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 μA @ 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

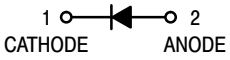
Rating	Symbol	Value	Unit
Reverse Voltage	V_R	20	Vdc
Forward Continuous Current (DC)	I_F	500	mA
Non−Repetitive Peak Forward Surge Current	I_{FSM}	2.0	A
ESD Rating: Human Body Model Machine Model	ESD	Class 3B Class C	

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®

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†
NSR0520V2T1G	SOD−523* (Pb−Free)	3000/Tape & Reel

*This package is inherently Pb−Free.

†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.

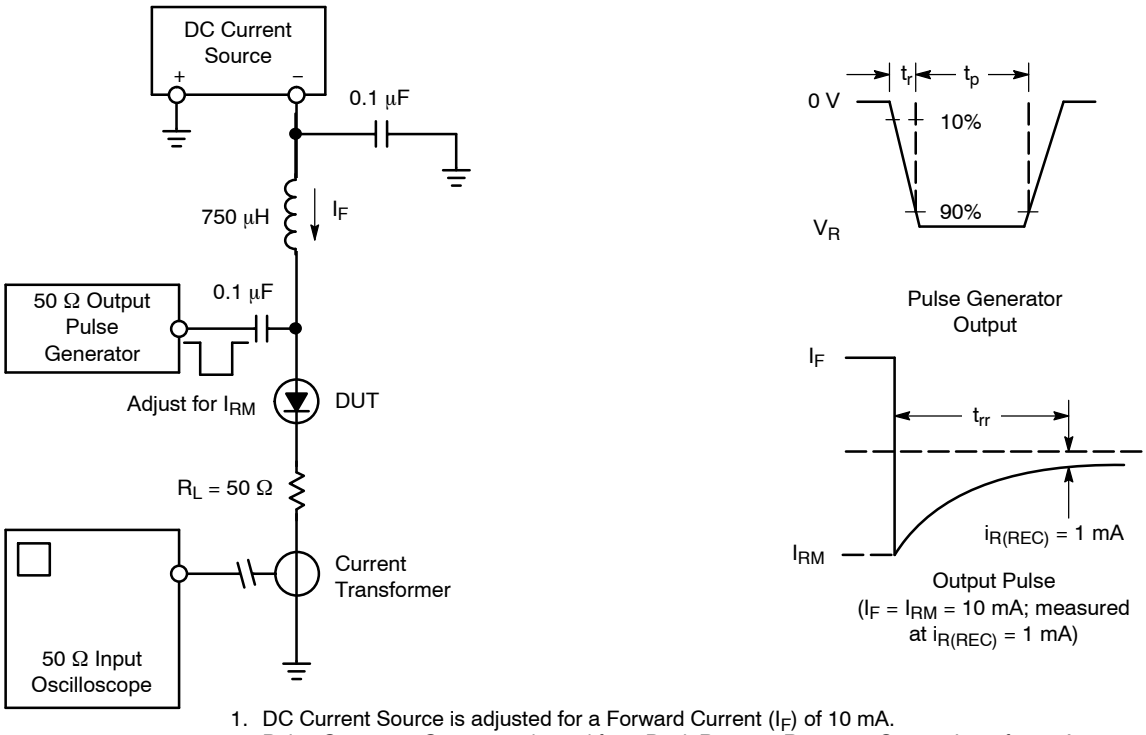
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction−to−Ambient (Note 1) Total Power Dissipation @ T_A = 25°C	 $R_{\theta JA}$ P_D	 600 170	 °C/W mW
Thermal Resistance Junction−to−Ambient (Note 2) Total Power Dissipation @ T_A = 25°C	 $R_{\theta JA}$ P_D	 300 340	 °C/W mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +125	°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°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage (V_R = 10 V) (V_R = 20 V)	I_R		 8.0 75	 30	µA
Forward Voltage (I_F = 10 mA) (I_F = 100 mA) (I_F = 500 mA)	V_F		 255 325 410	 320 390 480	mV
Total Capacitance (V_R = 1.0 V, f = 1 MHz)	C_T		35		pF
Reverse Recovery Time (I_F = I_R = 10 mA, I_R = 1.0 mA)	t_{rr}		12.0		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 << t_{rr}.
4. $I_{R(REC)}$ is measured at 1 mA. Typically 0.1 X I_{RM} or 0.25 X I_{RM}.
5. t_p » t_{rr}

Figure 1. Recovery Time Equivalent Test Circuit

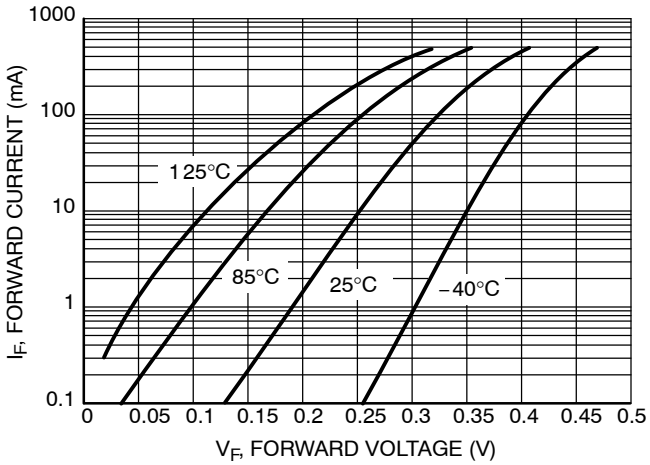


Figure 2.

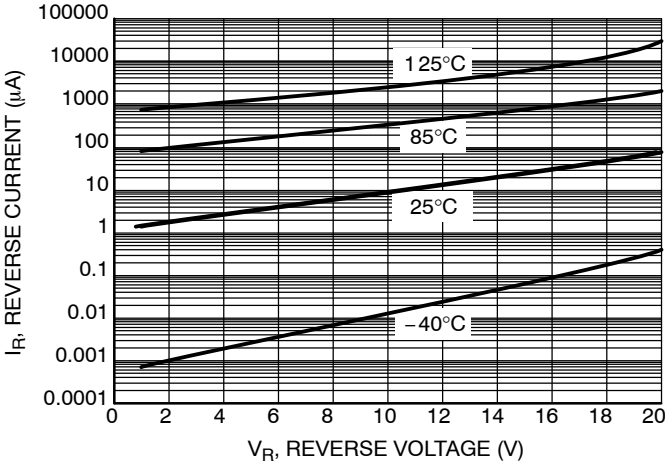


Figure 3.

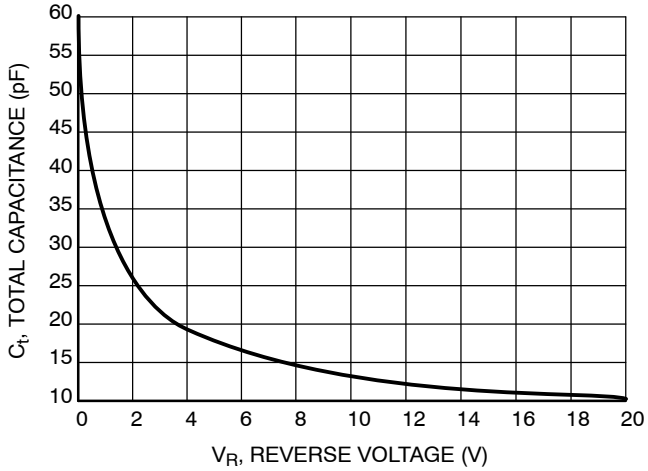
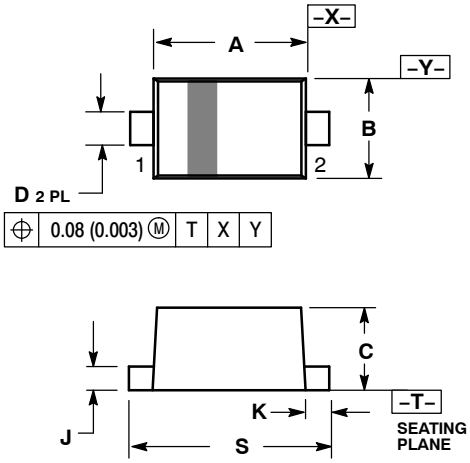


Figure 4.

NSR0520V2T1G

PACKAGE DIMENSIONS

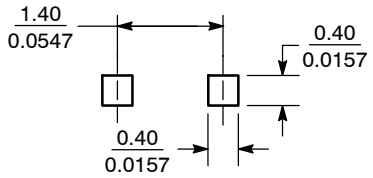
SOD−523
CASE 502−01
ISSUE C



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.

	MILLIMETERS			INCHES		
DIM	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 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

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Japan Customer Focus Center
Phone: 81−3−5773−3850

ON Semiconductor Website: **www.onsemi.com**

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For additional information, please contact your local Sales Representative