

# NSR10T406MX2

## Product Preview

# 1 A, 40 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 spacing saving micro-packaging ideal for space constraint applications.

### Features

- Low Forward Voltage Drop – 470 mV (Typ.) @  $I_F = 1\text{ A}$
- Low Reverse Current – 5  $\mu\text{A}$  (Typ.) @  $V_R = 40\text{ V}$
- 1 A of Continuous Forward Current
- 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)	$I_F$	1.0	A
Forward Surge Current (60 Hz @ 1 cycle)	$I_{FSM}$	9.5	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	$I_{FRM}$	3.8	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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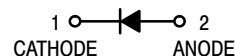
[www.onsemi.com](http://www.onsemi.com)



X2DFNW2  
CASE 717AB

XX = Specific Device Code  
M = Date Code

### MARKING DIAGRAM



### ORDERING INFORMATION

Device	Package	Shipping†
NSR10T406MX2WT5G	X2DFNW2 (Pb-Free)	8000 / 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.

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

# NSR10T406MX2

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$			150 800	$^\circ\text{C/W}$ mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ $P_D$			72.7 1500	$^\circ\text{C/W}$ mW
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150			$^\circ\text{C}$

- Mounted onto a 4 in square FR-4 board 50 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.
- Mounted onto a 4 in square FR-4 board 650 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.

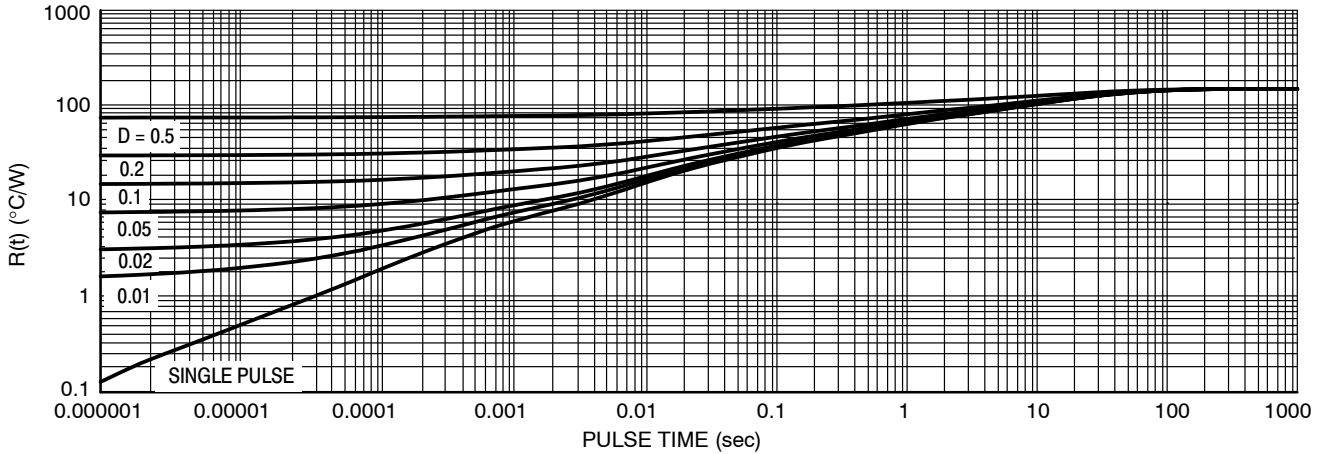


Figure 1. Thermal Response (Note 1)

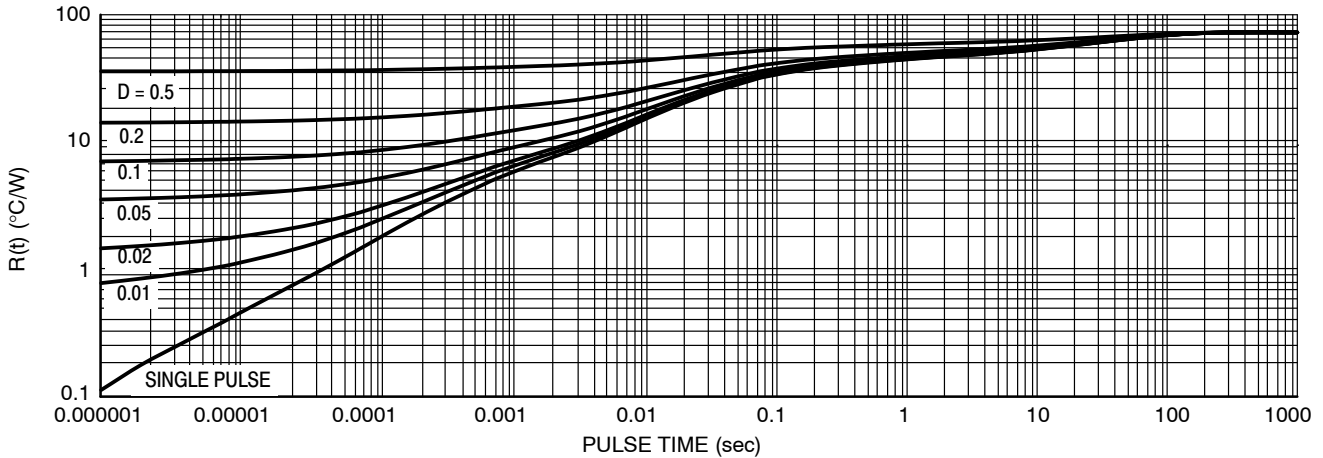


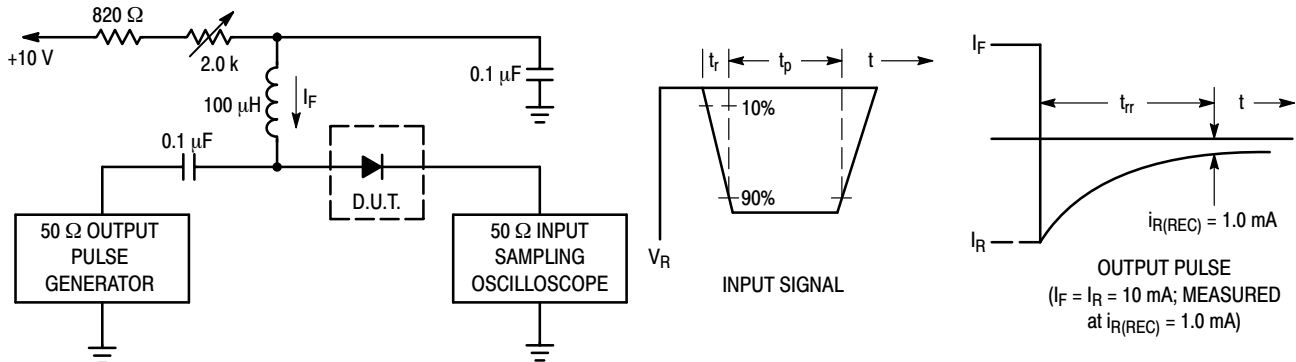
Figure 2. Thermal Response (Note 2)

# NSR10T406MX2

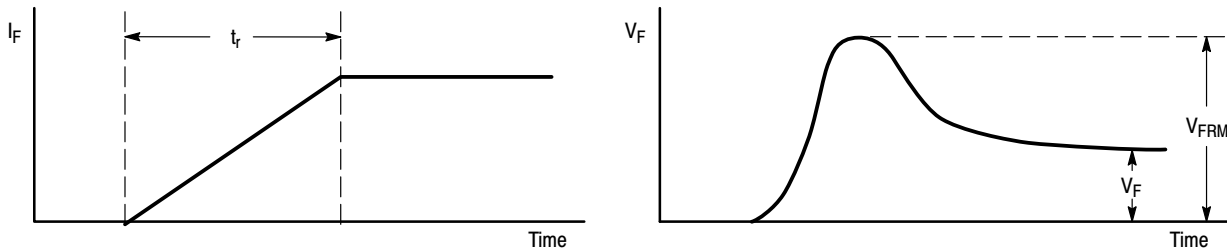
## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage ( $V_R = 10\text{ V}$ ) ( $V_R = 40\text{ V}$ )	$I_R$		0.5 2.1	1.5 10	$\mu\text{A}$
Forward Voltage ( $I_F = 10\text{ mA}$ ) ( $I_F = 100\text{ mA}$ ) ( $I_F = 200\text{ mA}$ ) ( $I_F = 500\text{ mA}$ ) ( $I_F = 1.0\text{ A}$ )	$V_F$		310 375 400 435 475	380 440 470 500 530	mV
Total Capacitance ( $V_R = 1.0\text{ V}$ , $f = 1.0\text{ MHz}$ )	$C_T$		265	350	pF
Reverse Recovery Time ( $I_F = I_R = 10\text{ mA}$ , $I_{R(\text{REC})} = 1.0\text{ mA}$ , Figure 3)	$t_{rr}$		65	150	ns
Peak Forward Recovery Voltage ( $I_F = 100\text{ mA}$ , $t_r = 20\text{ ns}$ , Figure 4)	$V_{FRM}$		0.54	1.0	V

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.



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



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

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## TYPICAL CHARACTERISTICS

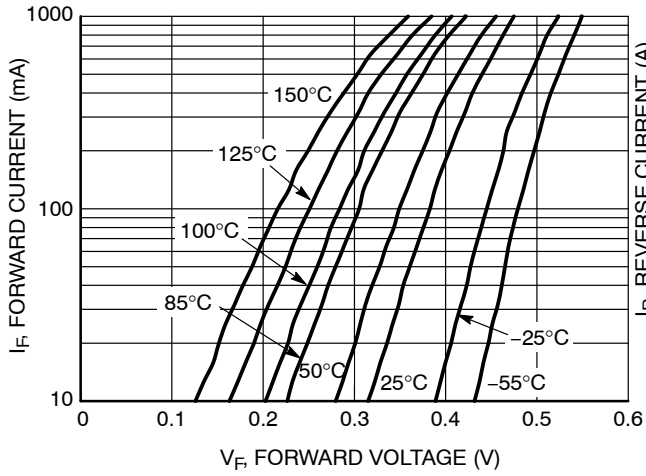


Figure 5. Forward Voltage

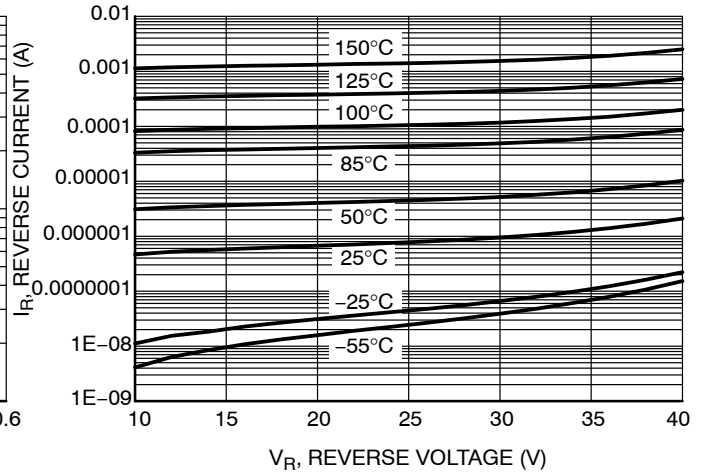


Figure 6. Leakage Current

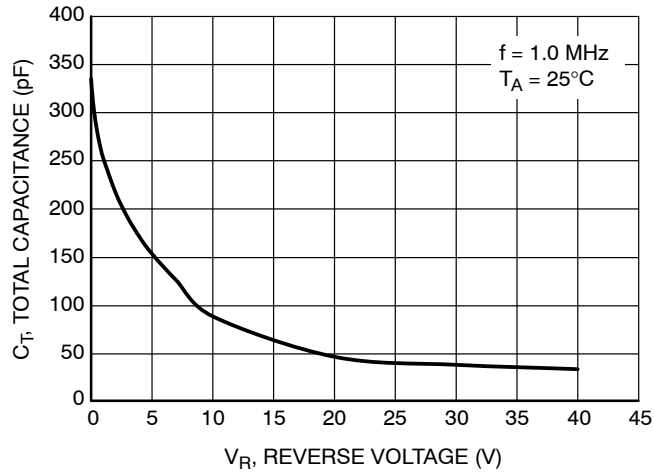
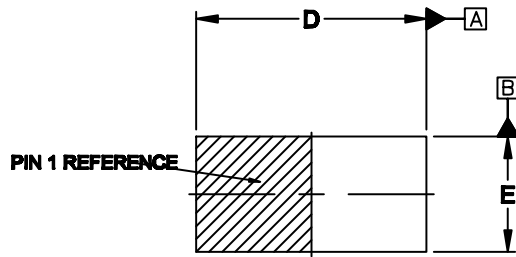


Figure 7. Total Capacitance

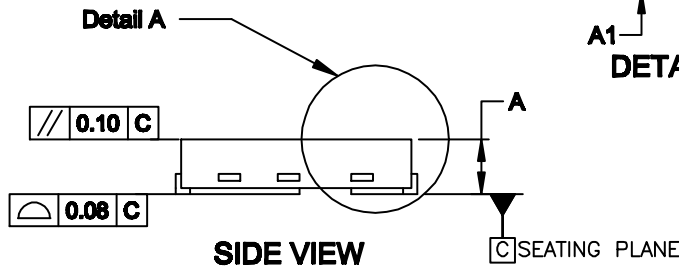
# NSR10T406MX2

## PACKAGE DIMENSIONS

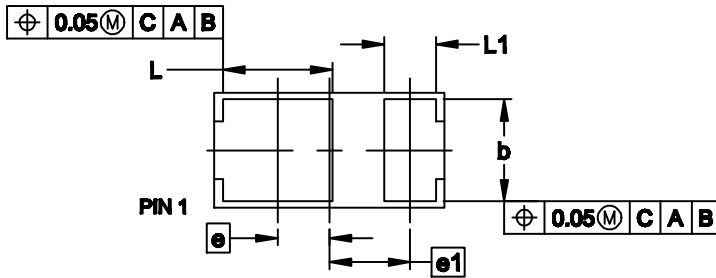
X2DFNW2 1.60x0.80  
CASE 717AB  
ISSUE O



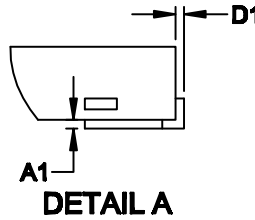
TOP VIEW



SIDE VIEW



BOTTOM VIEW

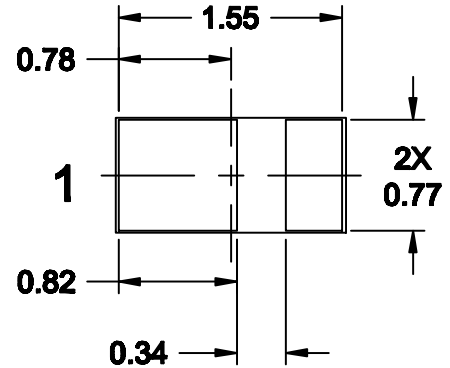


DETAIL A

### NOTES:

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

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
A1	—	—	0.04
b	0.67	0.71	0.75
D	1.55	1.60	1.65
D1	—	—	0.04
E	0.75	0.80	0.85
e	0.36 BSC		
e1	0.58 BSC		
L	0.72	0.76	0.80
L1	0.32	0.36	0.40



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