

**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](https://www.diodes.com/quality/product-definitions/) 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)



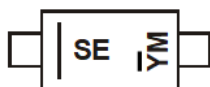
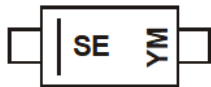
Top View

## Ordering Information (Note 4)

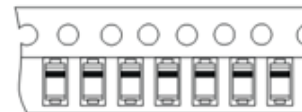
| Part Number | Package | Packing |             |
|-------------|---------|---------|-------------|
|             |         | Qty.    | Carrier     |
| B0530W-7-F  | SOD123  | 3000    | Tape & Reel |

- 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 & YM = Date Code Marking  
Y = Year (ex: J = 2022)  
M = Month (ex: 9 = September)



### Date Code Key

| Year | 2002 | ... | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | O    | ... | J    | K    | L    | M    | N    | O    | P    | R    | S    | T    |

| 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 Rectified Output Current                                                                    | I <sub>O</sub>      | 0.5   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 5.5   | A    |

## Thermal Characteristics

| Characteristic                                          | Symbol                            | Value       | Unit |
|---------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                              | P <sub>D</sub>                    | 410         | mW   |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 244         | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -65 to +125 | °C   |

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

| Characteristic                             | Symbol             | Value | Unit | Test Conditions                               |
|--------------------------------------------|--------------------|-------|------|-----------------------------------------------|
| Minimum Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 30    | V    | I <sub>R</sub> = 130μA                        |
| Maximum Forward Voltage Drop               | V <sub>FM</sub>    | 0.375 | V    | I <sub>F</sub> = 0.1A, T <sub>J</sub> = +25°C |
|                                            |                    | 0.430 |      | I <sub>F</sub> = 0.5A, T <sub>J</sub> = +25°C |
| Maximum Leakage Current (Note 7)           | I <sub>RM</sub>    | 20    | μA   | V <sub>R</sub> = 15V, T <sub>J</sub> = +25°C  |
|                                            |                    | 130   |      | V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C  |
| Total Capacitance                          | C <sub>T</sub>     | 170   | pF   | f = 1MHz, V <sub>R</sub> = 0V DC              |

Notes: 6. Device mounted on FR-4 PC board, 2"x2", 2 oz. Copper, single sided, Cathode pad dimensions 0.75"x1.0", Anode pad dimensions 0.25"x1.0".  
7. Pulse test: pulse width = 300μs, duty cycle ≤ 2%.

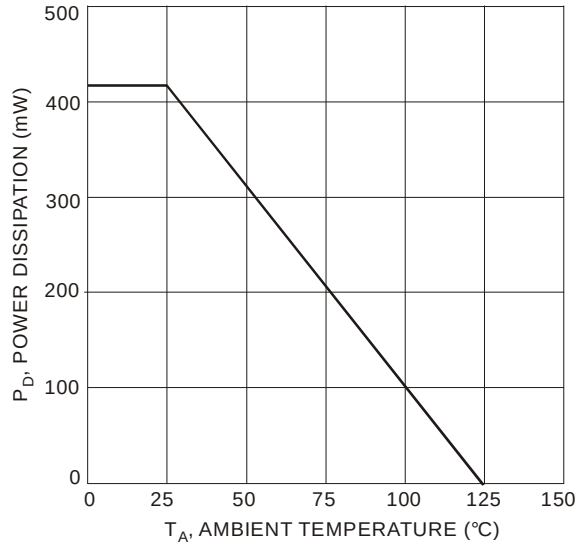


Fig. 1 Power Derating

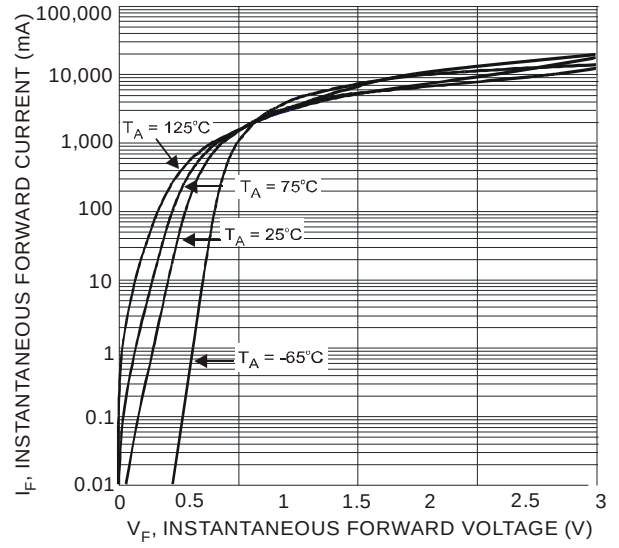


Fig. 2 Typical Forward Characteristics

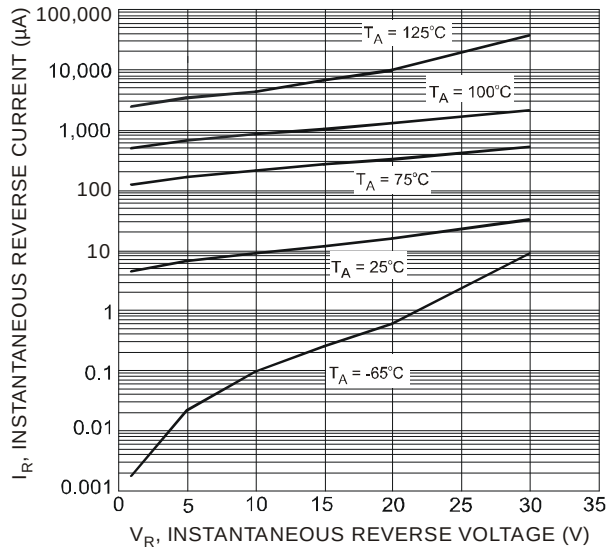


Fig. 3 Typical Reverse Characteristics

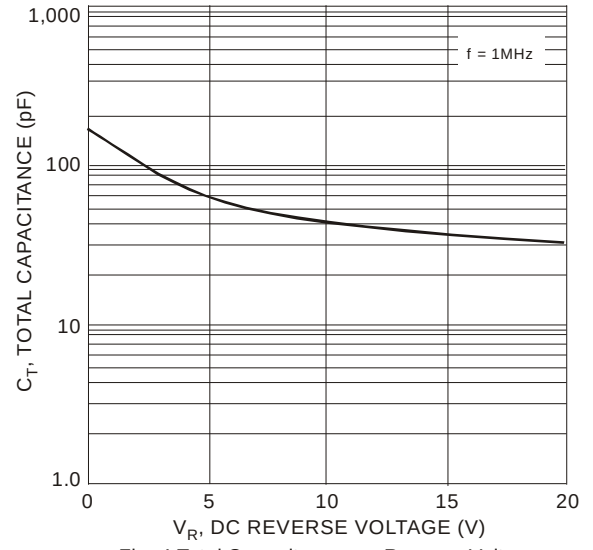


Fig. 4 Total Capacitance vs. Reverse Voltage

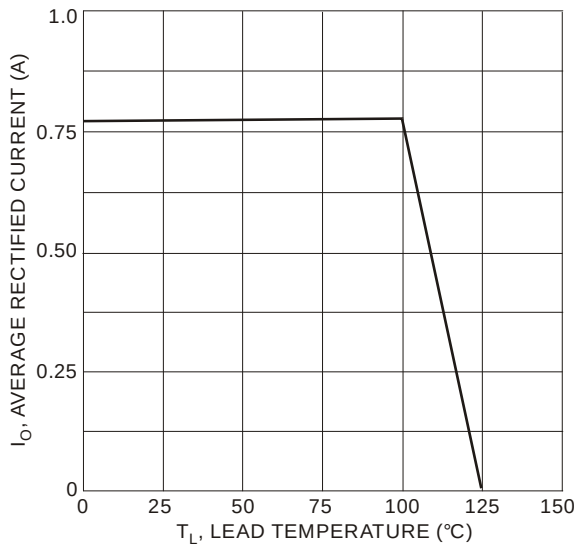
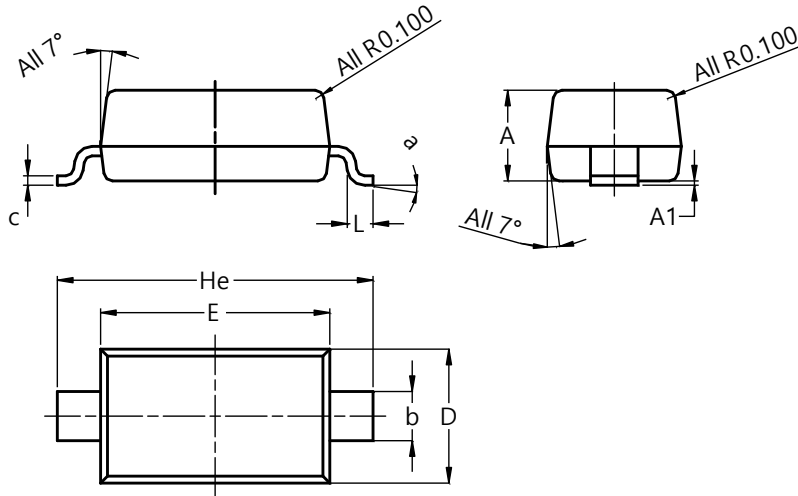


Fig. 5 Forward Current Derating Curve

## Package Outline Dimensions

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

### SOD123

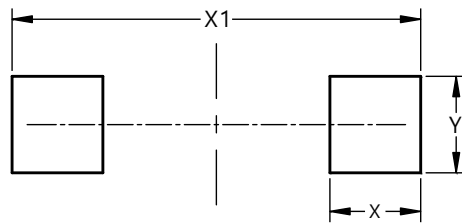


| SOD123               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.00 | 1.35 | 1.05 |
| A1                   | 0.00 | 0.10 | 0.05 |
| b                    | 0.52 | 0.62 | 0.57 |
| c                    | 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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