

# NSR02F30MX

## 200 mA, 30 V Schottky Barrier Diode

These Schottky barrier diodes are optimized for low forward voltage drop and low leakage current that offers the most optimal power dissipation in applications. They are housed in a spacing saving x3DFN 0201 package ideal for space constraint applications.

### Features

- Low Forward Voltage Drop – 500 mV (Typ.) @  $I_F = 200$  mA
- Low Reverse Current – 20  $\mu$ A (Typ.) @  $V_R = 30$  V
- 200 mA of Continuous Forward Current
- ESD Rating – Human Body Model: Class 2  
– Machine Model: Class M3  
– CDM: Class IV
- 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 and Protection

### MAXIMUM RATINGS

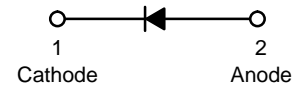
Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	30	V
Forward Current (DC)	$I_F$	200	mA
Forward Surge Current (60 Hz @ 1 cycle)	$I_{FSM}$	2	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	$I_{FRM}$	1	A
ESD Rating: Human Body Model Machine Model	ESD	2 – 4 >400	kV V

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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### MARKING DIAGRAM



X3DFN2  
CASE 152AF



J = Specific Device Code  
(Rotated 180°)  
M = Month Code

### ORDERING INFORMATION

Device	Package	Shipping†
NSR02F30MXT5G	X3DFN (Pb-Free)	10000 / 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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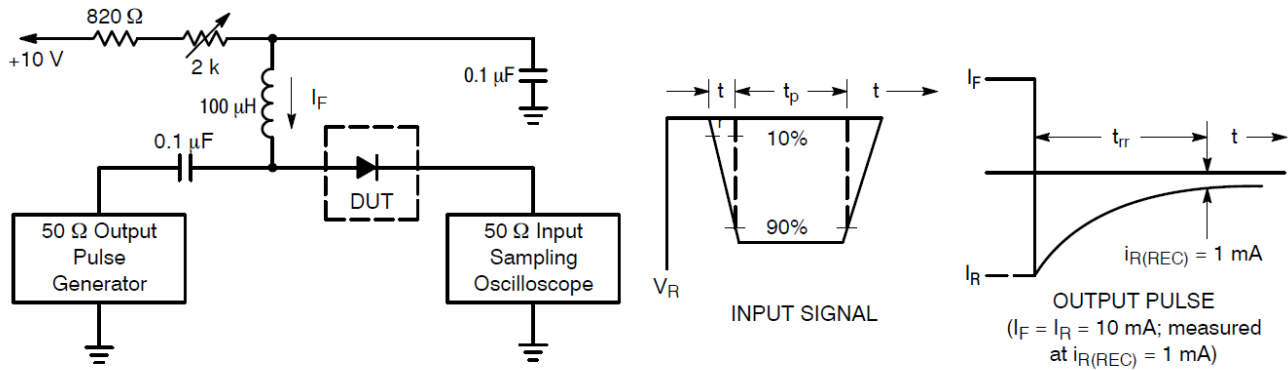
**Table 1. THERMAL CHARACTERISTICS**

Rating	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	695 180	$^\circ\text{C/W}$ mW
Storage Temperature Range	$T_{stg}$	-55 to +125	$^\circ\text{C}$
Junction Temperature	$T_J$	+125	$^\circ\text{C}$

1. Mounted onto a 4 in square FR-4 board 100 mm sq. 2 oz. Cu 0.06" thick single sided. Operating to steady state.

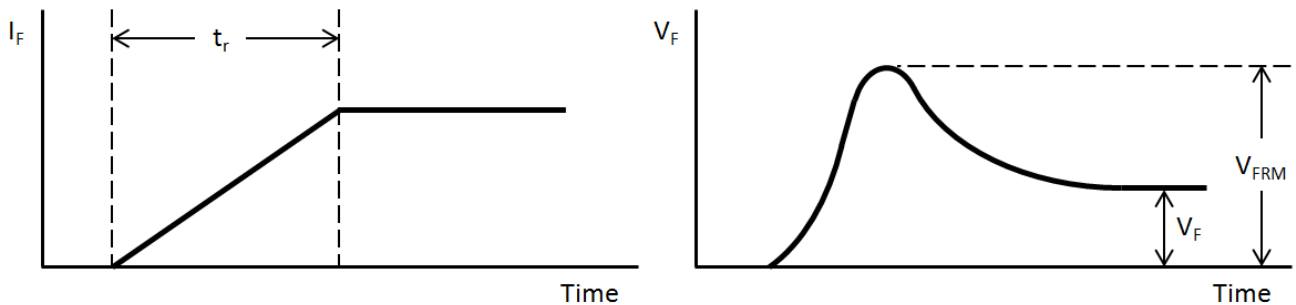
**Table 2. ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Reverse Leakage	$V_R = 10\text{ V}$	$I_R$	-	-	15	$\mu\text{A}$
Reverse Leakage	$V_R = 30\text{ V}$	$I_R$	-	20	50	$\mu\text{A}$
Forward Voltage	$I_F = 1\text{ mA}$	$V_F$	-	155		mV
Forward Voltage	$I_F = 10\text{ mA}$	$V_F$	-	250	290	mV
Forward Voltage	$I_F = 100\text{ mA}$	$V_F$	-	375	490	mV
Forward Voltage	$I_F = 200\text{ mA}$	$V_F$	-	500	600	mV
Total Capacitance	$V_R = 1.0\text{ V}$ , $f = 1.0\text{ MHz}$	$C_T$	-	6	8	pF
Reverse Recovery Time	$I_F = I_R = 10\text{ mA}$ , $I_{R(REC)} = 1.0\text{ mA}$ , Figure 2	$t_{rr}$	-	2.4	3	ns



- 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**



**Figure 2. Peak Forward Recover Voltage Definition**

# NSR02F30MX

## TYPICAL CHARACTERISTICS

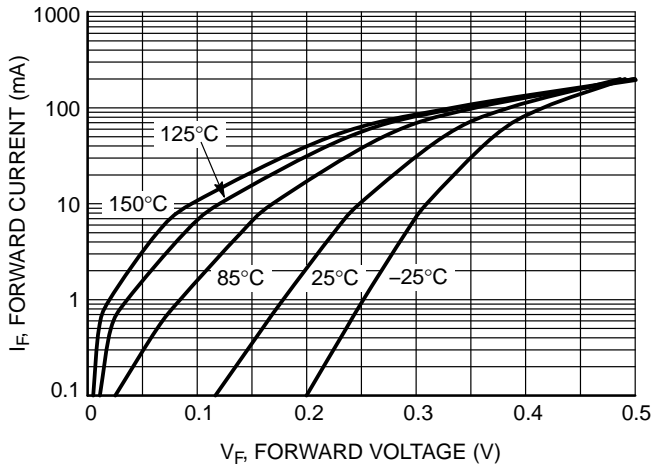


Figure 3. Forward Voltage

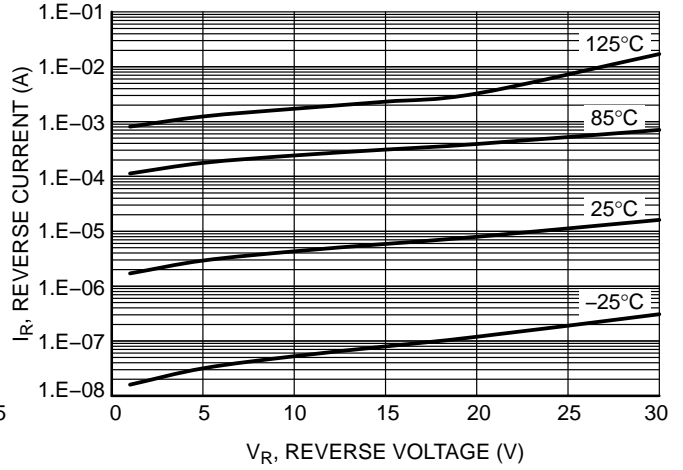


Figure 4. Leakage Current

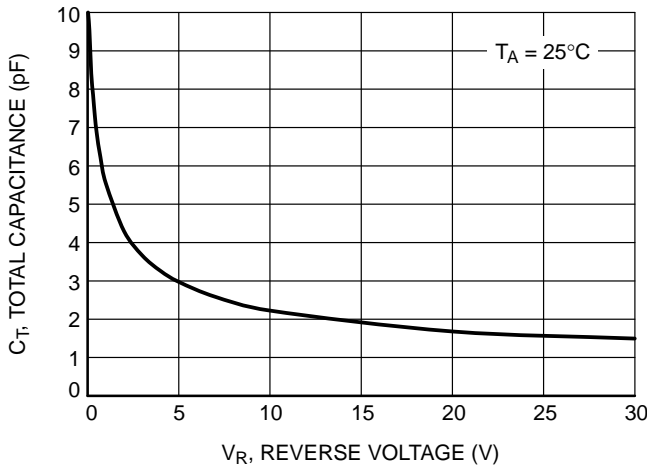


Figure 5. Total Capacitance

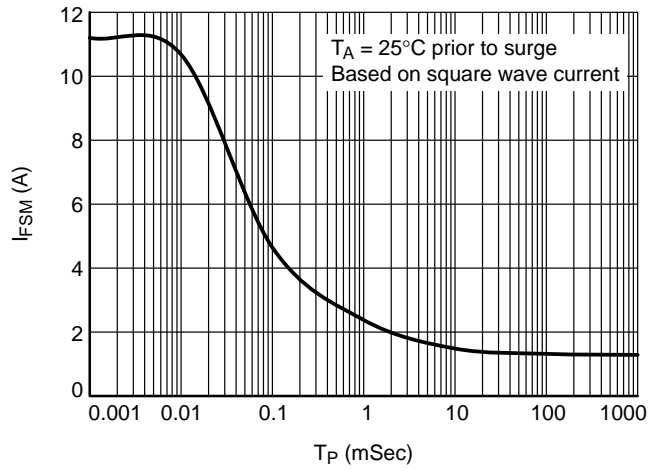


Figure 6. Forward Surge Current

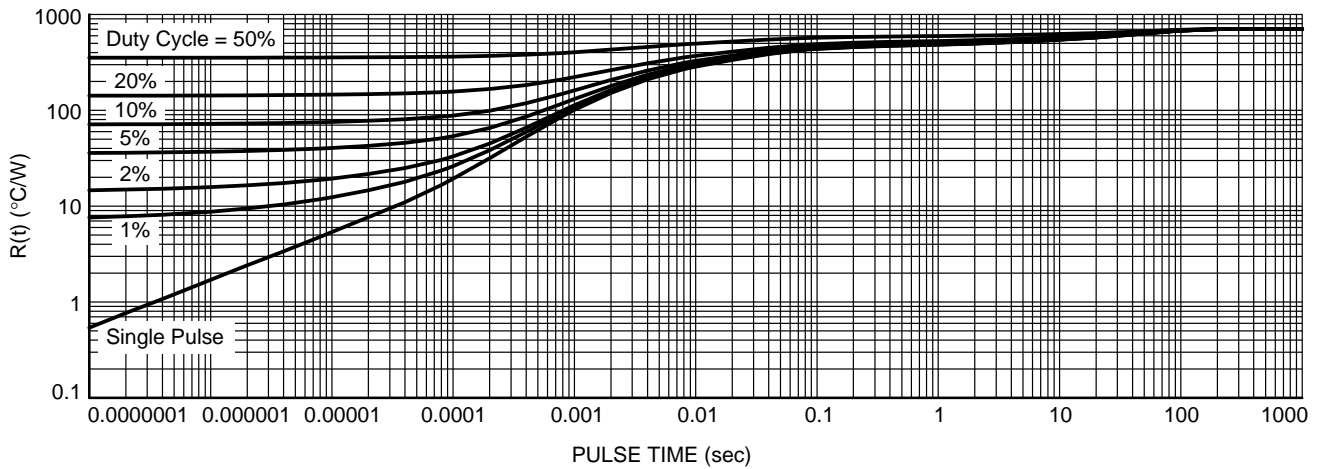
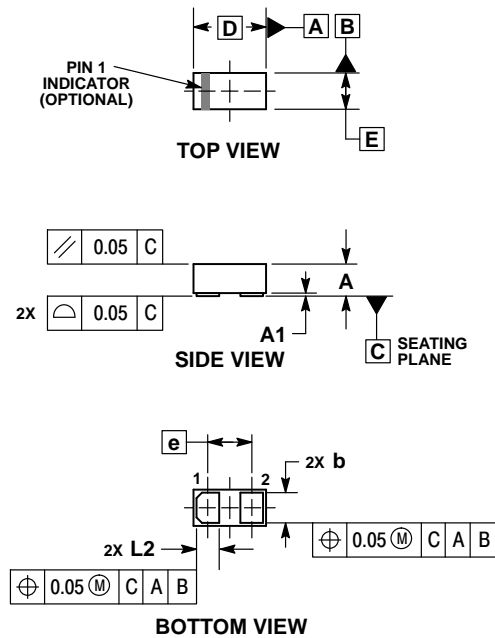


Figure 7. Thermal Response

# NSR02F30MX

## PACKAGE DIMENSIONS

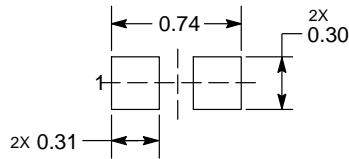
**X3DFN2, 0.62x0.32, 0.355P, (0201)**  
**CASE 152AF**  
**ISSUE A**



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

MILLIMETERS		
DIM	MIN	MAX
A	0.25	0.33
A1	—	0.05
b	0.22	0.28
D	0.58	0.66
E	0.28	0.36
e	0.355 BSC	
L2	0.17	0.23

### RECOMMENDED MOUNTING FOOTPRINT\*



See Application Note AND8398/D for more mounting details  
 \*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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