# **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
- 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 and Protection

#### Markets

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

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V <sub>R</sub>	20	Vdc
Forward Continuous Current (DC)	I <sub>F</sub>	500	mA
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>	2.0	Α
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	I <sub>FRM</sub>	1.5	Α
ESD Rating: Human Body Model Machine Model	ESD	Class 3B Class C	

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.



### ON Semiconductor®

http://onsemi.com

# 20 VOLT SCHOTTKY BARRIER DIODE





SOD-523 CASE 502 STYLE 1

#### **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
NSVR0520V2T1G	SOD-523 (Pb-Free)	3000/Tape & Reel
NSR0520V2T5G	SOD-523 (Pb-Free)	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.

#### THERMAL CHARACTERISTICS

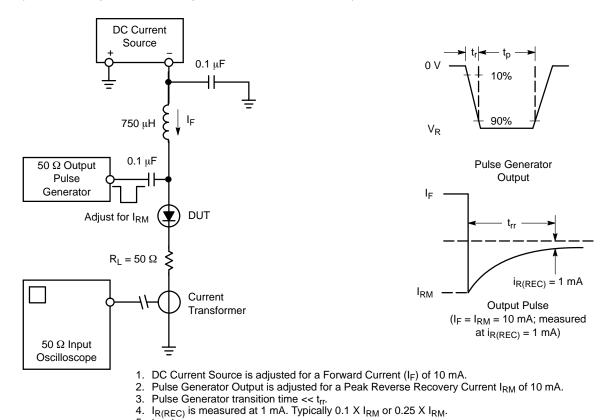
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ T <sub>A</sub> = 25°C	R <sub>θJA</sub>	600	°C/W
	P <sub>D</sub>	170	mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ T <sub>A</sub> = 25°C	R <sub>θJA</sub>	300	°C/W
	P <sub>D</sub>	340	mW
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-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	Тур	Max	Unit
Reverse Leakage $(V_R = 10 \text{ V})$ $(V_R = 20 \text{ V})$	I <sub>R</sub>		8.0 75	30	μΑ
Forward Voltage (I <sub>F</sub> = 10 mA) (I <sub>F</sub> = 100 mA) (I <sub>F</sub> = 500 mA)	V <sub>F</sub>		255 325 410	320 390 480	mV
Total Capacitance (V <sub>R</sub> = 1.0 V, f = 1 MHz)	СТ		35		pF
Reverse Recovery Time $(I_F = I_R = 10 \text{ mA}, I_R = 1.0 \text{ mA})$	t <sub>rr</sub>		12.0		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.



- p » t<sub>rr</sub>
- 5. t<sub>p</sub> » t<sub>rr</sub>

Figure 1. Recovery Time Equivalent Test Circuit

### **TYPICAL CHARACTERISTICS**

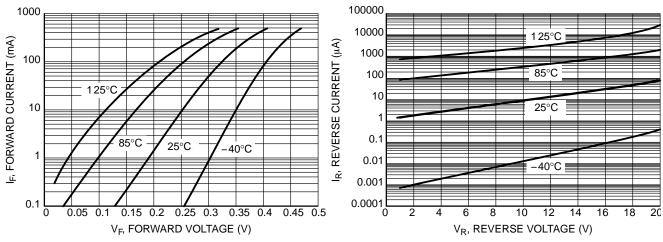


Figure 2. Figure 3.

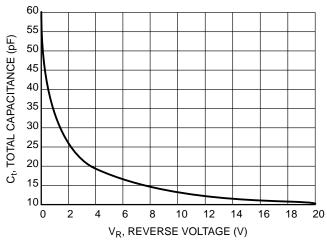
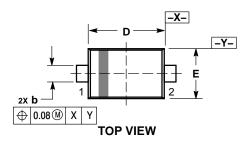
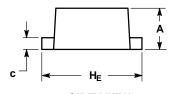


Figure 4.

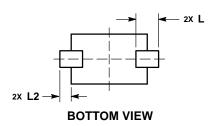
#### PACKAGE DIMENSIONS

SOD-523 **CASE 502 ISSUE E** 







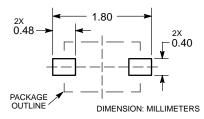


#### NOTES

- 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
- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS			
DIM	MIN	NOM	MAX	
Α	0.50	0.60	0.70	
b	0.25	0.30	0.35	
С	0.07	0.14	0.20	
D	1.10	1.20	1.30	
E	0.70	0.80	0.90	
HE	1.50	1.60	1.70	
L	0.30 REF			
L2	0.15	0.20	0.25	

### RECOMMENDED **SOLDERING FOOTPRINT\***



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

ON Semiconductor and iii) are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all Claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

N. American Technical Support: 800-282-9855 Toll Free

### **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

Europe, Middle East and Africa Technical Support: Phone: 421 33 790 2910

Japan Customer Focus Center Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

### **ПОСТАВКА** ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

многоканальный

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

# Данный компонент на территории Российской Федерации Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

### http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru\_6 moschip.ru 4 moschip.ru 9