NSR0240V2, NSVR0240V2

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. NSR0240V2 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 − 480 mV @ 100 mA
- Low Reverse Current − 0.2 μA @ 25 V VR
- 250 mA of Continuous Forward Current
- Power Dissipation of 200 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 & 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}	2.0	A
ESD Rating: Human Body Model Machine Model	ESD	Class 2 Class A	

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.

*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®

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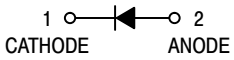
40 VOLT SCHOTTKY BARRIER DIODE

SOD−523
CASE 502



MARKING DIAGRAM

AC = 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†
NSR0240V2T1G	SOD−523 (Pb−Free)	3,000 / Tape & Reel
NSVR0240V2T1G	SOD−523 (Pb−Free)	3,000 / Tape & Reel
NSR0240V2T5G	SOD−523 (Pb−Free)	8,000 / Tape & Reel
NSVR0240V2T5G	SOD−523 (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 Specifications Brochure, BRD8011/D.

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THERMAL CHARACTERISTICS

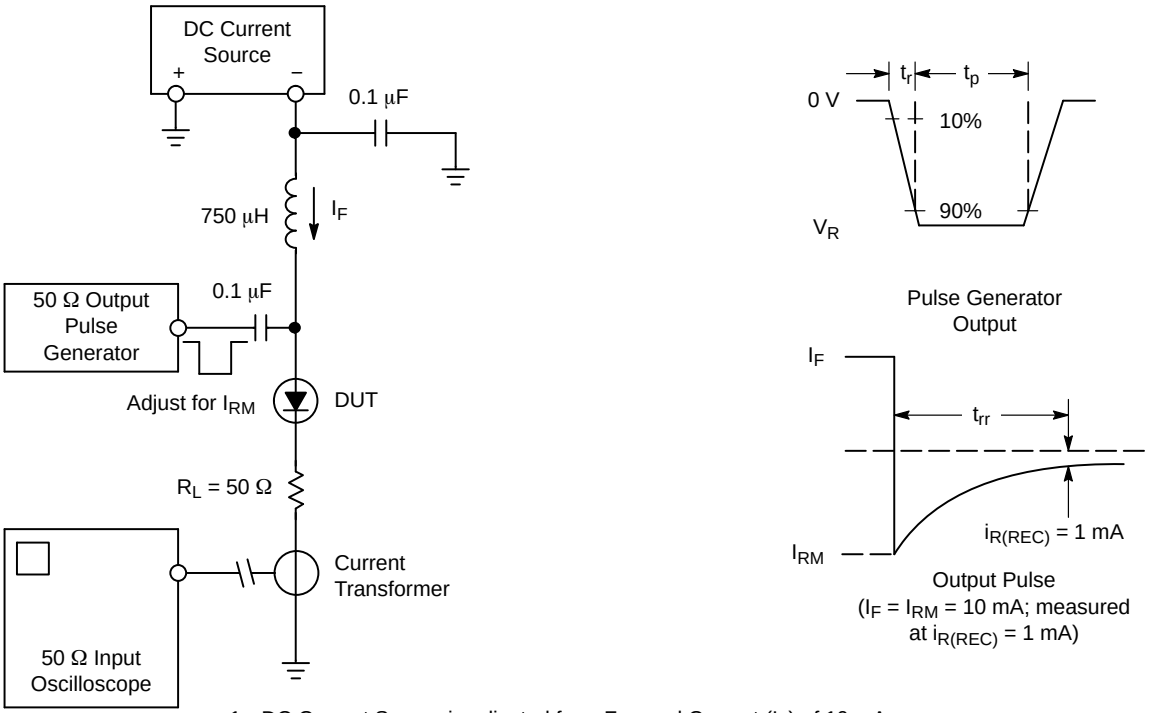
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction−to−Ambient (Note 1) Total Power Dissipation @ T_A = 25°C	 $R_{\theta JA}$ P_D	 600 200	 °C/W mW
Thermal Resistance Junction−to−Ambient (Note 2) Total Power Dissipation @ T_A = 25°C	 $R_{\theta JA}$ P_D	 300 400	 °C/W mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°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 = 25 V) (V_R = 40 V)	I_R	 − − −	 − 0.2 0.5	 0.55 2.0 10	μA
Forward Voltage (I_F = 10 mA) (I_F = 100 mA) (I_F = 200 mA)	V_F	 − − −	 345 485 580	 390 550 700	mV
Total Capacitance (V_R = 5.0 V, f = 1 MHz)	C_T	−	4.0	−	pF
Reverse Recovery Time (I_F = I_R = 10 mA, I_R = 1.0 mA)	t_{rr}	−	3.0	−	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.



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

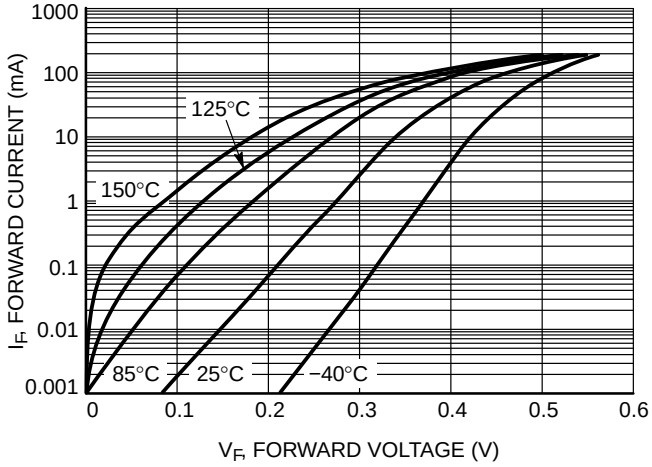


Figure 2. Forward Voltage

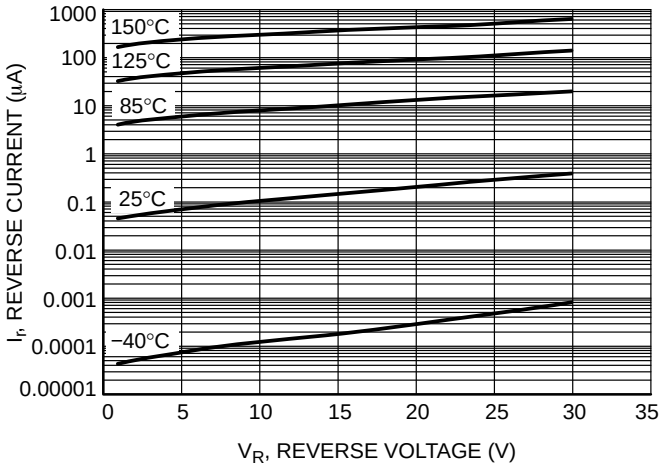


Figure 3. Leakage Current

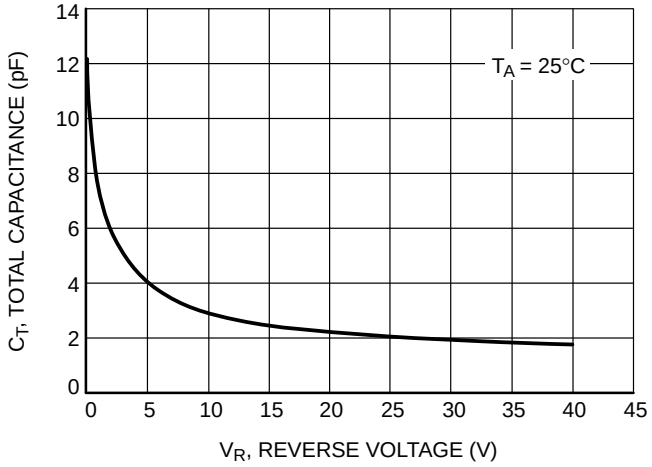
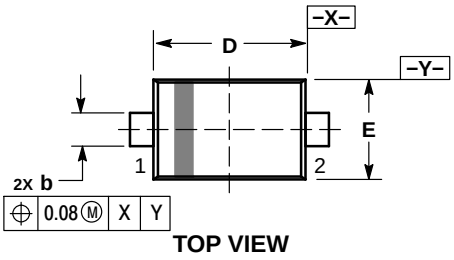


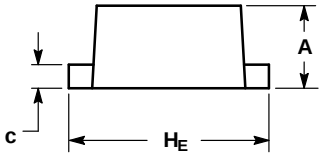
Figure 4. Total Capacitance

PACKAGE DIMENSIONS

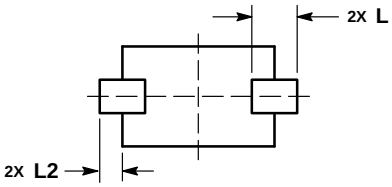
SOD−523
CASE 502
ISSUE E



TOP VIEW



SIDE VIEW



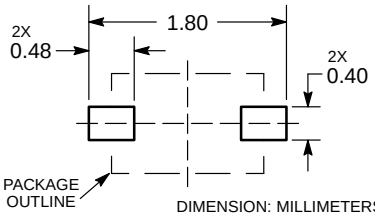
BOTTOM VIEW

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 BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

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

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

RECOMMENDED SOLDERING FOOTPRINT*



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