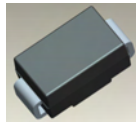


**1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER**
**Features**

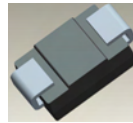
- Glass Passivated Die Construction
- Fast Recovery Time For High Efficiency
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

**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 <sup>(3)</sup>
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA - 0.064 grams (approximate)  
SMB - 0.093 grams (approximate)



Top View



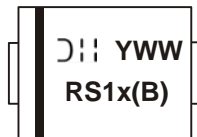
Bottom View

**Ordering Information** (Note 3)

| Part Number | Case | Packaging        |
|-------------|------|------------------|
| RS1x-13-F   | SMA  | 5000/Tape & Reel |
| RS1xB-13-F  | SMB  | 3000/Tape & Reel |

\* x = Device type, e.g. RS1D-13-F (SMA package); RS1JB-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**


RS1x = Product Type Marking Code, ex: RS1G (SMA package)  
 RS1xB = Product Type Marking Code, ex: RS1GB (SMB package)  
 ≡ = Manufacturer's Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 6 for 2006)  
 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                          | RS1 A/AB | RS1 B/BB | RS1 D/DB | RS1 G/GB | RS1 J/JB | RS1 K/KB | RS1 M/MB | Unit |
|--|---------------------------------|----------|----------|----------|----------|----------|----------|----------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage (Note 4)      | $V_{RRM}$<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 @ $T_T = 120^\circ\text{C}$   | $I_O$                           | 1.0      |          |          |          |          |          |          | A    |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>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) | $R_{\theta JT}$ | 20          | $^\circ\text{C/W}$ |
| 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   | RS1 A/AB   | RS1 B/BB | RS1 D/DB | RS1 G/GB | RS1 J/JB | RS1 K/KB | RS1 M/MB | Unit          |
|--|----------|------------|----------|----------|----------|----------|----------|----------|---------------|
| Forward Voltage Drop @ $I_F = 1.0\text{A}$   | $V_{FM}$ | 1.3        |          |          |          |          |          |          | V             |
| Peak Reverse Current @ $T_A = 25^\circ\text{C}$<br>at Rated DC Blocking Voltage (Note 4) @ $T_A = 125^\circ\text{C}$ | $I_{RM}$ | 5.0<br>200 |          |          |          |          |          |          | $\mu\text{A}$ |
| Reverse Recovery Time (Note 6)   | $t_{rr}$ | 150        |          |          | 250      | 500      |          |          | ns            |
| Typical Total Capacitance (Note 7)   | $C_T$    | 15         |          |          |          |          |          |          | pF            |

- Notes:
4. Short duration pulse test used to minimize self-heating effect.
  5. Valid provided that terminals are kept at ambient temperature.
  6. Reverse recovery test conditions:  $I_F = 0.5\text{A}$ ,  $I_R = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ . See figure 5.
  7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

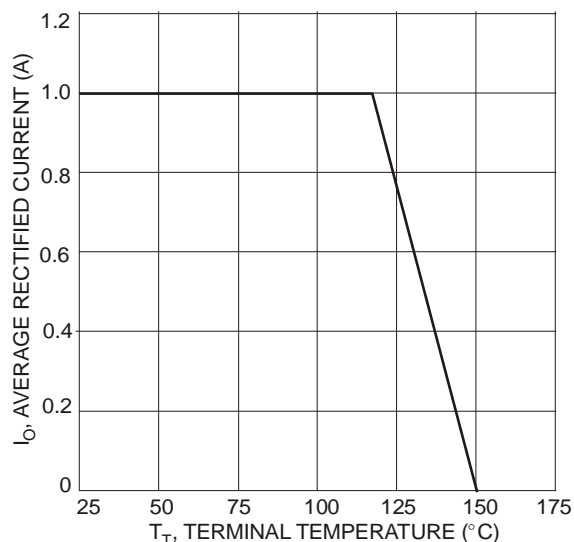


Fig. 1 Forward Current Derating Curve

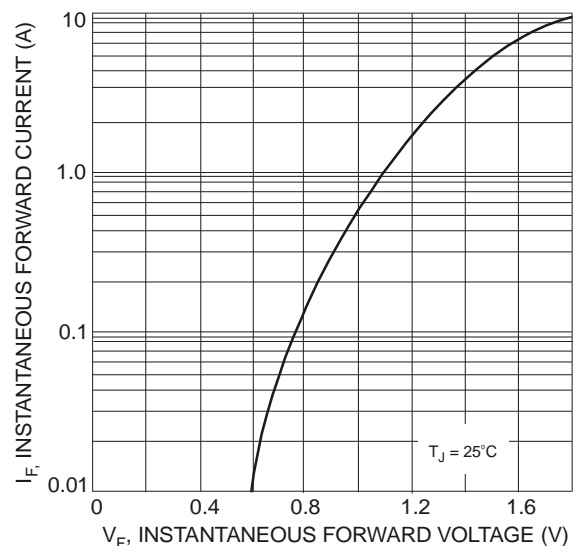


Fig. 2 Typical Forward Characteristics

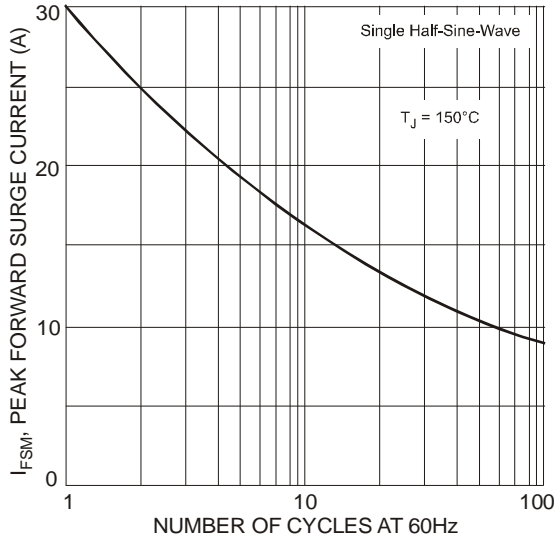


Fig. 3 Forward Surge Current Derating Curve

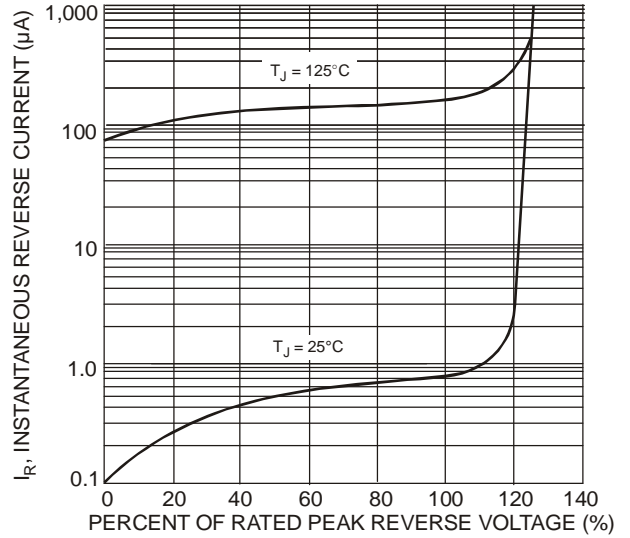
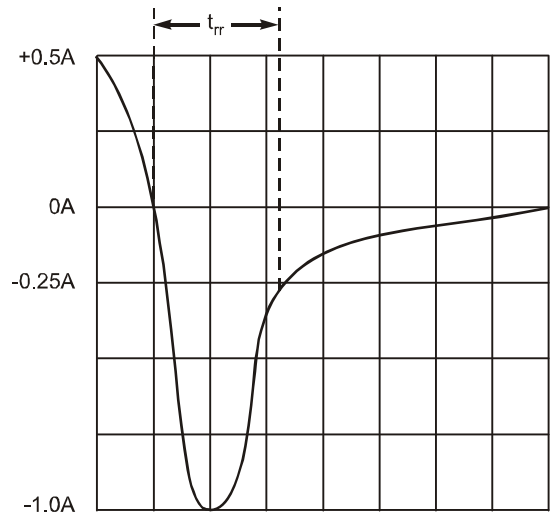
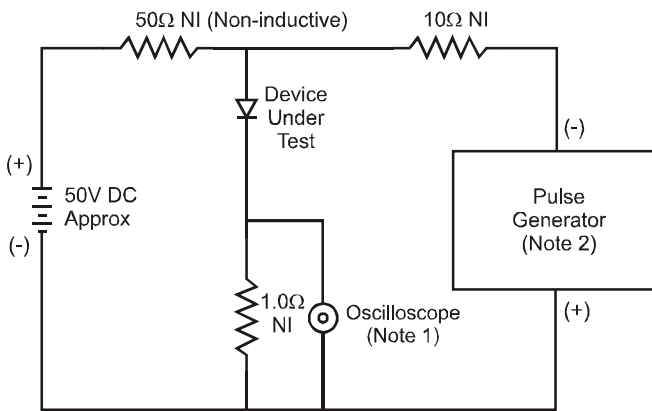


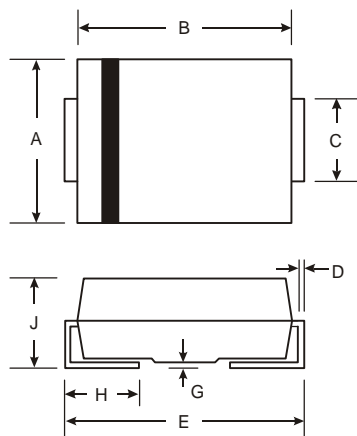
Fig. 4 Typical Reverse Characteristics



Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

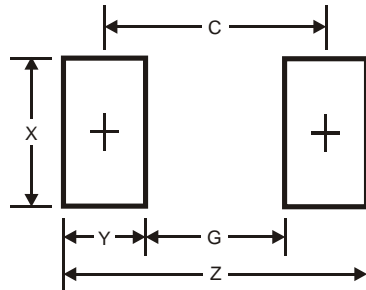
## Package Outline Dimensions



| 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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