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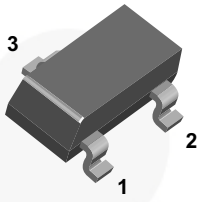
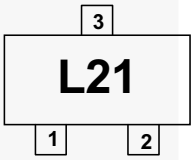
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

February 2015

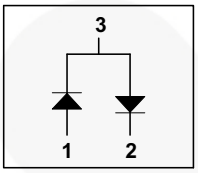
BAS31
Small Signal Diode



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°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	A
		Pulse Width = 1.0 microsecond	2.0	
T_{STG}	Storage Temperature Range		-55 to +150	°C
T_J	Operating Junction Temperature		150	°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°C unless otherwise noted.

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	350	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	°C/W

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_R	Breakdown Voltage	I_R = 1.0 mA	120		V
V_F	Forward Voltage	I_F = 10 mA		750	mV
		I_F = 50 mA		840	mV
		I_F = 100 mA		900	mV
		I_F = 200 mA		1.00	V
		I_F = 400 mA		1.25	V
I_R	Reverse Current	V_R = 90 V		100	nA
		V_R = 90 V, T_A = 150°C		100	µA
C_T	Total Capacitance	V_R = 0, f = 1.0 MHz		35	pF
t_{rr}	Reverse Recovery Time	$I_F = I_R$ = 30 mA, I_{RR} = 3.0 mA, R_L = 100 Ω		50	ns

Typical Performance Characteristics

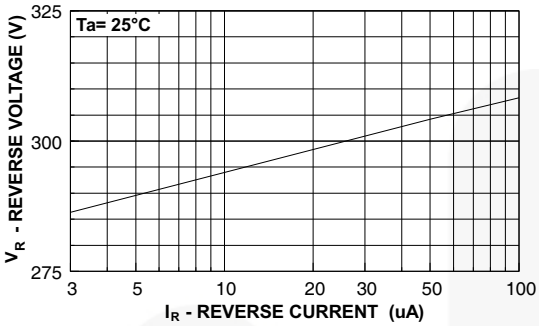


Figure 1. Reverse Voltage vs. Reverse Current
BV - 1.0 to 100 μA

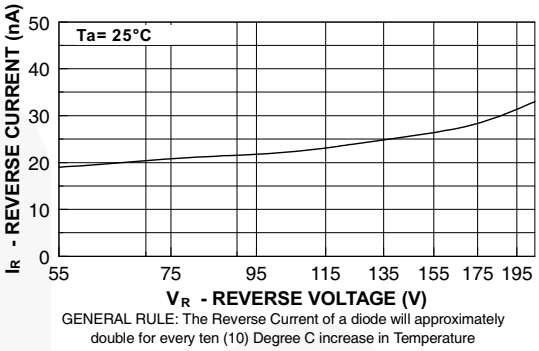


Figure 2. Reverse Current vs. Reverse Voltage
I_R - 55 to 205 V

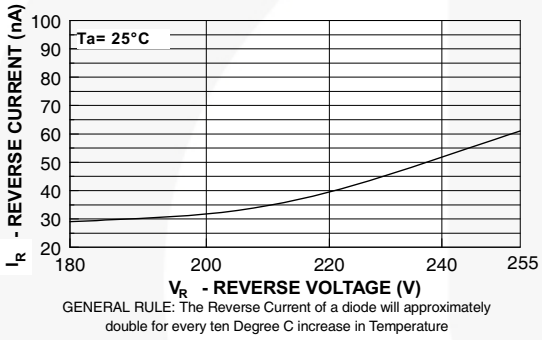


Figure 3. Reverse Current vs. Reverse Voltage
I_R - 180 to 255 V

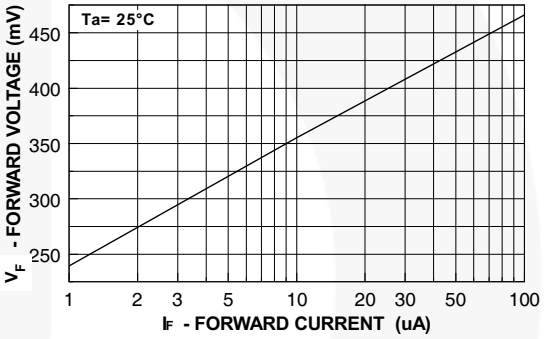


Figure 4. Forward Voltage vs. Forward Current
V_F - 1.0 to 100 μA

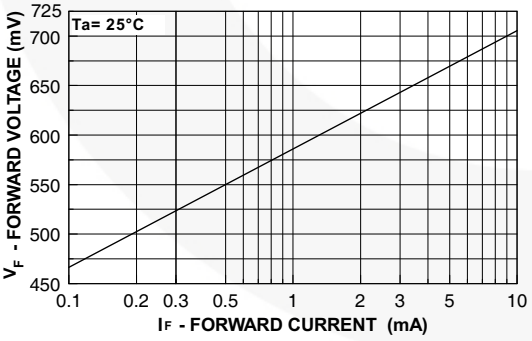


Figure 5. Forward Voltage vs. Forward Current
V_F - 0.1 to 10 mA

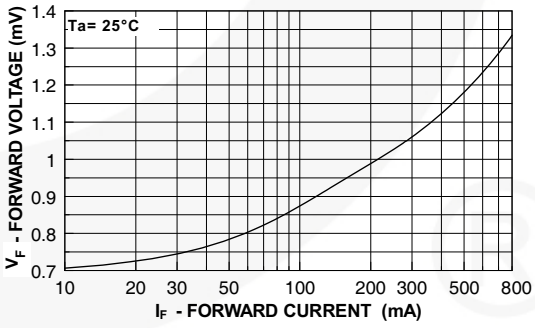


Figure 6. Forward Voltage vs. Forward Current
V_F - 10 to 800 mA

Typical Performance Characteristics (Continued)

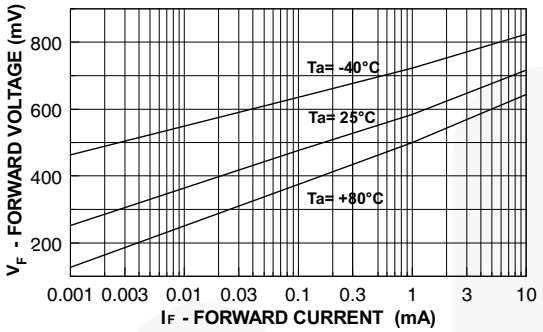


Figure 7. Forward Voltage vs. Ambient Temperature V_F - 1.0 μA - 10 mA (- 40 to +80°C)

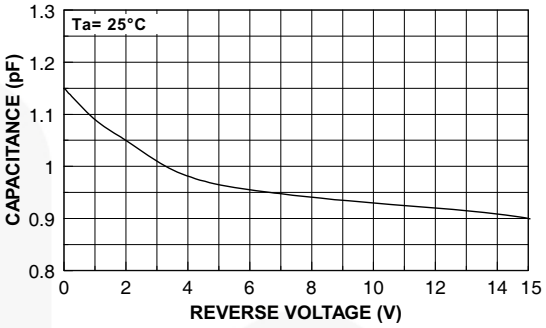


Figure 8. Capacitance vs. Reverse Voltage

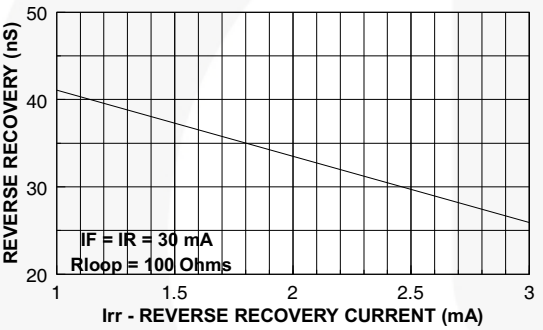


Figure 9. Reverse Recovery Time vs. Reverse Recovery Current (Irr)

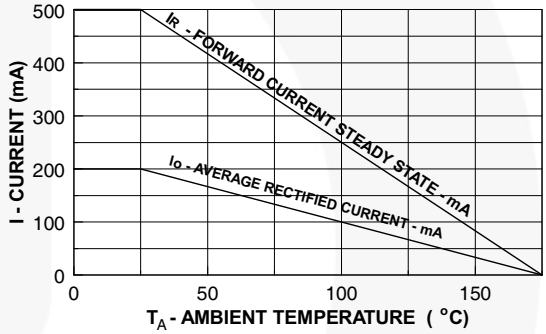


Figure 10. Average Rectified Current(I_O) and Forward Current (I_F) vs. Ambient Temperature(T_A)

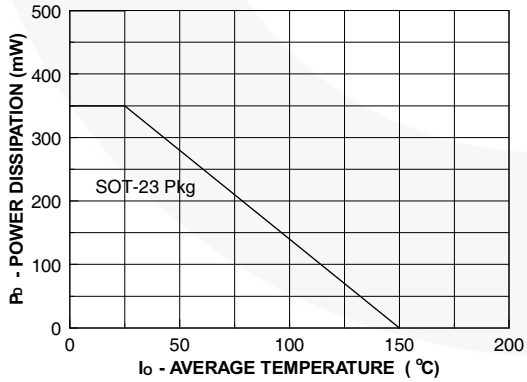


Figure 11. Power Derating Curve

Physical Dimensions

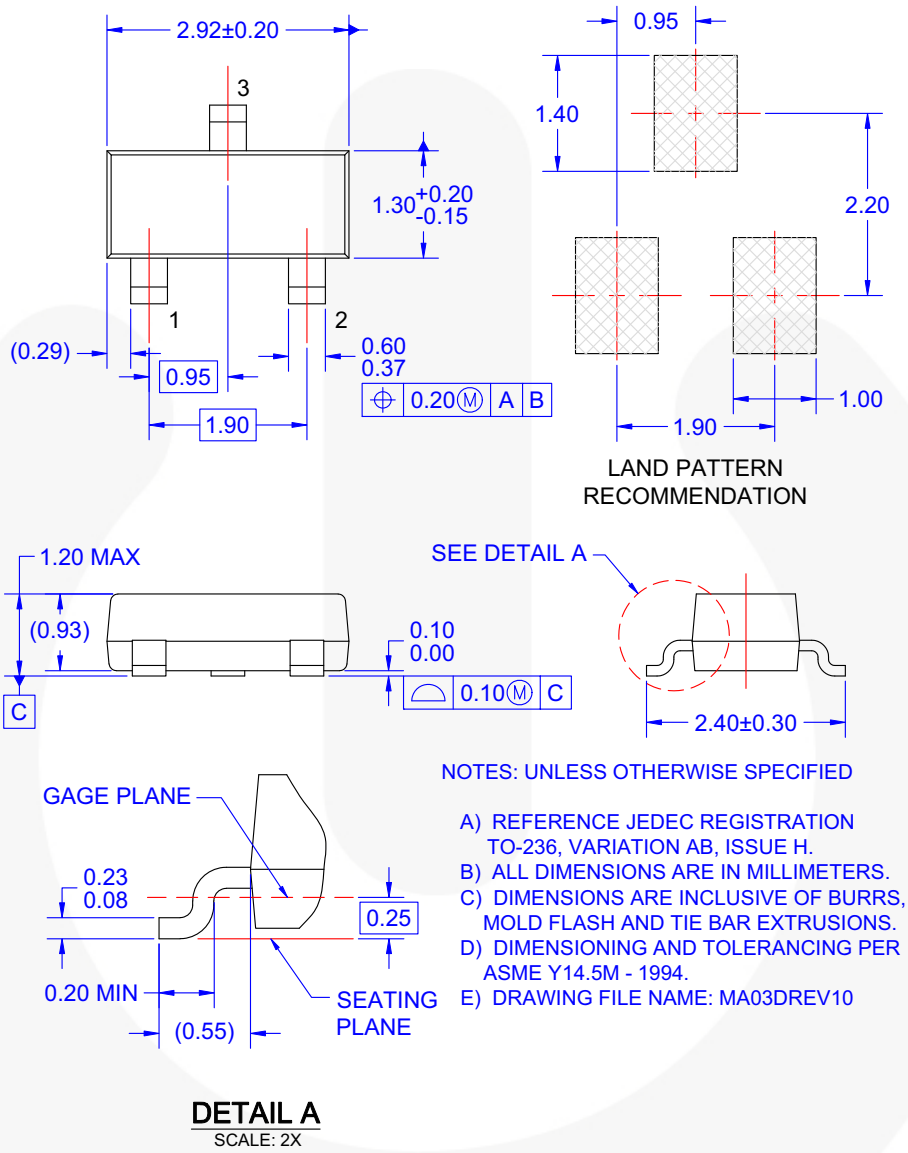


Figure 12. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE

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Rev. I73

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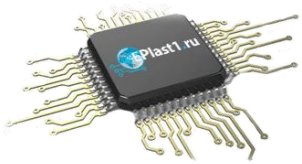

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