

# Schottky Barrier Diode

## NSR0240H

### 40 VOLT 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. NSR0240H in a SOD-323 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

#### Features

- Very Low Forward Voltage Drop –480 mV @ 100 mA
- Low Reverse Current – 0.2  $\mu$ A @ 25 V VR
- 250 mA of Continuous Forward Current
- Power Dissipation of 160 mW with Minimum Trace
- Very High Switching Speed
- Low Capacitance – CT = 4 pF
- NSV 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

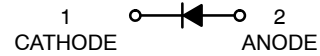
#### Markets

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

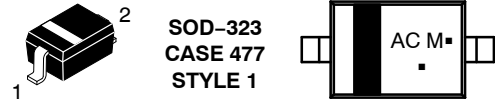
#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	40	Vdc
Forward Continuous Current (DC)	$I_F$	250	mA
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$	1.0	A
ESD Rating: Human Body Model Machine Model	ESD	Class 1C Class M2	

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.



#### MARKING DIAGRAM



SOD-323  
CASE 477  
STYLE 1

AC = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NSR0240HT1G	SOD-323 (Pb-Free)	3000 / Tape & Reel
NSVR0240HT1G	SOD-323 (Pb-Free)	3000 / Tape & Reel

<sup>†</sup>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.

# NSR0240H

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	740 160	$^\circ\text{C}/\text{W}$ $\text{mW}$
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	460 270	$^\circ\text{C}/\text{W}$ $\text{mW}$
Junction and Storage Temperature Range	$T_J, T_{stg}$	-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)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage ( $V_R = 10\text{ V}$ ) ( $V_R = 25\text{ V}$ ) ( $V_R = 40\text{ V}$ )	$I_R$		0.2 0.6	0.55 2.0 10	$\mu\text{A}$
Forward Voltage ( $I_F = 10\text{ mA}$ ) ( $I_F = 100\text{ mA}$ ) ( $I_F = 200\text{ mA}$ )	$V_F$		345 480 585	450 550 710	$\text{mV}$
Total Capacitance ( $V_R = 5.0\text{ V}$ , $f = 1\text{ MHz}$ )	CT		4.0		$\text{pF}$
Reverse Recovery Time ( $I_F = I_R = 10\text{ mA}$ , $I_R = 1.0\text{ mA}$ )	$t_{rr}$		3.0		$\text{ns}$

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.

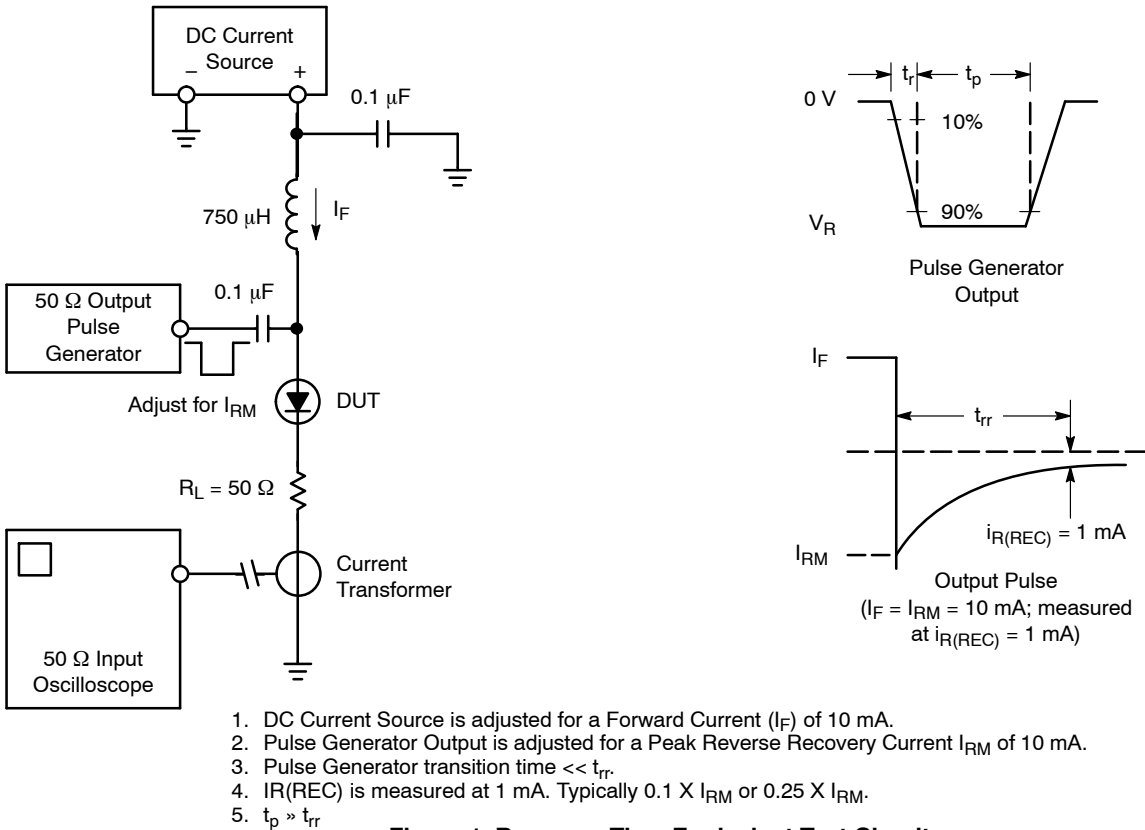


Figure 1. Recovery Time Equivalent Test Circuit

# NSR0240H

## TYPICAL CHARACTERISTICS

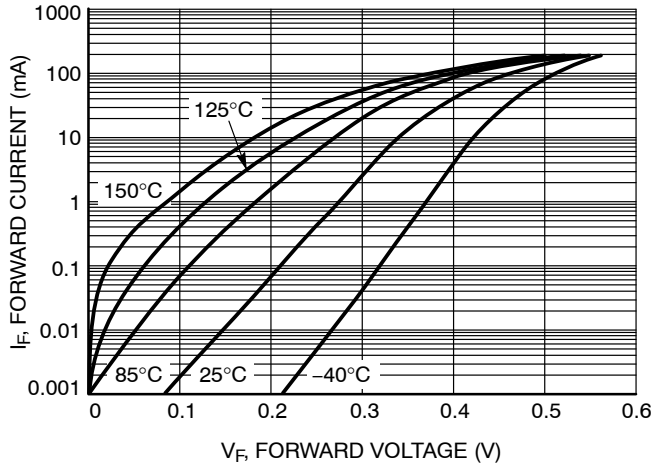


Figure 2. Forward Voltage

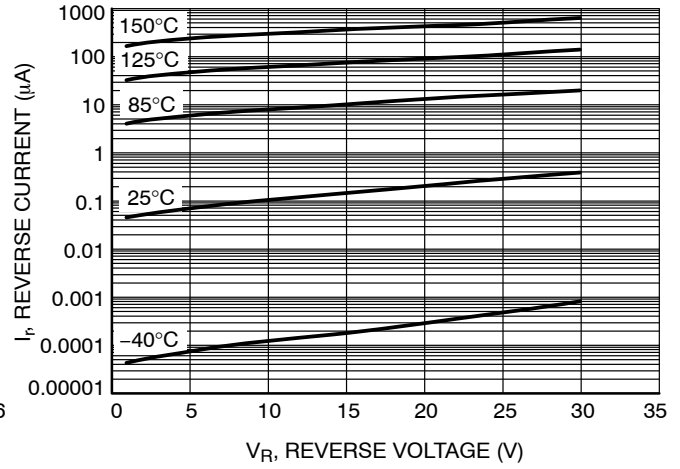


Figure 3. Leakage Current

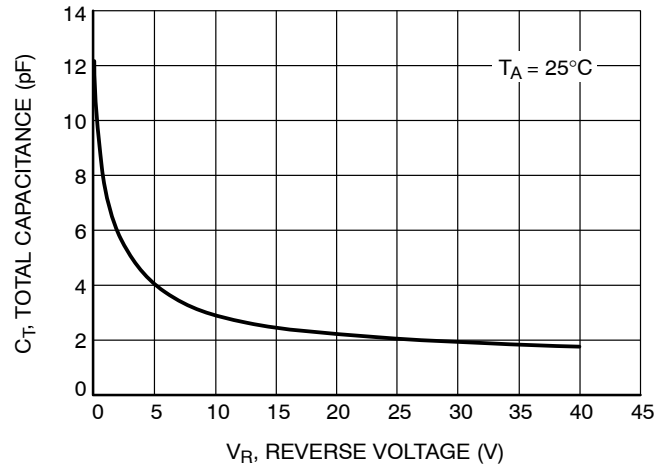
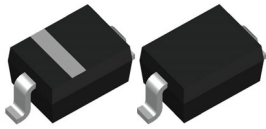


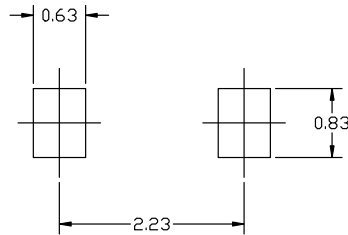
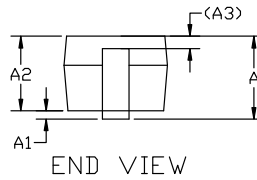
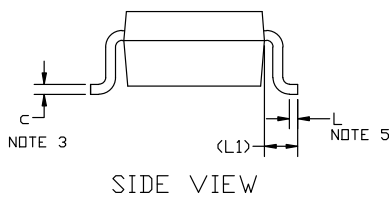
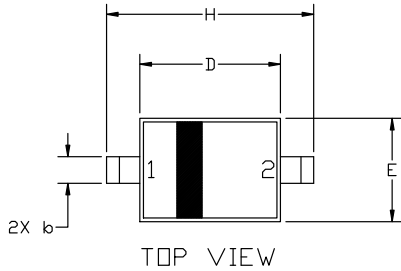
Figure 4. Total Capacitance

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



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

DATE 11 MAR 2024



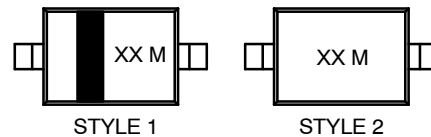
NOTES:

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

STYLE 2: NO POLARITY

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