

## 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> (mA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 40                   | 3                  | 0.53                    | 0.4                      |

## Description and Applications

The SBR3A40SAF is a 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

## Features and Benefits

- Patented SBR technology provides an avalanche capability five times larger than Schottky diodes, ensuring more rugged and reliable end applications.
- Lower reverse leakage ensuring greater stability at higher temperatures
- Low forward voltage (V<sub>F</sub>) minimizes conduction losses and improving efficiency.
- **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 
- Polarity: Cathode Band
- Weight: 0.064 grams (approximate)

SMAF



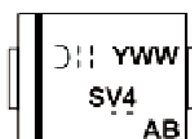
Top View

## Ordering Information (Note 4)

| Part Number   | Case | Packaging         |
|---------------|------|-------------------|
| SBR3A40SAF-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



SV4 = Product Type Marking Code  
 = Manufacturers' code marking  
 YWW = Date Code Marking  
 Y = Last digit of year (ex: 7 for 2007)  
 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> | 40    | V    |
| Working Peak Reverse Voltage                                                                         | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage                                                                                  | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current (See Figure 1)                                                      | I <sub>O</sub>   | 3.0   | A    |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 50    | A    |

**Thermal Characteristics**

| Characteristic                                  | Symbol                            | Value       | Unit |
|-------------------------------------------------|-----------------------------------|-------------|------|
| Thermal Resistance Junction to Case (Note 5)    | R <sub>θJC</sub>                  | 15          | °C/W |
| Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 85          |      |
| Operating and Storage Temperature Range         | T <sub>J</sub> , T <sub>STG</sub> | -65 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> | —   | 0.46 | 0.53 | V    | I <sub>F</sub> = 3.0A, T <sub>J</sub> = +25°C |
| Leakage Current (Note 6) | I <sub>R</sub> | —   | —    | 0.4  | mA   | V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C  |
|                          |                | —   | —    | 80   | mA   | V <sub>R</sub> = 40V, T <sub>J</sub> = +125°C |

Notes: 5. Device mounted on FR-4 substrate, 1"×1", 2oz, single-sided, PC boards with 0.1"×0.15" copper pad.  
 6. Short duration pulse test used to minimize self-heating effect.

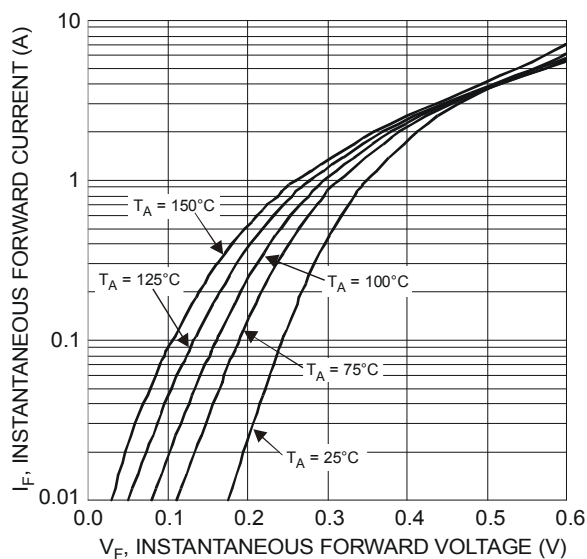


Figure 1 Typical Forward Characteristics

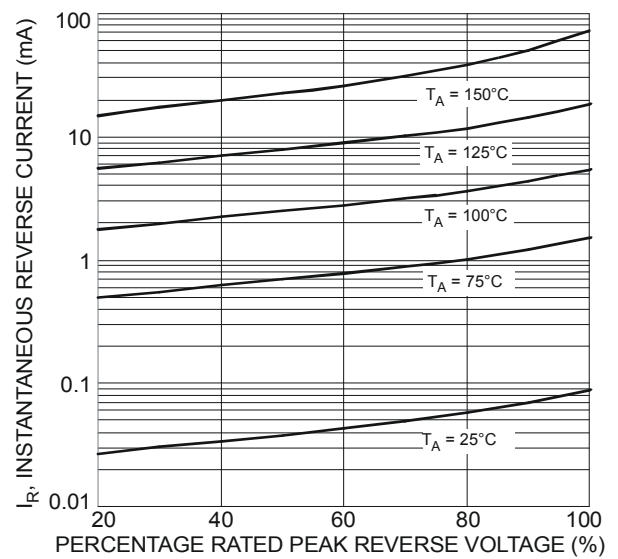


Figure 2 Typical Reverse Characteristics

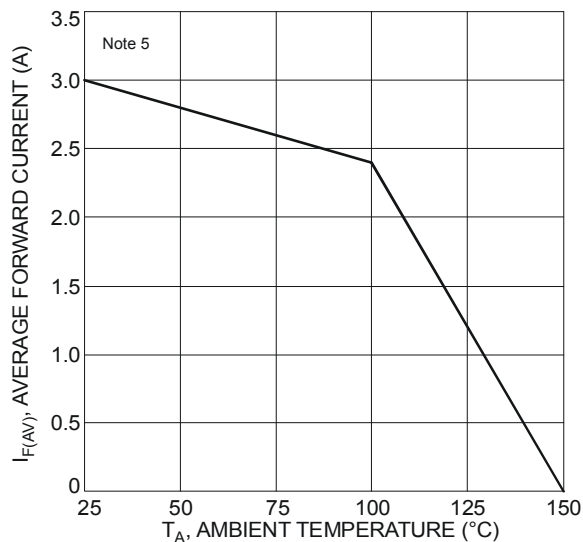


Figure 3 Forward Current Derating Curve

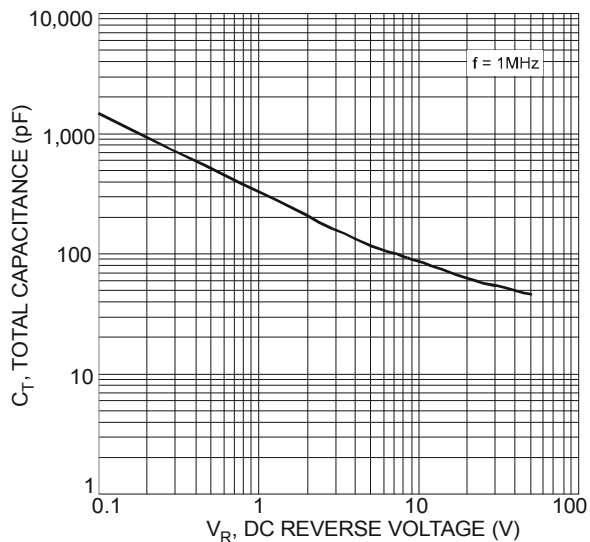
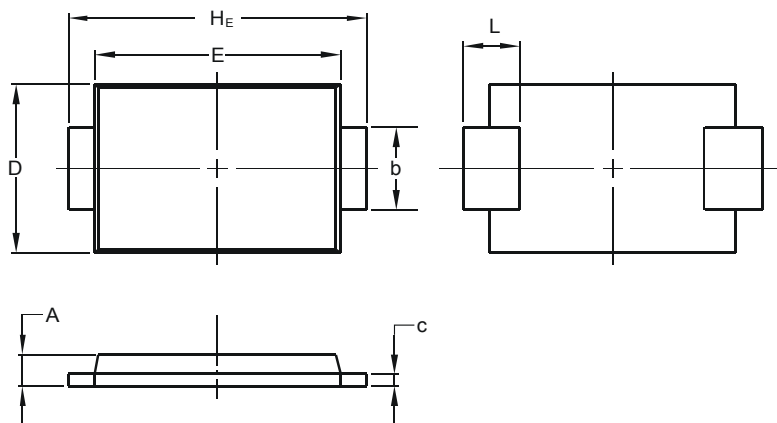


Figure 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

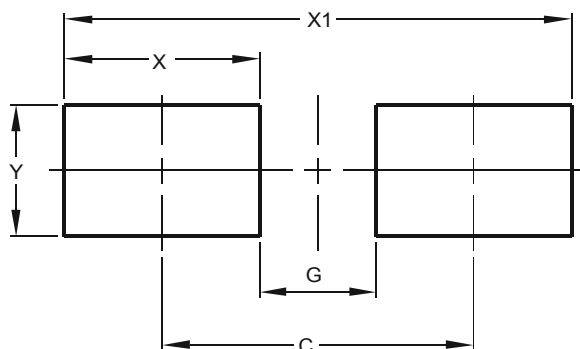
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| 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 |
| $H_E$                | 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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