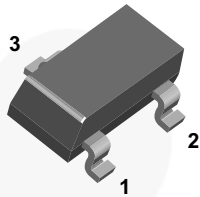




February 2015

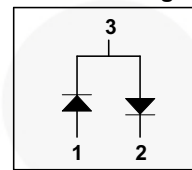
BAS31 Small Signal Diode



SOT-23



Connection Diagram



Ordering Information

Part Number	Top Mark	Package	Packing Method
BAS31	L21	SOT-23 3L	Tape and Reel, 7 inch Reel, 3000 pcs
BAS31_D87Z	L21	SOT-23 3L	Tape and Reel, 13 inch Reel, 10000 pcs

Absolute Maximum Ratings^{(1), (2)}

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
V_{RRM}	Maximum Repetitive Reverse Voltage	120	V
$I_{F(AV)}$	Average Rectified Forward Current	200	mA
I_{FSM}	Non-Repetitive Peak Forward Surge Current	Pulse Width = 1.0 second	1.0
		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°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	Value	Unit
P_D	Power Dissipation	350	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	$^\circ\text{C}/\text{W}$

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_R	Breakdown Voltage	$I_R = 1.0 \text{ mA}$	120		V
V_F	Forward Voltage	$I_F = 10 \text{ mA}$		750	mV
		$I_F = 50 \text{ mA}$		840	mV
		$I_F = 100 \text{ mA}$		900	mV
		$I_F = 200 \text{ mA}$		1.00	V
		$I_F = 400 \text{ mA}$		1.25	V
I_R	Reverse Current	$V_R = 90 \text{ V}$		100	nA
		$V_R = 90 \text{ V}, T_A = 150^\circ\text{C}$		100	μA
C_T	Total Capacitance	$V_R = 0, f = 1.0 \text{ MHz}$		35	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

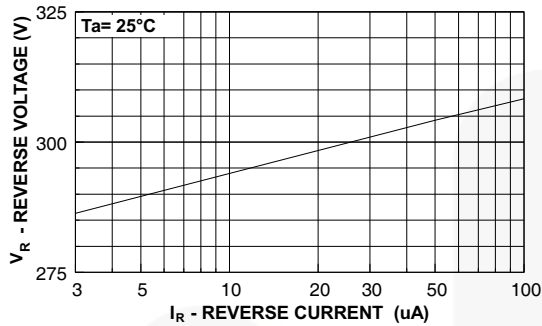


Figure 1. Reverse Voltage vs. Reverse Current
BV - 1.0 to 100 μ A

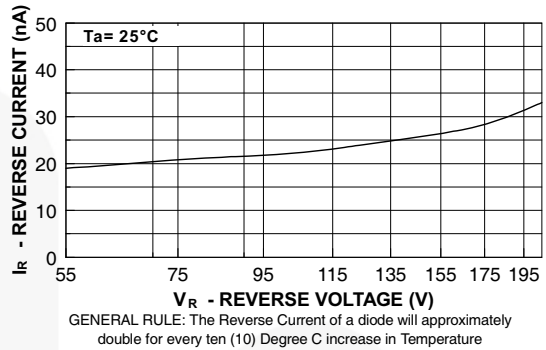


Figure 2. Reverse Current vs. Reverse Voltage
 I_R - 55 to 205 V

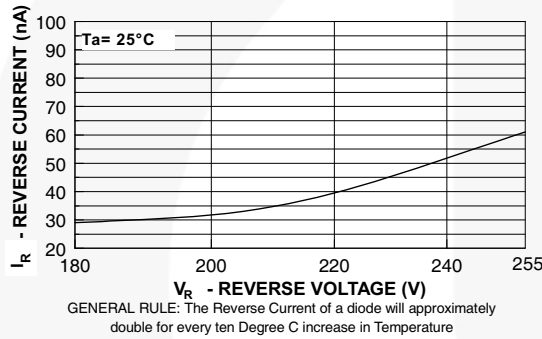


Figure 3. Reverse Current vs. Reverse Voltage
 I_R - 180 to 255 V

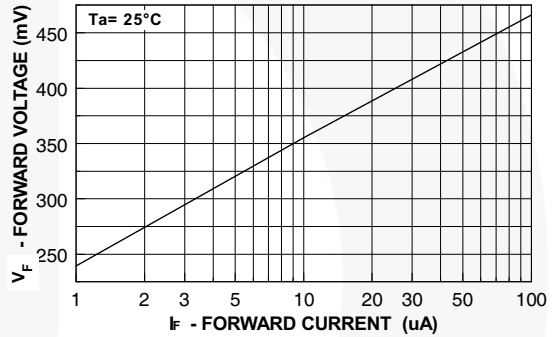


Figure 4. Forward Voltage vs. Forward Current
 V_F - 1.0 to 100 μ A

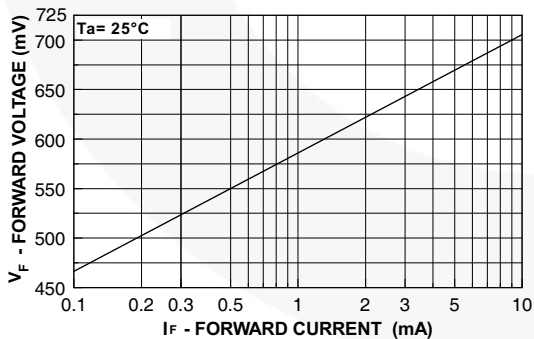


Figure 5. Forward Voltage vs. Forward Current
 V_F - 0.1 to 10 mA

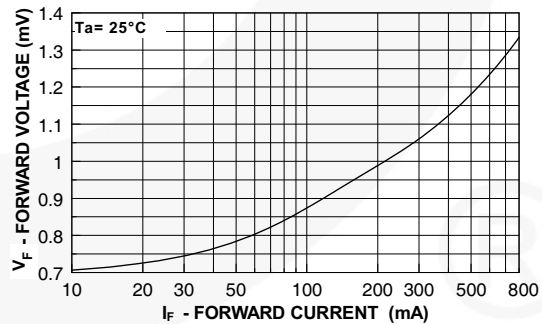


Figure 6. Forward Voltage vs. Forward Current
 V_F - 10 to 800 mA

Typical Performance Characteristics (Continued)

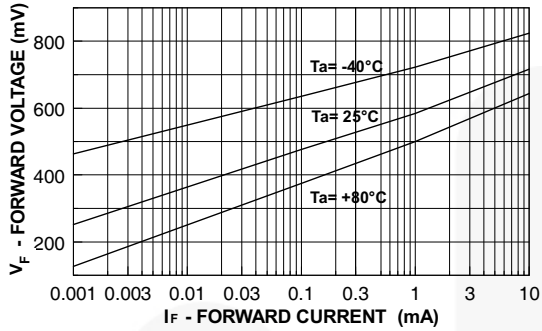


Figure 7. Forward Voltage vs. Ambient Temperature
 V_F - 1.0 μ A - 10 mA (- 40 to +80°C)

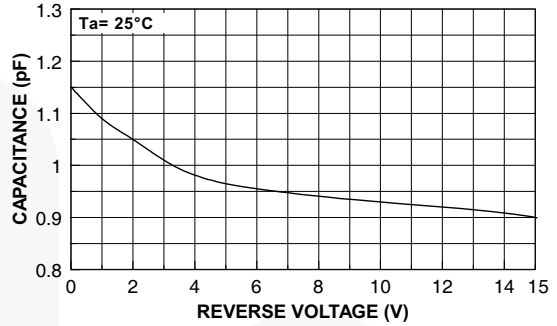


Figure 8. Capacitance vs. Reverse Voltage

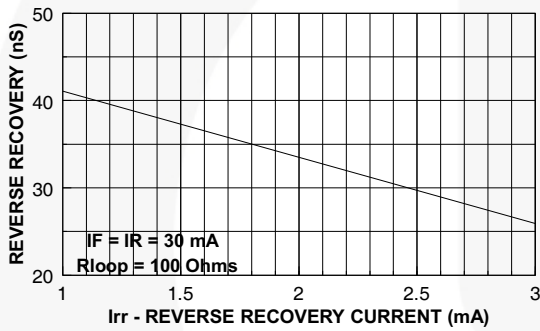


Figure 9. Reverse Recovery Time vs. Reverse Recovery Current (I_{rr})

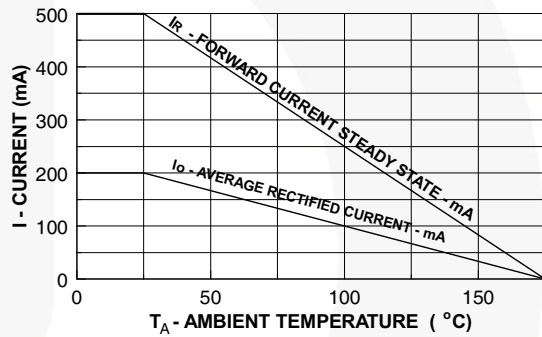


Figure 10. Average Rectified Current (I_O) and Forward Current (I_F) vs. Ambient Temperature (T_A)

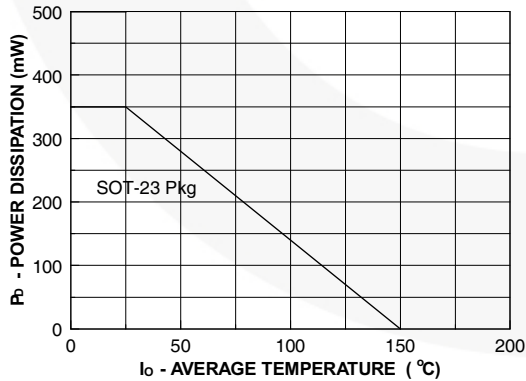


Figure 11. Power Derating Curve

Physical Dimensions

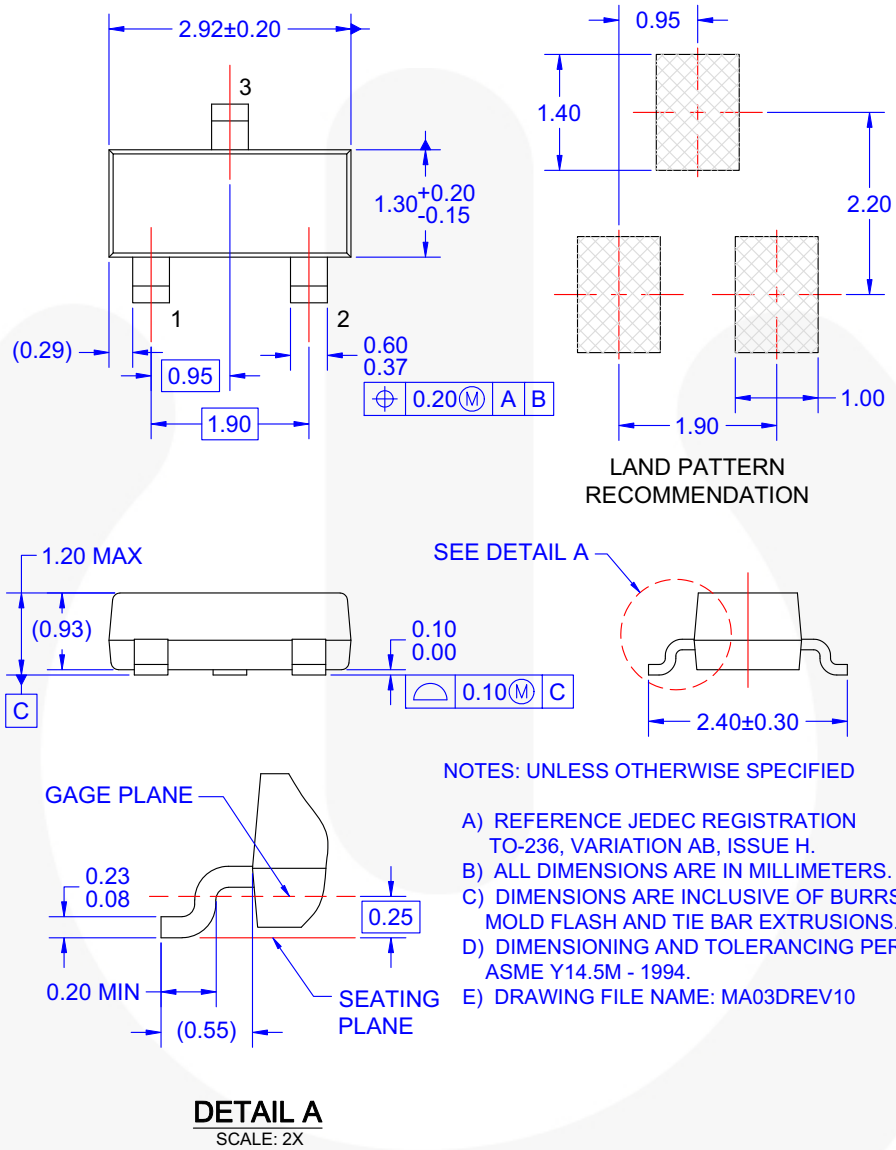


Figure 12. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE





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