



**THE DATASHEET OF
S1DB-13-F**

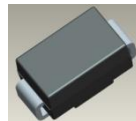


1.0A SURFACE MOUNT GLASS PASSIVATED RECTIFIER
Features

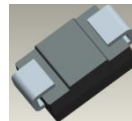
- Glass Passivated Die Construction for High Reliability
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

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 Ⓔ③
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA - 0.064 grams (Approximate)
SMB - 0.093 grams (Approximate)



Top View



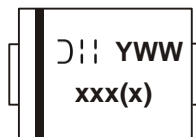
Bottom View

Ordering Information(Note 4)

| Part Number | Qualification | Case | Packaging |
|-------------|---------------|------|-------------------|
| S1x-13-F | Commercial | SMA | 5,000/Tape & Reel |
| S1xB-13-F | Commercial | SMB | 3,000/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) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See 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


- XXX = Product Type Marking Code, ex: S1A (SMA Package)
- XXXX = Product Type Marking Code, ex: S1AB (SMB Package)
- ⌋|| = Manufacturers' Code Marking
- YWW = Date Code Marking
- Y = Last Digit of Year (ex: 4 for 2014)
- WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

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

| Characteristic | Symbol | S1 A/AB | S1 B/BB | S1 D/DB | S1 G/GB | S1 J/JB | S1 K/KB | S1 M/MB | Unit | |
|---|---------------------|---------|---------|---------|---------|---------|---------|---------|------|---|
| Peak Repetitive Reverse Voltage | V _{RRM} | | | | | | | | | |
| Working Peak Reverse Voltage | V _{RWM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V | |
| DC Blocking Voltage | V _R | | | | | | | | | |
| RMS Reverse Voltage | V _{R(RMS)} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V | |
| Average Rectified Output Current @ T _T = +100°C | I _O | 1.0 | | | | | | | | A |
| Non-Repetitive Peak Forward Surge Current 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 5) | R _{θJT} | 30 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|-----------------|-----|-----|------------|------|
| Forward Voltage @ I _F = 1.0A | V _{FM} | — | — | 1.1 | V |
| Peak Reverse Leakage Current @ T _A = +25°C at Rated DC Blocking Voltage @ T _A = +125°C | I _{RM} | — | — | 5.0 100 | μA |
| Reverse Recovery Time (Note 6) | t _{rr} | — | 1.8 | 3.0 | μs |
| Typical Total Capacitance (Note 7) | C _T | — | 10 | — | pF |

- Notes: 5. Thermal resistance junction to terminal, unit mounted on PC board with 5.0 mm² (0.013 mm thick) copper pads as heat sink.
6. Measured with I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A.
7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

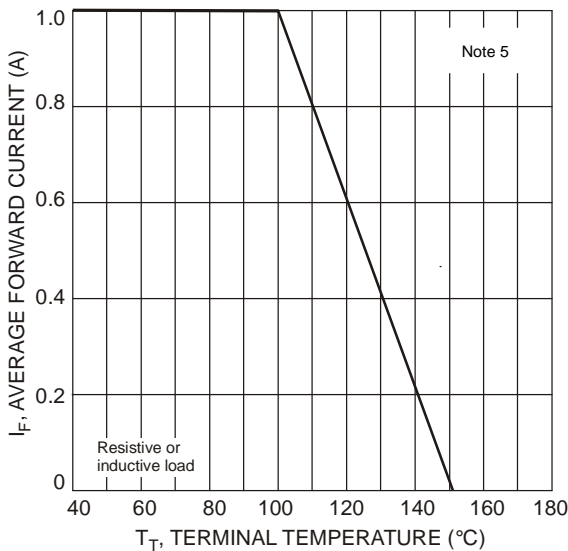


Fig. 1 Forward Current Derating Curve

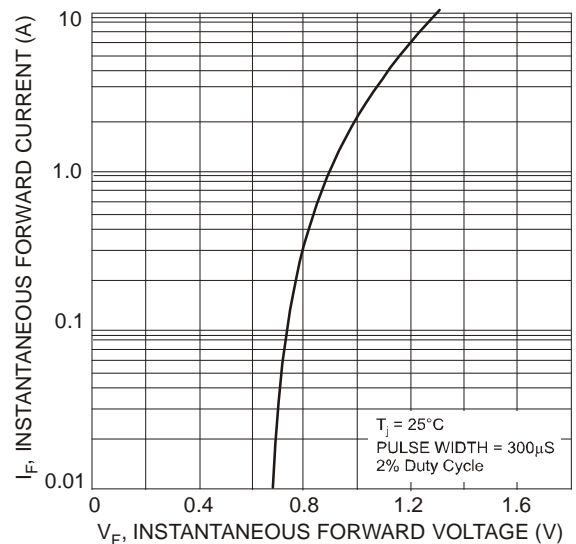


Fig. 2 Typical Forward Characteristics

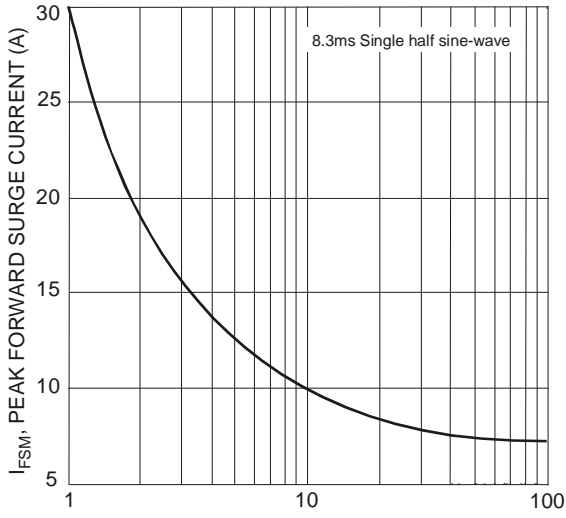


Fig. 3 Typical Forward Characteristics

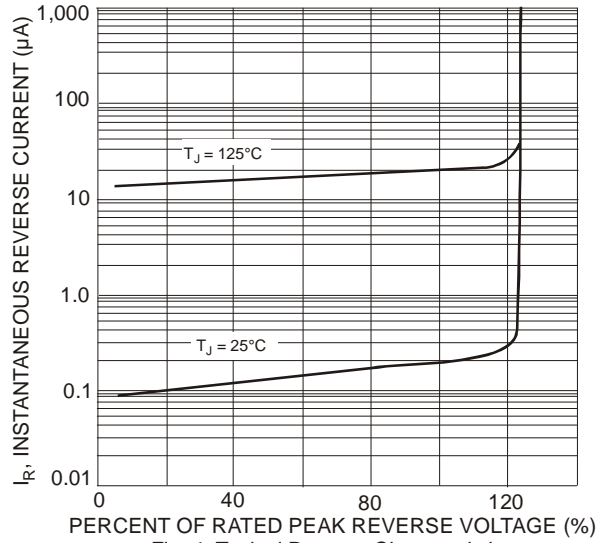
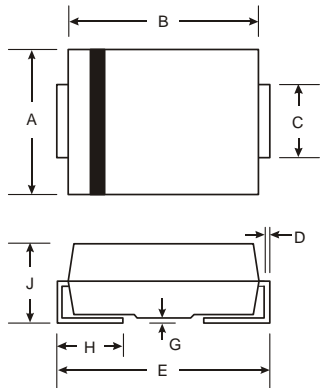


Fig. 4 Typical Reverse Characteristics

Package Outline Dimensions

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



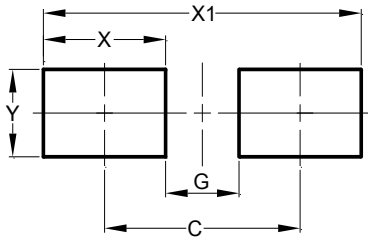
| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 1.96 | 2.40 |
| All Dimensions in mm | | |



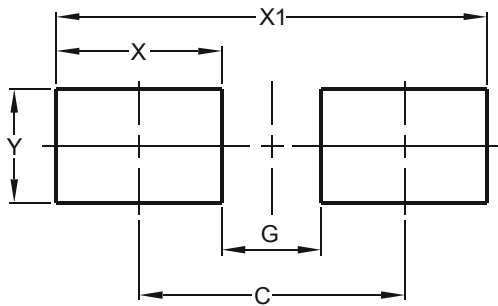
| SMB | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 3.30 | 3.94 |
| B | 4.06 | 4.57 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.00 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

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



| SMA | |
|------------|---------------|
| Dimensions | Value (in mm) |
| C | 4.00 |
| G | 1.50 |
| X | 2.50 |
| X1 | 6.50 |
| Y | 1.70 |



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

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