

**Features**

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**

**Mechanical Data**

- Case: SOD323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Leads: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band
- Weight: 0.004 grams (approximate)

SOD323



Top View

**Ordering Information** (Note 5)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| BAT42WS-7-F | SOD323 | 3000/Tape & Reel |
| BAT43WS-7-F | SOD323 | 3000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See <http://www.diodes.com> 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. Product manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.
  5. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**


xx = Product Type Marking Code,  
 S7 = BAT42WS  
 S8 = BAT42WS and BAT43WS

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                            | Symbol       | Value | Unit |
|---|--------------|-------|------|
| Peak Repetitive Reverse Voltage           | $V_{RRM}$    | 30    | V    |
| Working Peak Reverse Voltage              | $V_{RWM}$    |       |      |
| DC Blocking Voltage                       | $V_R$        |       |      |
| RMS Reverse Voltage                       | $V_{R(RMS)}$ | 21    | V    |
| Forward Continuous Current (Note 6)       | $I_{FM}$     | 200   | mA   |
| Repetitive Peak Forward Current (Note 6)  | $I_{FRM}$    | 500   | mA   |
| Non-Repetitive Peak Forward Surge Current | $I_{FSM}$    | 4.0   | A    |

**Thermal Characteristics**

| Characteristic                                      | Symbol          | Value       | Unit                      |
|---|-----------------|-------------|---------------------------|
| Power Dissipation (Note 6)                          | $P_D$           | 200         | mW                        |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 625         | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -55 to +125 | $^\circ\text{C}$          |

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                     | Symbol      | Min | Max | Unit          | Test Condition  |      |                     |                      |
|------------------------------------|-------------|-----|-----|---------------|---|------|---------------------|----------------------|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 30  | —   | V             | $I_R = 100\mu\text{A}$  |      |                     |                      |
| Forward Voltage Drop               | $V_F$       | —   | 1.0 | V             | $I_F = 200\text{mA}$  |      |                     |                      |
|                                    |             |     |     |               | BAT42WS   | 0.40 | $I_F = 10\text{mA}$ |                      |
|                                    |             |     |     |               | BAT42WS   | 0.65 | $I_F = 50\text{mA}$ |                      |
|                                    |             |     |     |               | BAT43WS   | 0.26 | 0.33                | $I_F = 2.0\text{mA}$ |
|                                    |             |     |     |               | BAT43WS   | —    | 0.45                | $I_F = 15\text{mA}$  |
| Reverse Current (Note 7)           | $I_R$       | —   | 500 | nA            | $V_R = 25\text{V}$  |      |                     |                      |
|                                    |             |     | 100 | $\mu\text{A}$ | $V_R = 25\text{V}, T_J = 100^\circ\text{C}$                         |      |                     |                      |
| Total Capacitance                  | $C_T$       | —   | 10  | pF            | $V_R = 1.0, f = 1.0\text{MHz}$                                      |      |                     |                      |
| Reverse Recovery Time              | $t_{rr}$    | —   | 5.0 | ns            | $I_F = I_R = 10\text{mA}, I_{rr} = 0.1 \times I_R, R_L = 100\Omega$ |      |                     |                      |

Notes: 6. Part mounted on FR4 PC Board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.  
7. Short duration pulse test used to minimize self-heating effect.

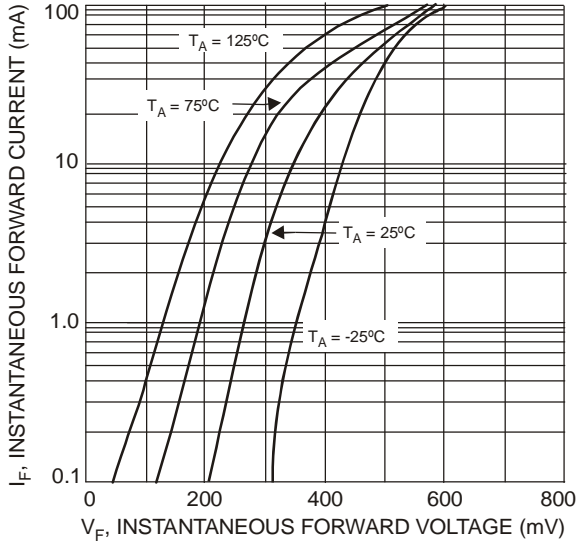


Fig. 1 Typical Forward Characteristics

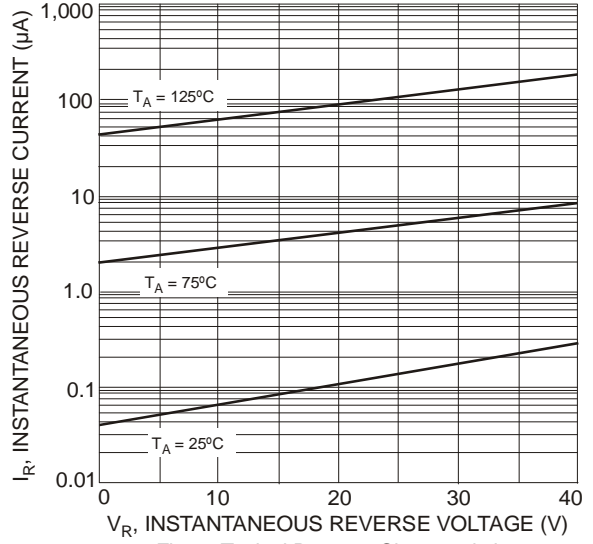


Fig. 2 Typical Reverse Characteristics

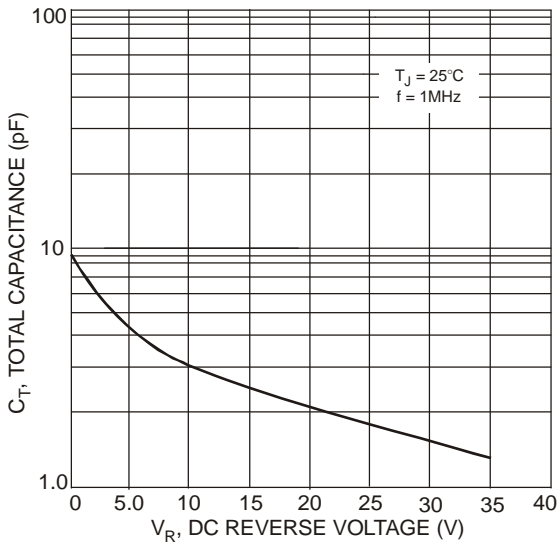


Fig. 3 Total Capacitance vs. Reverse Voltage

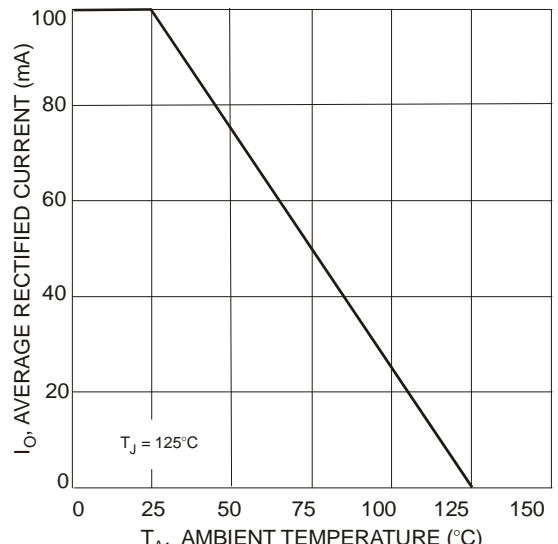
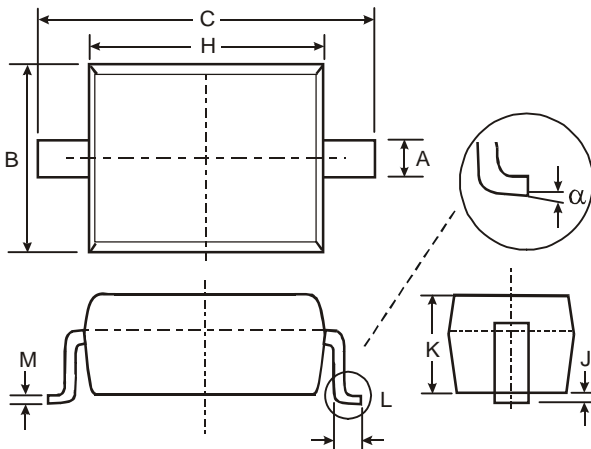


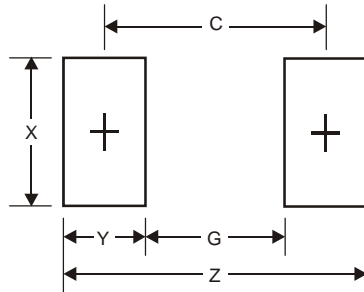
Fig. 4 Forward Current Derating Curve

**Package Outline Dimensions**



| SOD323                      |      |      |
|-----------------------------|------|------|
| Dim                         | Min  | Max  |
| A                           | 0.25 | 0.35 |
| B                           | 1.20 | 1.40 |
| C                           | 2.30 | 2.70 |
| H                           | 1.60 | 1.80 |
| J                           | 0.00 | 0.10 |
| K                           | 1.0  | 1.1  |
| L                           | 0.20 | 0.40 |
| M                           | 0.10 | 0.15 |
| α                           | 0°   | 8°   |
| <b>All Dimensions in mm</b> |      |      |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 3.75          |
| G          | 1.05          |
| X          | 0.65          |
| Y          | 1.35          |
| C          | 2.40          |

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