

# Schottky Barrier Diode

## NSR0530H

Schottky barrier diodes are optimized for very low forward voltage drop and low leakage current and are used in a wide range of dc-dc converter, clamping and protection applications in portable devices. NSR0530H in a SOD-323 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

### Features

- Very Low Forward Voltage Drop – 370 mV @ 100 mA
- Low Reverse Current – 1.4  $\mu\text{A}$  @ 10 V VR
- 500 mA of Continuous Forward Current
- Very High Switching Speed
- Low Capacitance – CT = 10 pF
- This is a Pb-Free Device

### Typical Applications

- LCD and Keypad Backlighting
- Camera Photo Flash
- Buck and Boost dc-dc Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

### Markets

- Mobile Handsets
- MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS

### MAXIMUM RATINGS

| Rating                                        | Symbol    | Value               | Unit |
|-----------------------------------------------|-----------|---------------------|------|
| Reverse Voltage                               | $V_R$     | 30                  | V    |
| Forward Current (DC)                          | $I_F$     | 500                 | mA   |
| Forward Surge Current<br>(60 Hz @ 1 cycle)    | $I_{FSM}$ | 2.5                 | A    |
| ESD Rating: Human Body Model<br>Machine Model | ESD       | Class 3B<br>Class C |      |

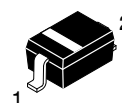
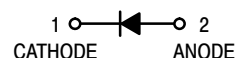
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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### 30 V SCHOTTKY BARRIER DIODE



SOD-323  
CASE 477  
STYLE 1

### MARKING DIAGRAM



AK = Specific Device Code  
M = Month Code

### ORDERING INFORMATION

| Device      | Package              | Shipping†        |
|-------------|----------------------|------------------|
| NSR0530HT1G | SOD-323<br>(Pb-Free) | 3000/Tape & Reel |

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

# THERMAL CHARACTERISTICS

| Characteristic                                                                                           | Symbol                   | Min | Typ | Max         | Unit                     |
|----------------------------------------------------------------------------------------------------------|--------------------------|-----|-----|-------------|--------------------------|
| Thermal Resistance<br>Junction-to-Ambient (Note 1)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 740<br>160  | $^\circ\text{C/W}$<br>mW |
| Thermal Resistance<br>Junction-to-Ambient (Note 2)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 460<br>270  | $^\circ\text{C/W}$<br>mW |
| Junction and Storage Temperature Range                                                                   | $T_J, T_{stg}$           |     |     | -55 to +150 | $^\circ\text{C}$         |

- Mounted onto a 4 in square FR-4 board 10 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.
- Mounted onto a 4 in square FR-4 board 1 in sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.

# ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic                                                                                     | Symbol | Min | Typ                  | Max                  | Unit          |
|----------------------------------------------------------------------------------------------------|--------|-----|----------------------|----------------------|---------------|
| Reverse Leakage<br>( $V_R = 10\text{ V}$ )<br>( $V_R = 30\text{ V}$ )                              | $I_R$  |     | 1.4<br>24            | 10<br>200            | $\mu\text{A}$ |
| Forward Voltage ( $I_F = 10\text{ mA}$ )<br>( $I_F = 100\text{ mA}$ )<br>( $I_F = 500\text{ mA}$ ) | $V_F$  |     | 0.28<br>0.37<br>0.52 | 0.37<br>0.46<br>0.62 | V             |
| Total Capacitance<br>( $V_R = 1.0\text{ V}$ , $f = 1\text{ MHz}$ )                                 | CT     |     | 10                   |                      | pF            |

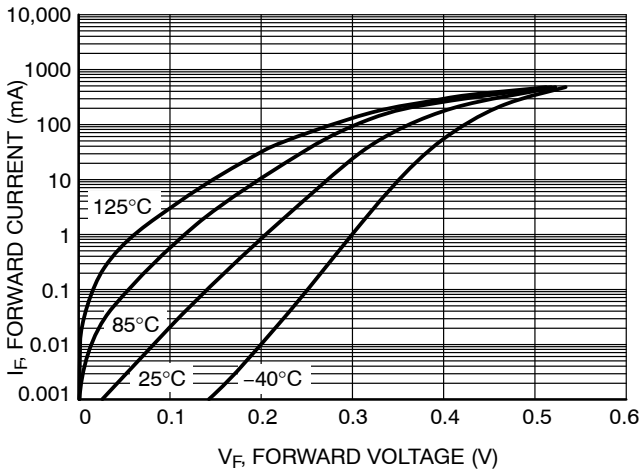


Figure 1. Forward Voltage

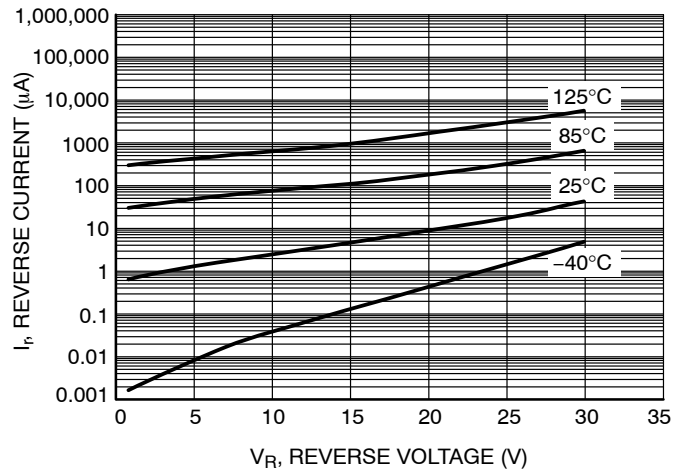


Figure 2. Leakage Current

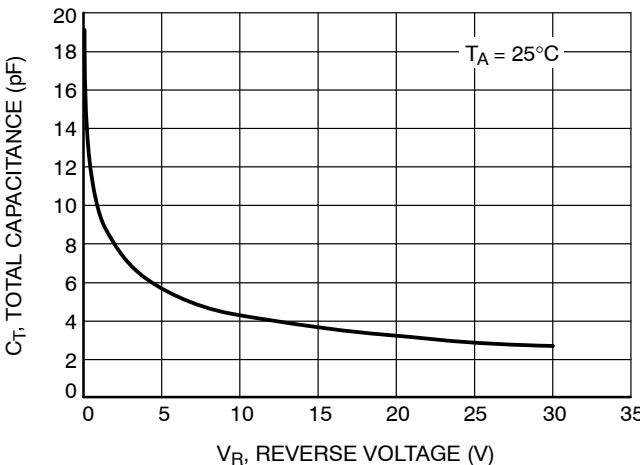


Figure 3. Total Capacitance

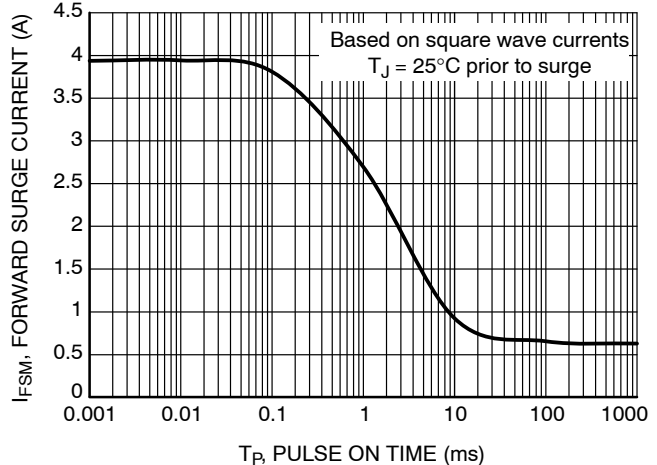


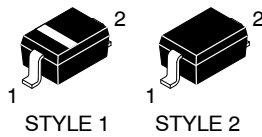
Figure 4. Forward Surge Current

# MECHANICAL CASE OUTLINE

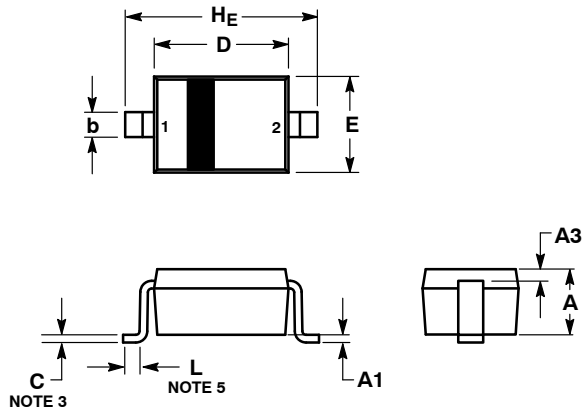
## PACKAGE DIMENSIONS

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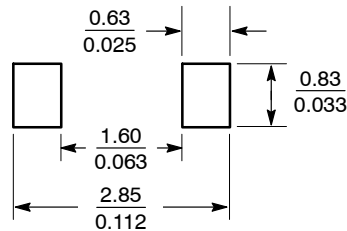
ON



SCALE 4:1



### SOLDERING FOOTPRINT\*



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

SOD-323  
CASE 477-02  
ISSUE H

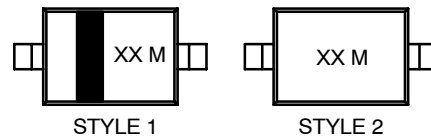
DATE 13 MAR 2007

#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

| DIM | MILLIMETERS |      |       | INCHES    |       |       |
|-----|-------------|------|-------|-----------|-------|-------|
|     | MIN         | NOM  | MAX   | MIN       | NOM   | MAX   |
| A   | 0.80        | 0.90 | 1.00  | 0.031     | 0.035 | 0.040 |
| A1  | 0.00        | 0.05 | 0.10  | 0.000     | 0.002 | 0.004 |
| A3  | 0.15 REF    |      |       | 0.006 REF |       |       |
| b   | 0.25        | 0.32 | 0.4   | 0.010     | 0.012 | 0.016 |
| C   | 0.089       | 0.12 | 0.177 | 0.003     | 0.005 | 0.007 |
| D   | 1.60        | 1.70 | 1.80  | 0.062     | 0.066 | 0.070 |
| E   | 1.15        | 1.25 | 1.35  | 0.045     | 0.049 | 0.053 |
| L   | 0.08        |      |       | 0.003     |       |       |
| HE  | 2.30        | 2.50 | 2.70  | 0.090     | 0.098 | 0.105 |

### GENERIC MARKING DIAGRAM\*



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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| DESCRIPTION:     | SOD-323     | PAGE 1 OF 1                                                                                                                                                                      |

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