

# NSR2030DMX

## 2A, 30V Schottky Half Bridge

These half bridge Schottky barrier diodes are designed for the rectification of the high speed signal of wireless charging. The NSR2030DMX has a very low forward voltage that will reduce conduction loss. It is housed in a XDFN 2.0 x 1.35 x 0.4 mm package that is ideal for space constrained wireless applications.

### Features

- Extremely Fast Switching Speed
- Low Forward Voltage – 0.54 V (Typ) @  $I_F = 2$  A
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

### Typical Applications

- Low Voltage Half Bridge Rectification & Wireless Charging

### MAXIMUM RATINGS ( $T_J = 150^\circ\text{C}$ unless otherwise noted) (Note 1)

| Rating  | Symbol    | Value               | Unit |
|---|-----------|---------------------|------|
| Reverse Voltage   | $V_R$     | 30                  | V    |
| Forward Current (DC)  | $I_F$     | 2.0                 | A    |
| Forward Current Surge Peak<br>(60 Hz, 1 cycle)  | $I_{FSM}$ | 8.0                 | A    |
| Non-Repetitive Peak Forward Current<br>(Square Wave, $T_J = 25^\circ\text{C}$ prior to surge) | $I_{FSM}$ | 55<br>10<br>5.0     | A    |
|   |           | $t = 1 \mu\text{s}$ |      |
|   |           | $t = 1 \text{ ms}$  |      |
|   |           | $t = 1 \text{ s}$   |      |

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.

1. All specifications pertain to a single diode.

### THERMAL CHARACTERISTICS

| Characteristic   | Symbol                      | Max            | Unit                      |
|--|-----------------------------|----------------|---------------------------|
| Total Device Dissipation FR-5 Board<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$<br>(Note 2)           | 0.634<br>5.07  | W<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance Junction to Ambient   | $R_{\theta JA}$<br>(Note 2) | 197.2          | $^\circ\text{C}/\text{W}$ |
| Junction Temperature   | $T_J$                       | +150           | $^\circ\text{C}$          |
| Storage Temperature Range  | $T_{stg}$                   | -55 to<br>+150 | $^\circ\text{C}$          |

2. Single Layer JEDEC JESD51.3 FR-4 @ 100 mm<sup>2</sup>, 2 oz. copper trace, still air.



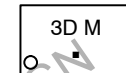
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### MARKING DIAGRAM

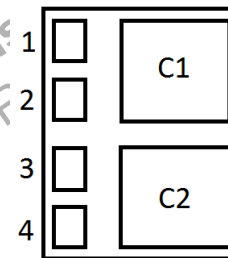


XDFN4 2.0x1.35  
CASE 711BD

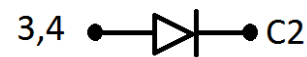
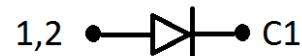


3D = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

### PIN CONNECTIONS



### DEVICE SCHEMATIC



### ORDERING INFORMATION

| Device        | Package            | Shipping†             |
|---------------|--------------------|-----------------------|
| NSR2030DMXTAG | XDFN4<br>(Pb-Free) | 3000 / Tape &<br>Reel |

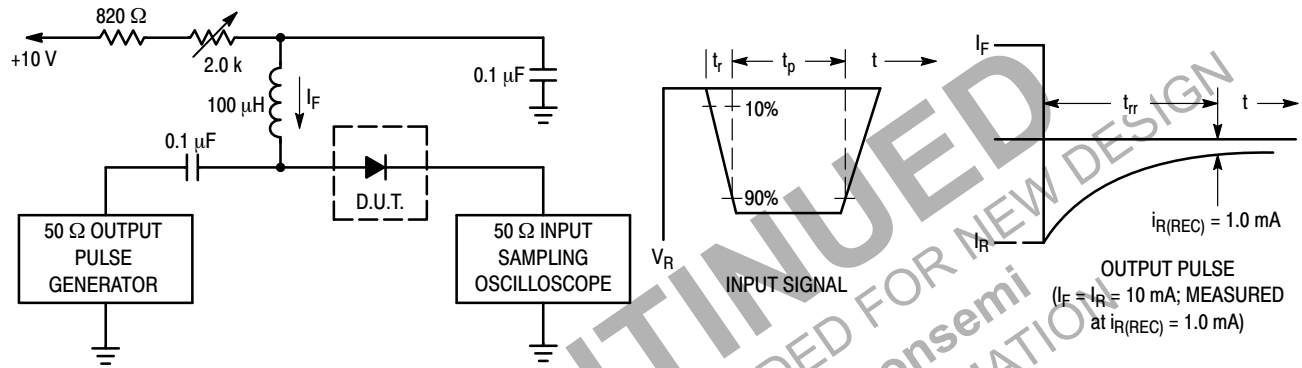
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# NSR2030DMX

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 3)

| Characteristic   | Symbol     | Min | Typ  | Max  | Unit          |
|--|------------|-----|------|------|---------------|
| Reverse Breakdown Voltage ( $I_R = 1.0\text{ mA}$ )                                    | $V_{(BR)}$ | 30  | -    | -    | V             |
| Reverse Leakage ( $V_R = 30\text{ V}$ )  | $I_R$      | -   | 5.0  | 20   | $\mu\text{A}$ |
| Forward Voltage ( $I_F = 0.5\text{ A}$ )   | $V_F$      | -   | 0.41 | 0.45 | V             |
| Forward Voltage ( $I_F = 1.0\text{ A}$ )   | $V_F$      | -   | 0.46 | 0.55 | V             |
| Forward Voltage ( $I_F = 2.0\text{ A}$ )   | $V_F$      | -   | 0.54 | 0.65 | V             |
| Reverse Recovery Time<br>( $I_F = I_R = 10\text{ mA}$ , $I_{R(REC)} = 1.0\text{ mA}$ ) | $t_{rr}$   | -   | 25   | -    | ns            |
| Total Capacitance ( $V_R = 1.0\text{ V}$ , $f = 1.0\text{ MHz}$ )                      | $C_T$      | -   | 76   | -    | pF            |

3. All specifications pertain to a single diode.



- Notes: 1. A 2.0 k $\Omega$  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 1. Recovery Time Equivalent Test Circuit**

# NSR2030DMX

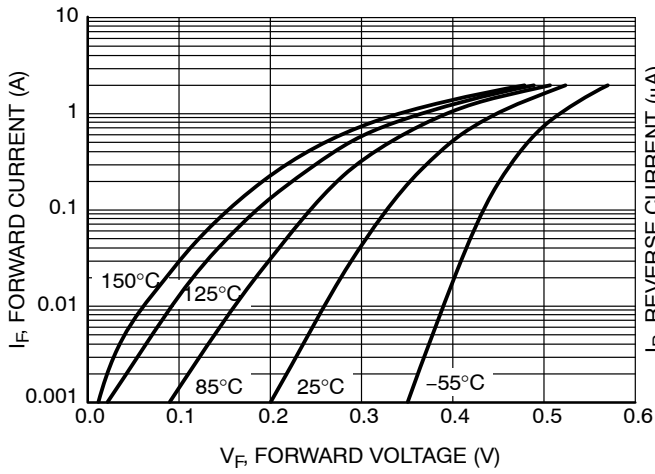


Figure 1. Forward Voltage

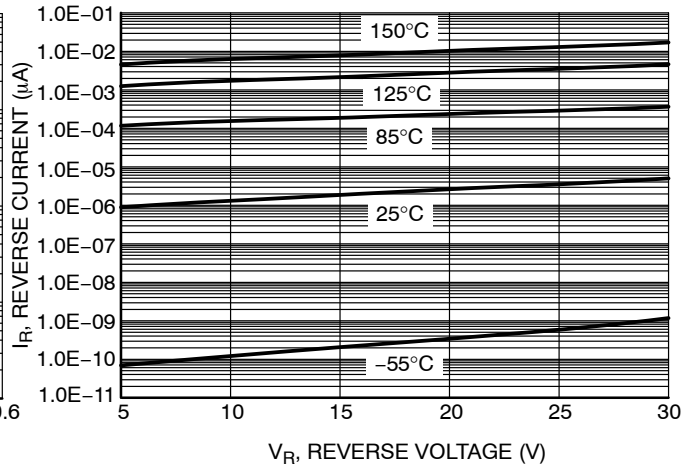


Figure 2. Reverse Leakage

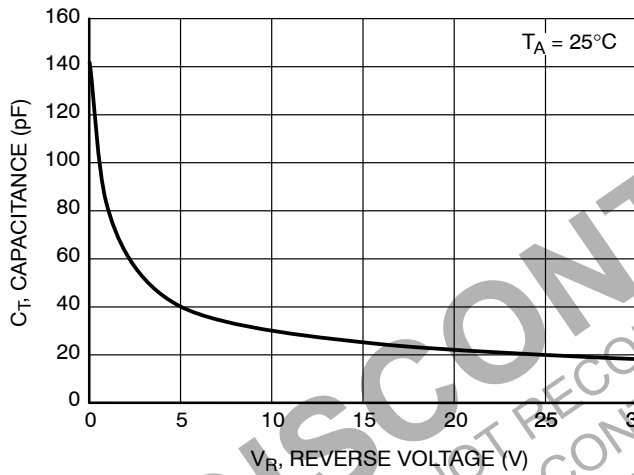


Figure 3. Capacitance

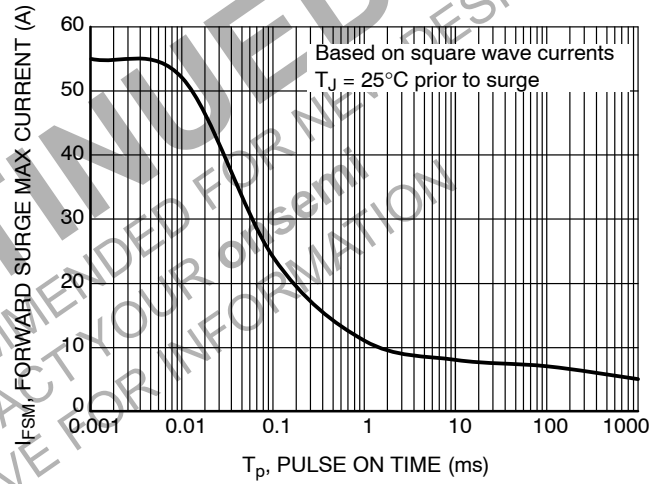


Figure 4. Non-Repetitive Peak Forward Current, Max Values

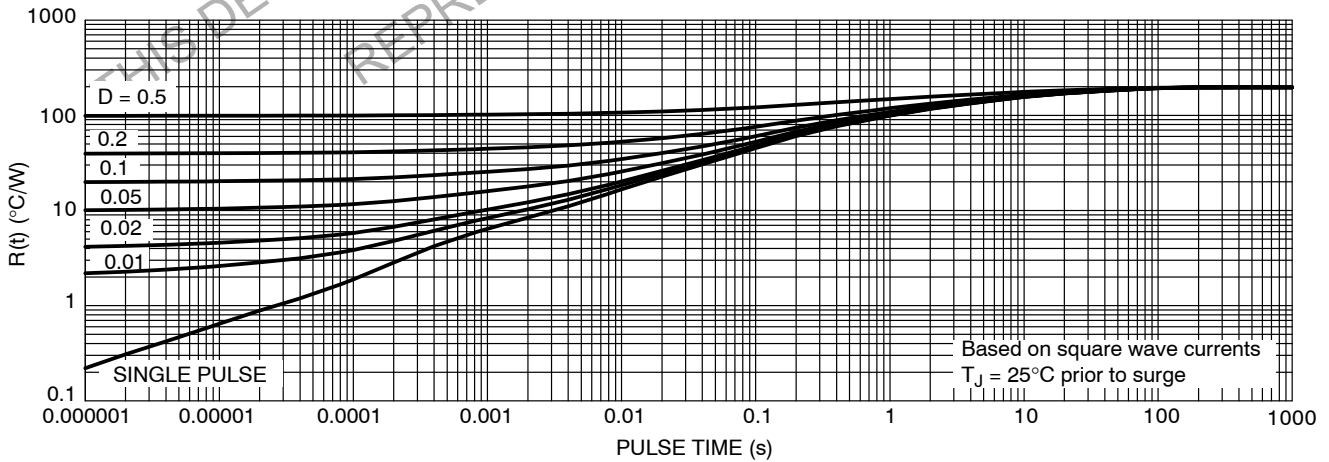


Figure 5. Thermal Response



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