

## 1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### Features

- Guard Ring Die Construction for Transient Protection
- Very Low Forward Voltage Drop
- **Totally Lead-Free & Fully RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

### Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe) Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)



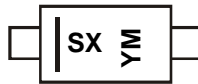
Top View

### Ordering Information (Note 4)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| B130LAW-7-F | SOD123 | 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/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

### Marking Information



SX = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: E = 2017)  
 M = Month (ex: 9 = September)

#### Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

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

| Characteristic  | Symbol              | Value | Unit |
|---|---------------------|-------|------|
| Peak Repetitive Reverse Voltage   | V <sub>RRM</sub>    | 30    | V    |
| Working Peak Reverse Voltage  | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage   | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage   | V <sub>R(RMS)</sub> | 21    | V    |
| Average Forward Current   | I <sub>F(AV)</sub>  | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 12    | A    |

**Thermal Characteristics**

| Characteristic  | Symbol          | Value       | Unit          |
|---|-----------------|-------------|---------------|
| Power Dissipation (Note 6)                              | $P_D$           | 450         | mW            |
| Typical Thermal Resistance Junction to Ambient (Note 6) | $R_{\theta JA}$ | 222         | $^{\circ}C/W$ |
| Operating Temperature Range (See Figure 5)              | $T_J$           | -55 to +125 | $^{\circ}C$   |
| Storage Temperature Range                               | $T_{STG}$       | -55 to +150 | $^{\circ}C$   |

**Electrical Characteristics** (@ $T_A = +25^{\circ}C$ , unless otherwise specified.)

| Characteristic                     | Symbol      | Min | Typ  | Max  | Unit | Test Condition                 |
|------------------------------------|-------------|-----|------|------|------|--------------------------------|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 30  | —    | —    | V    | $I_R = 1.5mA$                  |
| Forward Voltage                    | $V_F$       | —   | 0.25 | —    | V    | $I_F = 0.1A$                   |
|                                    |             | —   | 0.35 | 0.37 |      | $I_F = 0.7A$                   |
|                                    |             | —   | 0.38 | 0.42 |      | $I_F = 1.0A$                   |
| Leakage Current (Note 7)           | $I_R$       | —   | 0.15 | 1.0  | mA   | $V_R = 30V, T_A = 25^{\circ}C$ |
| Total Capacitance                  | $C_T$       | —   | 40   | —    | pF   | $V_R = 10V, f = 1.0MHz$        |

- Notes:
5. Device mounted on GETEK substrate, 2"x2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".
  6. Device mounted on FR-4 substrate, 2"x2", 2 oz. copper, single-sided, pad layout as per Diodes Incorporated, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  7. Short duration pulse test used to minimize self-heating effect.

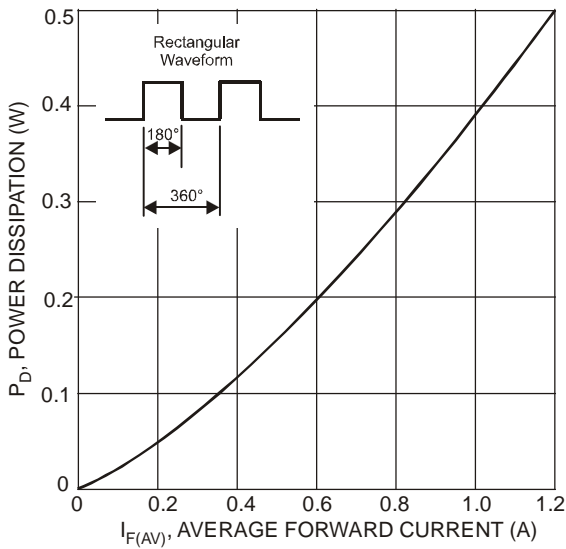


Fig. 1 Forward Power Dissipation

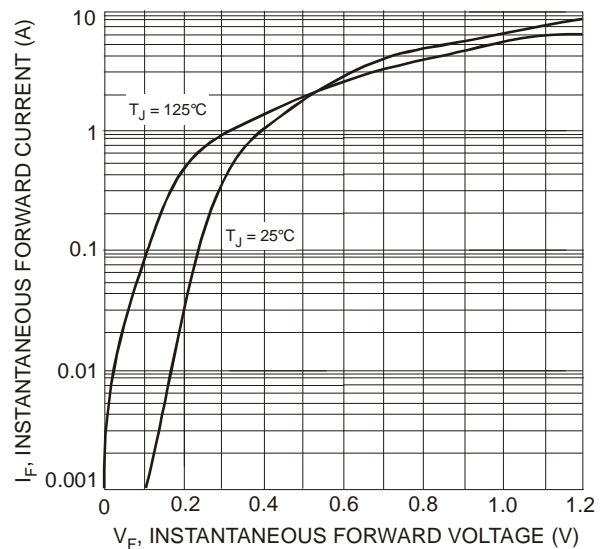


Fig. 2 Typical Forward Characteristics

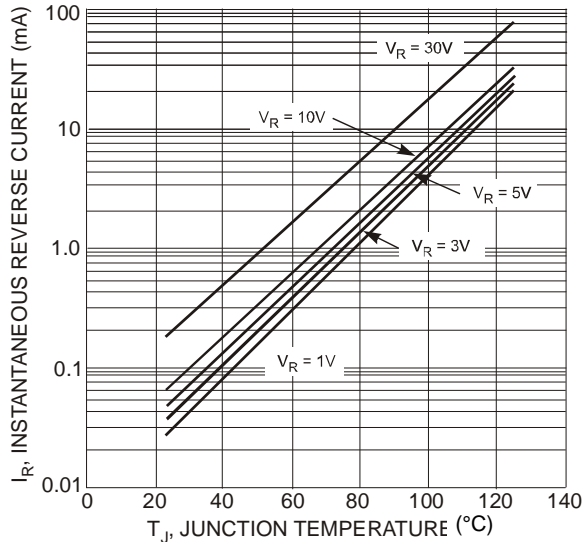


Fig. 3 Typical Pulsed Reverse Characteristics

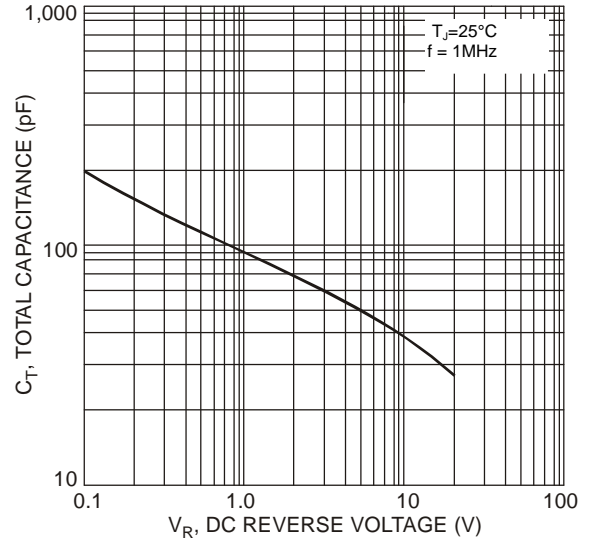


Fig. 4 Total Capacitance vs. Reverse Voltage

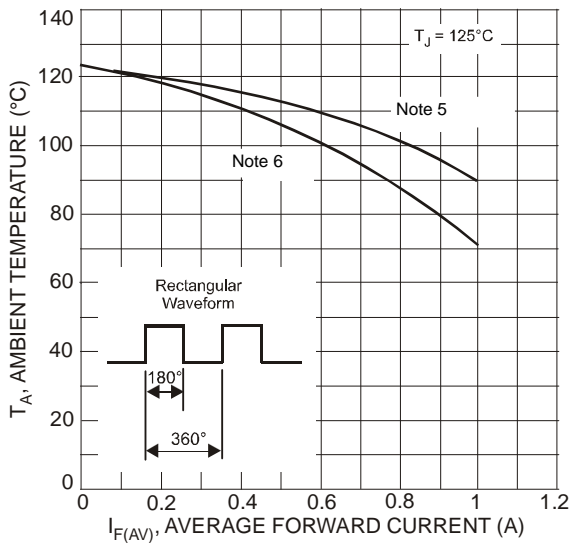


Fig. 5 Forward Current Derating Curve

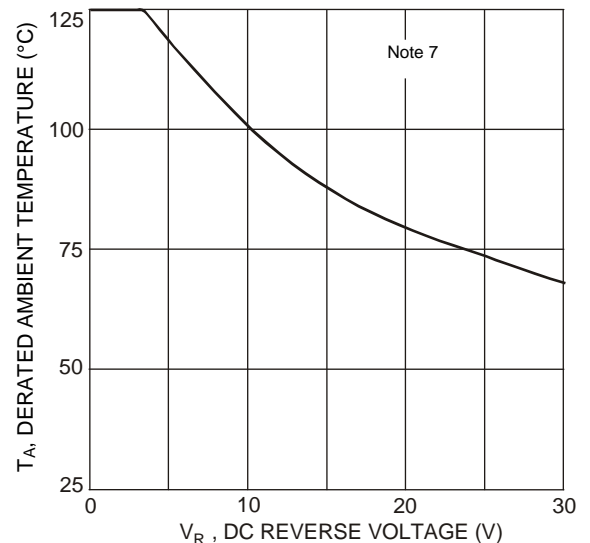


Fig. 6 Operating Temperature Derating

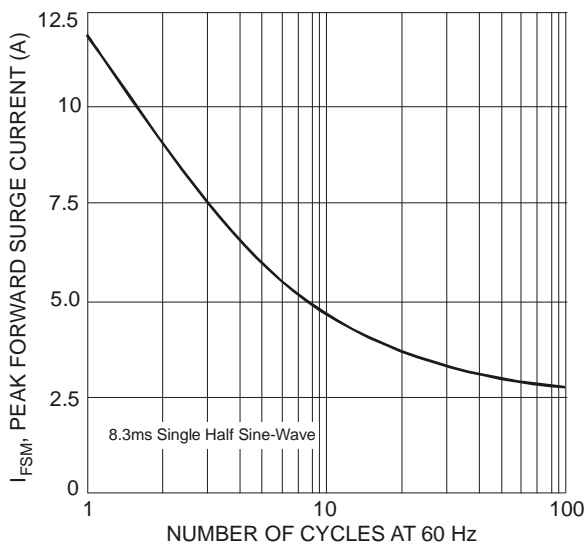
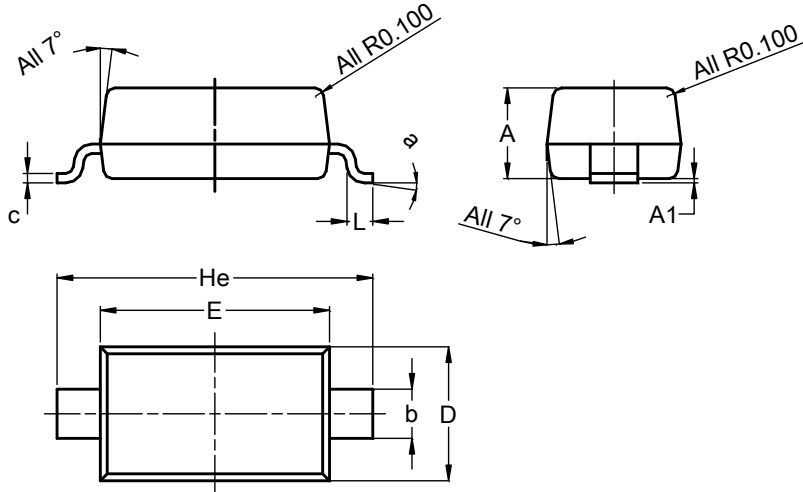


Fig. 7 Maximum Non-Repetitive Peak Forward Surge Current

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOD123**

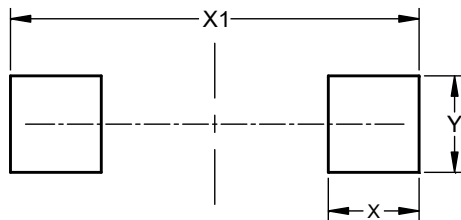


| SOD123               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.00 | 1.35 | 1.05 |
| A1                   | 0.00 | 0.10 | 0.05 |
| b                    | 0.52 | 0.62 | 0.57 |
| c                    | 0.10 | 0.15 | 0.11 |
| D                    | 1.40 | 1.70 | 1.55 |
| E                    | 2.55 | 2.85 | 2.65 |
| He                   | 3.55 | 3.85 | 3.65 |
| L                    | 0.25 | 0.40 | 0.30 |
| a                    | 0°   | 8°   | --   |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOD123**



| Dimensions | Value (in mm) |
|------------|---------------|
| X          | 0.900         |
| X1         | 4.050         |
| Y          | 0.950         |

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