



#### 1.0A SCHOTTKY BARRIER RECTIFIER

### **Product Summary**

3150AF/B160AF	31	50	AF	/B1	60	AF
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V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V) @ +25°C	I <sub>R(MAX)</sub> (mA) @ +25°C
50	1	0.65	0.10
60	1	0.65	0.20

## **Description and Applications**

The Schottky rectifier providing low V<sub>F</sub> and excellent reverse leakage stability at high temperatures, this device is ideal for use in general rectification applications such as:

- Boost Diode
- Blocking Diode
- Recirculating Diode

## **Features and Benefits**

- Reduced Low Forward Voltage Drop (V<sub>F</sub>); Better Efficiency and Cooler Operation
- Reduced High-Temperature Reverse Leakage; Increased Reliability against Thermal Runaway Failure in High Temperature Operation
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

#### **Mechanical Data**

- Case: SMAF
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
  Solderable per MIL-STD-202, Method 208 (§3)
- Polarity: Cathode Band
- Weight: 0.036 grams (Approximate)

**SMAF** 



Top View

### **Ordering Information** (Note 4)

Part Number	Case	Packaging
B150AF-13	SMAF	10,000/Tape & Reel
B160AF-13	SMAF	10,000/Tape & Reel

Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 2. See http://www.diodes.com/quality/lead\_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

## **Marking Information**





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Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

Characteristic	Symbol	B150AF	B160AF	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>RM</sub>	50	60	٧
Average Rectified Output Current	Io	1		Α
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30	)	А

## **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	95	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	45	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

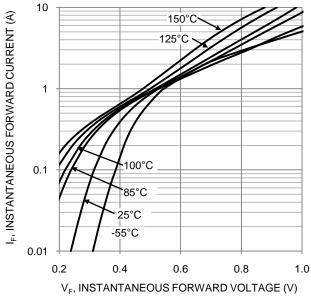
## **Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
Forward Voltage Drop	V <sub>F</sub>	_	0.53	0.65	V	$I_F = 1A, T_J = +25^{\circ}C$	
Forward Voltage Drop		_	0.50	_		I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C	
B150AF		_	0.015	0.10		$V_R = 50V, T_J = +25^{\circ}C$	
Leakage Current (Note 6) B160AF	I <sub>R</sub>	_	0.02	0.20	mA	$V_R = 60V, T_J = +25^{\circ}C$	
		_	7.5	_		$V_R = 60V, T_J = +125^{\circ}C$	
Typical Capacitance	C <sub>T</sub>	_	45	_	pF	$V_R = 4.0V$ , $f = 1MHz$	

Notes:

- 5. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad. 6. Short duration pulse test used to minimize self-heating effect.







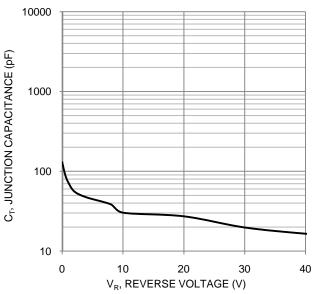


Figure 3. Typical Junction Capacitance

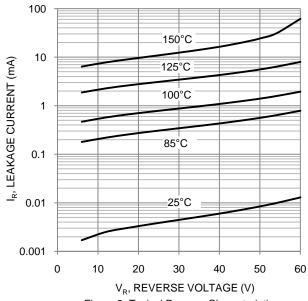


Figure 2. Typical Reverse Characteristics

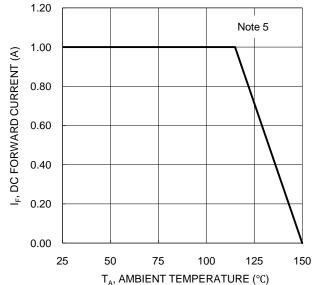


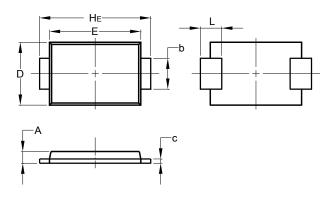
Figure 4. DC Forward Current Derating



## **Package Outline Dimensions**

Please see http://www.diodes.com/package-outlines.html for the latest version.

#### **SMAF**

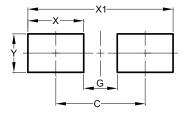


SMAF				
Dim	Min	Max		
Α	0.90	1.10		
b	1.25	1.65		
С	0.10	0.40		
D	2.25	2.95		
Е	3.95	4.60		
H <sub>E</sub>	<b>H</b> <sub>E</sub> 4.80 5.60			
Ĺ	0.50	1.50		
All Dimensions in mm				

## **Suggested Pad Layout**

Please see http://www.diodes.com/package-outlines.html for the latest version.

#### SMAF



Dimensions	Value (in mm)
С	4.00
G	1.50
Х	2.50
X1	6.50
Y	1.70



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