NSR2030QMUTWG

2A, 30V Schottky Full Bridge

These full bridge Schottky barrier diodes are designed for the rectification of the high speed signal of wireless charging. The NSR2030QMUTWG has a very low forward voltage that will reduce conduction loss. It is housed in a UDFN 3.5 x 3.5 x 0.5 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 Full Bridge Rectification & Wireless Charging

MAXIMUM RATINGS (T_J = 125°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}	12.5	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}	 40 10 3.0	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)	2.08 20.8	W mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$ (Note 2)	48	°C/W
Total Device Dissipation FR-5 Board (T_A = 25°C) Derate above 25°C	P_D (Note 3)	0.75 7.6	W mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$ (Note 3)	132	°C/W
Total Device Dissipation FR-5 Board (T_A = 25°C) Derate above 25°C	P_D (Note 4)	0.87 8.8	W mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$ (Note 4)	114	°C/W
Junction Temperature	T_J	+125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

2. 4 Layer JEDEC JESD51.7 FR−4 @ 10 mm^2, 1 oz. copper trace, still air.
3. Single Layer JEDEC JESD51.3 FR−4 @ 100 mm^2, 1 oz. copper trace, still air.
4. Single Layer JEDEC JESD51.3 FR−4 @ 100 mm^2, 2 oz. copper trace, still air.

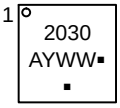
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MARKING DIAGRAM

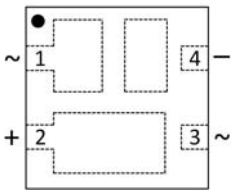


UDFN4 3.5x3.5
CASE 517DA

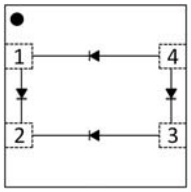


2030 = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

PIN CONNECTIONS



DEVICE SCHEMATIC



ORDERING INFORMATION

Device	Package	Shipping†
NSR2030QMUTWG	UDFN4 (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.

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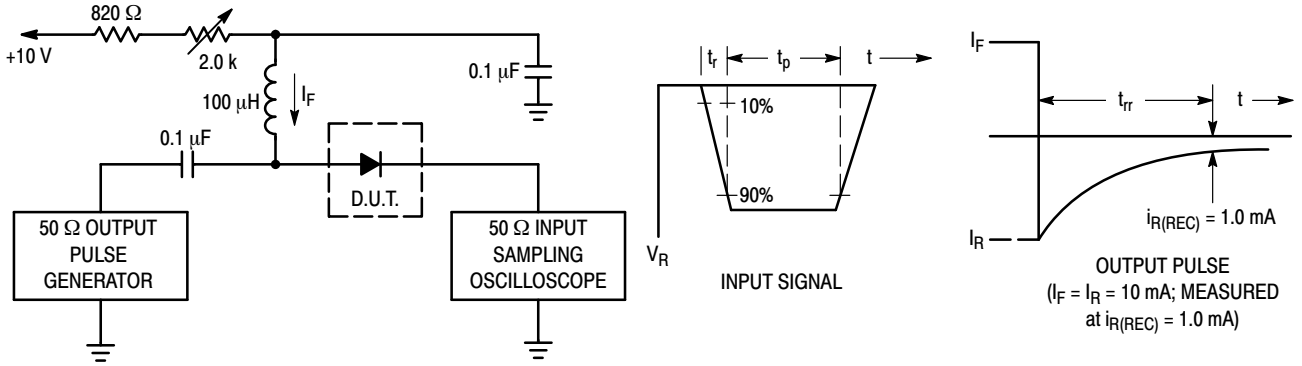
Publication Order Number:
NSR2030QMU/D

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Note 5)

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	0.455	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}	–	34	–	ns
Input Capacitance (pins 1 to 3) (V_R = 1.0 V, f = 1.0 MHz)	C_T	–	102	–	pF

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.

5. 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

TYPICAL CHARACTERISTICS

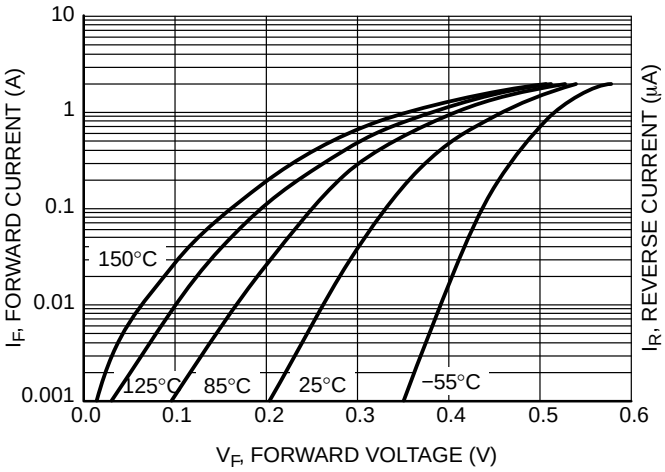


Figure 1. Forward Voltage

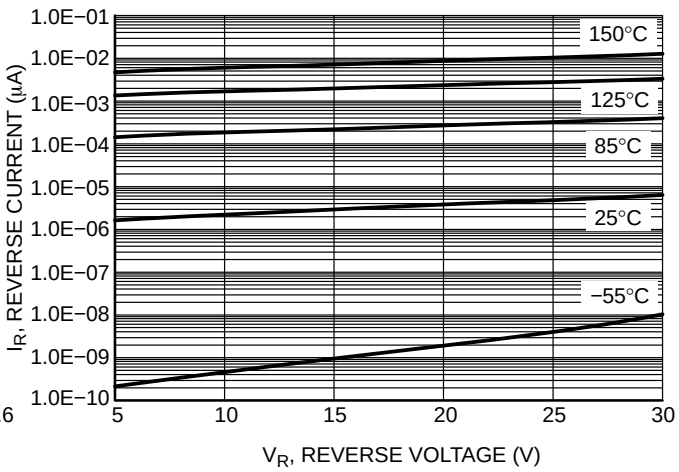


Figure 2. Reverse Leakage

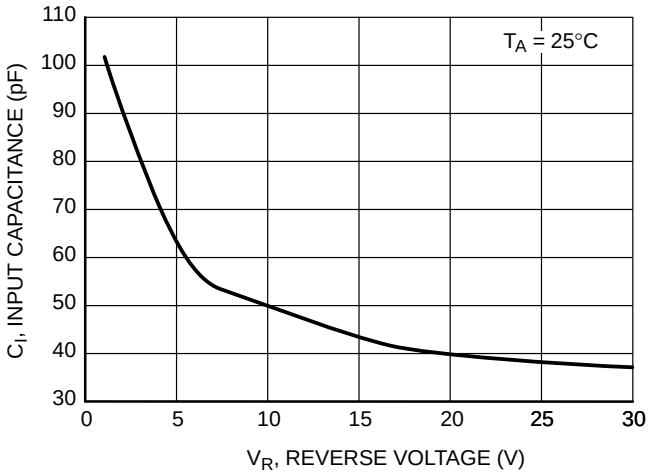


Figure 3. Input Capacitance

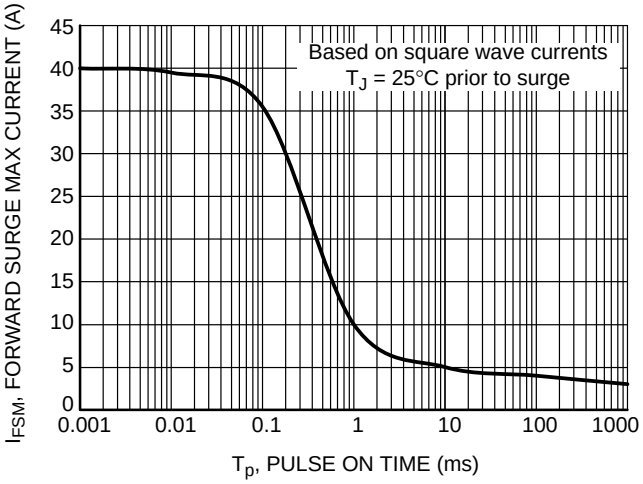


Figure 4. Forward Surge Current

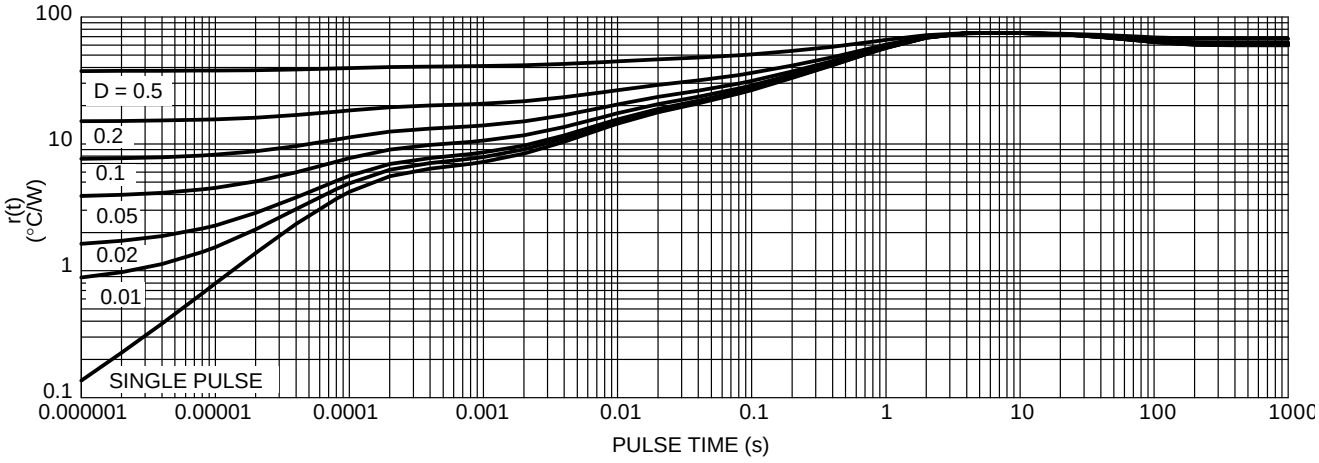
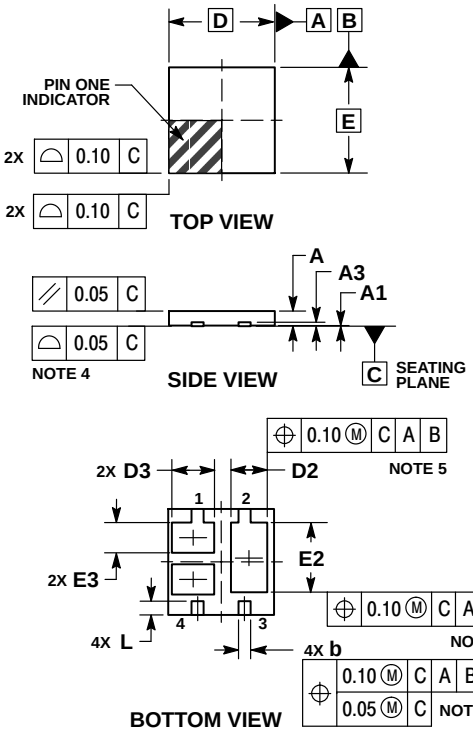


Figure 5. Thermal Response

NSR2030QMUTWG

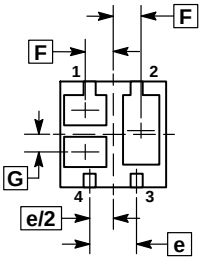
PACKAGE DIMENSIONS

UDFN4 3.5x3.5, 1.55P
CASE 517DA
ISSUE A

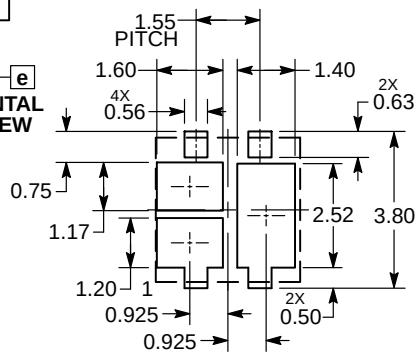


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.05 AND 0.15 MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PADS AS WELL AS THE TERMINALS.
5. POSITIONAL TOLERANCE APPLIES TO ALL OF THE EXPOSED PADS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.35	0.45
D	3.50 BSC	
D2	1.15	1.25
D3	1.35	1.45
E	3.50 BSC	
E2	2.25	2.35
E3	0.95	1.05
e	1.55 BSC	
F	0.925 BSC	
G	0.58 BSC	
L	0.35	0.55



RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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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