

NSR0240V2T1G, NSVR0240V2T1G

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 μ A @ 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®

<http://onsemi.com>

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) | 5,000 / 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 @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ P_D | 600 200 | $^\circ\text{C}/\text{W}$ mW |
| Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ P_D | 300 400 | $^\circ\text{C}/\text{W}$ 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 0.5 | 0.55 2.0 10 | μA |
| Forward Voltage ($I_F = 10\text{ mA}$) ($I_F = 100\text{ mA}$) ($I_F = 200\text{ mA}$) | V_F | - - - | 345 485 580 | 390 550 700 | mV |
| Total Capacitance ($V_R = 5.0\text{ V}$, $f = 1\text{ MHz}$) | CT | - | 4.0 | - | pF |
| Reverse Recovery Time ($I_F = I_R = 10\text{ mA}$, $I_R = 1.0\text{ mA}$) | 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.

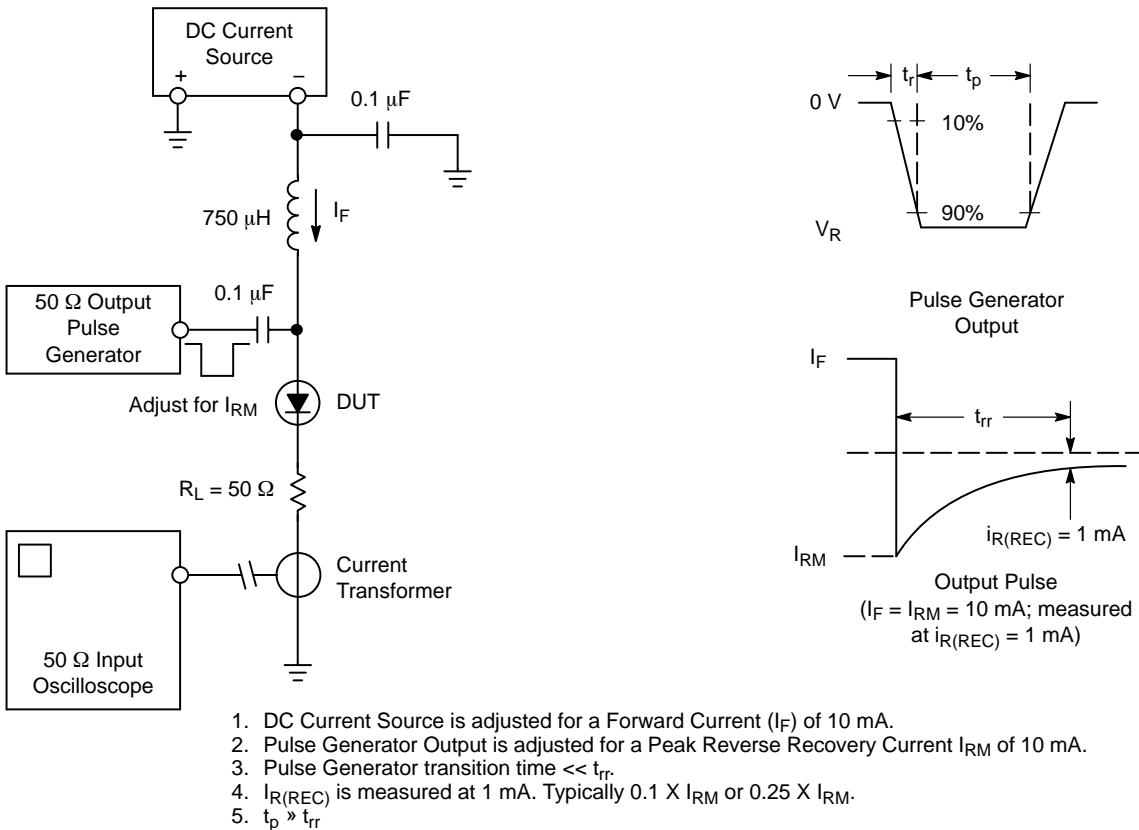


Figure 1. Recovery Time Equivalent Test Circuit

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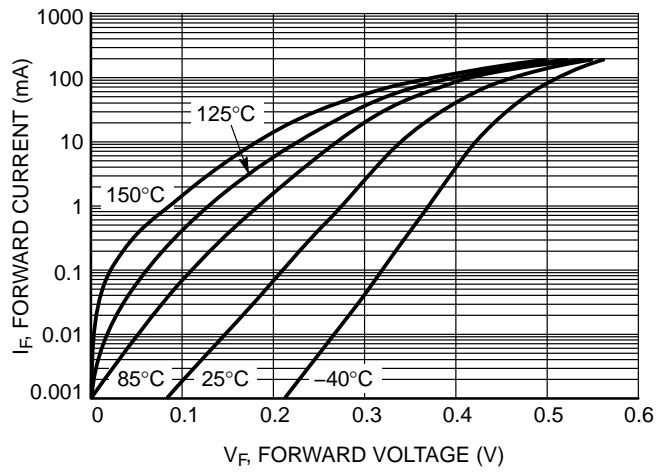


Figure 2. Forward Voltage

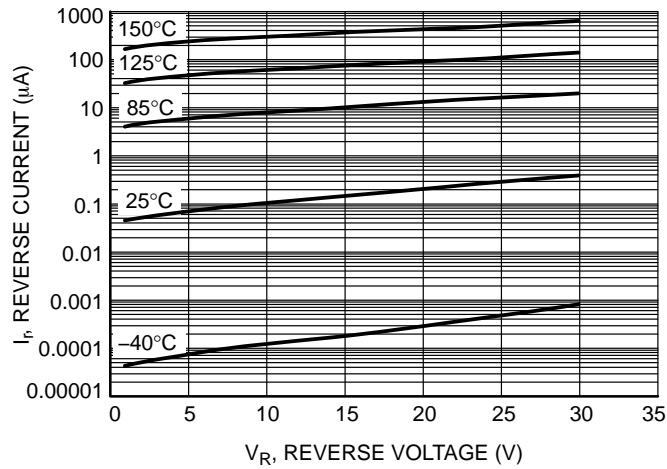


Figure 3. Leakage Current

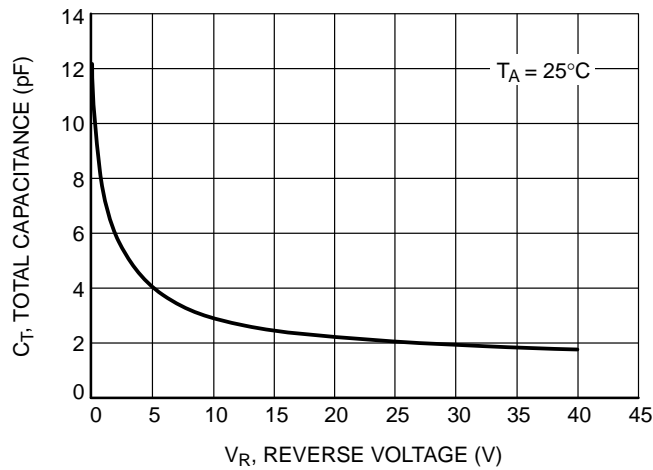
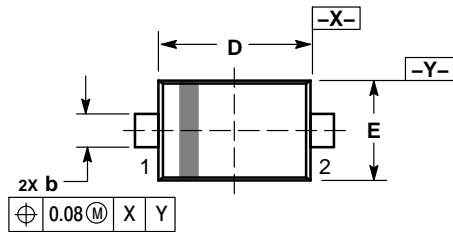


Figure 4. Total Capacitance

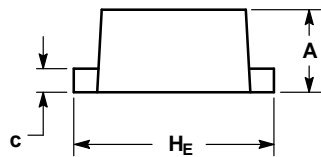
NSR0240V2T1G, NSVR0240V2T1G

PACKAGE DIMENSIONS

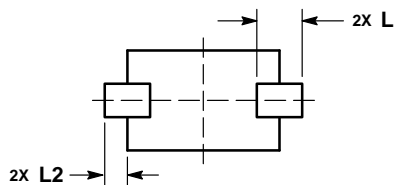
SOD-523
CASE 502
ISSUE E



TOP VIEW



SIDE VIEW



BOTTOM VIEW

NOTES:

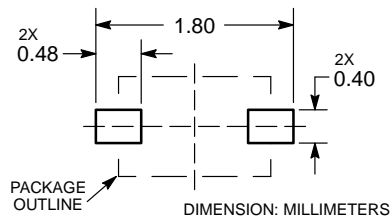
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | MILLIMETERS | | |
|-----|-------------|------|------|
| | 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:

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

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.

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