

# NSR0520V2T1G

## 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. NSR0520V2 in a SOD-523 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

### Features

- Very Low Forward Voltage Drop – 325 mV @ 100 mA
- Low Reverse Current – 8.0  $\mu$ A @ 10 V
- Continuous Forward Current – 500 mA
- Power Dissipation with Minimum Trace – 170 mW
- Very High Switching Speed – 12 ns @ 10 mA
- Low Capacitance – 35 pF @ 1.0 V
- 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 and 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	$I_{FSM}$	2.0	A
ESD Rating: Human Body Model Machine Model	ESD	Class 3B Class C	

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



**ON Semiconductor**<sup>®</sup>

<http://onsemi.com>

## 20 VOLT SCHOTTKY BARRIER DIODE



SOD-523  
CASE 502  
PLASTIC

### MARKING DIAGRAM



AA = Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation position may vary depending upon manufacturing location.

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NSR0520V2T1G	SOD-523* (Pb-Free)	3000/Tape & Reel

\*This package is inherently Pb-Free.

<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.

# NSR0520V2T1G

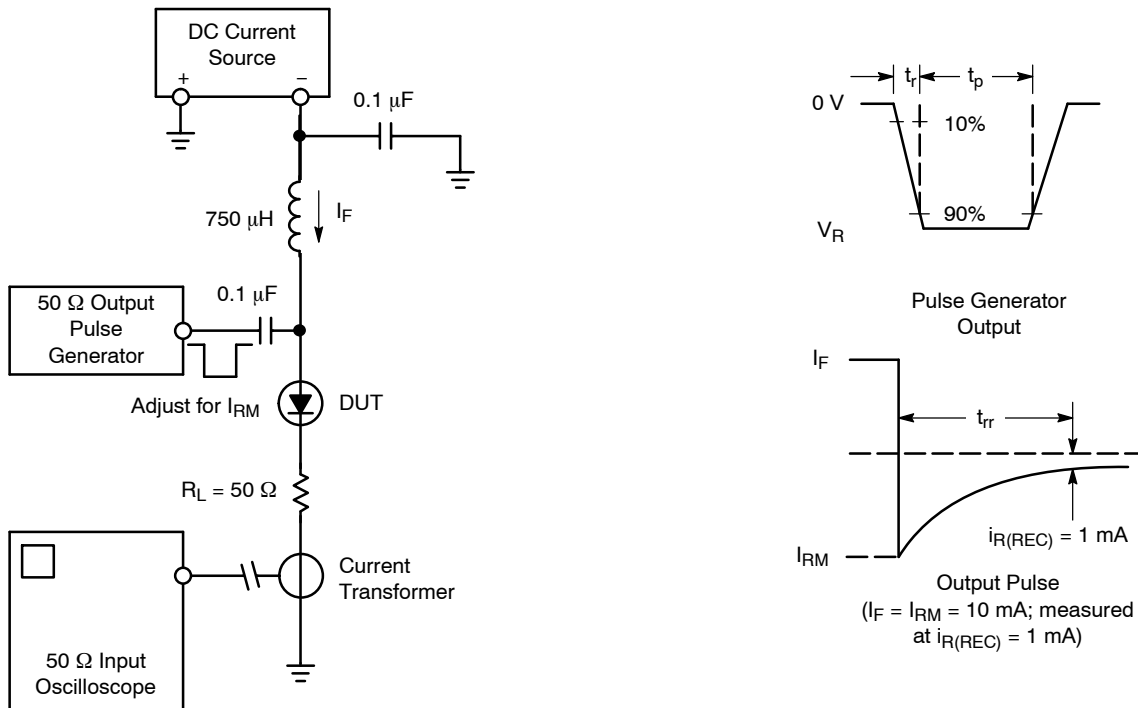
## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	600 170	$^\circ\text{C}/\text{W}$ $\text{mW}$
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	300 340	$^\circ\text{C}/\text{W}$ $\text{mW}$
Junction 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 ( $V_R = 10\text{ V}$ ) ( $V_R = 20\text{ V}$ )	$I_R$		8.0 75	30	$\mu\text{A}$
Forward Voltage ( $I_F = 10\text{ mA}$ ) ( $I_F = 100\text{ mA}$ ) ( $I_F = 500\text{ mA}$ )	$V_F$		255 325 410	320 390 480	$\text{mV}$
Total Capacitance ( $V_R = 1.0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_T$		35		$\text{pF}$
Reverse Recovery Time ( $I_F = I_R = 10\text{ mA}$ , $I_R = 1.0\text{ mA}$ )	$t_{rr}$		12.0		$\text{ns}$



1. DC Current Source is adjusted for a Forward Current ( $I_F$ ) of 10 mA.
2. Pulse Generator Output is adjusted for a Peak Reverse Recovery Current  $I_{RM}$  of 10 mA.
3. Pulse Generator transition time  $\ll t_{rr}$ .
4.  $I_{R(REC)}$  is measured at 1 mA. Typically  $0.1 \times I_{RM}$  or  $0.25 \times I_{RM}$ .
5.  $t_p \gg t_{rr}$ .

Figure 1. Recovery Time Equivalent Test Circuit

# NSR0520V2T1G

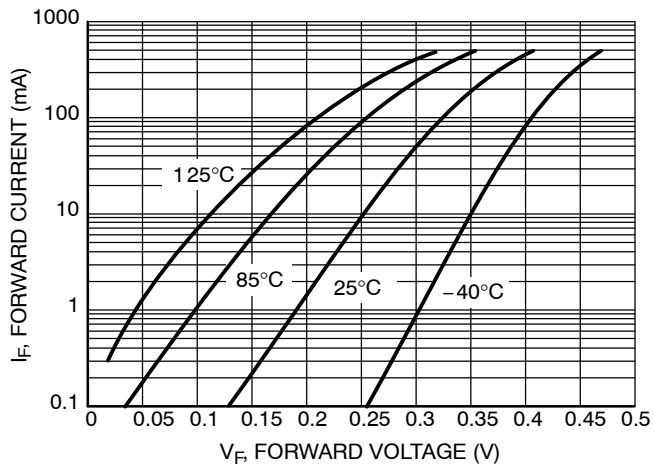


Figure 2.

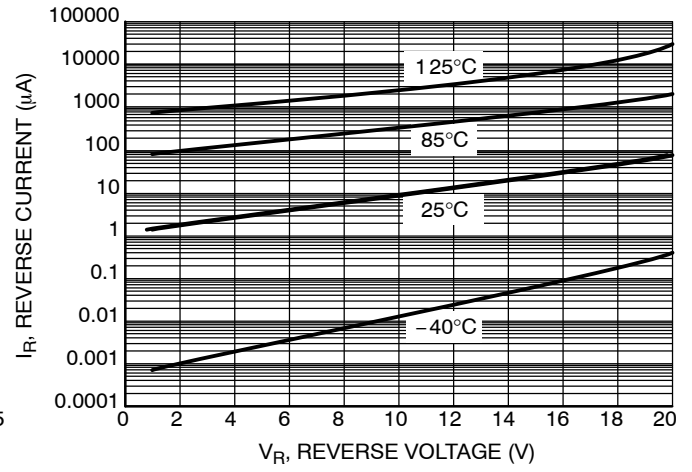


Figure 3.

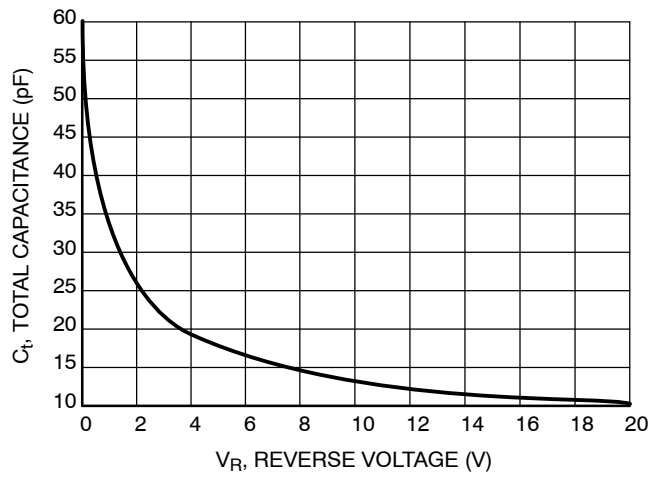
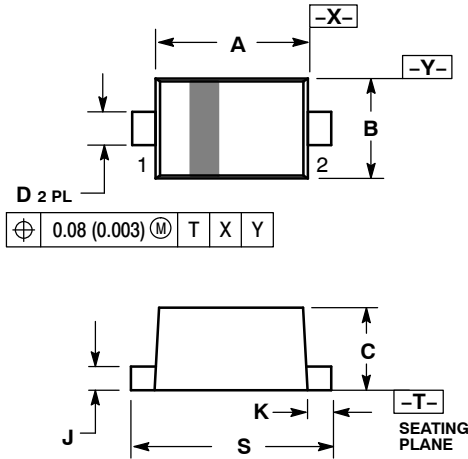


Figure 4.

# NSR0520V2T1G

## PACKAGE DIMENSIONS

**SOD-523**  
CASE 502-01  
ISSUE C

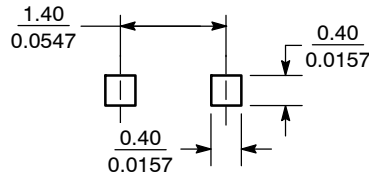


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.10	1.20	1.30	0.043	0.047	0.051
B	0.70	0.80	0.90	0.028	0.032	0.035
C	0.50	0.60	0.70	0.020	0.024	0.028
D	0.25	0.30	0.35	0.010	0.012	0.014
J	0.07	0.14	0.20	0.0028	0.0055	0.0079
K	0.15	0.20	0.25	0.006	0.008	0.010
S	1.50	1.60	1.70	0.059	0.063	0.067

### SOLDERING FOOTPRINT\*



SCALE 10:1 (mm/inches)

\*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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