $V_R = 200\text{ Vdc}$ ) ( $V_R = 200\text{ Vdc}$ , $T_J = 150^\circ\text{C}$ )	$I_R$	0.01 10	0.1 100	$\mu\text{A dc}$
Reverse Breakdown Voltage ( $I_{BR} = 100\ \mu\text{A dc}$ )	$V_{(BR)}$	250	–	Vdc
Forward Voltage ( $I_F = 100\ \text{mA dc}$ ) ( $I_F = 200\ \text{mA dc}$ )	$V_F$	600 1000	1000 1250	mV
Diode Capacitance ( $V_R = 0$ , $f = 1.0\ \text{MHz}$ )	$C_D$	–	5.0	pF
Reverse Recovery Time ( $I_F = I_R = 30\ \text{mA dc}$ , $R_L = 100\ \Omega$ )	$t_{rr}$	–	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 ( $I_F$ ) of 30 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 30 mA.  
 3.  $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**

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## TYPICAL CHARACTERISTICS

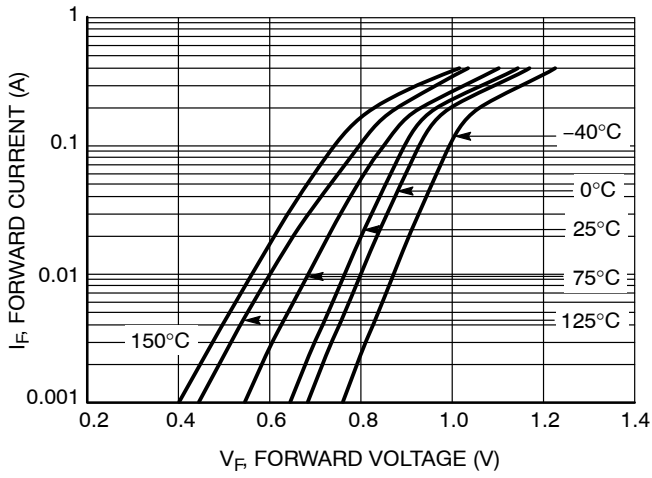


Figure 1. Forward Voltage

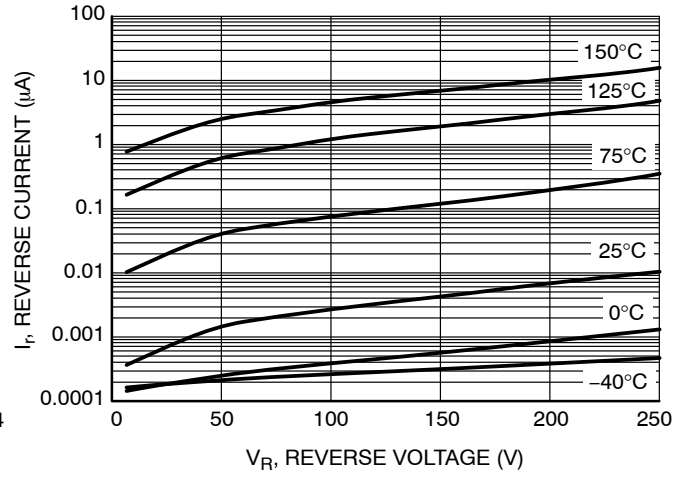


Figure 2. Reverse Current

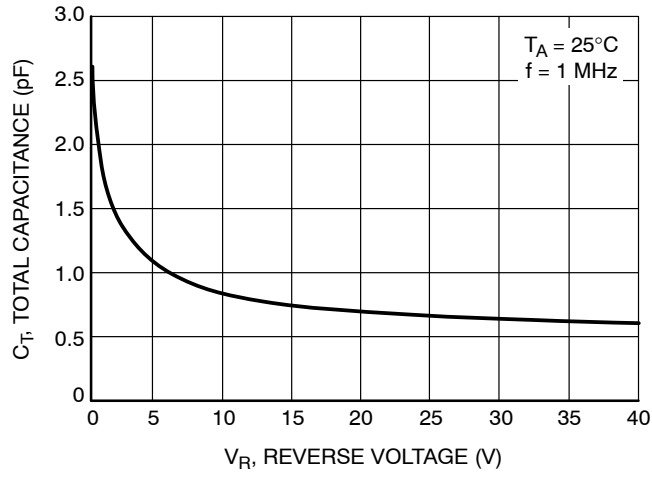
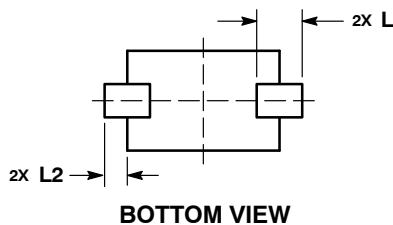
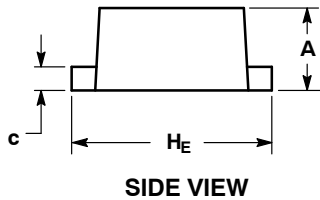
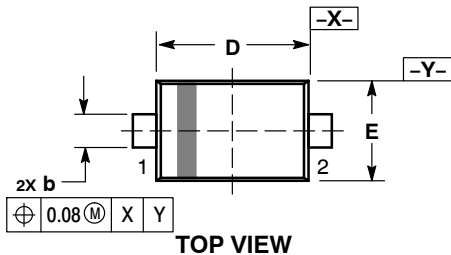


Figure 3. Total Capacitance

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## PACKAGE DIMENSIONS

**SOD-523**  
CASE 502-01  
ISSUE E

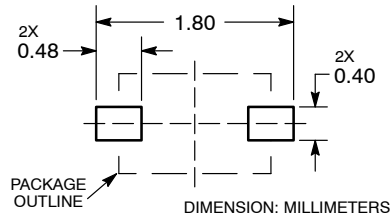


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.60	0.70
b	0.25	0.30	0.35
c	0.07	0.14	0.20
D	1.10	1.20	1.30
E	0.70	0.80	0.90
H E	1.50	1.60	1.70
L	0.30 REF		
L2	0.15	0.20	0.25

**RECOMMENDED  
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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