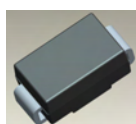


**1.0A SURFACE MOUNT GLASS PASSIVATED RECTIFIER**
**Features**

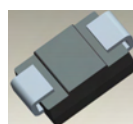
- Glass Passivated Die Construction for High Reliability
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SMA/SMB
- 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: SMA - 0.064 grams (approximate)  
SMB - 0.093 grams (approximate)



Top View



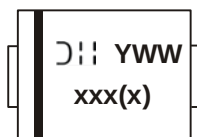
Bottom View

**Ordering Information** (Note 3)

| Part Number | Qualification | Case | Packaging        |
|-------------|---------------|------|------------------|
| S1x-13-F    | Commercial    | SMA  | 5000/Tape & Reel |
| S1xB-13-F   | Commercial    | SMB  | 3000/Tape & Reel |

\* x = Device type, e.g. S1A-13-F (SMA package); S1AB-13-F (SMB package).

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
  2. Product manufactured with Data Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
  3. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**


XXX = Product type marking code, ex: S1A (SMA package)  
 XXXX = Product type marking code, ex: S1AB (SMB package)  
 DII = Manufacturers' code marking  
 YWW = Date code marking  
 Y = Last digit of year (ex: 2 for 2002)  
 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                          | S1<br>A/AB | S1<br>B/BB | S1<br>D/DB | S1<br>G/GB | S1<br>J/JB | S1<br>K/KB | S1<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                                                                                 | $V_{R(RMS)}$                    | 35         | 70         | 140        | 280        | 420        | 560        | 700        | V    |
| Average Rectified Output Current @ $T_T = 100^\circ\text{C}$                                        | $I_O$                           | 1.0        |            |            |            |            |            |            | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave superimposed on rated load | $I_{FSM}$                       | 30         |            |            |            |            |            |            | A    |

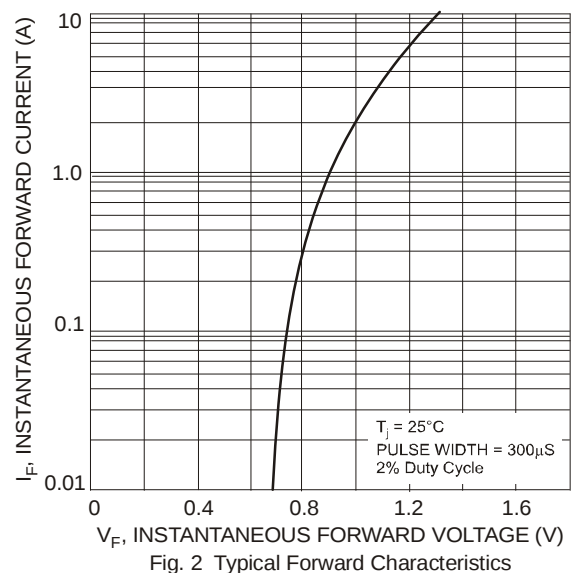
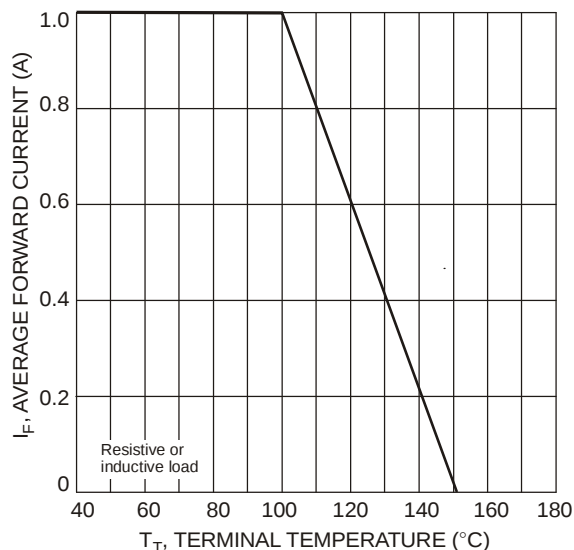
**Thermal Characteristics**

| Characteristic                                            | Symbol          | Value       | Unit               |
|-----------------------------------------------------------|-----------------|-------------|--------------------|
| Typical Thermal Resistance, Junction to Terminal (Note 4) | $R_{\theta JT}$ | 30          | $^\circ\text{C/W}$ |
| 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   | Min | Typ | Max | Unit          |
|----------------------------------------------------------|----------|-----|-----|-----|---------------|
| Forward Voltage @ $I_F = 1.0\text{A}$                    | $V_{FM}$ | -   | -   | 1.1 | V             |
| Peak Reverse Leakage Current @ $T_A = 25^\circ\text{C}$  | $I_{RM}$ | -   | -   | 5.0 | $\mu\text{A}$ |
| at Rated DC Blocking Voltage @ $T_A = 125^\circ\text{C}$ |          | -   | -   | 100 |               |
| Reverse Recovery Time (Note 5)                           | $t_{rr}$ | -   | 1.8 | 3.0 | $\mu\text{s}$ |
| Typical Total Capacitance (Note 6)                       | $C_T$    | -   | 10  | -   | pF            |

Notes: 4. Thermal resistance junction to terminal, unit mounted on PC board with 5.0 mm<sup>2</sup> (0.013 mm thick) copper pads as heat sink.  
 5. Measured with  $I_F = 0.5\text{A}$ ,  $I_R = 1.0\text{A}$ ,  $I_{RR} = 0.25\text{A}$ .  
 6. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.



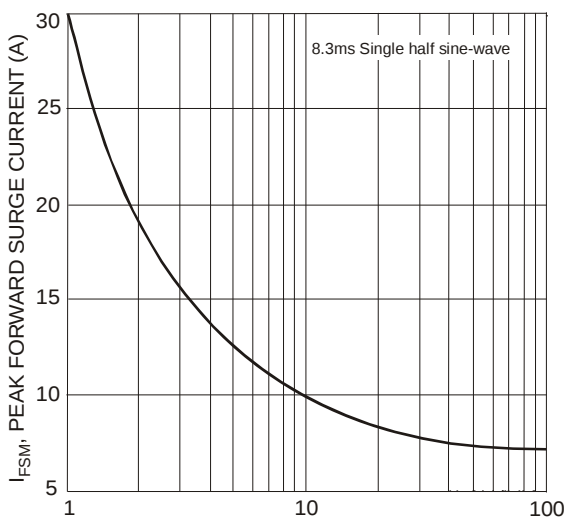


Fig. 3 Typical Forward Characteristics

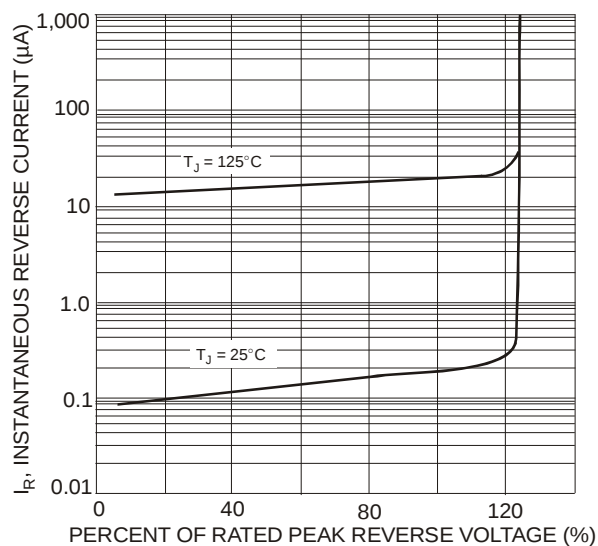
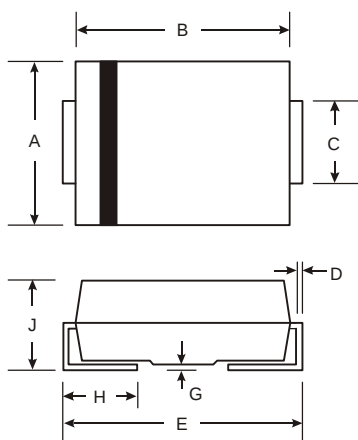


Fig. 4 Typical Reverse Characteristics

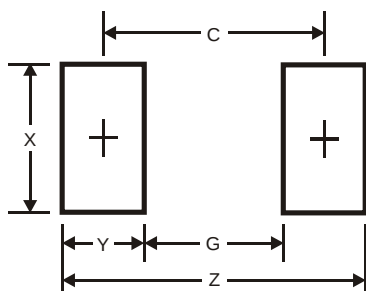
## Package Outline Dimensions



| SMA                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 2.29 | 2.92 |
| B                    | 4.00 | 4.60 |
| C                    | 1.27 | 1.63 |
| D                    | 0.15 | 0.31 |
| E                    | 4.80 | 5.59 |
| G                    | 0.05 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.01 | 2.30 |
| All Dimensions in mm |      |      |

| 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 |      |      |

## Suggested Pad Layout



| SMA Dimensions | Value (in mm) |
|----------------|---------------|
| Z              | 6.5           |
| G              | 1.5           |
| X              | 1.7           |
| Y              | 2.5           |
| C              | 4.0           |

| SMB Dimensions | Value (in mm) |
|----------------|---------------|
| Z              | 6.7           |
| G              | 1.8           |
| X              | 2.3           |
| Y              | 2.5           |
| C              | 4.3           |

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