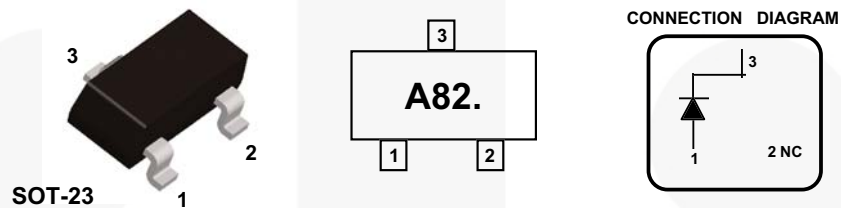




February 2015

## BAS21 General-Purpose High Voltage Diode



### Ordering Information

Part Number	Top Mark	Package	Packing Method
BAS21	A82.	SOT-23 3L	Tape and Reel

### Absolute Maximum Ratings<sup>(1), (2)</sup>

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter		Value	Unit
$W_{IV}$	Working Inverse Voltage		250	V
$I_O$	Average Rectified Current		200	mA
$I_F$	DC Forward Current		600	mA
$i_f$	Recurrent Peak Forward Current		700	mA
$i_{f(\text{surge})}$	Peak Forward Surge Current	Pulse Width = 1.0 second	1.0	A
		Pulse Width = 1.0 microsecond	2.0	
$T_{STG}$	Storage Temperature Range		-55 to +150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature		150	$^\circ\text{C}$

#### Notes:

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

## Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
$P_D$	Total Device Dissipation	350	mW
	Derate Above $25^\circ\text{C}$	2.8	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	$^\circ\text{C/W}$

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$B_V$	Breakdown Voltage	$I_R = 100\ \mu\text{A}$	250		V
$I_R$	Reverse Voltage Leakage Current	$V_R = 200\ \text{V}$		100	nA
		$V_R = 200\ \text{V}, T_A = 150^\circ\text{C}$		100	$\mu\text{A}$
$V_F$	Forward Voltage	$I_F = 100\ \text{mA}$		1.0	V
		$I_F = 200\ \text{mA}$		1.25	V
$C_O$	Diode Capacitance	$V_R = 0, f = 1.0\ \text{MHz}$		5.0	pF
$T_{RR}$	Reverse Recovery Time	$I_F = I_R = 30\ \text{mA}, I_{RR} = 3.0\ \text{mA}, R_L = 100\ \Omega$		50	nS

## Typical Performance Characteristics

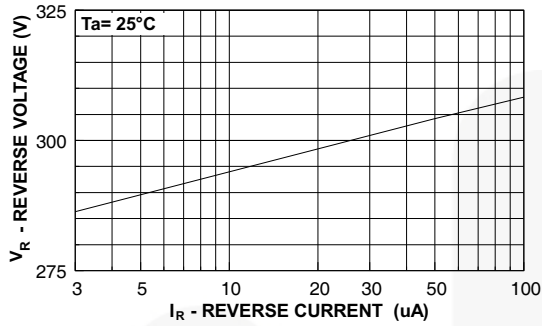


Figure 1. Reverse Voltage vs. Reverse Current  
 $V_R$  - 1.0 to 100  $\mu\text{A}$

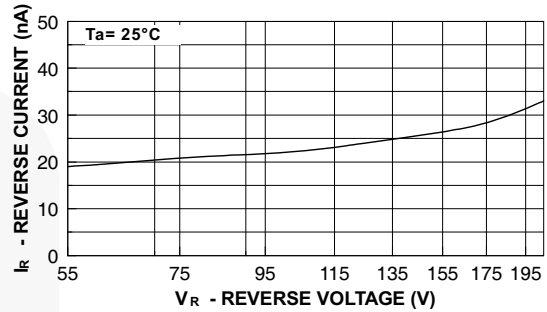


Figure 2. Reverse Current vs. Reverse Voltage  
 $I_R$  - 55 to 205 V

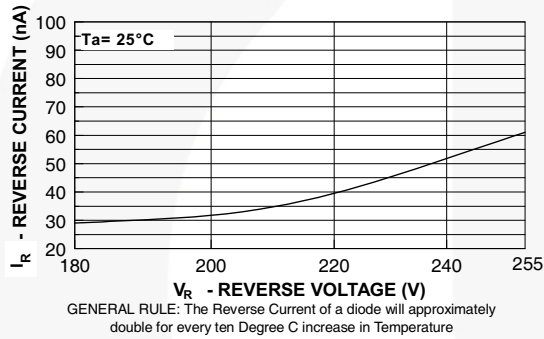


Figure 3. Reverse Current vs. Reverse Voltage  
 $I_R$  - 180 to 255 V

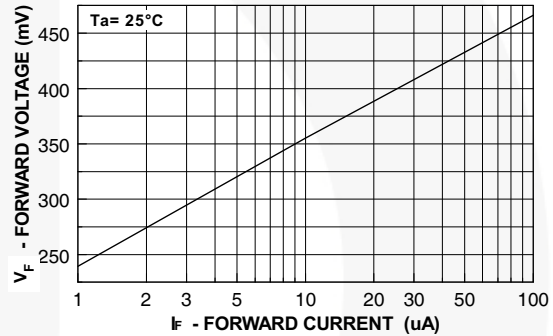


Figure 4. Forward Voltage vs. Forward Current  
 $V_F$  - 1.0 to 100  $\mu\text{A}$

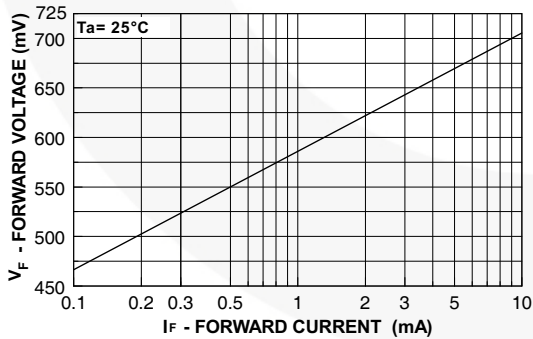


Figure 5. Forward Voltage vs. Forward Current  
 $V_F$  - 0.1 to 10 mA

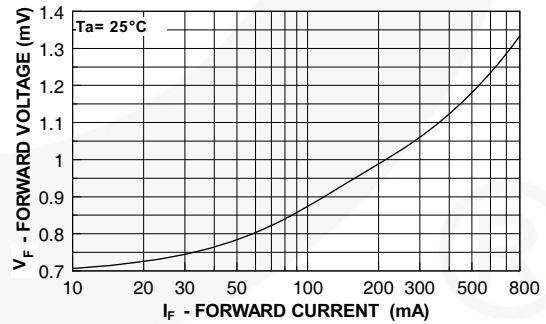


Figure 6. Forward Voltage vs. Forward Current  
 $V_F$  - 10 to 800 mA

## Typical Performance Characteristics (Continued)

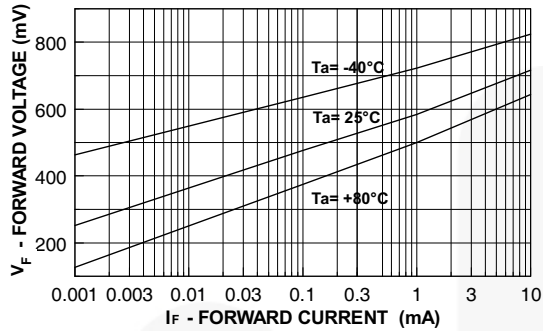


Figure 7. Forward Voltage vs. Ambient Temperature  
 $V_F = 1.0 \mu A - 10 mA (-40 \text{ to } +80^\circ C)$

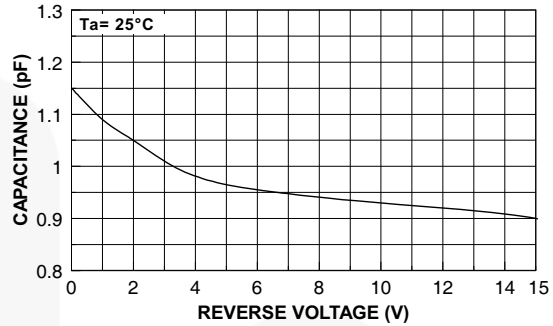


Figure 8. Capacitance vs. Reverse Voltage

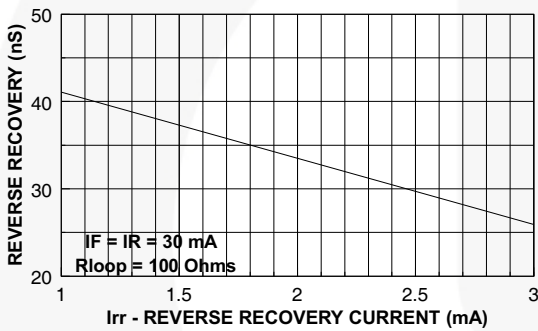


Figure 9. Reverse Recovery Time vs. Reverse Recovery Current ( $I_{rr}$ )

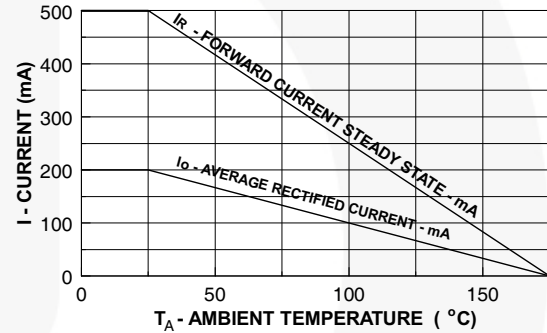


Figure 10. Average Rectified Current ( $I_O$ ) and Forward Current ( $I_F$ ) vs. Ambient Temperature ( $T_A$ )

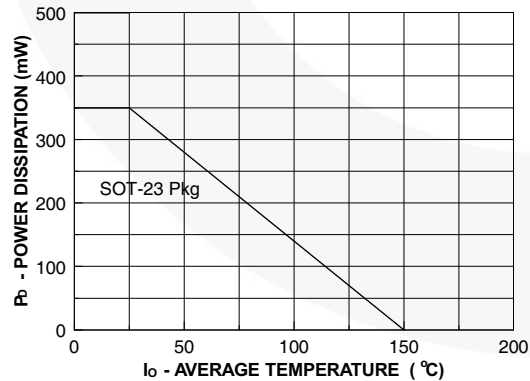


Figure 11. Power Derating Curve

# Physical Dimensions

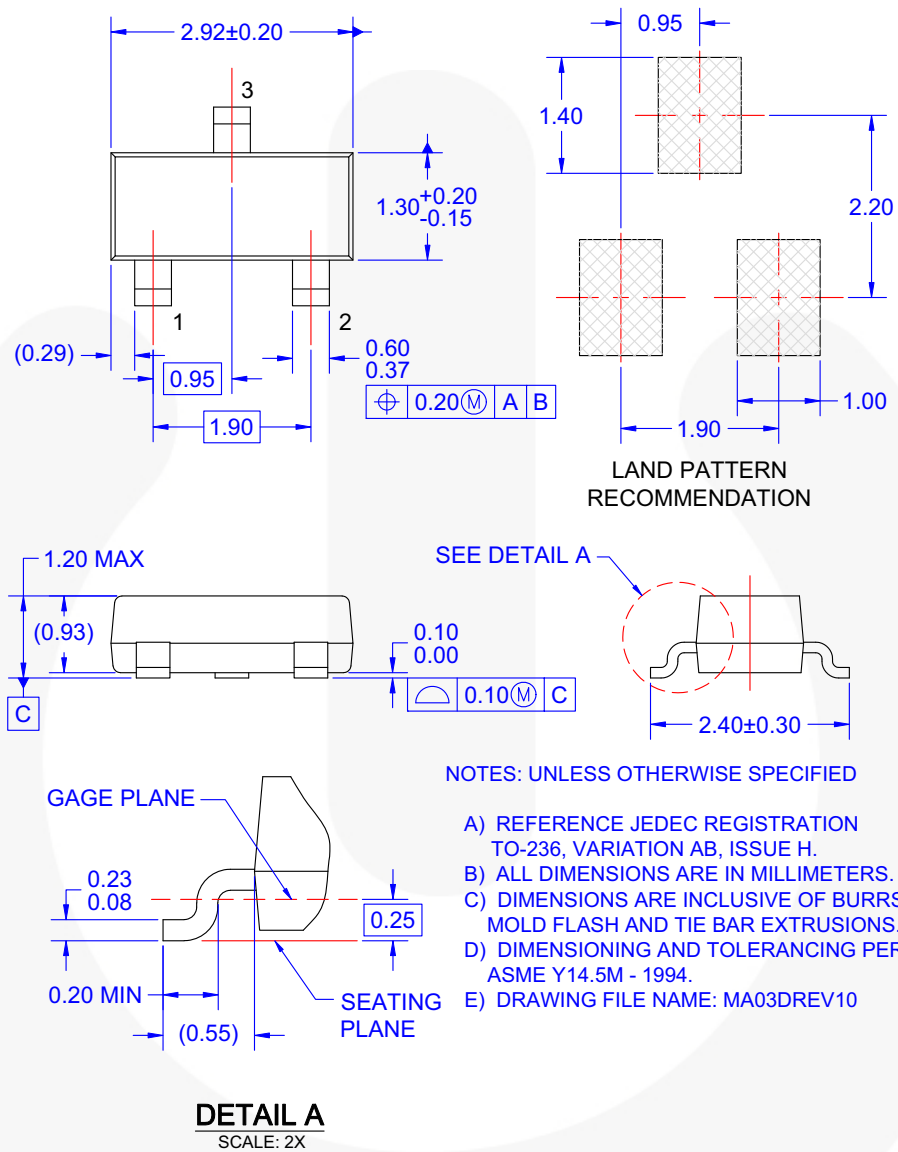


Figure 12. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



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Rev. I73

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