



**THE DATASHEET OF  
SD103BWSQ-7-F**



## Product Summary

| $V_R$ (V) | $I_F$ (mA) | $V_{F\ MAX}$ (V)<br>@ +25°C | $I_{R\ MAX}$ (μA)<br>@ +25°C |
|-----------|------------|-----------------------------|------------------------------|
| 20        | 20         | 0.37                        | 5.0                          |
| 30        |            |                             |                              |
| 40        |            |                             |                              |

## Description and Applications

This Schottky Barrier Rectifier has been designed to meet the stringent requirements of Automotive Applications. It is ideally suited to use as a:

- Polarity Protection Diode
- Re-circulating Diode
- Switching Diode

## Features and Benefits

- Low Forward Voltage Drop
- Guard Ring Construction for Transient Protection
- Negligible Reverse Recovery Time
- Low Reverse Capacitance
- Ultra-Small Surface Mount Package
- **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**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: SOD323
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Leads: Solderable per MIL-STD-202, Method 208<sup>③</sup>
- Lead-free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: Cathode Band
- Weight: 0.004 grams (approximate)



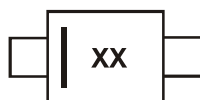
Top View

## Ordering Information (Note 5)

| Part Number   | Compliance | Case    | Packaging        |
|---------------|------------|---------|------------------|
| SD103AWS-7-F  | AEC-Q101   | SOD-323 | 3000/Tape & Reel |
| SD103AWSQ-7-F | Automotive | SOD-323 | 3000/Tape & Reel |
| SD103BWS-7-F  | AEC-Q101   | SOD-323 | 3000/Tape & Reel |
| SD103CWS-7-F  | AEC-Q101   | SOD-323 | 3000/Tape & Reel |
| SD103BWSQ-7-F | Automotive | SOD-323 | 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



xx = Product Type Marking Code  
 S4 = SD103AWS  
 S5 or S4 = SD103BWS  
 S6 or S5 or S4 = SD103CWS

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

| Characteristic                                       | Symbol              | SD103AWS | SD103BWS | SD103CWS | Unit |
|--|---------------------|----------|----------|----------|------|
| Peak Repetitive Reverse Voltage                      | V <sub>RRM</sub>    | 40       | 30       | 20       | V    |
| Working Peak Reverse Voltage                         | V <sub>RWM</sub>    |          |          |          |      |
| DC Blocking Voltage                                  | V <sub>R</sub>      |          |          |          |      |
| RMS Reverse Voltage                                  | V <sub>R(RMS)</sub> | 28       | 21       | 14       | V    |
| Forward Continuous Current (Note 6)                  | I <sub>FM</sub>     | 350      |          |          | mA   |
| Non-Repetitive Peak Forward Surge Current @ t ≤ 1.0s | I <sub>FSM</sub>    | 1.5      |          |          | A    |

**Thermal Characteristics**

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                           | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 625         | °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             | Min | Typ | Max          | Unit | Test Conditions  |
|------------------------------------|--------------------|-----|-----|--------------|------|--|
| Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 40  | —   | —            | V    | I <sub>R</sub> = 100µA<br>I <sub>R</sub> = 100µA<br>I <sub>R</sub> = 100µA                                 |
| Forward Voltage Drop               | V <sub>F</sub>     | —   | —   | 0.37<br>0.60 | V    | I <sub>F</sub> = 20mA<br>I <sub>F</sub> = 200mA  |
| Peak Reverse Current (Note 7)      | I <sub>R</sub>     | —   | —   | 5.0          | µA   | V <sub>R</sub> = 30V<br>V <sub>R</sub> = 20V<br>V <sub>R</sub> = 10V                                       |
| Total Capacitance                  | C <sub>T</sub>     | —   | 28  | —            | pF   | V <sub>R</sub> = 0V, f = 1.0MHz  |
| Reverse Recovery Time              | t <sub>rr</sub>    | —   | 10  | —            | ns   | I <sub>F</sub> = I <sub>R</sub> = 200mA,<br>I <sub>rr</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω |

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

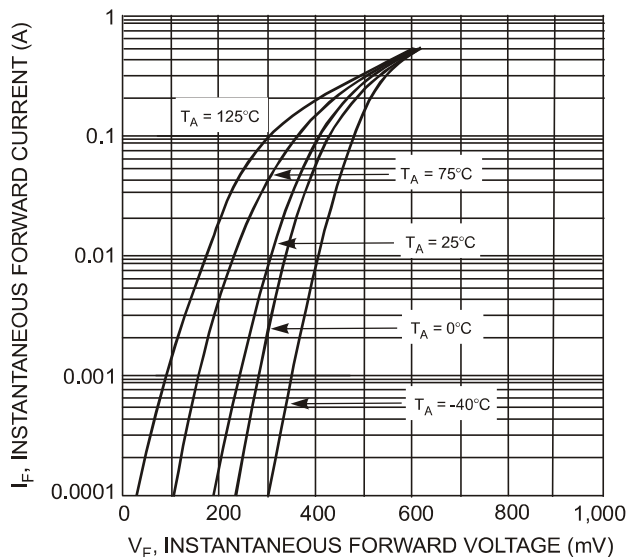


Fig. 1 Typical Forward Characteristics

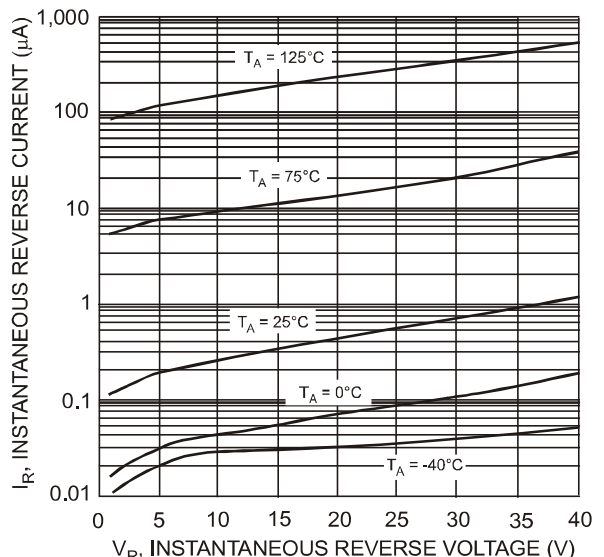


Fig. 2 Typical Reverse Characteristics

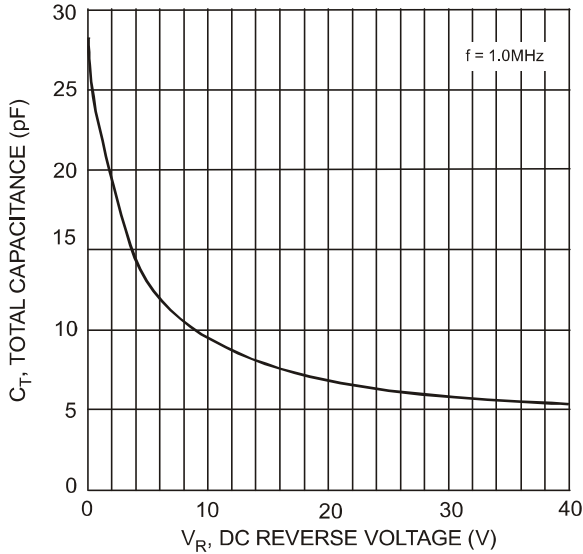


Fig. 3 Total Capacitance vs. Reverse Voltage

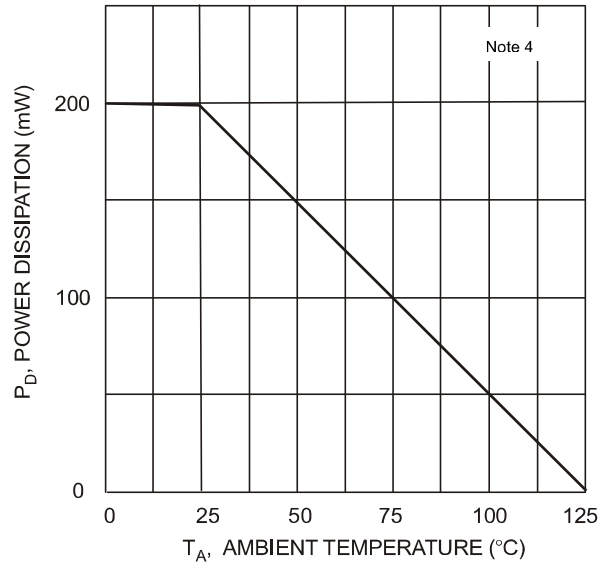
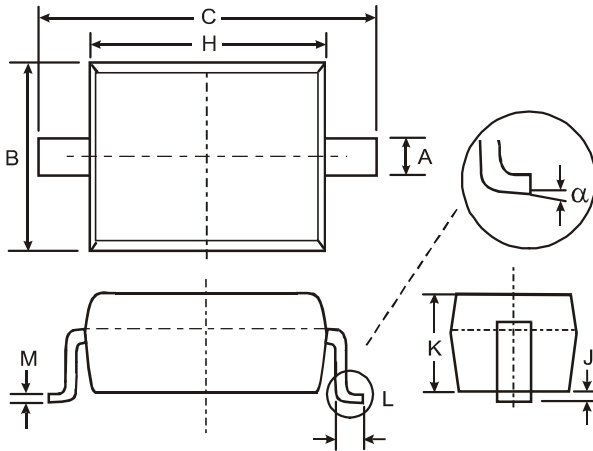


Fig. 4 Power Derating Curve

**Package Outline Dimensions**

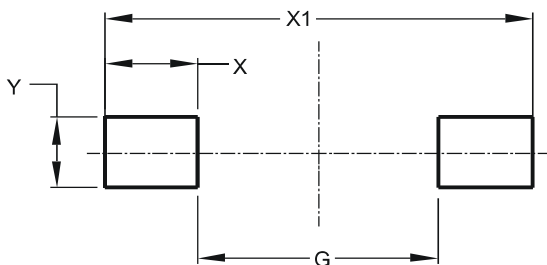
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| 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 |
| $\alpha$             | 0°   | 8°   |
| All Dimensions in mm |      |      |

**Suggested Pad Layout**

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



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 1.520         |
| X          | 0.590         |
| X1         | 2.700         |
| Y          | 0.450         |

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