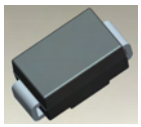
# 1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

## Features

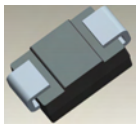
- Glass Passivated Die Construction
- Fast Recovery Time For High Efficiency
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

## 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 e3
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA - 0.064 grams (approximate)
  SMB - 0.093 grams (approximate)



Top View



Bottom View

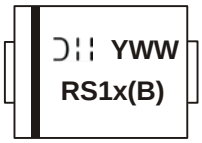
## Ordering Information (Note 3)

| 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)


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## 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 | 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°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 | °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 | 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 @ $I_F$ = 1.0A | $V_{FM}$ | 1.3 | | | | | | | V |
| Peak Reverse Current @ $T_A$ = 25°C<br>at Rated DC Blocking Voltage (Note 4) @ $T_A$ = 125°C | $I_{RM}$ | 5.0<br>200 | | | | | | | µA |
| 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: $I_F$ = 0.5A, $I_R$ = 1.0A, $I_{rr}$ = 0.25A. See figure 5.
7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

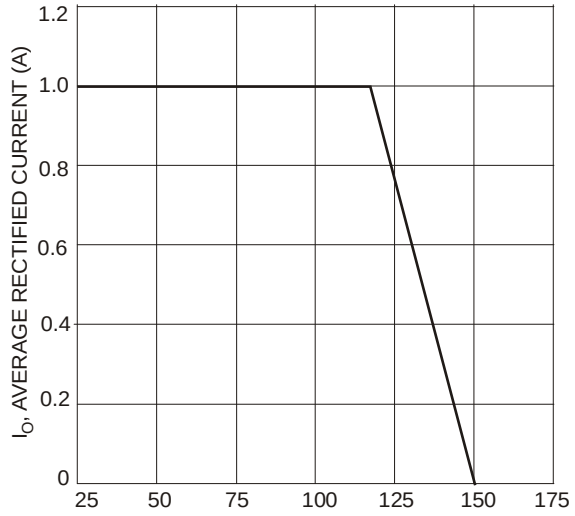


Fig. 1 Forward Current Derating Curve

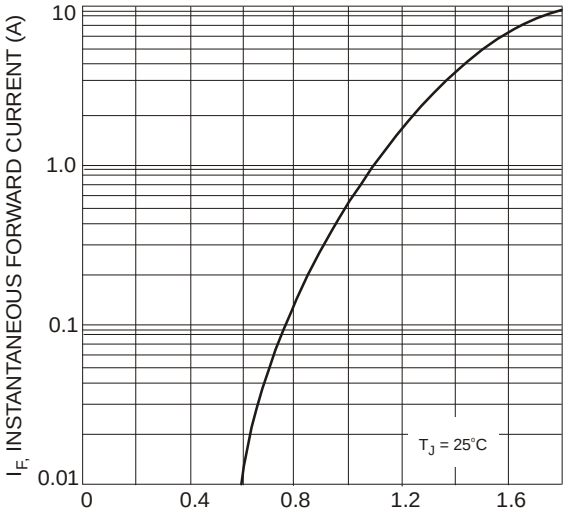


Fig. 2 Typical Forward Characteristics


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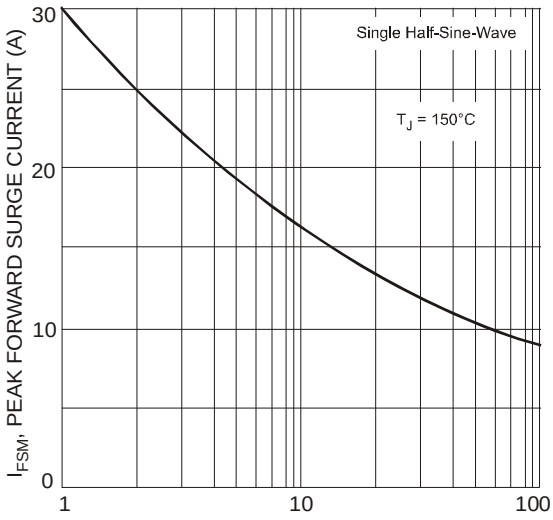



Fig. 3 Forward Surge Current Derating Curve

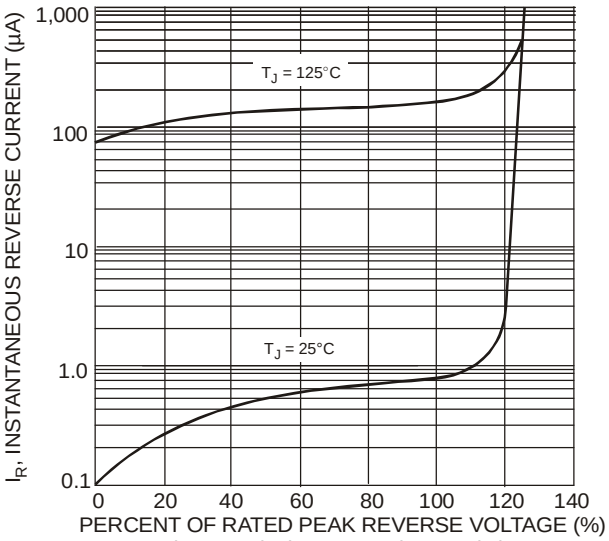
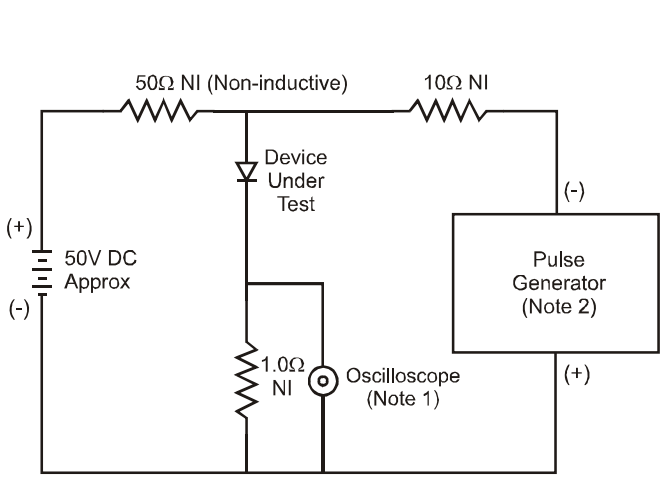



Fig. 4 Typical Reverse Characteristics




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

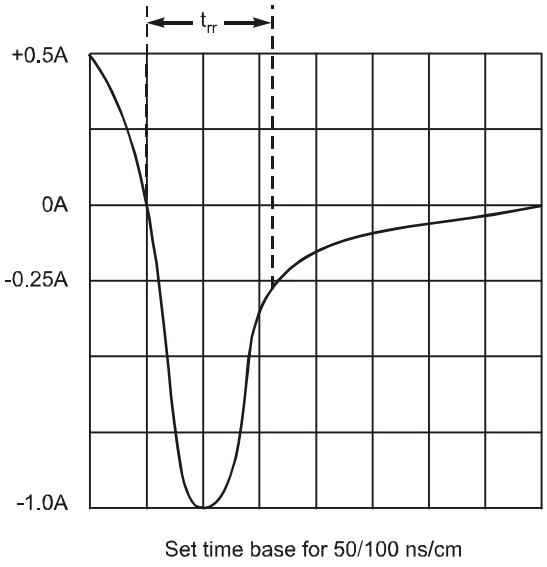
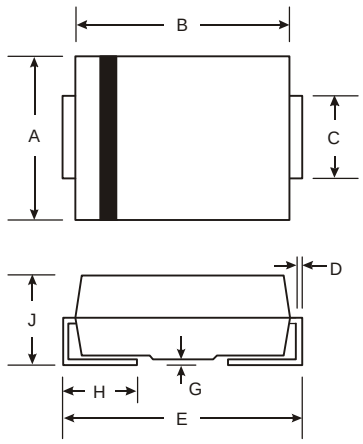



Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

## Package Outline Dimensions

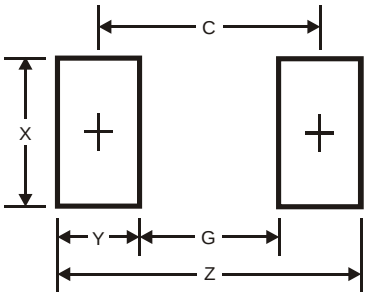



| SMA | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 2.29 | 2.92 |
| **B** | 4.00 | 4.60 |
| **C** | 1.27 | 1.63 |
| **D** | 0.15 | 0.31 |
| **E** | 4.80 | 5.59 |
| **G** | 0.05 | 0.20 |
| **H** | 0.76 | 1.52 |
| **J** | 2.01 | 2.30 |
| **All Dimensions in mm** | | |

| 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** | | |


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## 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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