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°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 (60 Hz, 1 cycle)	I_{FSM}	8.0	A
Non−Repetitive Peak Forward Current (Square Wave, T_J = 25°C prior to surge) t = 1 μs t = 1 ms t = 1 s	I_{FSM}	 55 10 5.0	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.

1. All specifications pertain to a single diode.

THERMAL CHARACTERISTICS

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

2. Single Layer JEDEC JESD51.3 FR−4 @ 100 mm^2, 2 oz. copper trace, still air.

ON Semiconductor®

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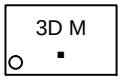
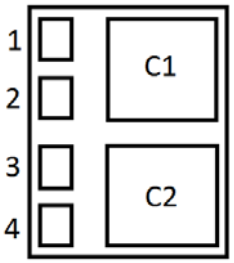
MARKING DIAGRAM

XDFN4 2.0x1.35
CASE 711BD

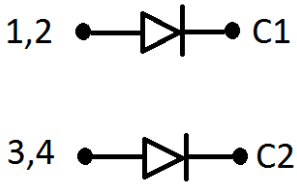


3D = Specific Device Code
M = Date Code
▪ = Pb−Free Package

PIN CONNECTIONS



DEVICE SCHEMATIC



ORDERING INFORMATION

Device	Package	Shipping†
NSR2030DMXTAG	XDFN4 (Pb−Free)	3000 / Tape & 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.

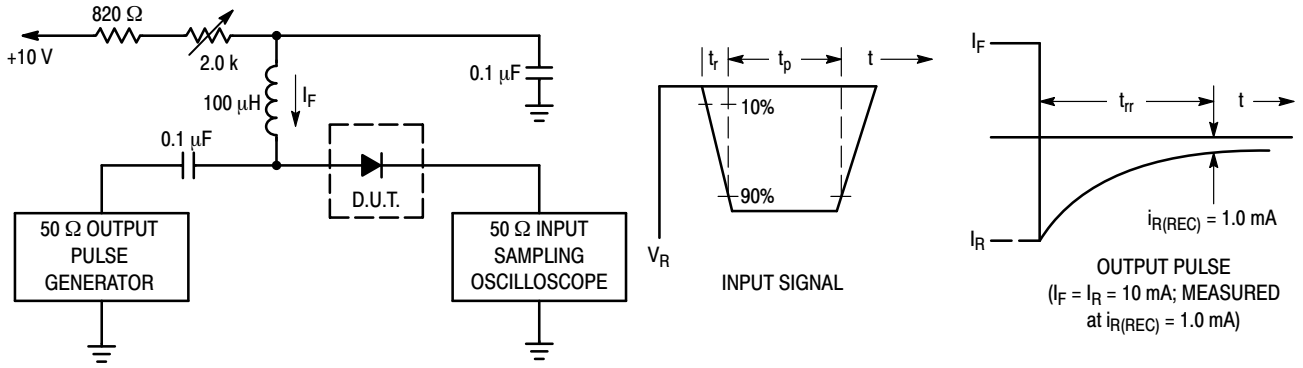
August, 2016 − Rev. 0

Publication Order Number:
NSR2030DMX/D

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Note 3)

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

3. All specifications pertain to a single diode.



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

Figure 1. Recovery Time Equivalent Test Circuit

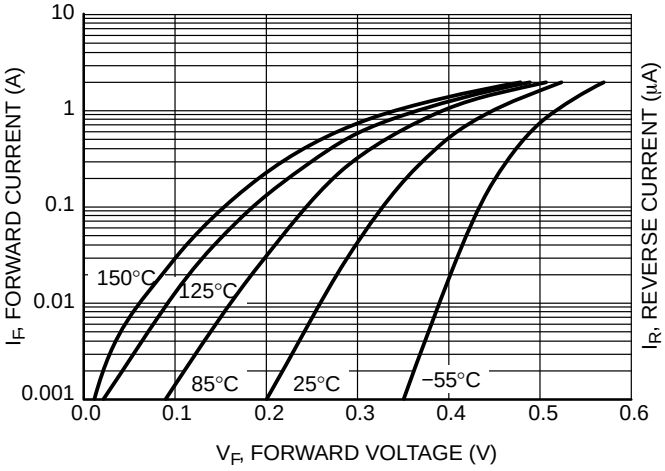


Figure 1. Forward Voltage

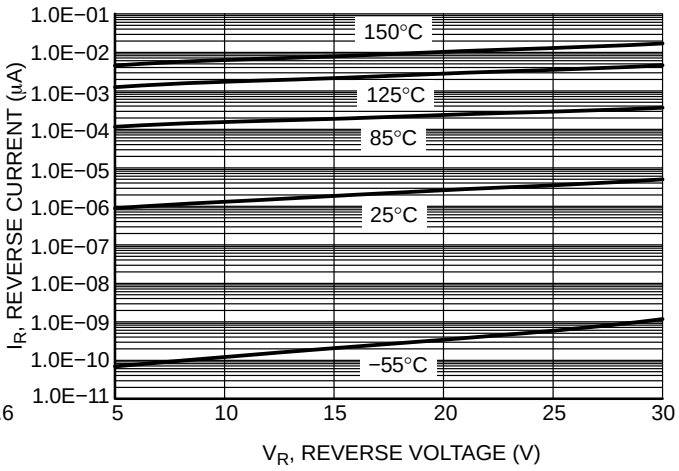


Figure 2. Reverse Leakage

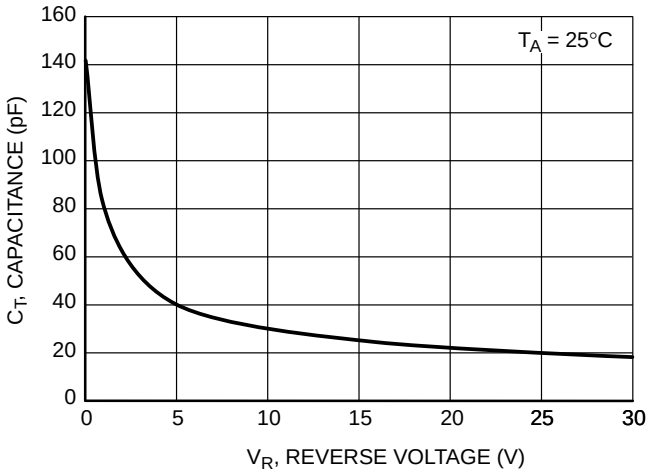


Figure 3. Capacitance

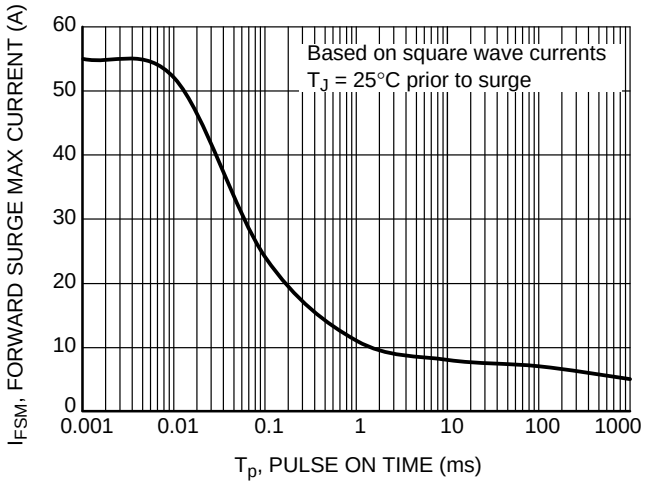


Figure 4. Non−Repetitive Peak Forward Current, Max Values

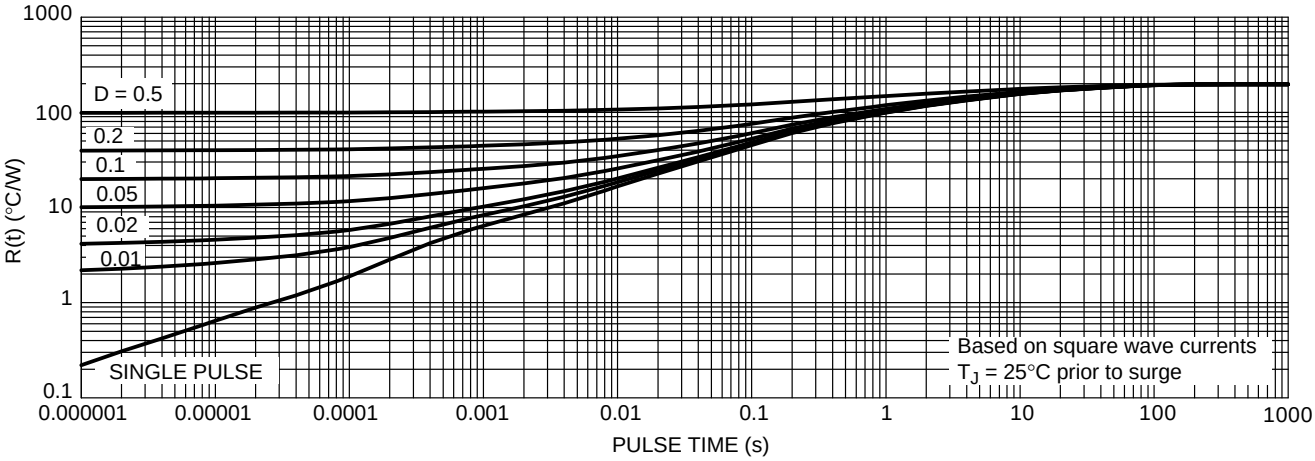


Figure 5. Thermal Response

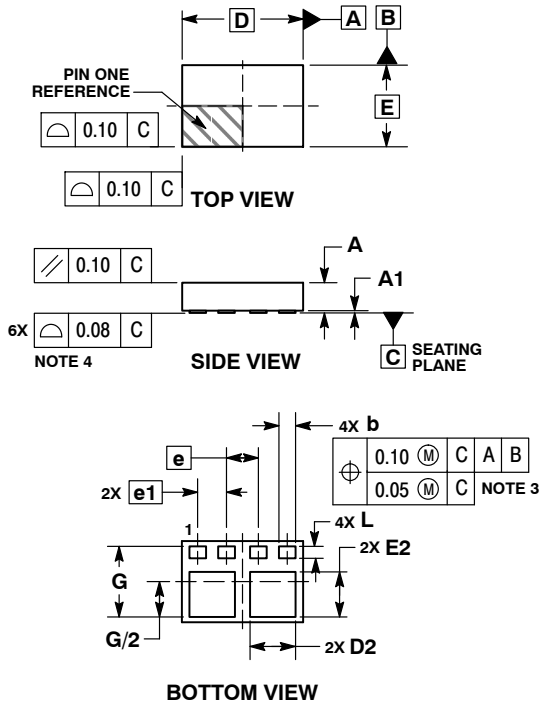
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

ON Semiconductor®

XDFN4 2.0x1.35, 0.525P
CASE 711BD
ISSUE O

DATE 15 SEP 2015

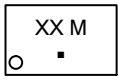
SCALE 4:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.25 MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE PADS AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.34	0.44
A1	0.00	0.05
b	0.225	0.325
D	2.00 BSC	
D2	0.70	0.80
E	1.35 BSC	
E2	0.70	0.80
e	0.525 BSC	
e1	0.475 BSC	
G	1.12	1.23
L	0.15	0.25

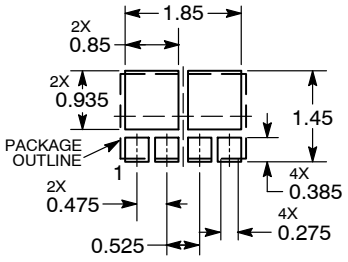
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

RECOMMENDED MOUNTING FOOTPRINT



DIMENSIONS: MILLIMETERS

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DESCRIPTION:	**XDFN4 2.0X1.35, 0.525P**		**PAGE 1 OF 1**

PUBLICATION ORDERING INFORMATION

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