



**THE DATASHEET OF  
S3D-13-F**



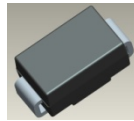
**3.0A SURFACE MOUNT GLASS PASSIVATED RECTIFIER**

**Features**

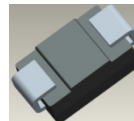
- Glass Passivated Die Construction
- Low Forward Voltage Drop and High Current Capability
- Surge Overload Rating to 100A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

- Case: SMB/SMC
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 Ⓔ
- Polarity: Cathode Band or Cathode Notch
- Weight: SMB 0.093 grams (approximate)  
SMC 0.21 grams (approximate)



Top View



Bottom View

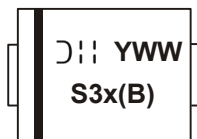
**Ordering Information\*** (Note 4)

| Part Number | Compliance | Case | Packaging        |
|-------------|------------|------|------------------|
| S3xB-13-F   | Standard   | SMB  | 3000/Tape & Reel |
| S3x-13-F    | Standard   | SMC  | 3000/Tape & Reel |

\*x = Device type, e.g. S3AB-13-F (SMB package); S3A-13-F (SMC Package).

- 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**



- S3x = Product Type Marking Code, ex. S3K (SMC)
- S3xB = Product Type Marking Code, ex. S3KB (SMB)
- ⌋:: = Manufacturers' code marking
- YWW = Date code marking
- Y = Last digit of year (ex: 14 for 2014)
- WW = Week code (01 to 53)

### 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   | S3 A/AB | S3 B/BB | S3 D/DB | S3 G/GB | S3 J/JB | S3 K/KB | S3 M/MB | Unit |
|---|--|---------|---------|---------|---------|---------|---------|---------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 50      | 100     | 200     | 400     | 600     | 800     | 1000    | V    |
| RMS Reverse Voltage   | V <sub>R(RMS)</sub>                                    | 30      | 70      | 140     | 280     | 420     | 560     | 700     | V    |
| Average Rectified Output Current @ T <sub>T</sub> = +75°C   | 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>                                       | 100     |         |         |         |         |         |         | A    |

### Thermal Characteristics

| Characteristic   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Terminal (Note 5) | R <sub>θJT</sub>                  | 10          | °C/W |
| 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          | Value     | Unit |
|--|-----------------|-----------|------|
| Forward Voltage @ I <sub>F</sub> = 3.0A  | V <sub>FM</sub> | 1.15      | V    |
| Peak Reverse Current @ T <sub>A</sub> = +25°C<br>at Rated DC Blocking Voltage @ T <sub>A</sub> = +125 °C | I <sub>RM</sub> | 10<br>250 | μA   |
| Typical Total Capacitance (Note 6)   | C <sub>T</sub>  | 40        | pF   |

Notes: 5. Thermal resistance: Junction to Terminal, unit mounted on PC board with 5.0 mm<sup>2</sup> (0.013 mm thick) copper pad as heat sink.  
6. Measured at 1.0 MHz and applied reverse voltage of 4.0V DC.

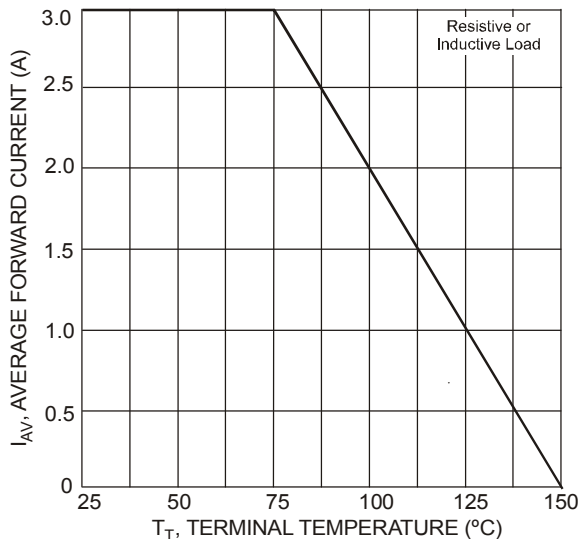


Fig. 1 Forward Current Derating Curve

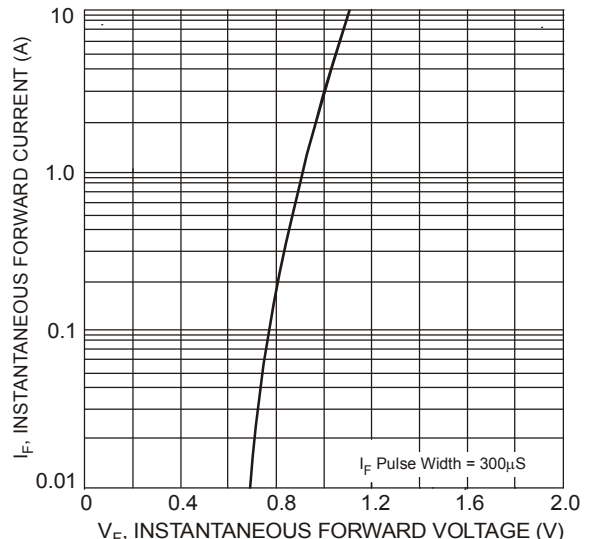


Fig. 2 Typical Forward Characteristics

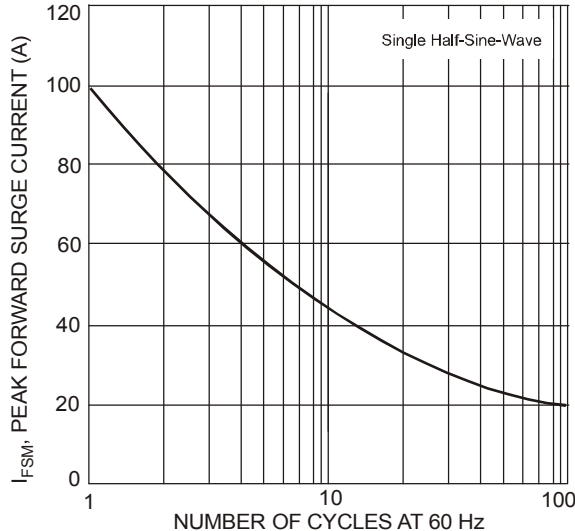


Fig. 3 Forward Surge Current Derating Curve

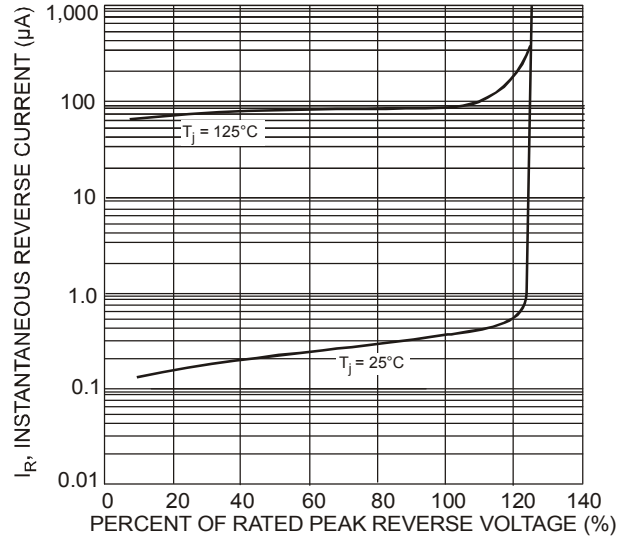
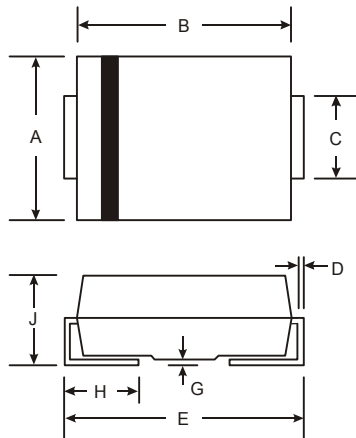


Fig. 4 Typical Reverse Characteristics

**Package Outline Dimensions**

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



| SMB |      |      |
|-----|------|------|
| Dim | Min  | Max  |
| A   | 3.30 | 3.94 |
| B   | 4.06 | 4.57 |
| C   | 1.96 | 2.21 |
| D   | 0.15 | 0.31 |
| E   | 5.00 | 5.59 |
| G   | 0.05 | 0.20 |
| H   | 0.76 | 1.52 |
| J   | 2.00 | 2.50 |

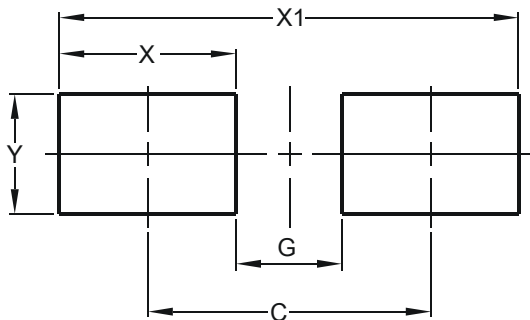
All Dimensions in mm

| SMC |      |      |
|-----|------|------|
| Dim | Min  | Max  |
| A   | 5.59 | 6.22 |
| B   | 6.60 | 7.11 |
| C   | 2.75 | 3.18 |
| D   | 0.15 | 0.31 |
| E   | 7.75 | 8.13 |
| G   | 0.10 | 0.20 |
| H   | 0.76 | 1.52 |
| J   | 2.00 | 2.50 |

All Dimensions in mm

**Suggested Pad Layout**

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



| SMB        |               |
|------------|---------------|
| Dimensions | Value (in mm) |
| C          | 4.30          |
| G          | 1.80          |
| X          | 2.50          |
| X1         | 6.80          |
| Y          | 2.30          |

| SMC        |               |
|------------|---------------|
| Dimensions | Value (in mm) |
| C          | 6.80          |
| G          | 4.40          |
| X          | 2.50          |
| X1         | 9.40          |
| Y          | 3.30          |

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