



**THE DATASHEET OF  
SBRT5A50SAF-13**



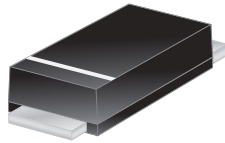
**Product Summary (@T<sub>A</sub> = +25°C)**

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> MAX (V)	I <sub>R</sub> MAX (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)**

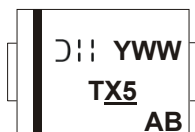
**Mechanical Data**

- 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 ⑥③
- Polarity: Cathode Band
- Weight: 0.064 grams (approximate)

**Ordering Information (Note 4)**

Part Number	Case	Packaging
SBRT5A50SAF-13	SMAF	10000/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**


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** (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$	50	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current	$I_O$	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	100	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	38	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	28	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.39	—	V	$I_F = 2.5\text{A}, T_J = +25^\circ\text{C}$
			0.46	0.53		$I_F = 5\text{A}, T_J = +25^\circ\text{C}$
			0.32	—		$I_F = 2.5\text{A}, T_J = +125^\circ\text{C}$
			0.44	0.5		$I_F = 5\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	—	30	150	$\mu\text{A}$	$V_R = 50\text{V}, T_J = +25^\circ\text{C}$
			7	45	$\text{mA}$	$V_R = 50\text{V}, T_J = +125^\circ\text{C}$

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.

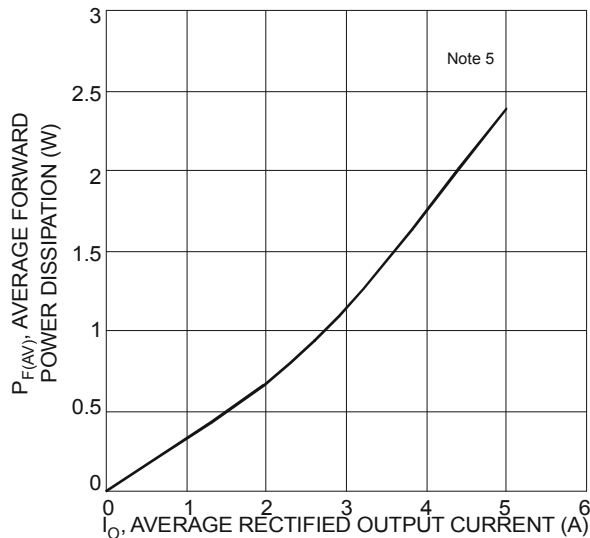


Figure 1 Forward Power Dissipation

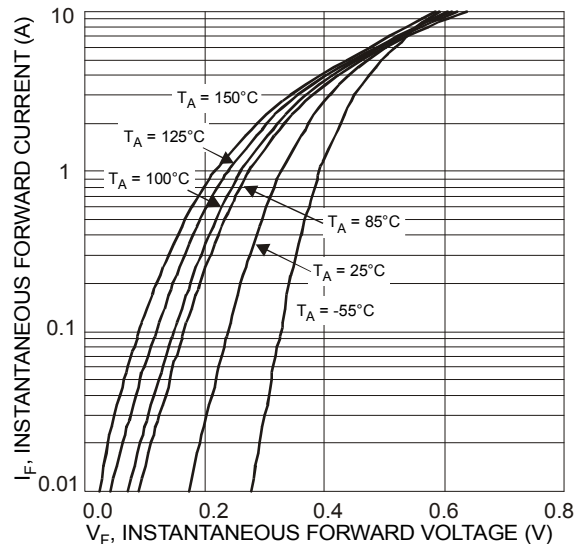
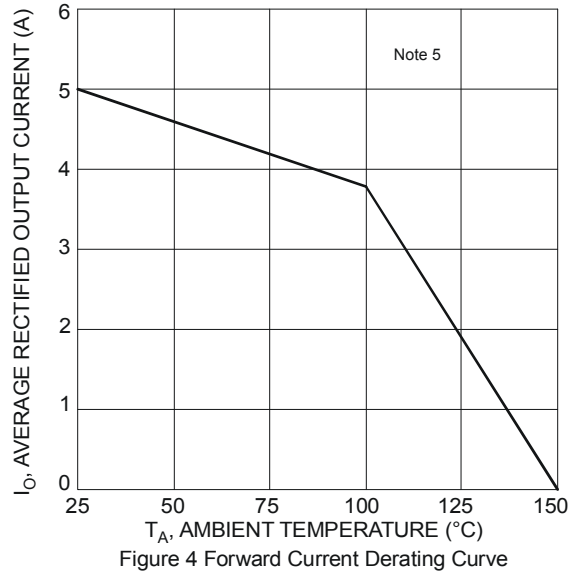
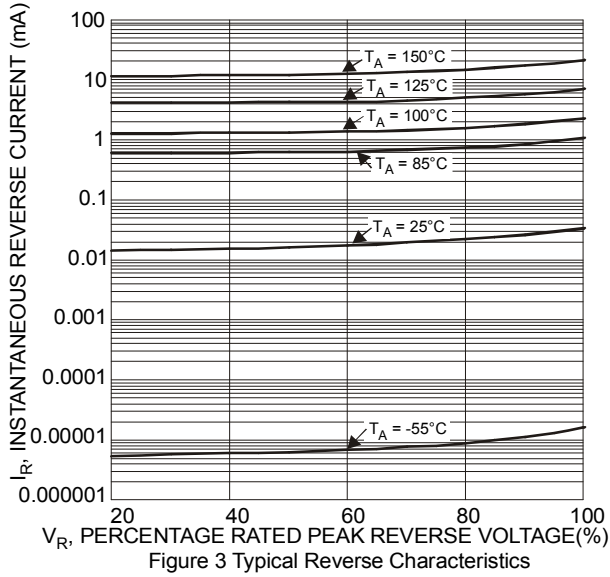
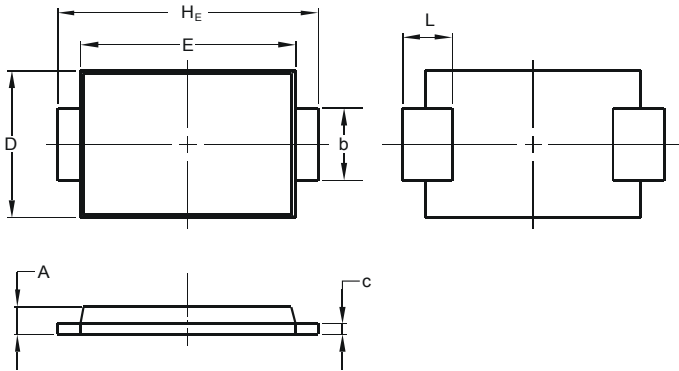


Figure 2 Typical Forward Characteristics



**Package Outline Dimensions**

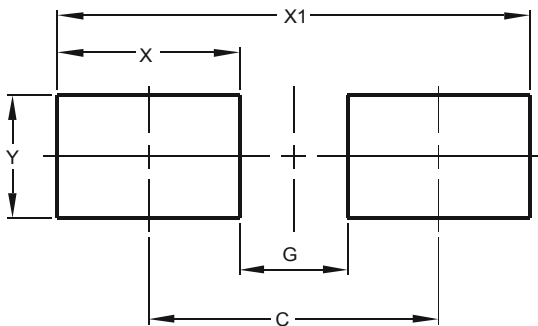
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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