

# Trench-based Schottky Diode, 200 mA, 30 V

## NSR02301MX4

These Trench Schottky 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 space saving micro-packaging ideal for space constrained applications.

### Features

- Small Body Outline Dimensions
  - ◆ 01005 Size: 0.445 mm x 0.24 mm
- 200 mA Continuous Forward Current
- Low Forward Voltage Drop – 350 mV (Typical) @  $I_F = 100$  mA
- Low Reverse Current – 25  $\mu$ A (Typical) @  $V_R = 30$  V
- Very Low  $t_{rr}$  – 11 ns Maximum
- Low Capacitance – 19 pF Typical

### Typical Applications

- Mobile and Wearable Devices
- Camera Photo Flash
- Buck and Boost DC–DC Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

### MAXIMUM RATINGS

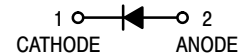
Rating	Symbol	Value	Unit
Forward Current (DC)	$I_F$	200	mA
Reverse Voltage	$V_R$	30	V
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	$I_{FRM}$	1.0	A

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.



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### MARKING DIAGRAM



X4DFN2  
CASE 718AA



E = Specific Device Code  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
NSR02301MX4T5G	X4DFN2 (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.

# NSR02301MX4

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	614.9 203	$^\circ\text{C/W}$ mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$	239.4 522	$^\circ\text{C/W}$ mW
Junction Temperature Range	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Lead Solder Temperature - Maximum (10 seconds)	$T_L$	260	$^\circ\text{C}$

1. Mounted onto a 4 in<sup>2</sup> FR-4 board 10 mm<sup>2</sup> 1 oz. Cu 0.06" thick single-sided. Operating to steady state.
2. Mounted onto a 4 in<sup>2</sup> FR-4 board 2 cm<sup>2</sup> 1 oz. Cu 0.06" thick single-sided. Operating to steady state.

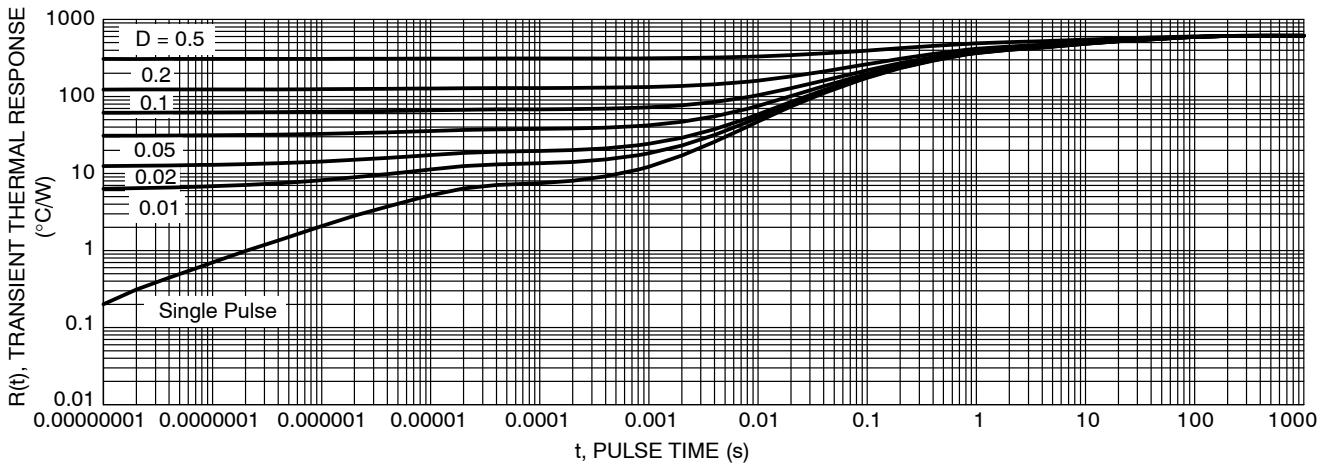


Figure 1. Thermal Response (Note 1)

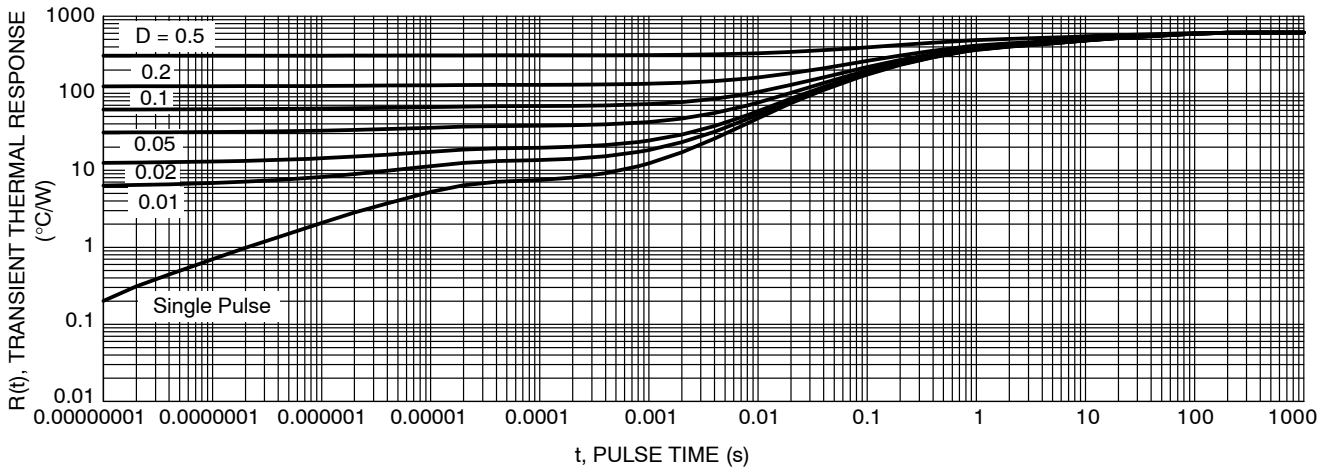


Figure 2. Thermal Response (Note 2)

# NSR02301MX4

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage (V <sub>R</sub> = 10 V) (V <sub>R</sub> = 30 V)	I <sub>R</sub>		15 25	50 100	μA
Forward Voltage (I <sub>F</sub> = 50 mA) (I <sub>F</sub> = 100 mA) (I <sub>F</sub> = 200 mA)	V <sub>F</sub>		300 350 420	440 480 540	mV
Total Capacitance (V <sub>R</sub> = 5.0 V, f = 1 MHz)	C <sub>T</sub>		19		pF
Reverse Recovery Time (I <sub>F</sub> = I <sub>R</sub> = 10 mA, I <sub>R(REC)</sub> = 1.0 mA)	t <sub>rr</sub>		9.4	11	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.

## TYPICAL CHARACTERISTICS

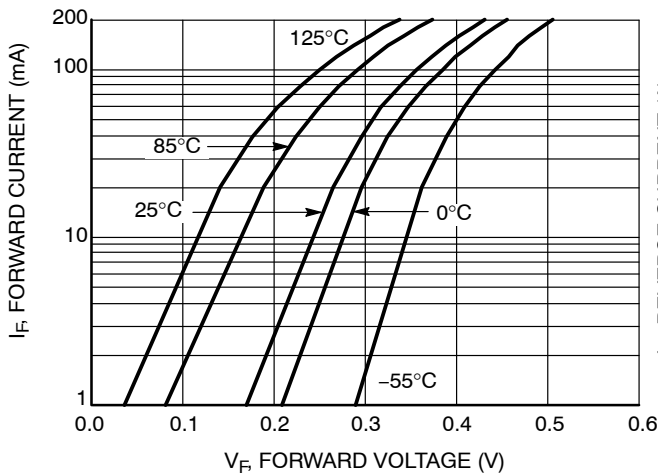


Figure 3. Forward Voltage

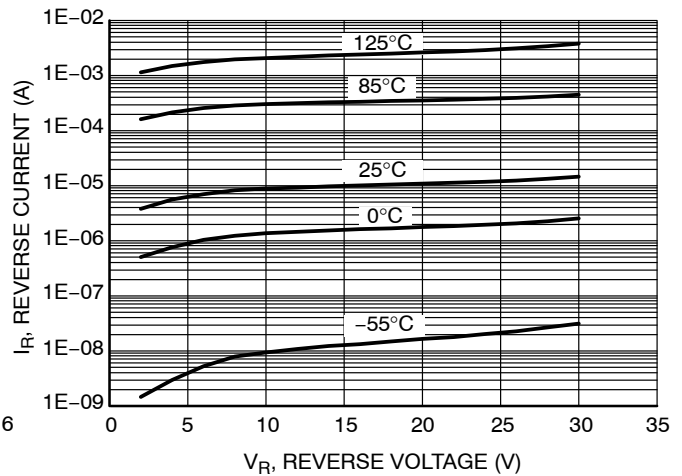


Figure 4. Leakage Current

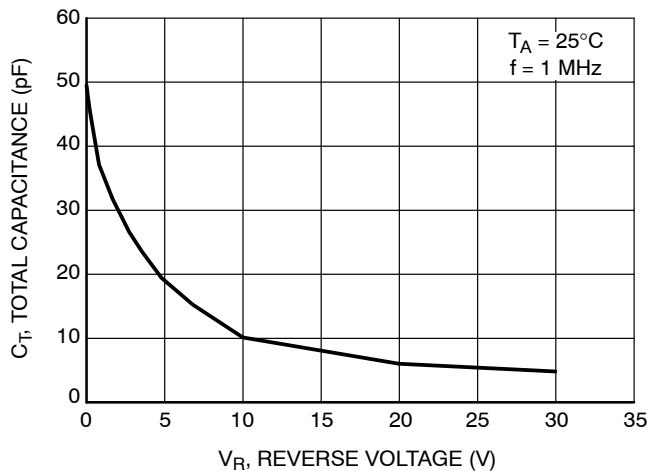


Figure 5. Total Capacitance

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

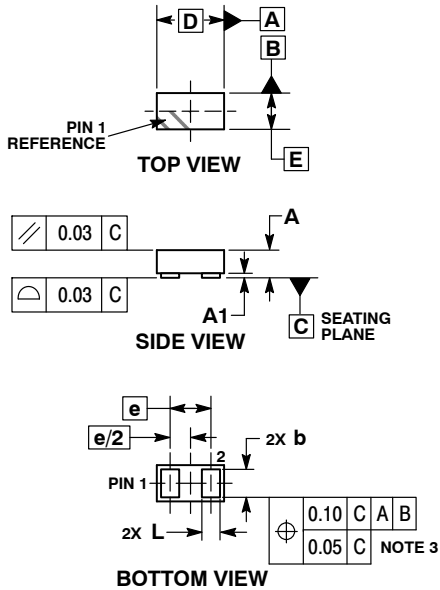
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SCALE 10:1

X4DFN2, 0.445x0.24, 0.27P  
CASE 718AA  
ISSUE A

DATE 21 MAR 2017

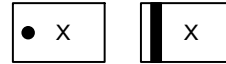


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.15	0.18	0.21
A1	---	---	0.03
b	0.170	0.185	0.200
D	0.415	0.445	0.475
E	0.210	0.240	0.270
e	0.270 BSC		
L	0.105	0.120	0.135

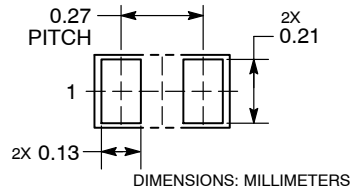
**GENERIC MARKING DIAGRAMS\***



X = Specific Device Code

\*This information is generic. Please refer to device data sheet for actual part marking. Some products may not follow the Generic Marking.

**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, SOLDERM/D.

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