

# NSR0170HT1G

## Schottky Barrier Diode

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. NSR0170H in a SOD-323 small footprint package enables designers to meet the challenging task of achieving higher efficiency designs and meeting reduced board space requirements.

### Features

- Very Low Forward Voltage Drop – 560 mV @ 10 mA
- Low Reverse Current – 25 nA @ 50 V  $V_R$
- 70 mA of Continuous Forward Current
- Power Dissipation of 180 mW with Minimum Trace
- Very High Switching Speed
- Low Capacitance – CT = 2 pF
- NSVR 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

### Typical Applications

- Automotive Modules
- Buck and Boost dc-dc Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

### MAXIMUM RATINGS

| Rating                                        | Symbol    | Value               | Unit |
|-----------------------------------------------|-----------|---------------------|------|
| Reverse Voltage                               | $V_R$     | 70                  | V    |
| Forward Current (DC)                          | $I_F$     | 70                  | mA   |
| Non-Repetitive Peak Surge Forward Current     | $I_{FSM}$ | 100                 | mA   |
| ESD Rating: Human Body Model<br>Machine Model | ESD       | Class 2<br>Class M3 |      |

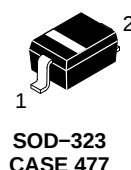
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



**ON Semiconductor®**

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## 70 V SCHOTTKY BARRIER DIODE



### MARKING DIAGRAM



Q = Specific Device Code  
M = Month Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device       | Package           | Shipping†          |
|--------------|-------------------|--------------------|
| NSR0170HT1G  | SOD-323 (Pb-Free) | 3000 / Tape & Reel |
| NSVR0170HT1G | SOD-323 (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.

# NSR0170HT1G

## 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>$P_D$ |     |     | 680<br>180  | $^\circ\text{C/W}$<br>mW |
| Thermal Resistance<br>Junction-to-Ambient (Note 2)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 440<br>280  | $^\circ\text{C/W}$<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>( $V_R = 50\text{ V}$ )<br>( $V_R = 70\text{ V}$ )                                | $I_R$  |     | 25<br>-           | 90<br>3.0         | nA<br>$\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 1.0\text{ mA}$ )<br>( $I_F = 10\text{ mA}$ )<br>( $I_F = 15\text{ mA}$ ) | $V_F$  |     | 340<br>560<br>650 | 390<br>640<br>730 | mV                  |
| Total Capacitance<br>( $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ )                                     | $C_T$  |     | 2.0               |                   | pF                  |

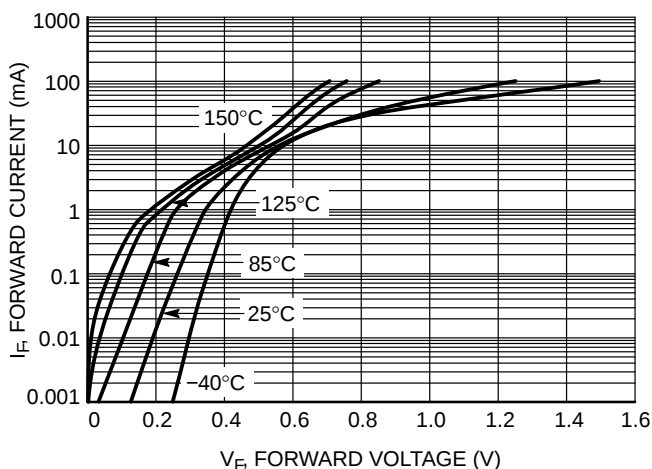


Figure 1. Forward Voltage

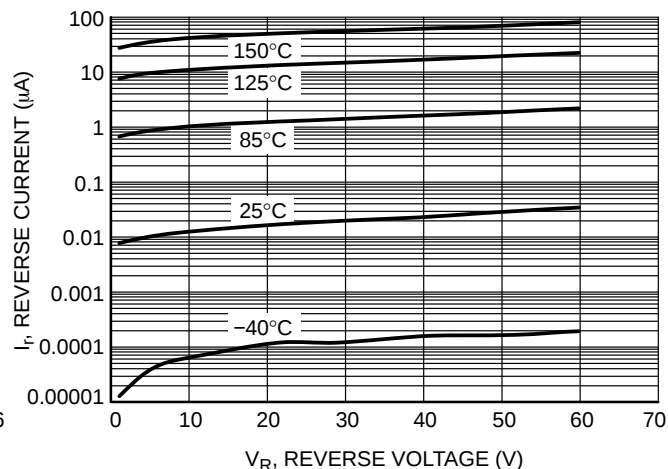


Figure 2. Leakage Current

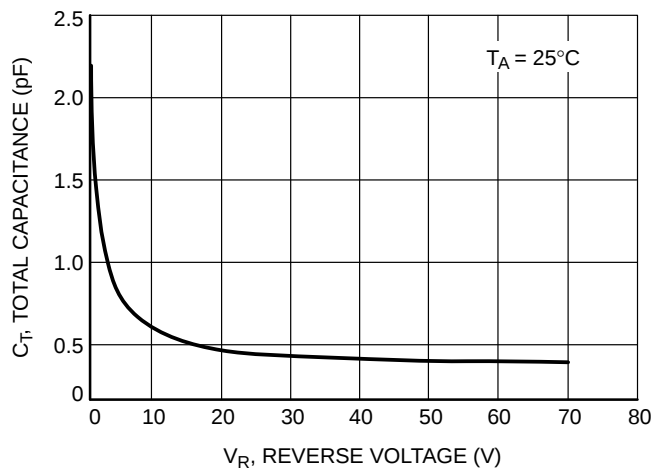
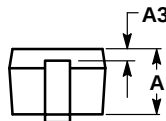
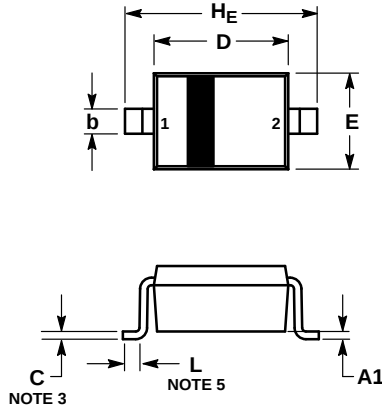


Figure 3. Total Capacitance

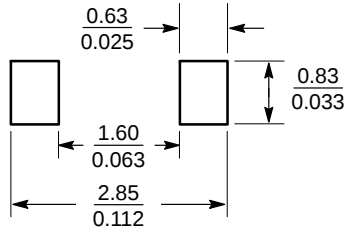
# NSR0170HT1G

## PACKAGE DIMENSIONS

SOD-323  
CASE 477-02  
ISSUE H



### SOLDERING FOOTPRINT\*



#### 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 |

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

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NSR0170H/D



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