

# Schottky Barrier Diode

## NSR0240P2

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. NSR0240P2 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 – 460 mV @ 100 mA
- Low Reverse Current – 0.2  $\mu$ A @ 25 V VR
- 200 mA of Continuous Forward Current
- Power Dissipation of 240 mW with Minimum Trace
- Very High Switching Speed
- Low Capacitance – CT = 7 pF
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- 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

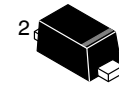
- Mobile Handsets
- MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS

### MAXIMUM RATINGS

| Rating                                        | Symbol    | Value               | Unit |
|-----------------------------------------------|-----------|---------------------|------|
| Reverse Voltage                               | $V_R$     | 40                  | V    |
| Forward Current (DC)                          | $I_F$     | 200                 | mA   |
| Non-Repetitive Peak Forward Surge Current     | $I_{FSM}$ | 2.0                 | A    |
| ESD Rating: Human Body Model<br>Machine Model | ESD       | Class 1C<br>Class A |      |

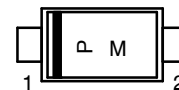
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## 40 V SCHOTTKY BARRIER DIODE



SOD-923  
CASE 514AB

### MARKING DIAGRAM



P = Specific Device Code  
M = Month Code

### ORDERING INFORMATION

| Device        | Package              | Shipping†          |
|---------------|----------------------|--------------------|
| NSR0240P2T5G  | SOD-923<br>(Pb-Free) | 8000 / Tape & Reel |
| NSVR0240P2T5G | SOD-923<br>(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 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>$P_D$ |     |     | 520<br>240  | $^\circ\text{C/W}$<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>710  | $^\circ\text{C/W}$<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>( $V_R = 25\text{ V}$ )<br>( $V_R = 40\text{ V}$ )                              | $I_R$  |     | 0.2<br>0.8           | 0.55<br>5.0           | $\mu\text{A}$ |
| Forward Voltage ( $I_F = 10\text{ mA}$ )<br>( $I_F = 100\text{ mA}$ )<br>( $I_F = 200\text{ mA}$ ) | $V_F$  |     | 0.34<br>0.46<br>0.54 | 0.365<br>0.50<br>0.60 | V             |
| Total Capacitance<br>( $V_R = 1.0\text{ V}$ , $f = 1\text{ MHz}$ )                                 | CT     |     | 7.0                  |                       | pF            |

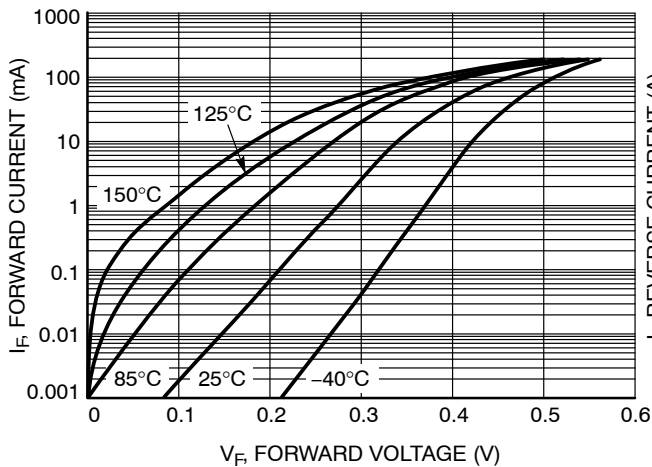


Figure 1. Forward Voltage

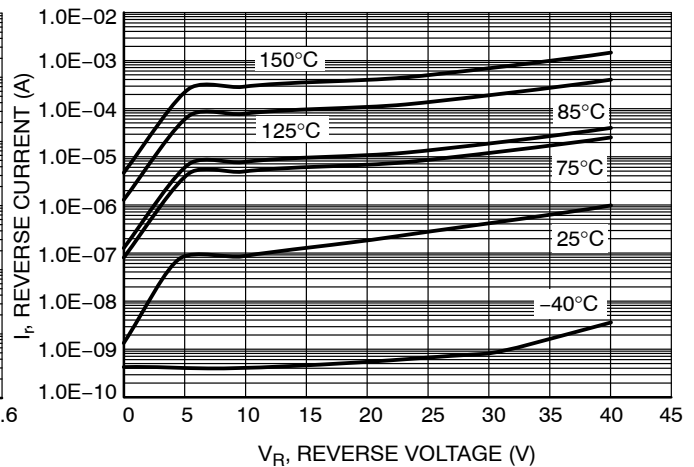


Figure 2. Leakage Current

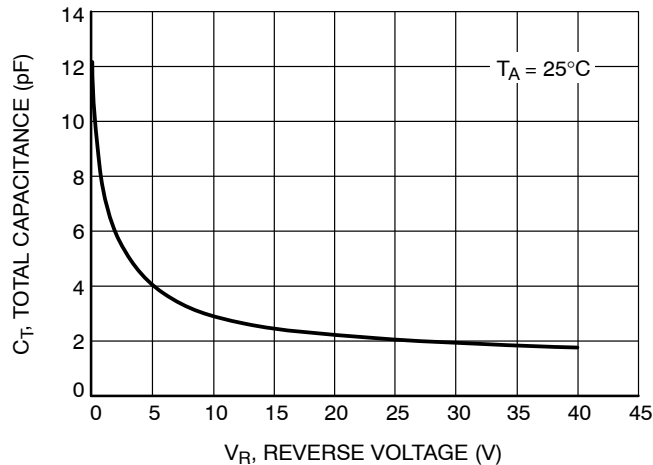
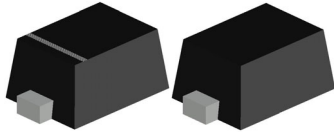
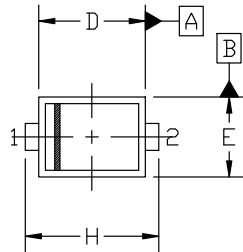


Figure 3. Total Capacitance

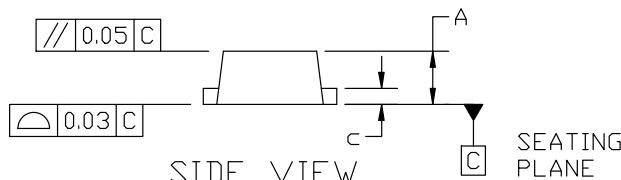


**SOD-923 0.80x0.60x0.37**  
CASE 514AB  
ISSUE E

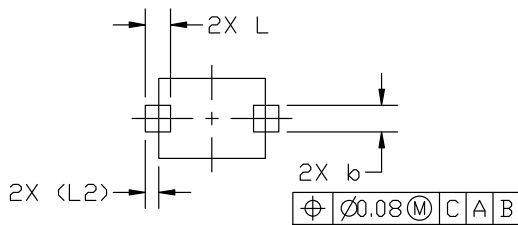
DATE 08 FEB 2024



TOP VIEW



SIDE VIEW



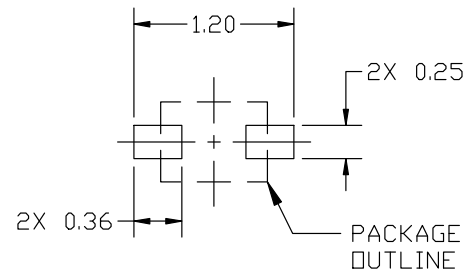
BOTTOM VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
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.
5. DIMENSION L WILL NOT EXCEED 0.30mm.

MILLIMETERS

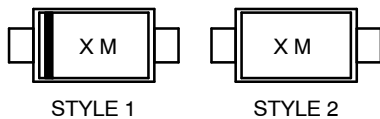
| DIM | MIN.     | NOM. | MAX. |
|-----|----------|------|------|
| A   | 0.34     | 0.37 | 0.40 |
| b   | 0.15     | 0.20 | 0.25 |
| c   | 0.07     | 0.12 | 0.17 |
| D   | 0.75     | 0.80 | 0.85 |
| E   | 0.55     | 0.60 | 0.65 |
| H   | 0.95     | 1.00 | 1.05 |
| L   | 0.19 REF |      |      |
| L2  | 0.05     | 0.10 | 0.15 |



RECOMMENDED MOUNTING  
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.

GENERIC  
MARKING DIAGRAM\*



X = 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. Some products may not follow the Generic Marking.

STYLE 1: PIN 1. CATHODE (POLARITY BAND)  
2. ANODE  
STYLE 2: NO POLARITY

|                  |                        |                                                                                                                                                                                  |
|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| DESCRIPTION:     | SOD-923 0.80x0.60x0.37 | PAGE 1 OF 1                                                                                                                                                                      |

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