

# NSR20406NXT5G

## 2 A, 40 V Schottky Barrier Diode

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

- Low Forward Voltage Drop – 520 mV (Typ.) @  $I_F = 2$  A
- Low Reverse Current – 35  $\mu$ A (Typ.) @  $V_R = 40$  V
- 2 A of Continuous Forward Current
- ESD Rating – Human Body Model: Class 3B  
– Machine Model: Class C
- 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

### MAXIMUM RATINGS

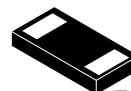
| Rating                                                                    | Symbol    | Value        | Unit    |
|---------------------------------------------------------------------------|-----------|--------------|---------|
| Reverse Voltage                                                           | $V_R$     | 40           | V       |
| Forward Current (DC)                                                      | $I_F$     | 2            | A       |
| Forward Surge Current<br>(60 Hz @ 1 cycle)                                | $I_{FSM}$ | 19           | A       |
| Repetitive Peak Forward Current<br>(Pulse Wave = 1 sec, Duty Cycle = 66%) | $I_{FRM}$ | 3.4          | A       |
| ESD Rating: Human Body Model<br>Machine Model                             | ESD       | > 8<br>> 400 | kV<br>V |

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.



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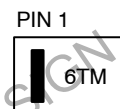
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DSN2  
(0603)  
CASE 152AT

6T = Specific Device Code  
M = Date Code

### MARKING DIAGRAM



### PIN CONNECTIONS



### ORDERING INFORMATION

| Device        | Package           | Shipping†          |
|---------------|-------------------|--------------------|
| NSR20406NXT5G | DSN2<br>(Pb-Free) | 5000 / 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                   | 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>$P_D$ |     |     | 245<br>510  | $^\circ\text{C/W}$<br>mW |
| Thermal Resistance<br>Junction-to-Ambient (Note 2)<br>Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$<br>$P_D$ |     |     | 90<br>1.4   | $^\circ\text{C/W}$<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 650 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.

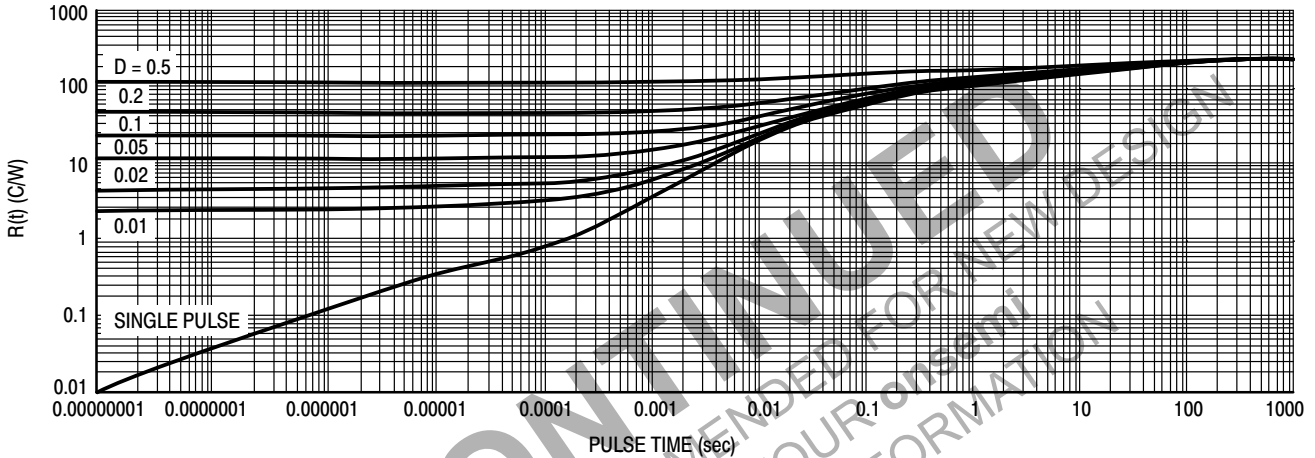


Figure 1. Thermal Response (Note 1)

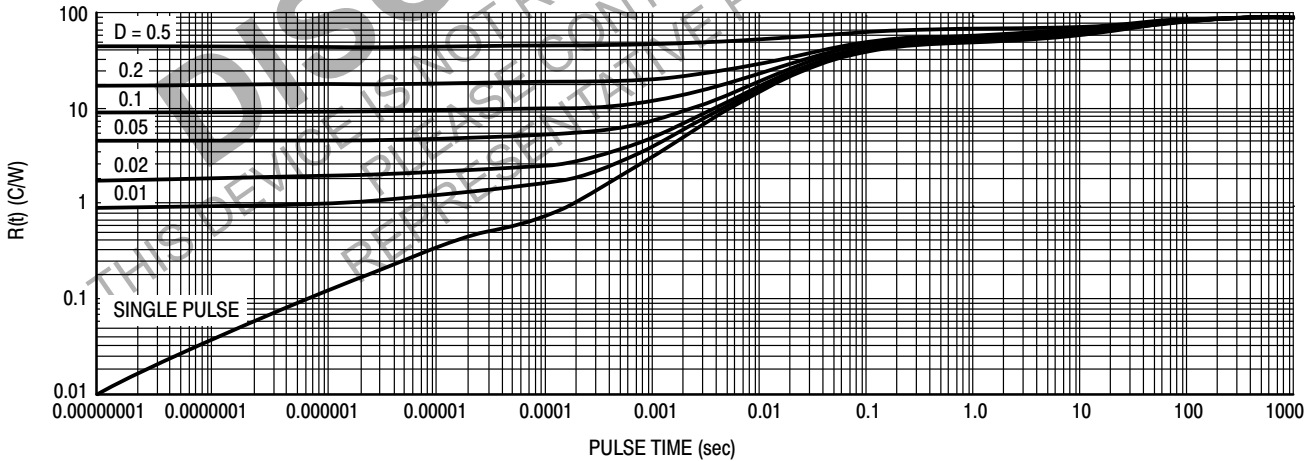
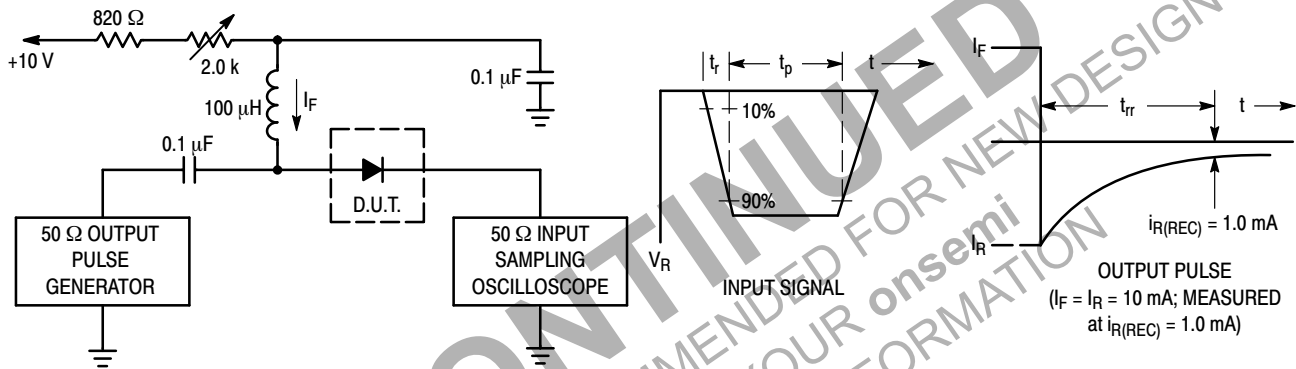


Figure 2. Thermal Response (Note 2)

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

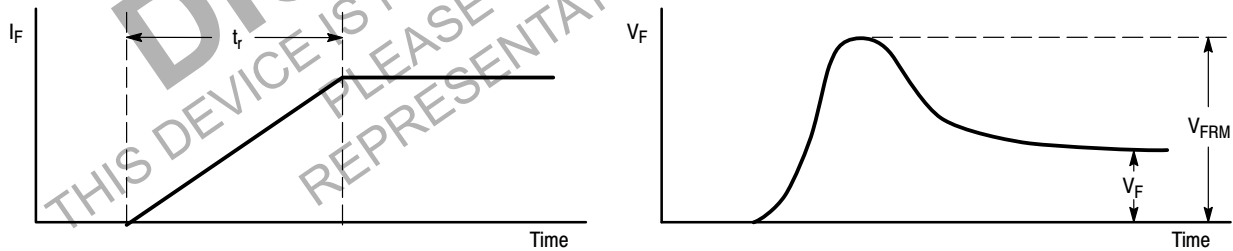
| Characteristic                                                                                                                                            | Symbol    | Min                   | Typ                             | Max                             | Unit          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------|---------------------------------|---------------------------------|---------------|
| Reverse Leakage<br>( $V_R = 10\text{ V}$ )<br>( $V_R = 40\text{ V}$ )                                                                                     | $I_R$     | –<br>–                | 3<br>35                         | 15<br>150                       | $\mu\text{A}$ |
| Forward Voltage<br>( $I_F = 10\text{ mA}$ )<br>( $I_F = 100\text{ mA}$ )<br>( $I_F = 500\text{ mA}$ )<br>( $I_F = 1\text{ A}$ )<br>( $I_F = 2\text{ A}$ ) | $V_F$     | –<br>–<br>–<br>–<br>– | 240<br>310<br>380<br>430<br>520 | 280<br>350<br>420<br>470<br>550 | mV            |
| Total Capacitance ( $V_R = 2.0\text{ V}$ , $f = 1.0\text{ MHz}$ )                                                                                         | $C_T$     | –                     | 140                             | –                               | pF            |
| Reverse Recovery Time ( $I_F = I_R = 10\text{ mA}$ , $I_{R(\text{REC})} = 1.0\text{ mA}$ , Figure 3)                                                      | $t_{rr}$  | –                     | 53                              | –                               | ns            |
| Peak Forward Recover Voltage ( $I_F = 100\text{ mA}$ , $t_r = 20\text{ ns}$ , Figure 4)                                                                   | $V_{FRM}$ | –                     | 440                             | –                               | mV            |

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.



- Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.  
3.  $t_p \gg t_{rr}$

**Figure 3. Recovery Time Equivalent Test Circuit**



**Figure 4. Peak Forward Recover Voltage Definition**

TYPICAL CHARACTERISTICS

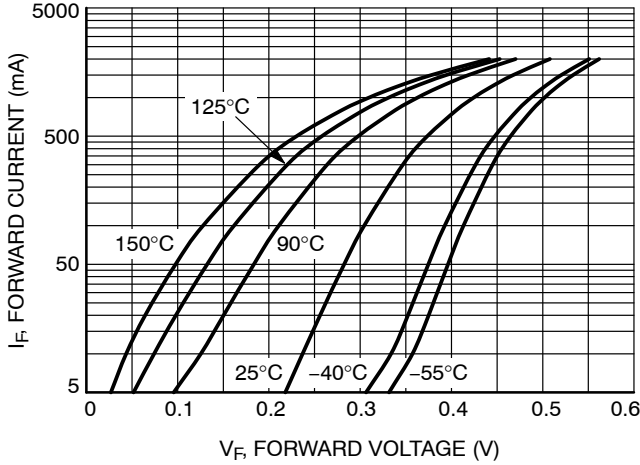


Figure 5. Forward Voltage

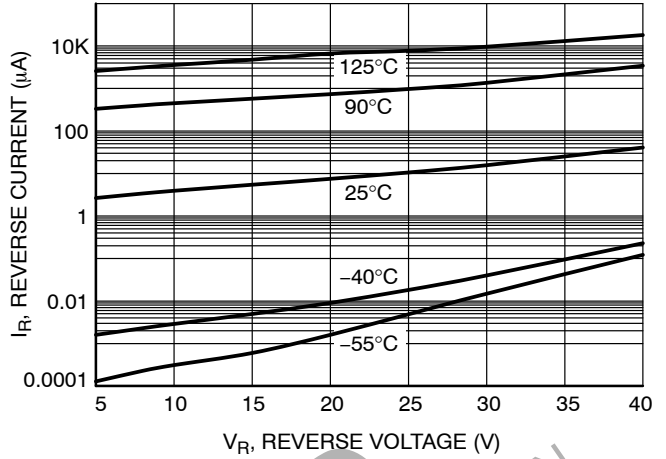


Figure 6. Leakage Current

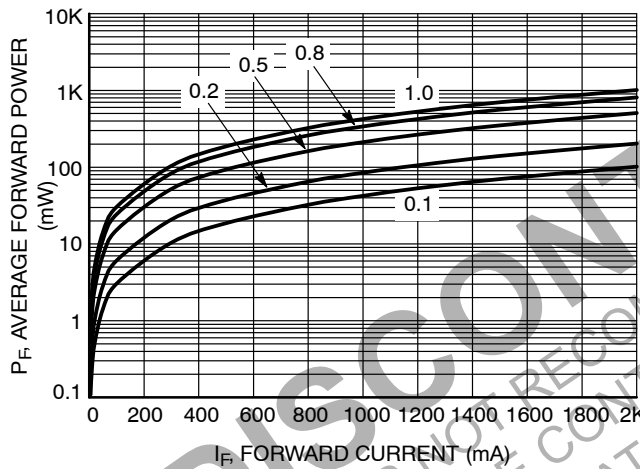


Figure 7. Average Forward Power Dissipation

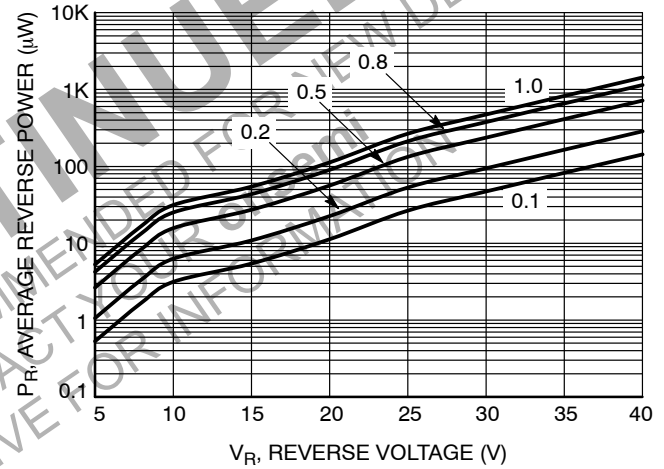


Figure 8. Average Reverse Power Dissipation

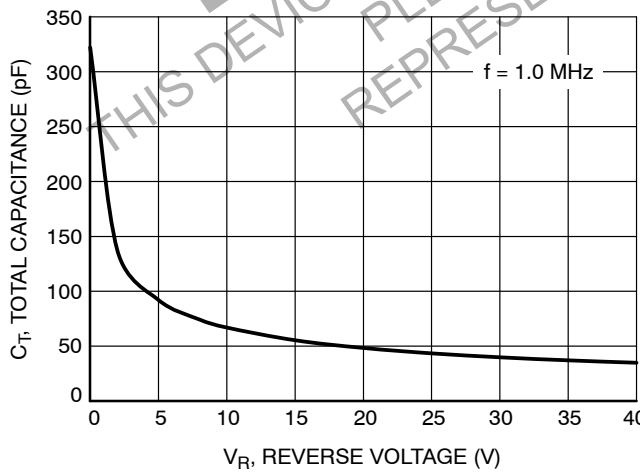


Figure 9. Total Capacitance

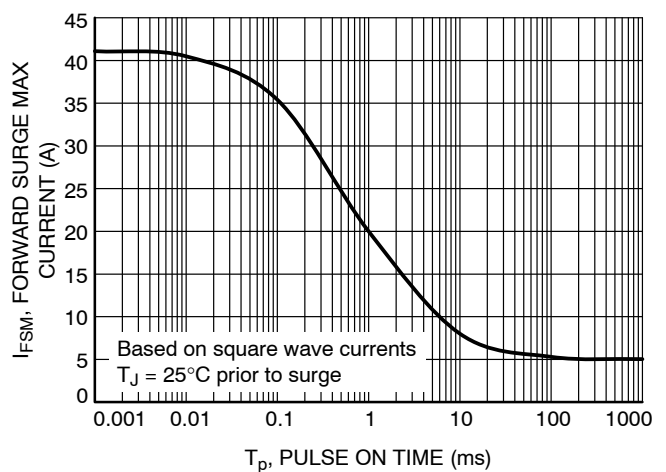
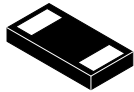


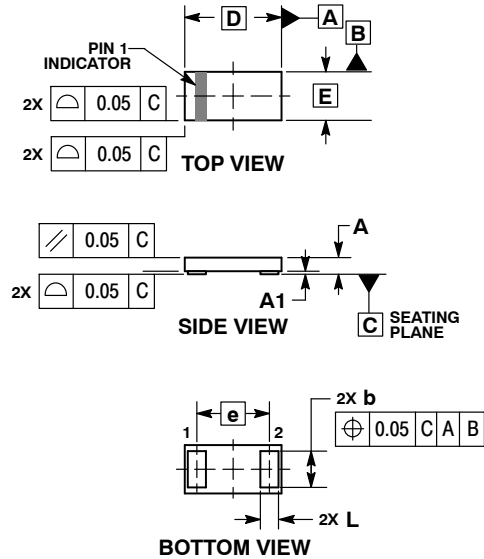
Figure 10. Forward Surge Maximum



SCALE 8:1

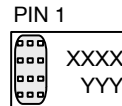
**DSN2, 1.6x0.8, 1.2P, (0603)**  
**CASE 152AT**  
**ISSUE A**

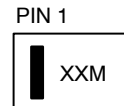
DATE 03 JUN 2016


**NOTES:**

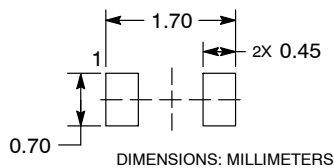
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.

| MILLIMETERS |      |      |
|-------------|------|------|
| DIM         | MIN  | MAX  |
| A           | 0.25 | 0.31 |
| A1          | 0.00 | 0.05 |
| b           | 0.55 | 0.65 |
| D           | 1.60 | BSC  |
| E           | 0.80 | BSC  |
| e           | 1.20 | BSC  |
| L           | 0.25 | 0.35 |

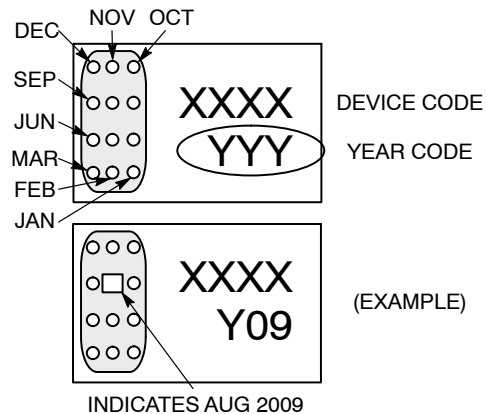
**GENERIC MARKING DIAGRAM1\***

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.

**RECOMMENDED MOUNTING FOOTPRINT\***

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](#).

**CATHODE BAND MONTH CODING**


|                         |                                    |                                                                                                                                                                                  |
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