

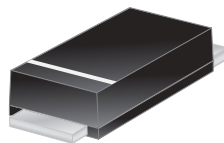
**Product Summary** (@T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F MAX</sub> (V)	I <sub>R MAX</sub> (μA)
50	5	0.53	150

**Description and Applications**

The SBRT5A50SAF is a 5A 50V single rectifier packaged in the low profile SMAF package. Providing low V<sub>F</sub> and excellent high temperature stability, this device is ideal for use in general rectification applications such as:

- Boost Diode
- Blocking Diode
- Recirculating Diode



SMAF



Device symbol

**Features and Benefits**

- Reduced ultra-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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**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 (E3)
- Polarity: Cathode Band
- Weight: 0.064 grams (Approximate)

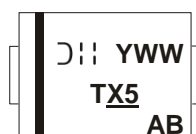
**Ordering Information** (Note 4)

Part Number	Case	Packaging
SBRT5A50SAF-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](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 <http://www.diodes.com/products/packages.html>.

**Marking Information**

SMAF



TX5 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 4 for 2014)  
 WW = Week Code 01 to 53  
 AB = Foundry and Assembly Code

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

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	50	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
Average Rectified Output Current	I <sub>O</sub>	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	100	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	38	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	28	°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	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	0.39	—	V	I <sub>F</sub> = 2.5A, T <sub>J</sub> = +25°C
			0.46	0.53		I <sub>F</sub> = 5A, T <sub>J</sub> = +25°C
			0.32	—		I <sub>F</sub> = 2.5A, T <sub>J</sub> = +125°C
			0.44	0.5		I <sub>F</sub> = 5A, T <sub>J</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	30	150	μA	V <sub>R</sub> = 50V, T <sub>J</sub> = +25°C
			7	45	mA	V <sub>R</sub> = 50V, T <sub>J</sub> = +125°C

Notes: 5. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.56" x 0.73" copper pad.  
6. Short duration pulse test used to minimize self-heating effect.

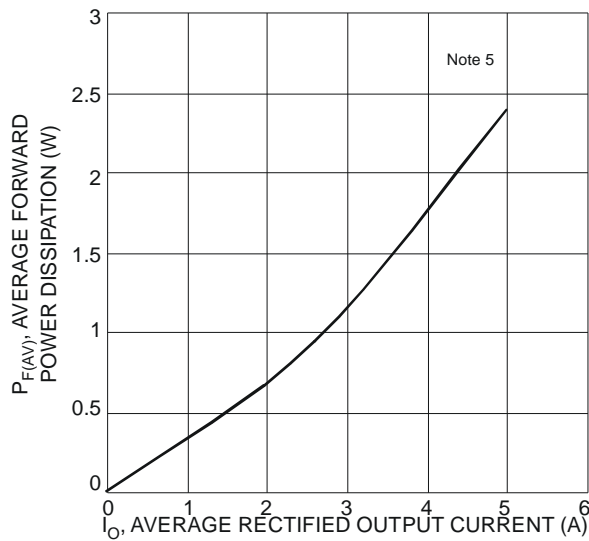


Figure 1 Forward Power Dissipation

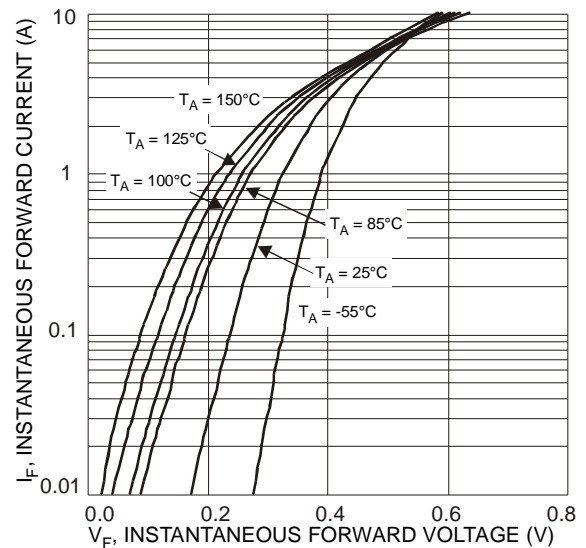
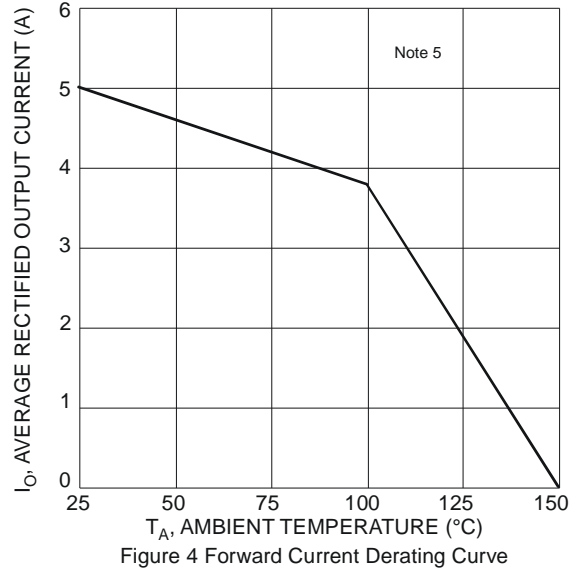
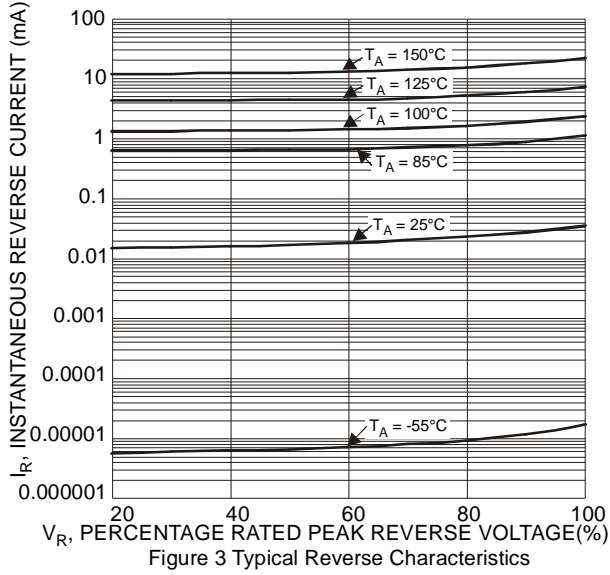
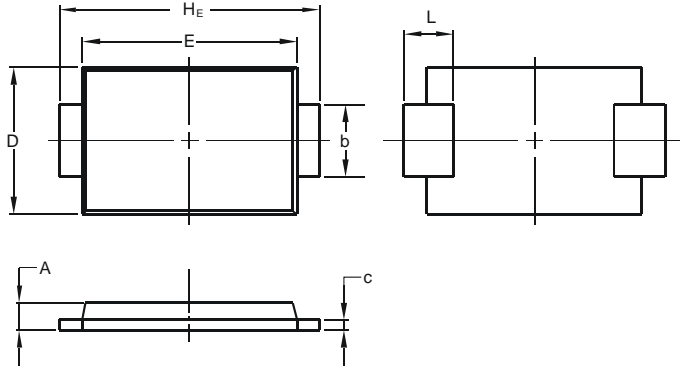


Figure 2 Typical Forward Characteristics



**Package Outline Dimensions**

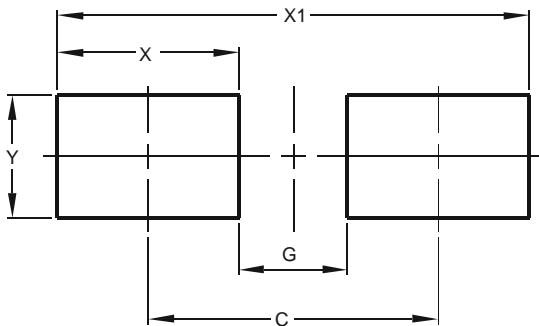
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SMAF		
Dim	Min	Max
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
HE	4.80	5.60
L	0.50	1.50
All Dimensions in mm		

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

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