

# Schottky Barrier Diode

## NSR0170

Schottky barrier diodes are optimized for very low forward voltage drop and low leakage current making them ideal devices to be used in a wide range of dc-dc converter, clamping and protection applications. NSR0170 in SOD-323, SOD-923 and X2DFNW2 miniature packages enable designers to meet the challenging task of achieving higher efficiency while meeting reduced PCB 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 -  $C_T = 2$  pF
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- NSVR0170MX2WT5G - Wettable Flank Package for Optimal Automated Optical Inspection (AOI)
- 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 and MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS
- Automotive ECUs

### MAXIMUM RATINGS

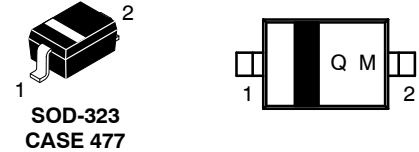
Symbol	Rating	Value	Unit
$V_R$	Reverse Voltage	70	V
$I_F$	Forward Current (DC)	70	mA
ESD	ESD Rating: Human Body Model Machine Model	Class 2 Class B	

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.

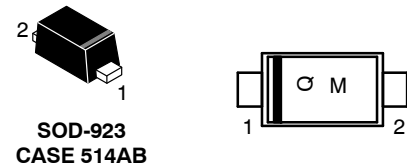
## 70 V SCHOTTKY BARRIER DIODE



### MARKING DIAGRAMS



Q = Specific Device Code  
M = Month Code



Q = Specific Device Code  
M = Month Code



Q = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
NSR0170HT1G	SOD-323 (Pb-Free)	3,000 / Tape & Reel
NSVR0170HT1G		
NSR0170P2T5G	SOD-923 (Pb-Free)	2 mm Pitch 8000/ Tape & Reel
NSVR0170P2T5G		
NSVR0170MX2WT5G	X2DFNW2 (Pb-Free)	8,000/ Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

# NSR0170

## THERMAL CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Unit
$R_{\theta JA}$ $P_D$	Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	–	–	520 240	$^\circ\text{C}/\text{W}$ mW
$R_{\theta JA}$ $P_D$	Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	–	–	175 710	$^\circ\text{C}/\text{W}$ mW
$T_J, T_{stg}$	Junction and Storage Temperature Range	–	–	–55 to +150	$^\circ\text{C}$

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)

Symbol	Characteristic	Min	Typ	Max	Unit
$I_R$	Reverse Leakage ( $V_R = 50\text{ V}$ ) ( $V_R = 70\text{ V}$ )	–	25 –	90 3.0	nA $\mu\text{A}$
$V_F$	Forward Voltage ( $I_F = 1.0\text{ mA}$ ) ( $I_F = 10\text{ mA}$ ) ( $I_F = 15\text{ mA}$ )	–	0.34 0.56 0.65	0.39 0.64 0.73	V
$C_T$	Total Capacitance ( $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ )	–	2.0	–	pF

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.

# NSR0170

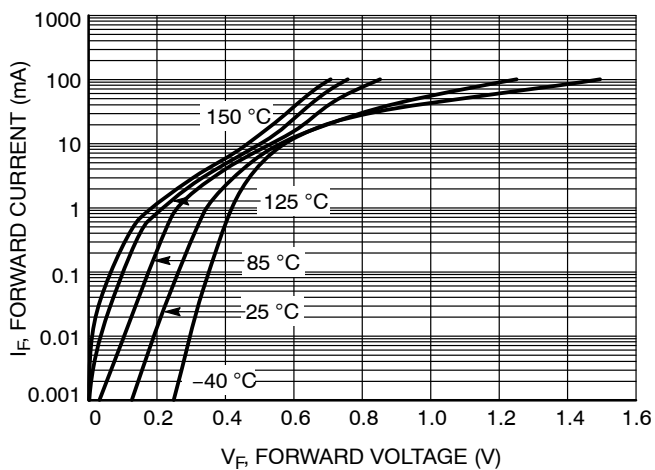


Figure 1. Forward Voltage

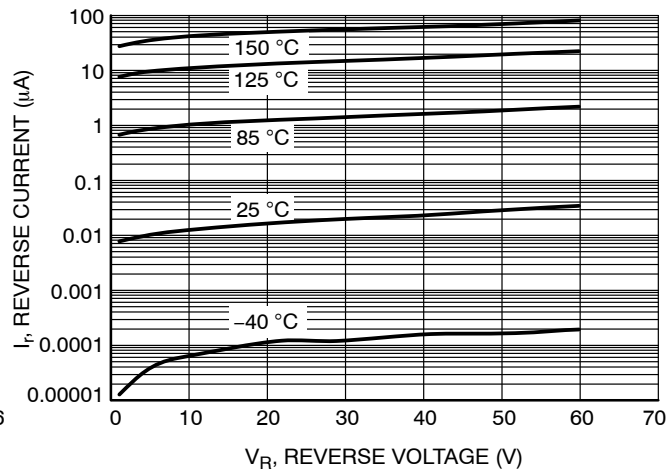


Figure 2. Leakage Current

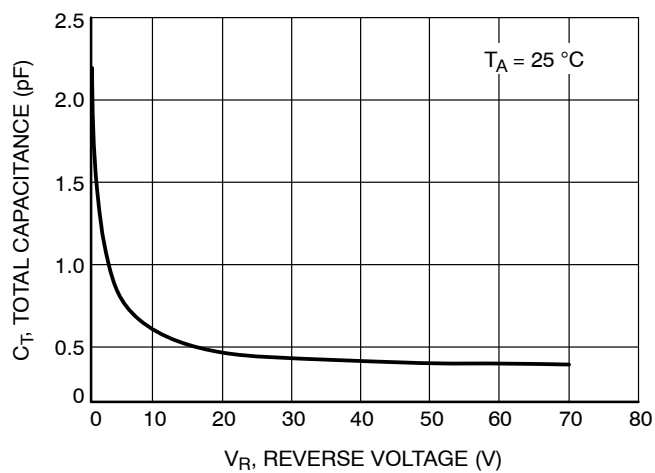


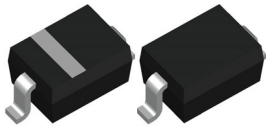
Figure 3. Total Capacitance

# NSR0170

## REVISION HISTORY

Revision	Description of Changes	Date
2	Update of the front page 711BG case outline 3D model.	11/19/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



**SOD-323 1.70x1.25x0.85  
CASE 477  
ISSUE K**

DATE 11 MAR 2024



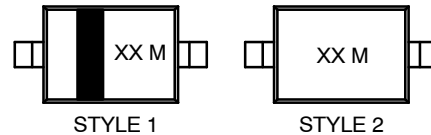
NOTES:

1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M, 2018.
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 MEASURE FROM END OF RADIUS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.80	0.90	1.00
A1	0.00	0.05	0.10
A2	0.75	0.85	0.95
A3	0.15 (REF)		
b	0.25	0.32	0.4
c	0.09	0.12	0.18
D	1.60	1.70	1.80
E	1.15	1.25	1.35
H	2.30	2.50	2.70
L	0.08	---	---
L1	0.40 (REF)		

\*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\***



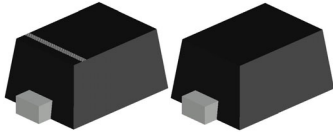
XX = Specific Device Code  
M = Date Code

\*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. Some products may not follow the Generic Marking.

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

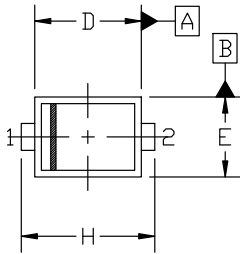
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<b>DESCRIPTION:</b>	<b>SOD-323 1.70x1.25x0.85</b>	<b>PAGE 1 OF 1</b>

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

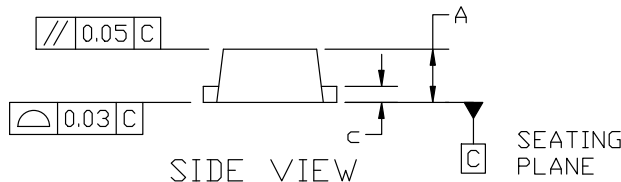
DATE 08 FEB 2024



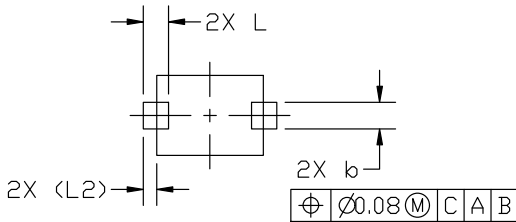
TOP VIEW

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.

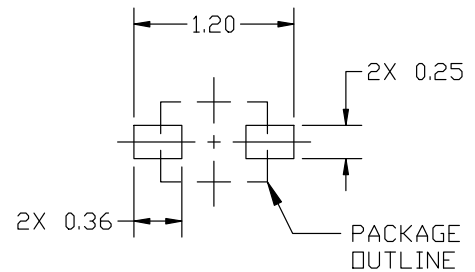


SIDE VIEW



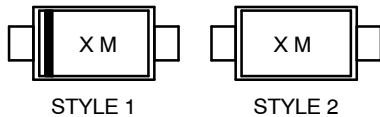
BOTTOM VIEW

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

**GENERIC MARKING DIAGRAM\***



X = Specific Device Code  
M = Date Code

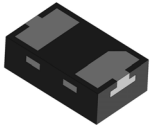
\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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

\*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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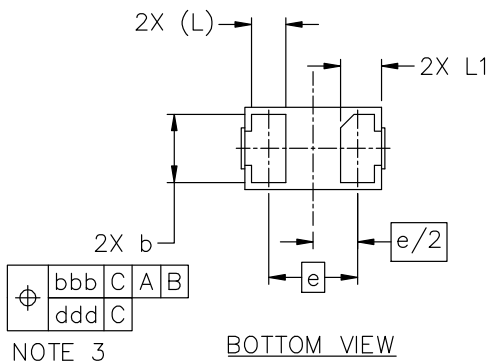
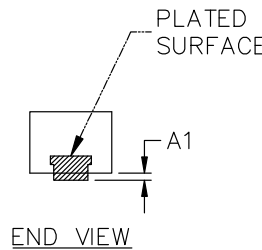
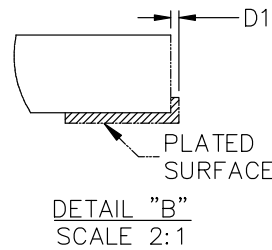
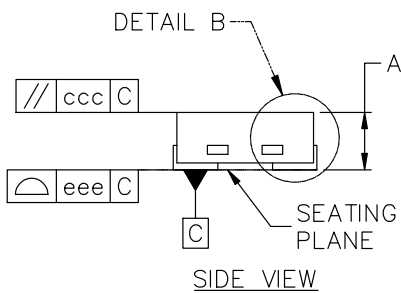
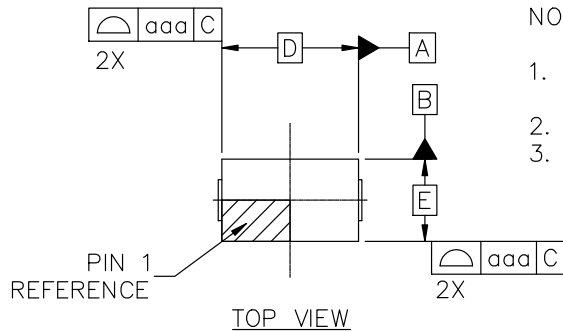


**X2DFNW-2 1.00x0.60x0.37, 0.65P**  
CASE 711BG  
ISSUE F

DATE 06 NOV 2025

NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. DIMENSION b APPLIES TO THE PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 FROM THE TERMINAL TIP.



NOTE 3

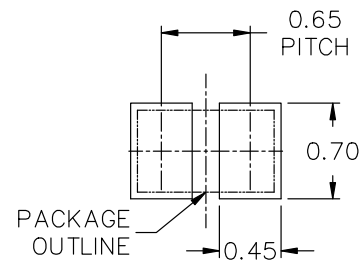
**GENERIC MARKING DIAGRAM\***



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", may or not be present. Some products may not follow the Generic Marking.

MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.34	0.37	0.40
A1	~	~	0.05
b	0.45	0.50	0.55
D	1.00 BSC		
D1	~	~	0.05
E	0.60 BSC		
e	0.65 BSC		
L	0.22 REF		
L1	0.24	0.28	0.34
TOLERANCE FORM & POSITION			
aaa	0.05		
bbb	0.10		
ccc	0.05		
ddd	0.05		
eee	0.05		



RECOMMENDED MOUNTING FOOTPRINT\*

\* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE onsemi SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

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