

## 3.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

## RS3A/B - RS3M/B

Vishaymas General Semiconductor

### Features

- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Surge Overload Rating to 100A Peak
- Ideally Suited for Automatic Assembly
- Lead Free Finish/RoHS Compliant (Note 1)
- Green Molding Compound (No Halogen and Antimony)  
(Note 2)

### Mechanical Data

**Case:** SMB, SMC

**Case Material:** Molded Plastic. UL Flammability

Classification Rating 94V-0

**Moisture Sensitivity:** Level 1 per J-STD-020

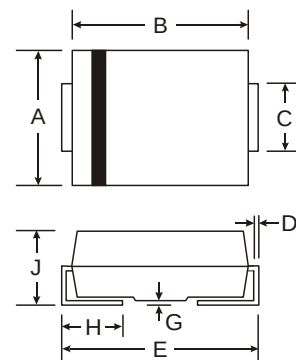
**Terminals:** Lead Free Plating (Matte Tin Finish).

Solderable per MIL-STD-202, Method 208

**Polarity:** Cathode Band or Cathode Notch

**Weight:** SMB 0.093 grams (approximate)

SMC 0.21 grams (approximate)



|                      | SMB  |      | SMC  |      |
|----------------------|------|------|------|------|
| Dim                  | Min  | Max  | Min  | Max  |
| A                    | 3.30 | 3.94 | 5.59 | 6.22 |
| B                    | 4.06 | 4.57 | 6.60 | 7.11 |
| C                    | 1.96 | 2.21 | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 | 0.15 | 0.31 |
| E                    | 5.00 | 5.59 | 7.75 | 8.13 |
| G                    | 0.10 | 0.20 | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 | 0.76 | 1.52 |
| J                    | 2.00 | 2.62 | 2.00 | 2.62 |
| All Dimensions in mm |      |      |      |      |

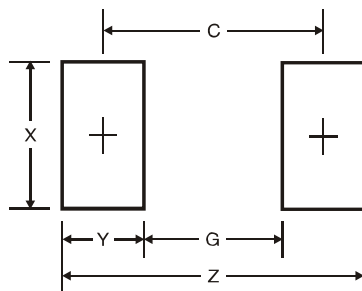
### Ordering Information (Note 3)

| Part Number | Case | Packaging        |
|-------------|------|------------------|
| RS3x-13-F   | SMC  | 3000/Tape & Reel |
| RS3xB-13-F  | SMB  | 3000/Tape & Reel |

\* x = Device type, e.g. RS3A-13-F (SMC package); RS3AB-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.

### Suggested Pad Layout



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

| SMC Dimensions | Value (in mm) |
|----------------|---------------|
| Z              | 9.3           |
| G              | 4.4           |
| X              | 3.3           |
| Y              | 2.5           |
| C              | 6.8           |

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

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

| Characteristic                                                                                      | Symbol                                                 | RS3<br>A/AB | RS3<br>B/BB | RS3<br>D/DB | RS3<br>G/GB | RS3<br>J/JB | RS3<br>K/KB | RS3<br>M/MB | Unit |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage (Note 4)     | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 50          | 100         | 200         | 400         | 600         | 800         | 1000        | V    |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub>                                    | 35          | 70          | 140         | 280         | 420         | 560         | 700         | V    |
| Average Rectified Output Current @ T <sub>T</sub> = 75°C                                            | I <sub>O</sub>                                         | 3.0         |             |             |             |             |             |             | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                                       | 100         |             |             |             |             |             |             | A    |

**Thermal Characteristics**

| Characteristic                                           | Symbol                            | Value       | Unit |
|----------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Terminal (Note 5) | R <sub>θJT</sub>                  | 25<br>11    | °C/W |
| Operating and Storage Temperature Range                  | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                                                                                 | Symbol          | RS3<br>A/AB | RS3<br>B/BB | RS3<br>D/DB | RS3<br>G/GB | RS3<br>J/JB | RS3<br>K/KB | RS3<br>M/MB | Unit |
|----------------------------------------------------------------------------------------------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| Forward Voltage @ I <sub>F</sub> = 3.0A                                                                        | V <sub>FM</sub> | 1.3         |             |             |             |             |             |             | V    |
| Peak Reverse Current @ T <sub>A</sub> = 25°C<br>at Rated DC Blocking Voltage (Note 4) @ T <sub>A</sub> = 125°C | I <sub>RM</sub> | 5.0<br>250  |             |             |             |             |             |             | μA   |
| Maximum Recovery Time (Note 6)                                                                                 | t <sub>rr</sub> | 150         |             |             |             | 250         | 500         |             | ns   |
| Typical Total Capacitance (Note 7)                                                                             | C <sub>T</sub>  | 50          |             |             |             |             |             |             | pF   |

- Notes:
4. Short duration pulse test used to minimize self-heating effect.
  5. 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.
  6. Reverse recovery test conditions: I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1.0A, I<sub>rr</sub> = 0.25A. See Figure 5.
  7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

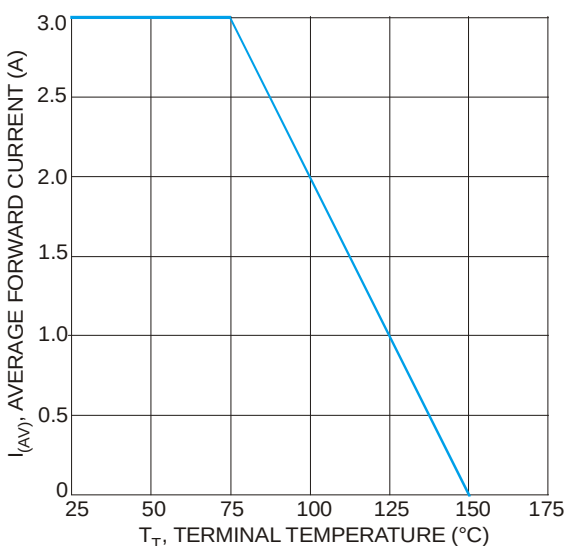


Fig. 1 Forward Current Derating Curve

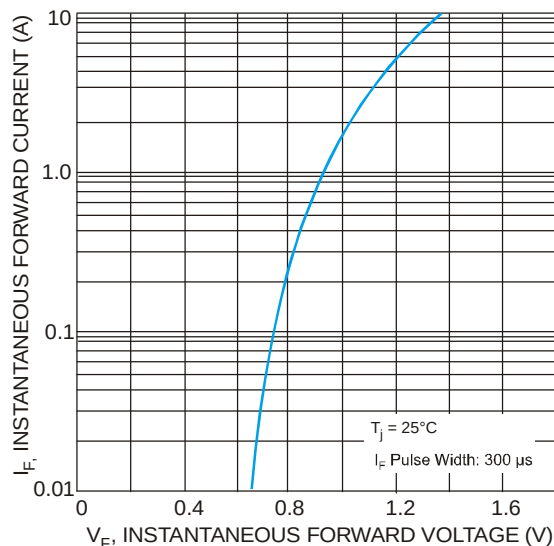
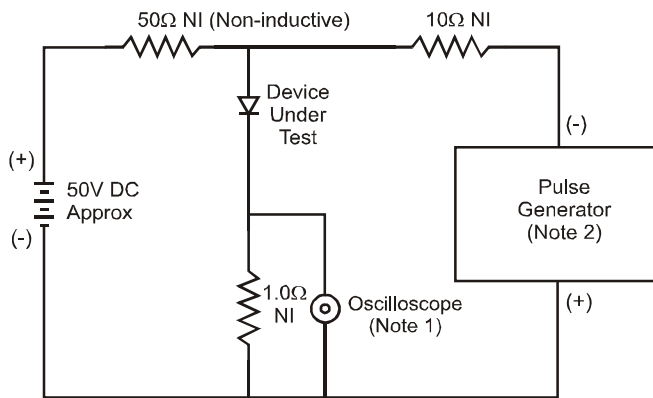
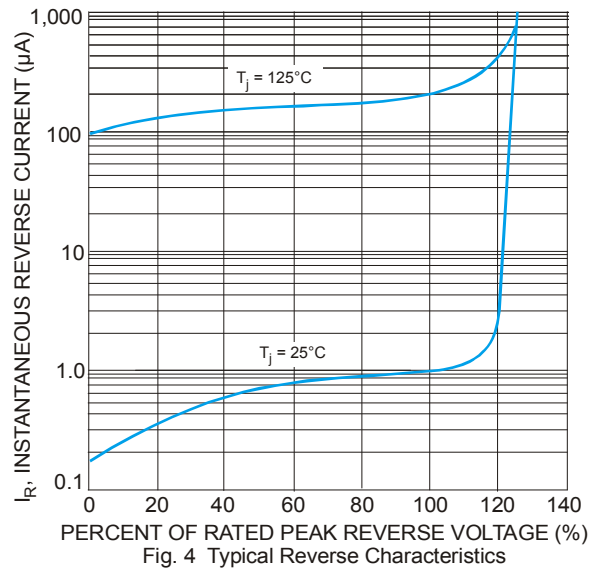
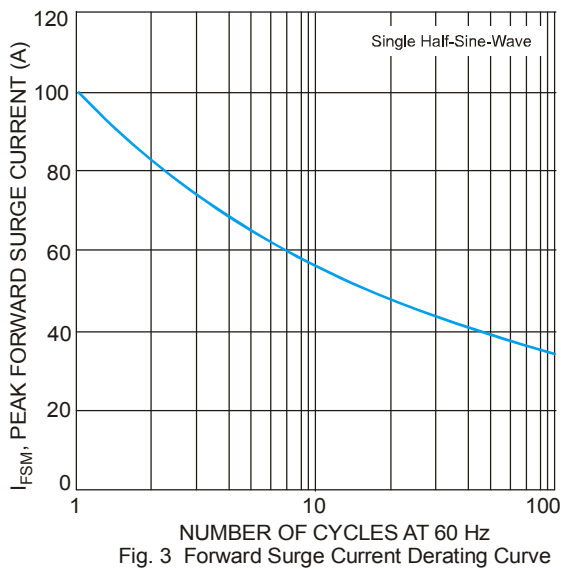


Fig. 2 Typical Forward Characteristics



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

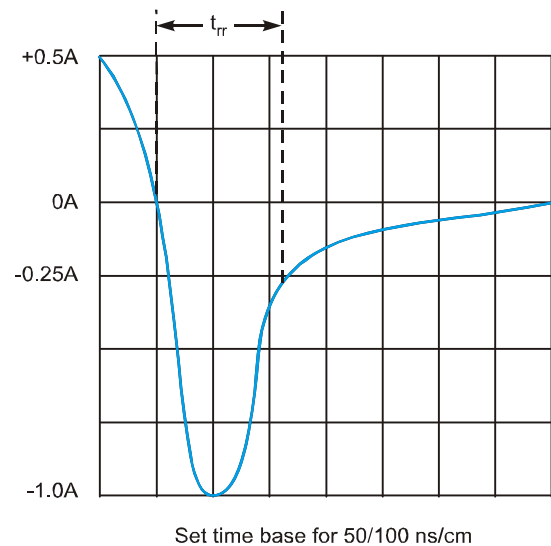


Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

