# 0.5A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

## Features

- Low-Forward Voltage Drop
- Guard Ring Die Construction for Transient Protection
- High Conductance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
  **https://www.diodes.com/quality/product-definitions/**

## Mechanical Data

- Package: SOD123
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

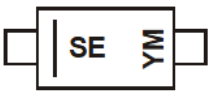
Top View

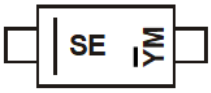
## Ordering Information (Note 4)

| Orderable Part Number | Package | Packing | |
|---|---|---|---|
| | | Qty. | Carrier |
| B0530W-7-F | SOD123 | 3000 | Tape & Reel |

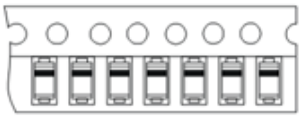
Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

## Marking Information




SE = Product Type Marking Code
YM & $\overline{Y}$M = Date Code Marking
Y = Year (ex: M = 2025)
M = Month (ex: 3 = March)



Date Code Key

| Year | 2002 | - | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | O | - | K | L | M | N | P | R | S | T | U | V |

| 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 (@$T_A$ = +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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 30 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 21 | V |
| Average Rectified Output Current | $I_O$ | 0.5 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 5.5 | A |
| ESD Rating Human Body Model<br>Charged Device Model | HBM<br>CDM | 1<br>1 | kV |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Note 6) | $P_D$ | 250 | mW |
| Typical Thermal Resistance Junction to Ambient (Note 6) | $R_{\theta JA}$ | 400 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 to +125 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit | Test Conditions |
|---|---|---|---|---|
| Minimum Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 30 | V | $I_R$ = 130μA |
| Maximum Forward Voltage Drop | $V_{FM}$ | 0.375<br>0.430 | V | $I_F$ = 0.1A, $T_J$ = +25°C<br>$I_F$ = 0.5A, $T_J$ = +25°C |
| Maximum Leakage Current (Note 7) | $I_{RM}$ | 20<br>130 | μA | $V_R$ = 15V, $T_J$ = +25°C<br>$V_R$ = 30V, $T_J$ = +25°C |
| Total Capacitance | $C_T$ | 170 | pF | f = 1MHz, $V_R$ = 0V DC |

Notes: 6. Device mounted on 1*MRP FR-4 PC board, 2oz.
7. Pulse test: pulse width = 300μs, duty cycle ≤ 2%.

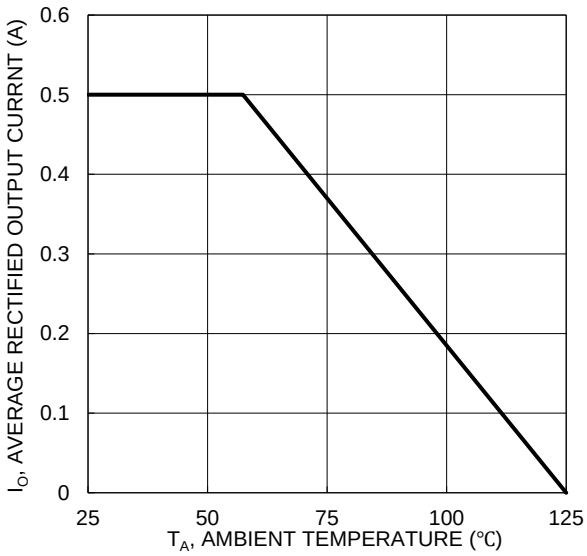



Fig.1 DC Forward Current Derating

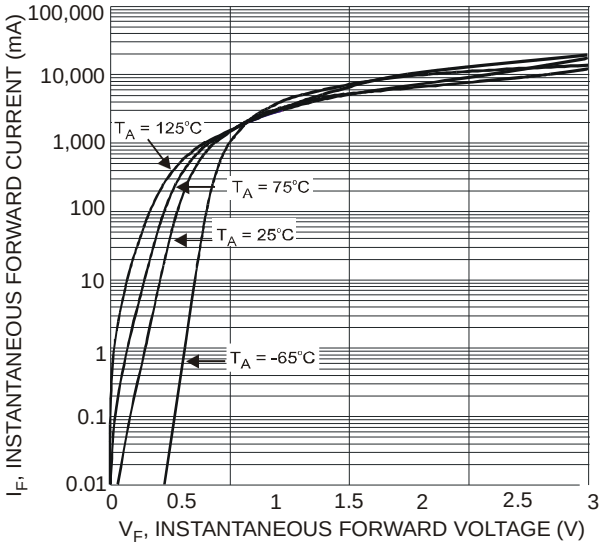



Fig. 2 Typical Forward Characteristics

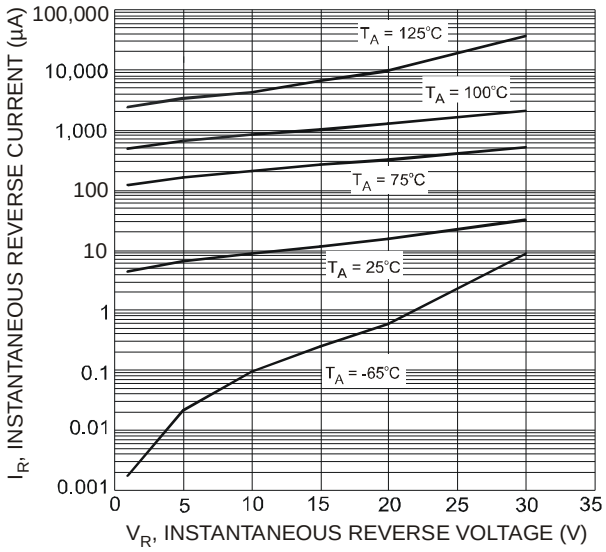



Fig. 3 Typical Reverse Characteristics

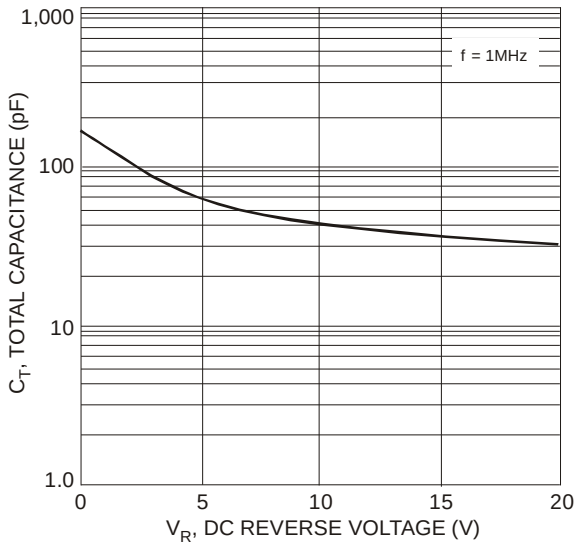
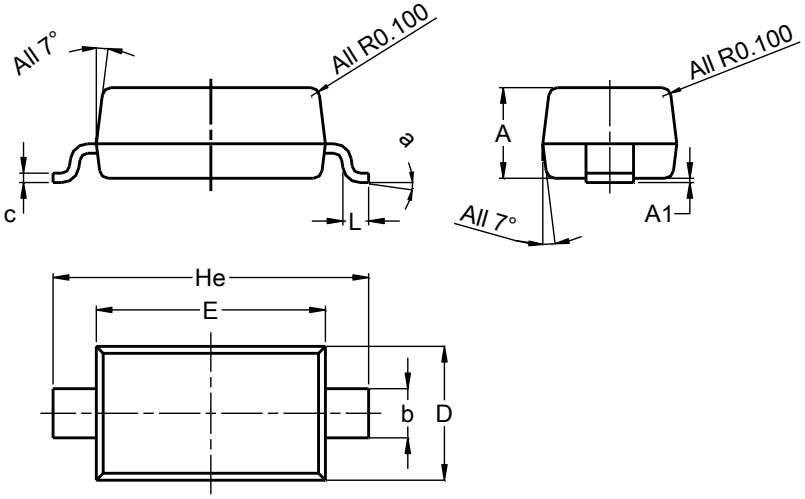



Fig. 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

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

**SOD123**

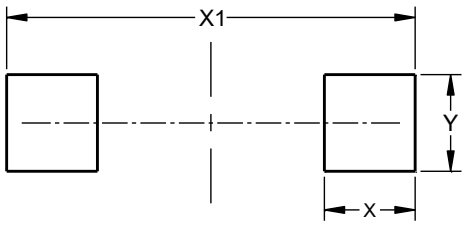



| SOD123 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 1.00 | 1.35 | 1.05 |
| **A1** | 0.00 | 0.10 | 0.05 |
| **b** | 0.52 | 0.62 | 0.57 |
| **c** | 0.10 | 0.15 | 0.11 |
| **D** | 1.40 | 1.70 | 1.55 |
| **E** | 2.55 | 2.85 | 2.65 |
| **He** | 3.55 | 3.85 | 3.65 |
| **L**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