

# Schottky Barrier Diode

## NSR20F40NXT5G

These Schottky barrier diodes are optimized for low forward voltage drop and low leakage current and are offered in a Chip Scale Package (CSP) to reduce board space. The low thermal resistance enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

### Features

- Very Low Forward Voltage Drop – 550 mV @ 2.0 A
- Low Reverse Current – 15  $\mu$ A @ 10 V VR
- 2.0 A of Continuous Forward Current
- Power Dissipation of 665 mW with Minimum Trace
- ESD Rating – Human Body Model: Class 3B  
– Machine Model: Class C
- Very High Switching Speed
- 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

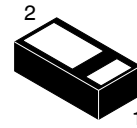
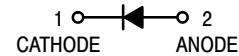
- Mobile Handsets
- MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS

### MAXIMUM RATINGS

| Rating                                                                    | Symbol    | Value        | Unit    |
|---------------------------------------------------------------------------|-----------|--------------|---------|
| Reverse Voltage                                                           | $V_R$     | 40           | V       |
| Forward Current (DC)                                                      | $I_F$     | 2.0          | A       |
| Forward Surge Current<br>(60 Hz @ 1 cycle)                                | $I_{FSM}$ | 28           | A       |
| Repetitive Peak Forward Current<br>(Pulse Wave = 1 sec, Duty Cycle = 66%) | $I_{FRM}$ | 4.0          | A       |
| ESD Rating: Human Body Model<br>Machine Model                             | ESD       | > 8<br>> 400 | kV<br>V |

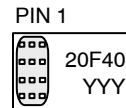
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## 40 V SCHOTTKY BARRIER DIODE



DSN2  
(0603)  
CASE 152AB

### MARKING DIAGRAM



20F40 = Specific Device Code  
YYY = Year Code

### ORDERING INFORMATION

| Device        | Package           | Shipping <sup>†</sup> |
|---------------|-------------------|-----------------------|
| NSR20F40NXT5G | DSN2<br>(Pb-Free) | 5000 / Tape & Reel    |

<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.

# THERMAL CHARACTERISTICS

| Characteristic                                                                                           | Symbol                   | Min | Typ | Max         | Unit                     |
|----------------------------------------------------------------------------------------------------------|--------------------------|-----|-----|-------------|--------------------------|
| Thermal Resistance<br>Junction-to-Ambient (Note 1)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 213<br>586  | $^\circ\text{C/W}$<br>mW |
| Thermal Resistance<br>Junction-to-Ambient (Note 2)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 80<br>1.56  | $^\circ\text{C/W}$<br>W  |
| Storage Temperature Range                                                                                | $T_{stg}$                |     |     | -40 to +125 | $^\circ\text{C}$         |
| Junction Temperature                                                                                     | $T_J$                    |     |     | +150        | $^\circ\text{C}$         |

1. Mounted onto a 4 in square FR-4 board 50 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<br>( $V_R = 10\text{ V}$ )<br>( $V_R = 40\text{ V}$ )   | $I_R$  |     |     | 15<br>150    | $\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 1.0\text{ A}$ )<br>( $I_F = 2.0\text{ A}$ ) | $V_F$  |     |     | 0.47<br>0.55 | V             |

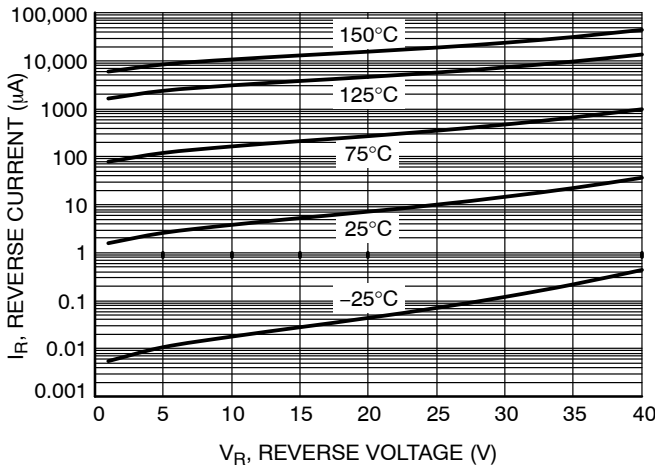


Figure 1. Reverse Current vs. Reverse Voltage

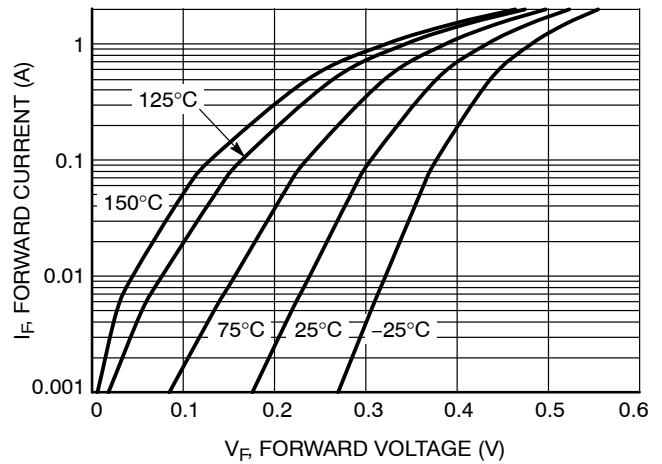


Figure 2. Forward Current vs. Forward Voltage

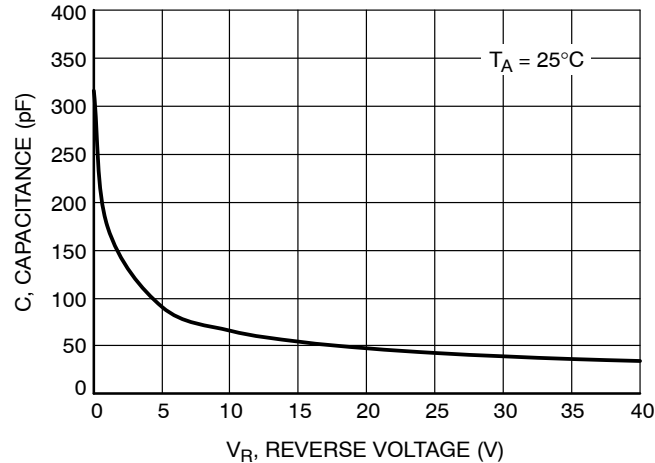


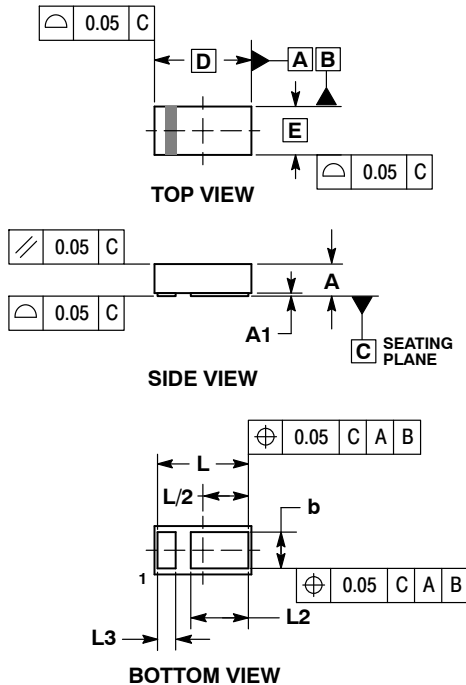
Figure 3. Capacitance



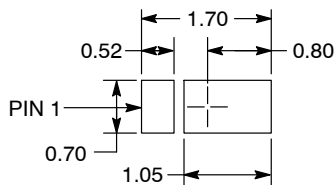
SCALE 8:1

DSN2, 1.6x0.8, 0.9P, (0603)  
CASE 152AB  
ISSUE C

DATE 30 APR 2017



**MOUNTING FOOTPRINT\***



DIMENSIONS: MILLIMETERS

See Application Note AND8464/D for more mounting details

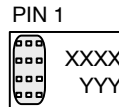
\*For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, [SOLDERRM/D](#).

**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.

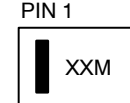
| MILLIMETERS |          |      |
|-------------|----------|------|
| DIM         | MIN      | MAX  |
| A           | 0.25     | 0.31 |
| A1          | ---      | 0.05 |
| b           | 0.55     | 0.65 |
| D           | 1.60 BSC |      |
| E           | 0.80 BSC |      |
| L           | 1.45     | 1.55 |
| L2          | 0.90     | 1.00 |
| L3          | 0.25     | 0.35 |

**GENERIC MARKING DIAGRAM1\***



XXXX = Specific Device Code  
YYY = Year Code

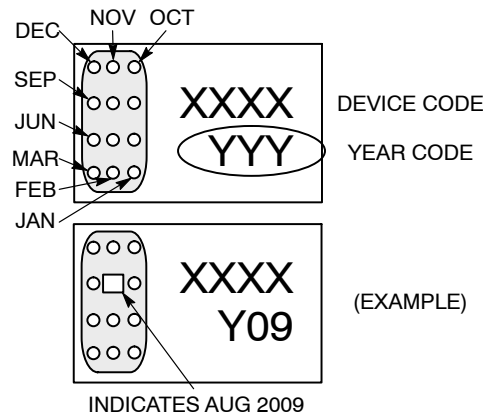
**GENERIC MARKING DIAGRAM2\***



XX = Specific Device Code  
M = Date Code

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present. Some products may not follow the Generic Marking.

**CATHODE BAND MONTH CODING**



|                         |                                    |                                                                                                                                                                                  |
|-------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| <b>DESCRIPTION:</b>     | <b>DSN2, 1.6X0.8, 0.9P, (0603)</b> | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

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