# RB751S40

# Schottky Barrier Diode

These Schottky barrier diodes are designed for high−speed switching applications, circuit protection, and voltage clamping. Extremely low forward voltage reduces conduction loss. Miniature surface mount package is excellent for hand−held and portable applications where space is limited.

### Features

- Extremely Fast Switching Speed
- Extremely Low Forward Voltage − 0.28 V (Typ) @ $I_F$ = 1.0 mAdc
- Low Reverse Current
- Lead−Free Plating
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Reverse Voltage | $V_{RM}$ | 40 | V |
| Reverse Voltage | $V_R$ | 30 | V |
| Forward Continuous Current (DC) | $I_F$ | 30 | mA |
| Peak Forward Surge Current | $I_{FSM}$ | 500 | mA |
| ESD Rating: Class 1C per Human Body Model<br>Class A per Machine Model | | | |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Total Device Dissipation FR−5 Board, (Note 1) $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 200<br>1.57 | mW<br>mW/°C |
| Thermal Resistance, Junction−to−Ambient | $R_{\theta JA}$ | 635 | °C/W |
| Junction and Storage Temperature Range | $T_J$, $T_{stg}$ | −55 to +150 | °C |

1. FR−5 Minimum Pad.

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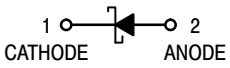
## 40 V SCHOTTKY BARRIER DIODE





**SOD−523**
**CASE 502**
**STYLE 1**

### MARKING DIAGRAM


5E = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| RB751S40T1G | SOD−523 (Pb−Free) | 3000 / Tape & Reel |
| NSVRB751S40T1G | SOD−523 (Pb−Free) | 3000 / Tape & Reel |
| RB751S40T5G | SOD−523 (Pb−Free) | 8000 / Tape & Reel |
| NSVRB751S40T5G | SOD−523 (Pb−Free) | 8000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage ($I_R$ = 10 μA) | $V_{(BR)R}$ | 30 | – | – | V |
| Total Capacitance ($V_R$ = 1.0 V, f = 1.0 MHz) | $C_T$ | – | 2.0 | 2.5 | pF |
| Reverse Leakage ($V_R$ = 30 V) | $I_R$ | – | 300 | 500 | nAdc |
| Forward Voltage ($I_F$ = 1.0 mAdc) | $V_F$ | – | 0.28 | 0.37 | Vdc |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

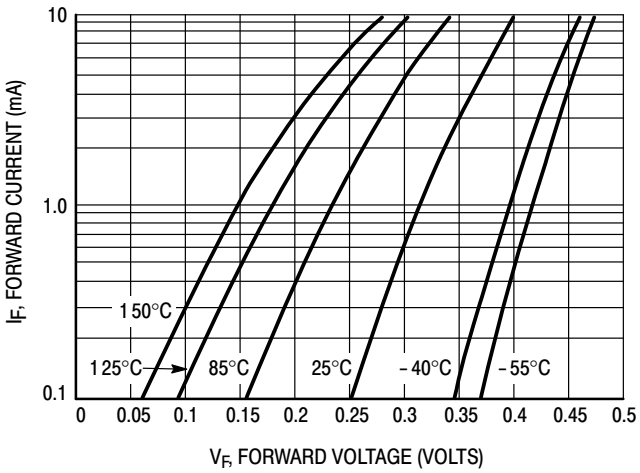



**Figure 1. Typical Forward Voltage**

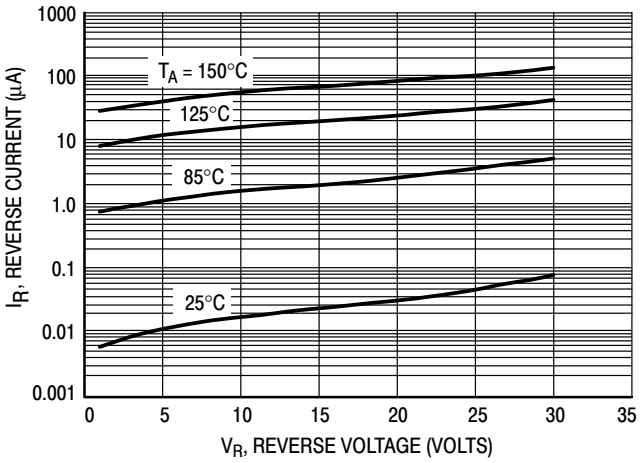



**Figure 2. Reverse Current versus Reverse Voltage**

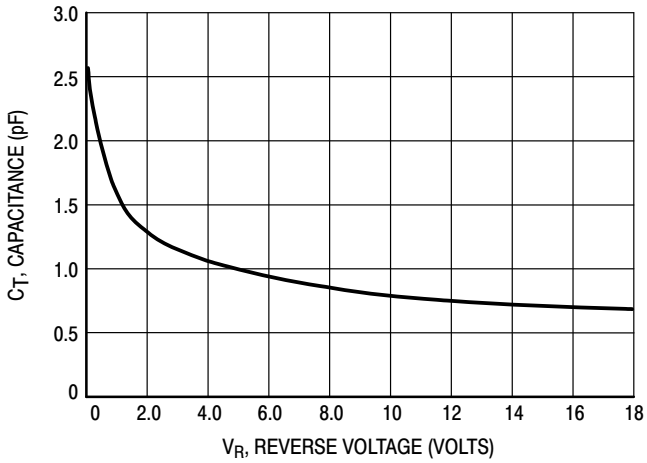


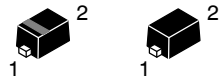

**Figure 3. Typical Capacitance**

# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

ON Semiconductor®

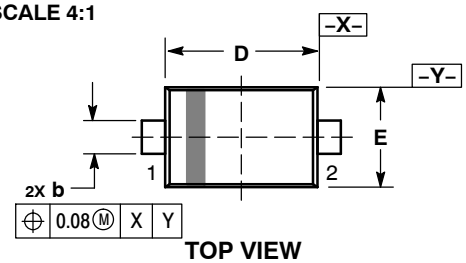
**SOD−523**
CASE 502−01
ISSUE E

DATE 28 SEP 2010

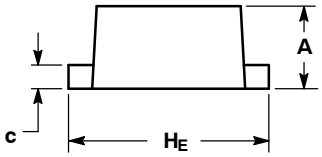



STYLE 1 STYLE 2

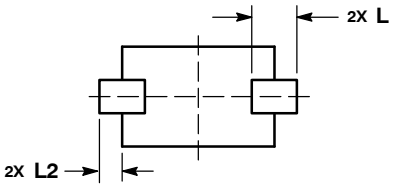
**SCALE 4:1**




**TOP VIEW**

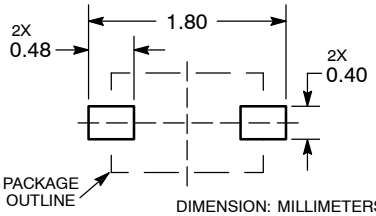



**SIDE VIEW**




**BOTTOM VIEW**

**RECOMMENDED**
**SOLDERING FOOTPRINT***



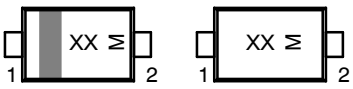

DIMENSION: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| | MILLIMETERS | | |
|---|---|---|---|
| DIM | MIN | NOM | MAX |
| A | 0.50 | 0.60 | 0.70 |
| b | 0.25 | 0.30 | 0.35 |
| c | 0.07 | 0.14 | 0.20 |
| D | 1.10 | 1.20 | 1.30 |
| E | 0.70 | 0.80 | 0.90 |
| HE | 1.50 | 1.60 | 1.70 |
| L | 0.30 REF | | |
| L2 | 0.15 | 0.20 | 0.25 |

**GENERIC**
**MARKING DIAGRAM***




STYLE 1 STYLE 2

XX = Specific Device Code
M Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY

| | | |
|---|---|---|
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| STATUS: | ON SEMICONDUCTOR STANDARD | |
| NEW STANDARD: | | |
| DESCRIPTION: | SOD−523 | PAGE 1 OF 2 |

| ISSUE | REVISION | DATE |
|---|---|---|
| A | ADDED CATHODE BAND. REQ. BY M. DEWITT | 07 JUL 2004 |
| B | UPDATED FOOTPRINT AND MARKING. REQ. BY S. WEST. | 21 FEB 2005 |
| C | CREATED CATHODE AND NON−CATHODE BAND OPTIONS. REQ. BY J. DAUGHERTY. | 13 MAR 2007 |
| D | CHANGED DIMENSION LABELS TO MATCH CURRENT STANDARDS. REQ. BY D. TRUHITTE. | 27 JAN 2009 |
| E | ADDED BOTTOM VIEW/UPDATED SOLDER FOOTPRINT. REQ. BY D. TRUHITTE. | 28 SEP 2010 |
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