

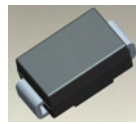
**1.5A SURFACE MOUNT FAST RECOVERY RECTIFIER**

**Features**

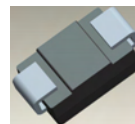
- Glass Passivated Die Construction
- Fast Recovery Time For High Efficiency
- Surge Overload Rating to 50A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

**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 
- Polarity: Cathode Band or Cathode Notch
- SMA Weight: 0.065 grams (approximate)
- SMB Weight: 0.09 grams (approximate)



Top View



Bottom View

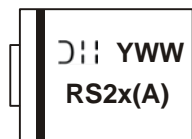
**Ordering Information** (Note 3)

| Part Number | Case | Packaging        |
|-------------|------|------------------|
| RS2xA-13-F  | SMA  | 5000/Tape & Reel |
| RS2x-13-F   | SMB  | 3000/Tape & Reel |

\*x = Device type, e.g. RS2DA-13-F (SMA package); RS2J-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**



RS2x = Product type marking code, ex: RS2G (SMB package)  
 RS2xA = Product type marking code, ex: RS2GA (SMA 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       | RS2 A/AA | RS2 B/BA | RS2 D/DA | RS2 G/GA | RS2 J/JA | RS2 K/KA | RS2 M/MA | Unit |
|-----------------------------------------------------------------------------------------------------|--------------|----------|----------|----------|----------|----------|----------|----------|------|
| Peak Repetitive Reverse Voltage                                                                     | $V_{RRM}$    | 50       | 100      | 200      | 400      | 600      | 800      | 1000     | V    |
| Working Peak Reverse Voltage                                                                        | $V_{RWM}$    |          |          |          |          |          |          |          |      |
| DC Blocking Voltage (Note 4)                                                                        | $V_R$        |          |          |          |          |          |          |          |      |
| RMS Reverse Voltage                                                                                 | $V_{R(RMS)}$ | 35       | 70       | 140      | 280      | 420      | 560      | 700      | V    |
| Average Rectified Output Current @ $T_T = 120^\circ\text{C}$                                        | $I_O$        | 1.5      |          |          |          |          |          |          | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$    | 50       |          |          |          |          |          |          | 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   | RS2 A/AA   | RS2 B/BA | RS2 D/DA | RS2 G/GA | RS2 J/JA | RS2 K/KA | RS2 M/MA | Unit          |
|----------------------------------------------------------------------------------------------------------------------|----------|------------|----------|----------|----------|----------|----------|----------|---------------|
| Forward Voltage @ $I_F = 1.5\text{A}$                                                                                | $V_{FM}$ | 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)                                                                                   | $C_T$    | 30         |          |          |          |          |          |          | pF            |

- Notes:
- Short duration pulse test used to minimize self-heating effect.
  - 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.
  - Thermal Resistance: Junction to terminal, unit mounted on PC board with  $5.0\text{ mm}^2$  ( $0.013\text{ mm}$  thick) copper pads as heat sink.
  - Measured at  $1.0\text{MHz}$  and applied reverse voltage of  $4.0\text{V DC}$ .

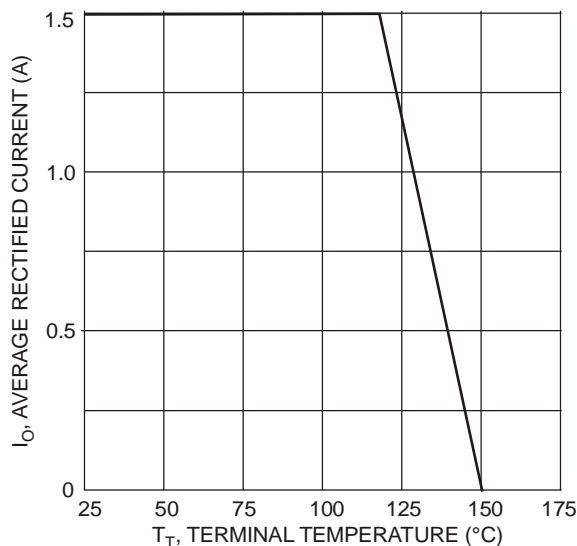


Fig. 1 Forward Current Derating Curve

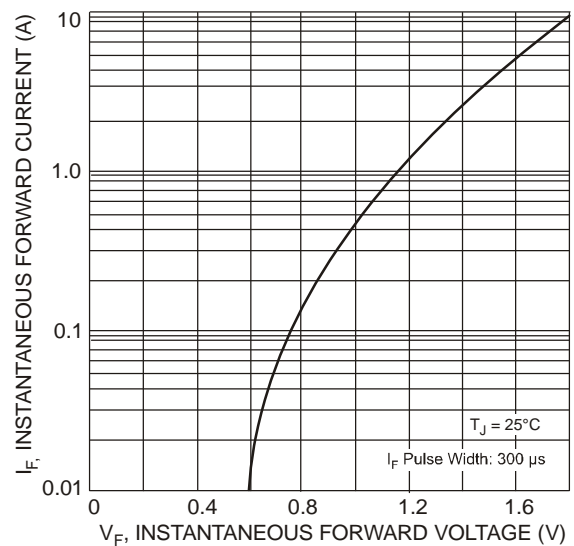


Fig. 2 Typical Forward Characteristics



Fig. 3 Forward Surge Current Derating Curve

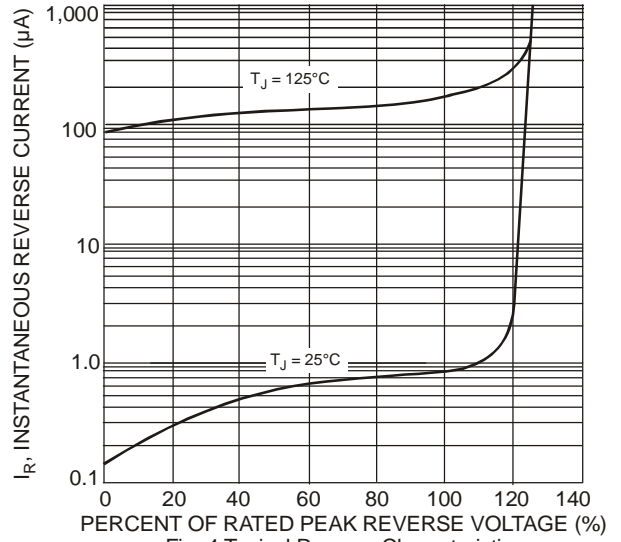
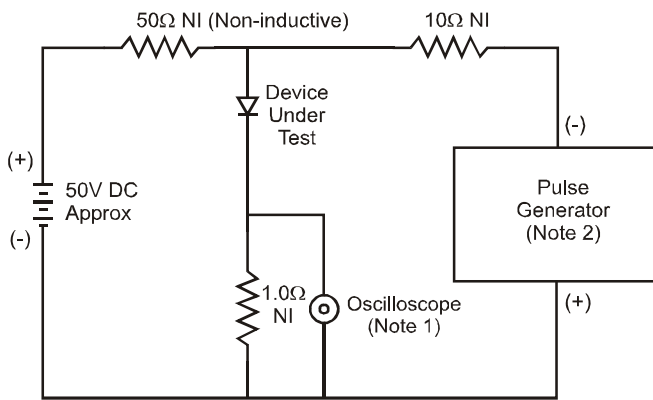
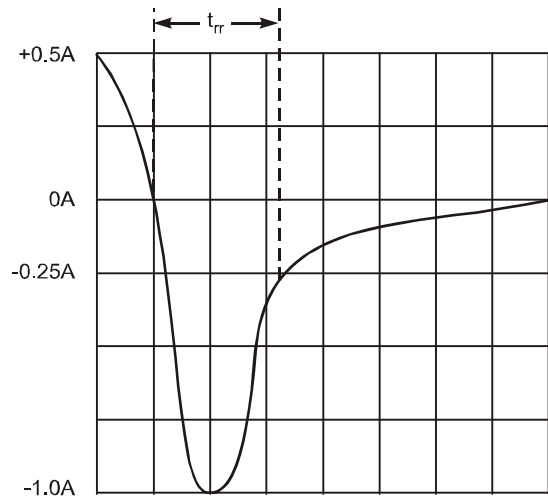


Fig. 4 Typical Reverse Characteristics



- Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
  2. Rise Time = 10ns max. Input Impedance = 50Ω.



Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

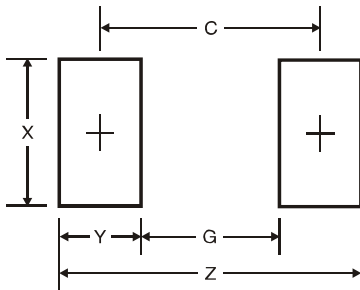
## Package Outline Dimensions



| 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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