

## Product Summary

| $V_R$<br>(V) | $I_F$<br>(A) | $V_F$ Max (V)<br>@ +25°C | $I_R$ Max (μA)<br>@ +25°C |
|--------------|--------------|--------------------------|---------------------------|
| 75           | 0.15         | 1.0                      | 2.0                       |

## Description and Applications

This Schottky Barrier diode is designed to meet the stringent requirements of AEC-Q101. It is ideally suited to use as:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode



Top View

## Features and Benefits

- High Breakdown Voltage
- Low Turn-On Voltage
- Guard Ring Construction for Transient Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

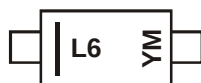
- Case: SOD123
- Case Material: Molded Plastic.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Matte Tin Finish Annealed over Alloy 42 Leadframe.  
Terminals: Solderable per MIL-STD-202, Method 208 Ⓔ3
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

## Ordering Information (Note 4)

| Part Number | Case   | Packaging         |
|-------------|--------|-------------------|
| BAT46WQ-7-F | SOD123 | 3,000/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



L6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2004 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | R    | 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.)

| Characteristic                                                                         | Symbol                                                 | Value | Unit |
|----------------------------------------------------------------------------------------|--------------------------------------------------------|-------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>R</sub> | 100   | V    |
| Forward Continuous Current                                                             | I <sub>F</sub>                                         | 150   | mA   |
| Repetitive Peak Forward Current (Note 5) @ t <sub>p</sub> < 1.0s, Duty Cycle < 50%     | I <sub>FRM</sub>                                       | 350   | mA   |
| Forward Surge Forward Current (Note 5) @ t <sub>p</sub> = 10ms                         | I <sub>FSM</sub>                                       | 750   | mA   |

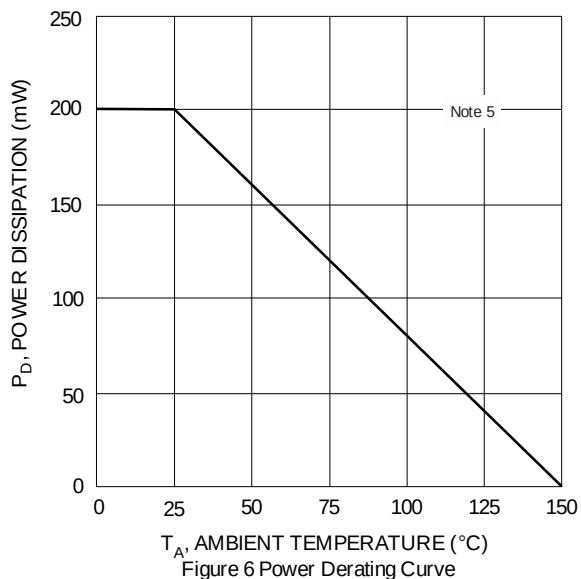
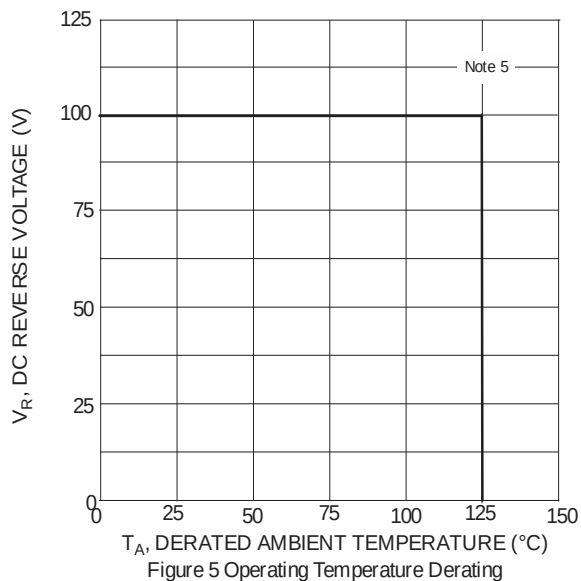
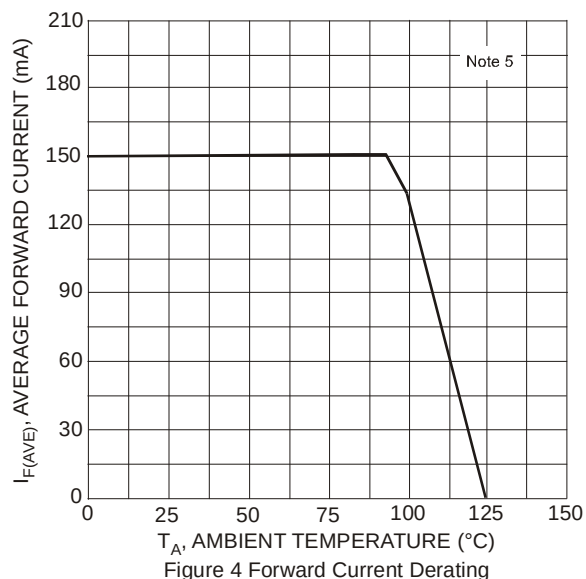
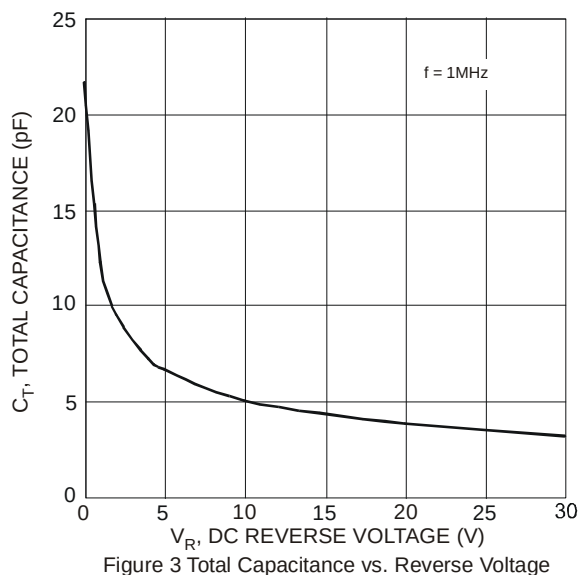
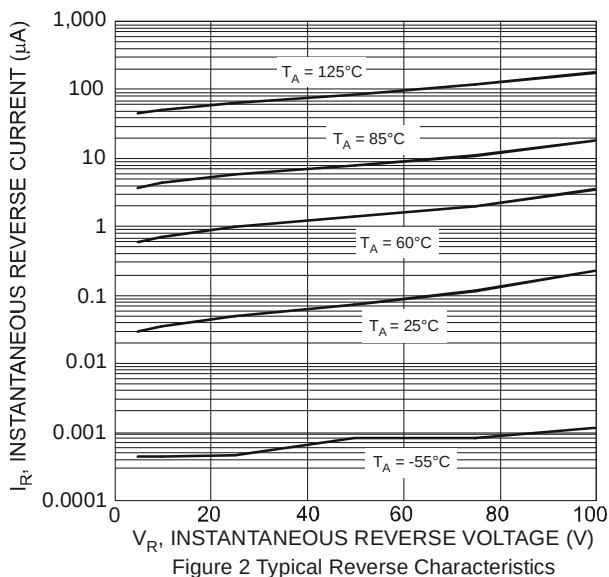
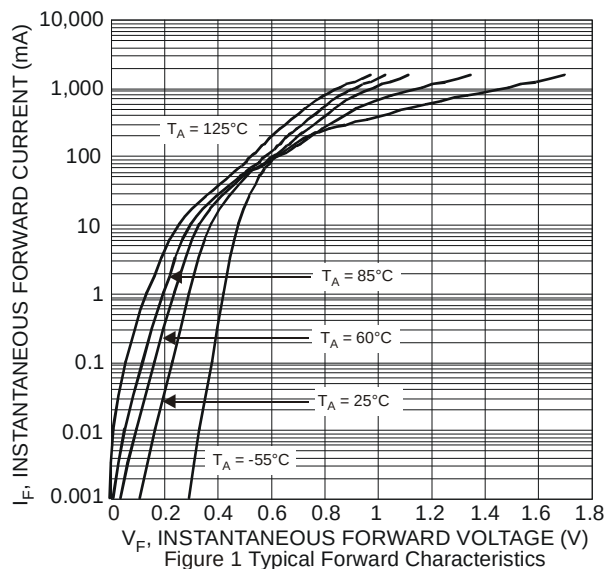
**Thermal Characteristics**

| Characteristic                                       | Symbol           | Value       | Unit |
|------------------------------------------------------|------------------|-------------|------|
| Power Dissipation                                    | P <sub>D</sub>   | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R <sub>θJA</sub> | 420         | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 6) |                  | 370         |      |
| Operating Temperature Range                          | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                            | T <sub>STG</sub> | -55 to +150 | °C   |

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

| Characteristic                     | Symbol             | Min | Typ      | Max                                                | Unit | Test Condition                                                                                                                                                                                                                                                                                 |
|------------------------------------|--------------------|-----|----------|----------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 100 | —        | —                                                  | V    | I <sub>R</sub> = 100μA                                                                                                                                                                                                                                                                         |
| Forward Voltage                    | V <sub>F</sub>     | —   | —        | 0.25<br>0.45<br>1.00                               | V    | I <sub>F</sub> = 0.1mA<br>I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 250mA                                                                                                                                                                                                                      |
| Peak Reverse Current (Note 7)      | I <sub>R</sub>     | —   | —        | 0.3<br>5.0<br>0.5<br>7.5<br>1.0<br>15<br>2.0<br>20 | μA   | V <sub>R</sub> = 1.5V<br>V <sub>R</sub> = 1.5V, T <sub>J</sub> = +60°C<br>V <sub>R</sub> = 10V<br>V <sub>R</sub> = 10V, T <sub>J</sub> = +60°C<br>V <sub>R</sub> = 50V<br>V <sub>R</sub> = 50V, T <sub>J</sub> = +60°C<br>V <sub>R</sub> = 75V<br>V <sub>R</sub> = 75V, T <sub>J</sub> = +60°C |
| Total Capacitance                  | C <sub>T</sub>     | —   | 20<br>12 | —                                                  | pF   | V <sub>R</sub> = 0V, f = 1.0MHz<br>V <sub>R</sub> = 1.0V, f = 1.0MHz                                                                                                                                                                                                                           |

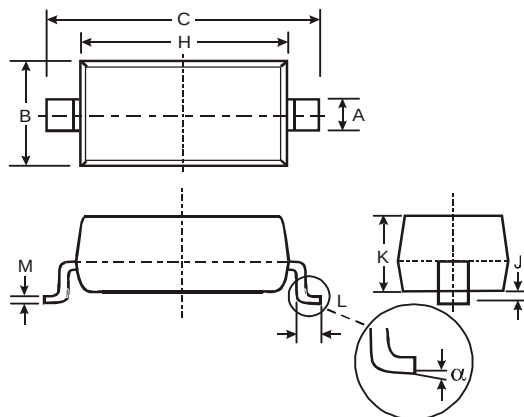
Notes: 5. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  
6. Part mounted on Polymide board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  
7. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

**SOD123**

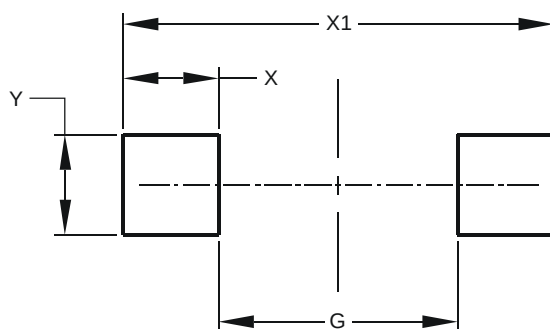


| SOD123               |          |      |
|----------------------|----------|------|
| Dim                  | Min      | Max  |
| A                    | 0.55 Typ |      |
| B                    | 1.40     | 1.70 |
| C                    | 3.55     | 3.85 |
| H                    | 2.55     | 2.85 |
| J                    | 0.00     | 0.10 |
| K                    | 1.00     | 1.35 |
| L                    | 0.25     | 0.40 |
| M                    | 0.10     | 0.15 |
| $\alpha$             | 0        | 8°   |
| All Dimensions in mm |          |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

**SOD123**



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 2.250         |
| X          | 0.900         |
| X1         | 4.050         |
| Y          | 0.950         |

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

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