

# NSR0620P2T5G

## 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. NSR0620P2 in a SOD–923 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

### Features

- Very Low Forward Voltage Drop – 350 mV @ 100 mA
- Low Reverse Current – 2.0  $\mu$ A @ 10 V
- Continuous Forward Current – 500 mA
- Power Dissipation with Minimum Trace – 190 mW
- Very High Switching Speed – 4.0 ns @ 10 mA
- Low Capacitance – 12 pF @ 1.0 V
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

### 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                               | $V_R$     | 20                  | Vdc  |
| Forward Continuous Current (DC)               | $I_F$     | 500                 | mA   |
| Non–Repetitive Peak Forward Surge Current     | $I_{FSM}$ | 1.0                 | A    |
| ESD Rating: Human Body Model<br>Machine Model | ESD       | Class 3B<br>Class C |      |

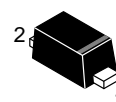
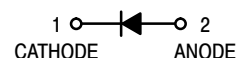
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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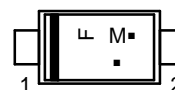
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## 20 V SCHOTTKY BARRIER DIODE



SOD–923  
CASE 514AB  
PLASTIC

### MARKING DIAGRAM



F = Specific Device Code  
M = Month Code  
■ = Pb–Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device       | Package              | Shipping†                      |
|--------------|----------------------|--------------------------------|
| NSR0620P2T5G | SOD–923<br>(Pb–Free) | 2 mm Pitch<br>8000/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.

# NSR0620P2T5G

## THERMAL CHARACTERISTICS

| Characteristic   | Symbol                   | Max         | Unit                     |
|--|--------------------------|-------------|--------------------------|
| Thermal Resistance<br>Junction-to-Ambient (Note 1)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ | 520<br>190  | $^\circ\text{C/W}$<br>mW |
| Thermal Resistance<br>Junction-to-Ambient (Note 2)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ | 175<br>570  | $^\circ\text{C/W}$<br>mW |
| Junction Operating and Storage Temperature Range   | $T_J, T_{stg}$           | -55 to +125 | $^\circ\text{C}$         |

1. Mounted onto a 4 in square FR-4 board 10 mm sq. 1 oz. Cu 0.06" thick single-sided. Operating to steady state.
2. 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>( $V_R = 20\text{ V}$ )                                 | $I_R$    |     | 2.0<br>9.0        | 10                | $\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 10\text{ mA}$ )<br>( $I_F = 100\text{ mA}$ )<br>( $I_F = 500\text{ mA}$ ) | $V_F$    |     | 270<br>350<br>480 | 310<br>390<br>520 | mV            |
| Total Capacitance<br>( $V_R = 1.0\text{ V}, f = 1\text{ MHz}$ )                                       | CT       |     | 12                |                   | pF            |
| Reverse Recovery Time<br>( $I_F = I_R = 10\text{ mA}, I_R = 1.0\text{ mA}$ )                          | $t_{rr}$ |     | 4.0               |                   | ns            |

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.

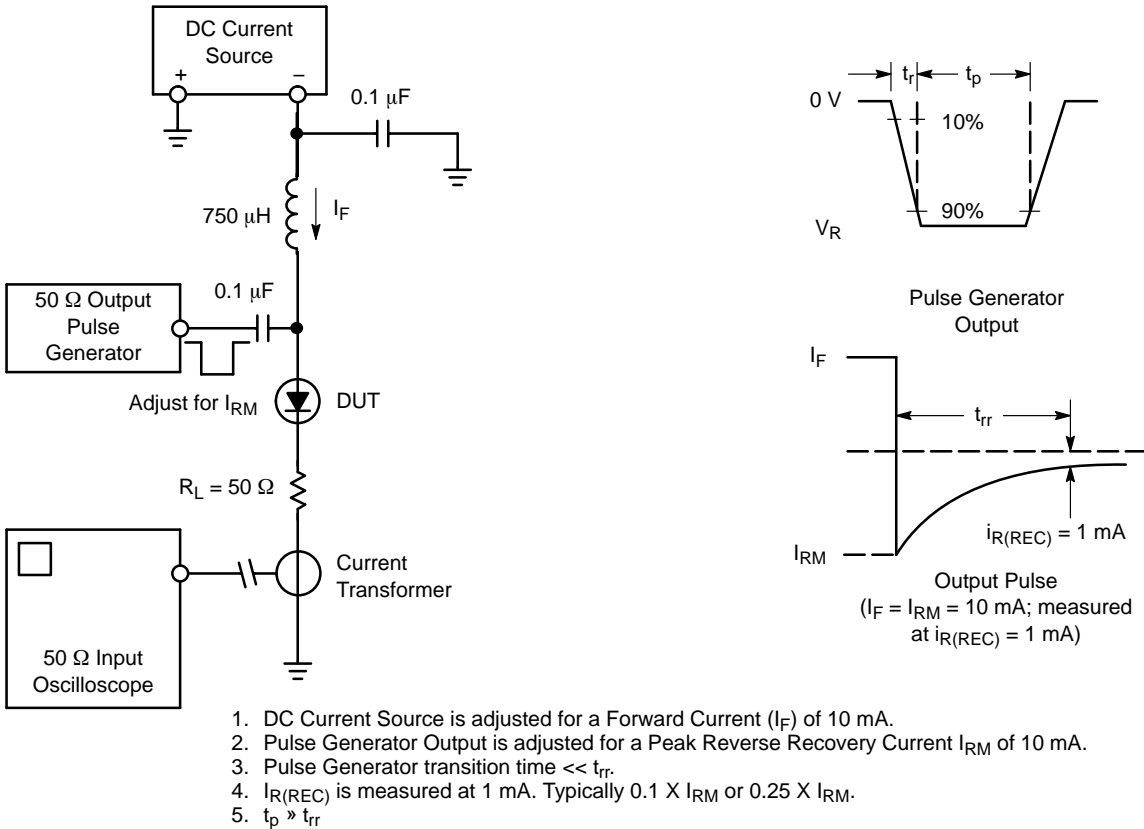


Figure 1. Recovery Time Equivalent Test Circuit

# NSR0620P2T5G

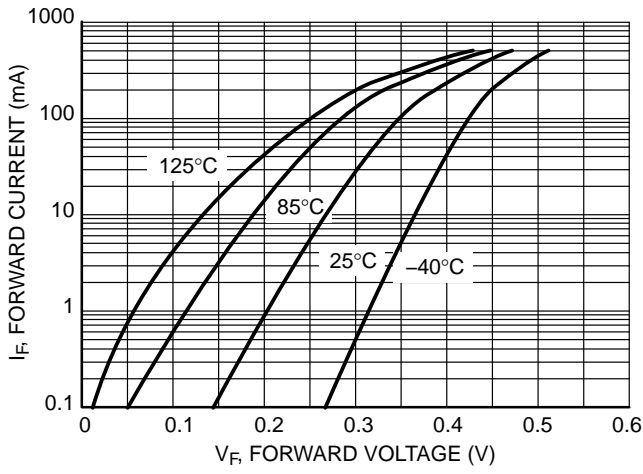


Figure 2.

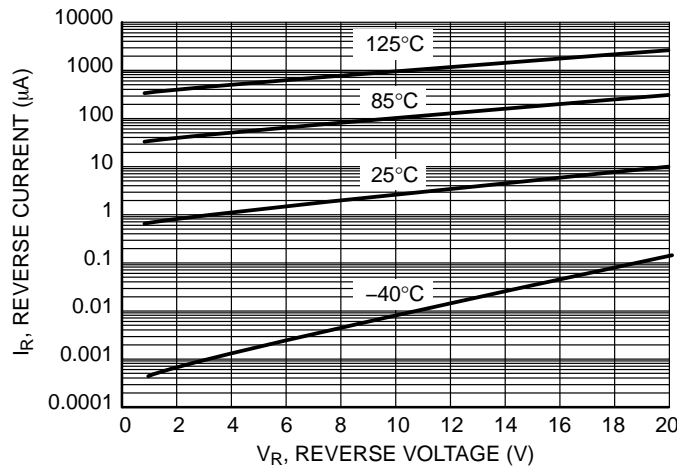


Figure 3.

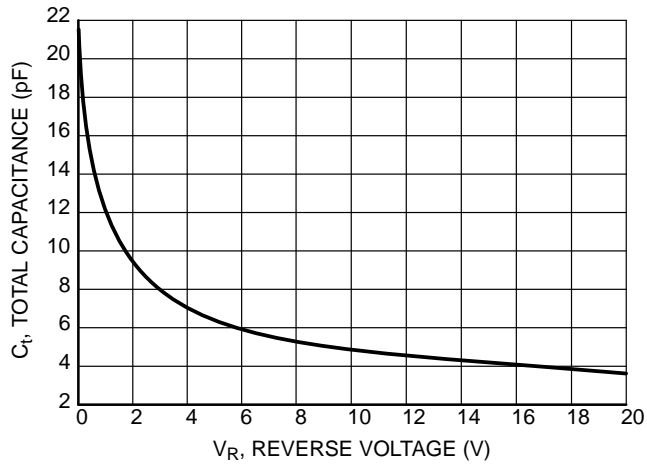
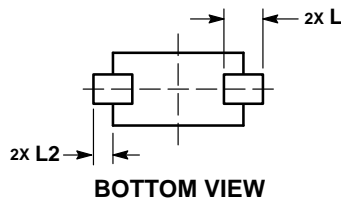
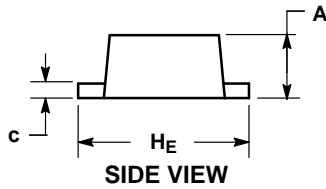
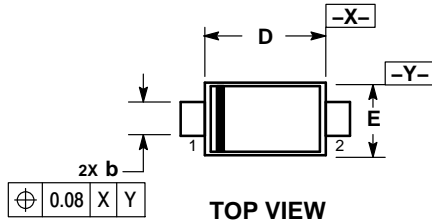


Figure 4.

# NSR0620P2T5G

## PACKAGE DIMENSIONS

SOD-923  
CASE 514AB  
ISSUE C

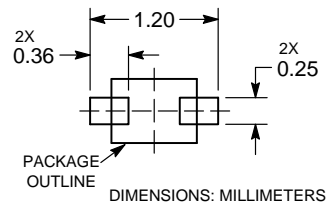


**NOTES:**

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.

| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A              | 0.34        | 0.37 | 0.40 | 0.013     | 0.015 | 0.016 |
| b              | 0.15        | 0.20 | 0.25 | 0.006     | 0.008 | 0.010 |
| c              | 0.07        | 0.12 | 0.17 | 0.003     | 0.005 | 0.007 |
| D              | 0.75        | 0.80 | 0.85 | 0.030     | 0.031 | 0.033 |
| E              | 0.55        | 0.60 | 0.65 | 0.022     | 0.024 | 0.026 |
| H <sub>E</sub> | 0.95        | 1.00 | 1.05 | 0.037     | 0.039 | 0.041 |
| L              | 0.19 REF    |      |      | 0.007 REF |       |       |
| L2             | 0.05        | 0.10 | 0.15 | 0.002     | 0.004 | 0.006 |

**SOLDERING FOOTPRINT\***



See Application Note AND8455/D for more mounting details

\*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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