

# Schottky Barrier Diode

## NSR0170P2

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. NSR0170P2 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 – 560 mV @ 10 mA
- Low Reverse Current – 25 nA @ 50 V VR
- 70 mA of Continuous Forward Current
- Power Dissipation of 240 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

- 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	$V_R$	70	V
Forward Current (DC)	$I_F$	70	mA
ESD Rating: Human Body Model Machine Model	ESD	Class 2 Class B	

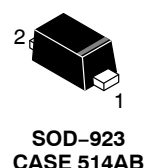
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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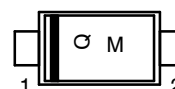
[www.onsemi.com](http://www.onsemi.com)

## 70 V SCHOTTKY BARRIER DIODE



SOD–923  
CASE 514AB

### MARKING DIAGRAM



Q = Specific Device Code  
M = Month Code

### ORDERING INFORMATION

Device	Package	Shipping†
NSR0170P2T5G	SOD–923 (Pb–Free)	2 mm Pitch 8000/Tape & Reel
NSVR0170P2T5G	SOD–923 (Pb–Free)	2 mm Pitch 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.

# NSR0170P2

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$			520 240	$^\circ\text{C/W}$ mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$			175 710	$^\circ\text{C/W}$ 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 ( $V_R = 50\text{ V}$ ) ( $V_R = 70\text{ V}$ )	$I_R$		25 -	90 3.0	nA $\mu\text{A}$
Forward Voltage ( $I_F = 1.0\text{ mA}$ ) ( $I_F = 10\text{ mA}$ ) ( $I_F = 15\text{ mA}$ )	$V_F$		0.34 0.56 0.65	0.39 0.64 0.73	V
Total Capacitance ( $V_R = 0\text{ V}, f = 1\text{ MHz}$ )	$C_T$		2.0		pF

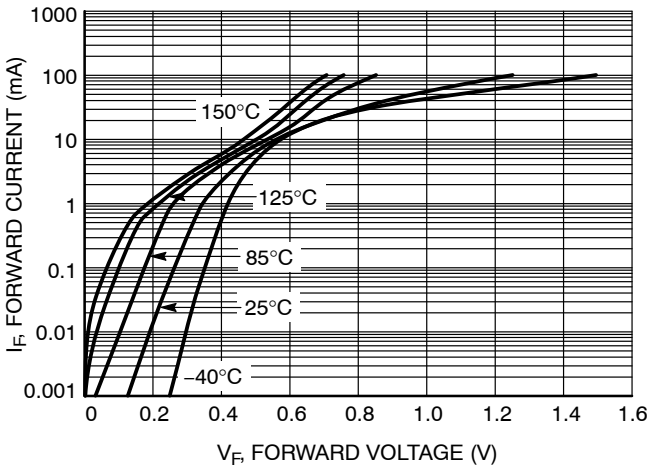


Figure 1. Forward Voltage

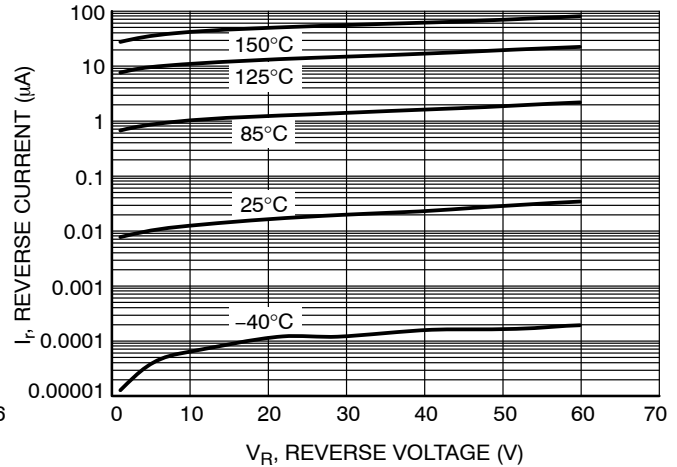


Figure 2. Leakage Current

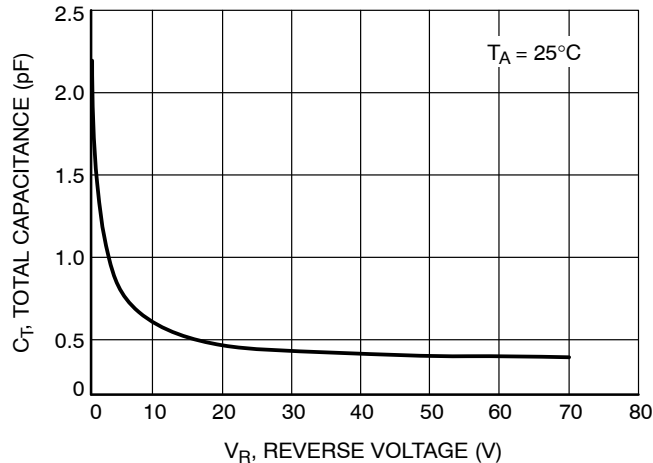
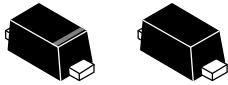


Figure 3. Total Capacitance

# MECHANICAL CASE OUTLINE

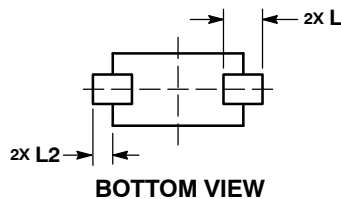
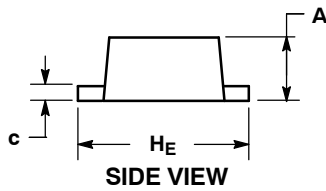
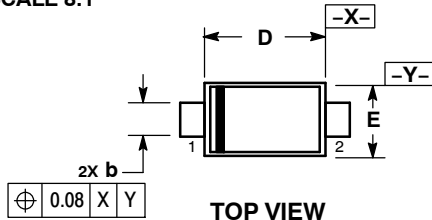
## PACKAGE DIMENSIONS

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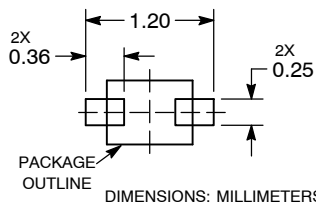


STYLE 1      STYLE 2

SCALE 8:1



### SOLDERING FOOTPRINT\*



**SOD-923**  
CASE 514AB-01  
ISSUE C

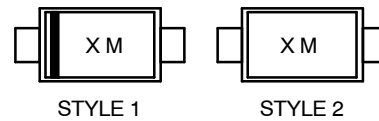
DATE 11 MAR 2011

#### 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
HE	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

### 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.

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

STYLE 2:  
NO POLARITY

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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<b>STATUS:</b>	<b>ON SEMICONDUCTOR STANDARD</b>	
<b>NEW STANDARD:</b>		
<b>DESCRIPTION:</b>	<b>SOD-923, 1.0X0.6X0.37, MAX HEIGHT 0.40</b>	<b>PAGE 1 OF 2</b>



ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION. REQ. BY J. DAUGHERTY.	29 AUG 2006
A	CHANGED DIMENSION A VALUES. REQ. BY D. TRUHITTE.	23 JAN 2007
B	CREATED CATHODE AND NON-CATHODE BAND VERSIONS. REQ. BY J. DAUGHERTY.	07 MAR 2007
C	ADDED BOTTOM VIEW AND DIMENSION L2. MODIFIED SOLDER FOOTPRINT. REQ. BY D. TRUHITTE.	11 MAR 2011

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