

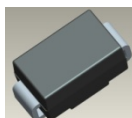
### 3.0A SURFACE MOUNT GLASS PASSIVATED RECTIFIER

#### Features

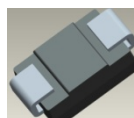
- Glass Passivated Die Construction
- Low Forward Voltage Drop and High Current Capability
- Surge Overload Rating to 100A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

#### 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 ③
- Polarity: Cathode Band or Cathode Notch
- Weight: SMB 0.093 grams (approximate)  
SMC 0.21 grams (approximate)



Top View



Bottom View

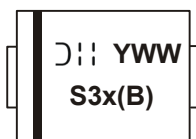
#### Ordering Information\* (Note 4)

| 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)  
③ = Manufacturers' code marking  
YWW = Date code marking  
Y = Last digit of year (ex: 14 for 2014)  
WW = Week code (01 to 53)

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

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

| Characteristic                                                                                      | Symbol                          | S3<br>A/AB | S3<br>B/BB | S3<br>D/DB | S3<br>G/GB | S3<br>J/JB | S3<br>K/KB | S3<br>M/MB | Unit |
|-----------------------------------------------------------------------------------------------------|---------------------------------|------------|------------|------------|------------|------------|------------|------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50         | 100        | 200        | 400        | 600        | 800        | 1000       | V    |
| RMS Reverse Voltage                                                                                 | $V_{R(RMS)}$                    | 30         | 70         | 140        | 280        | 420        | 560        | 700        | V    |
| Average Rectified Output Current @ $T_T = +75^\circ\text{C}$                                        | $I_O$                           | 3.0        |            |            |            |            |            |            | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$                       | 100        |            |            |            |            |            |            | A    |

**Thermal Characteristics**

| Characteristic                                           | Symbol          | Value       | Unit               |
|----------------------------------------------------------|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Terminal (Note 5) | $R_{\theta JT}$ | 10          | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                  | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

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

| Characteristic                                                                                                | Symbol   | Value     | Unit          |
|---------------------------------------------------------------------------------------------------------------|----------|-----------|---------------|
| Forward Voltage @ $I_F = 3.0\text{A}$                                                                         | $V_{FM}$ | 1.15      | V             |
| Peak Reverse Current @ $T_A = +25^\circ\text{C}$<br>at Rated DC Blocking Voltage @ $T_A = +125^\circ\text{C}$ | $I_{RM}$ | 10<br>250 | $\mu\text{A}$ |
| Typical Total Capacitance (Note 6)                                                                            | $C_T$    | 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.

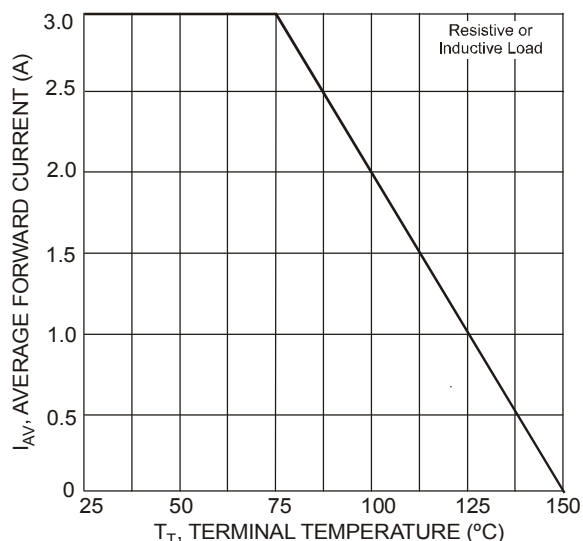


Fig. 1 Forward Current Derating Curve

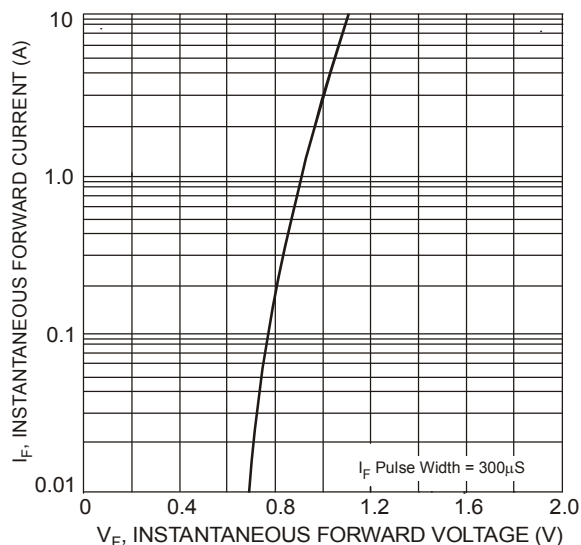


Fig. 2 Typical Forward Characteristics

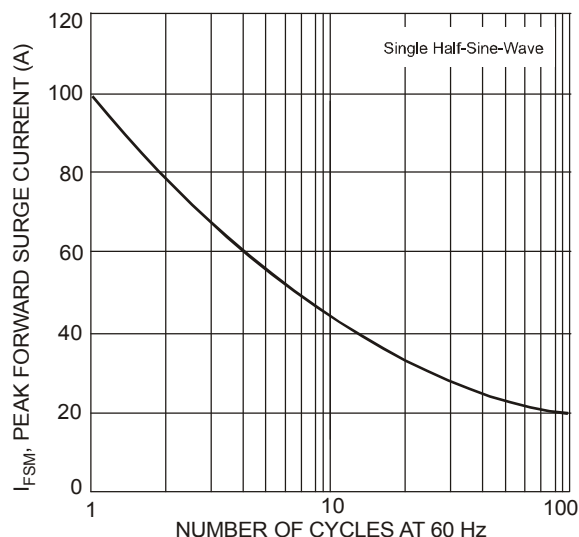


Fig. 3 Forward Surge Current Derating Curve

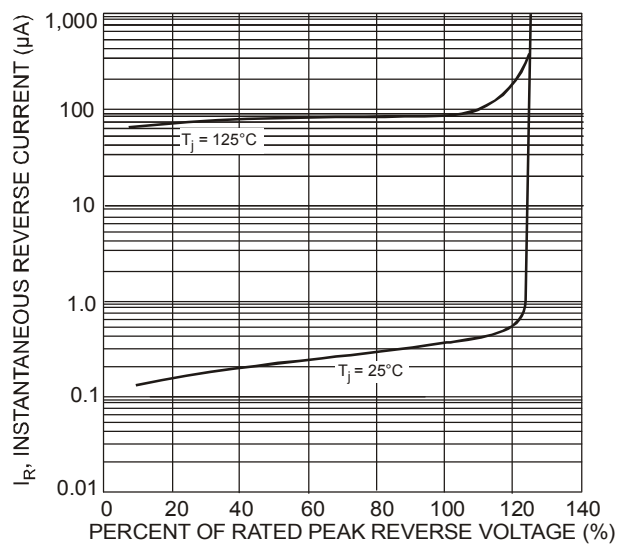
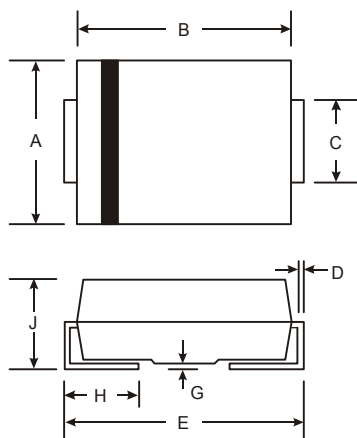


Fig. 4 Typical Reverse Characteristics

## Package Outline Dimensions

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

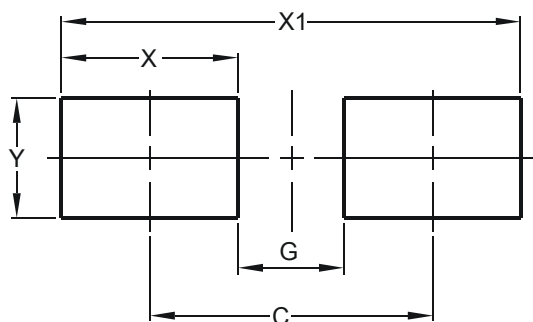


| SMB                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 3.30 | 3.94 |
| B                    | 4.06 | 4.57 |
| C                    | 1.96 | 2.21 |
| D                    | 0.15 | 0.31 |
| E                    | 5.00 | 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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