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.

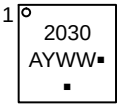
ON Semiconductor®

www.onsemi.com

MARKING DIAGRAM

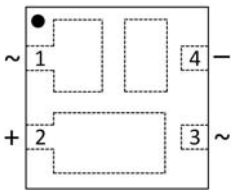


UDFN4 3.5x3.5
CASE 517DA

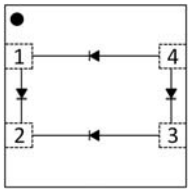


2030 = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

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.

© Semiconductor Components Industries, LLC, 2015

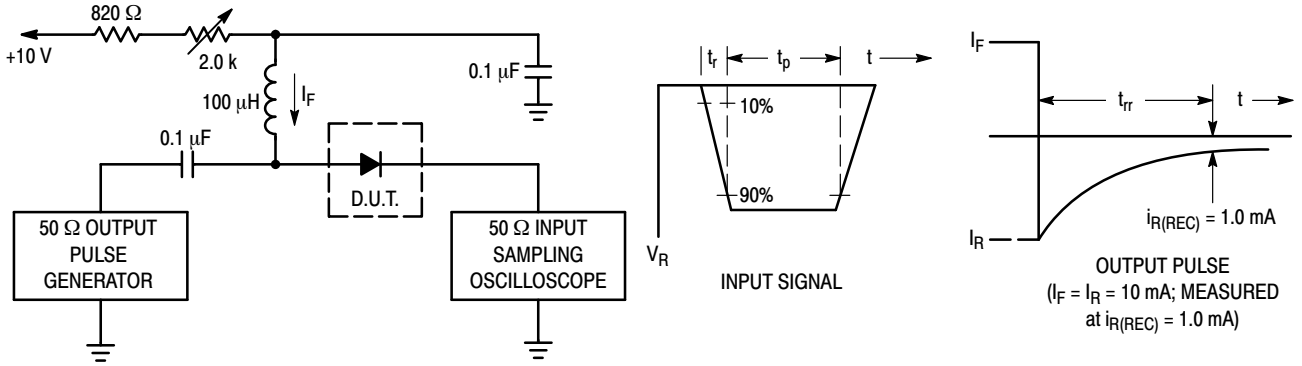
Publication Order Number:
NSR2030QMU/D

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

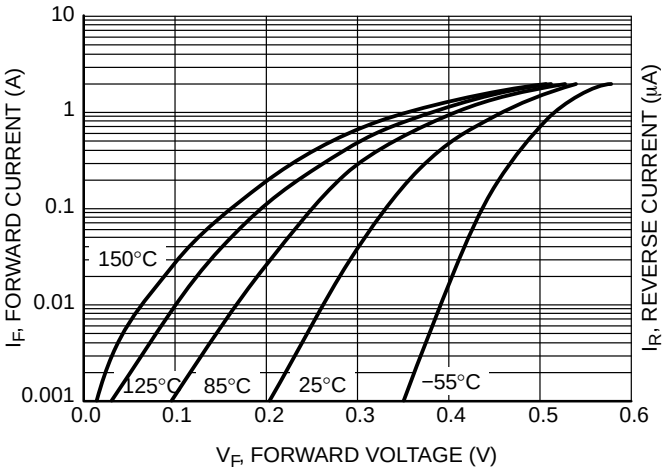


Figure 1. Forward Voltage

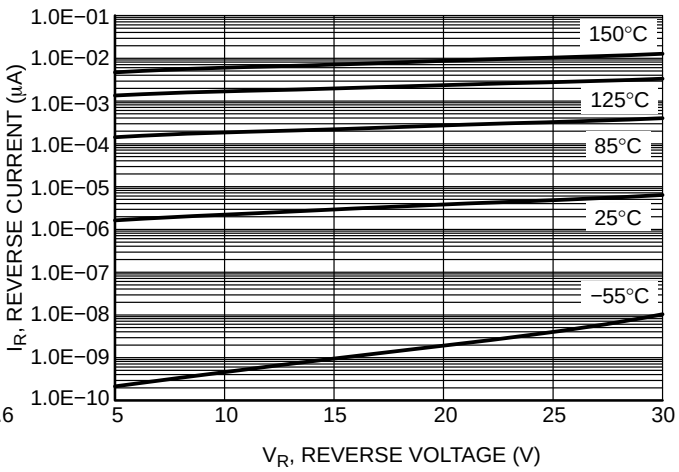


Figure 2. Reverse Leakage

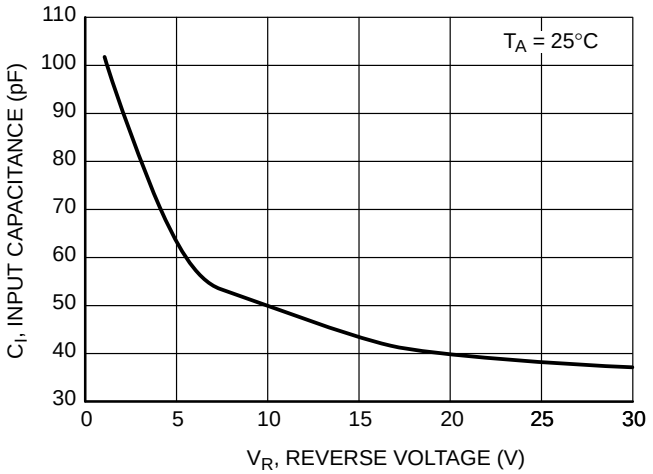


Figure 3. Input Capacitance

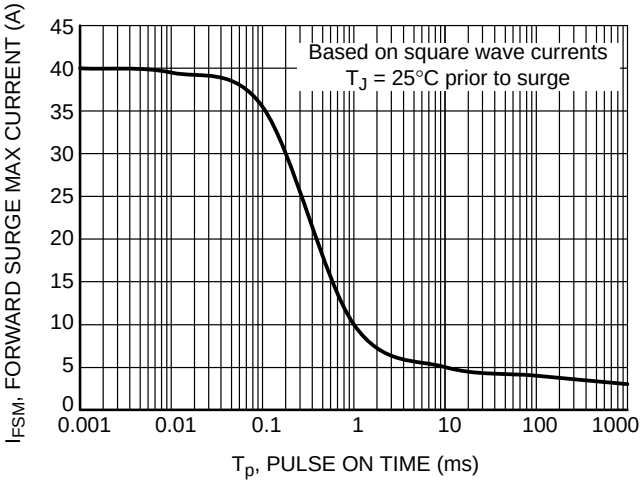


Figure 4. Forward Surge Current

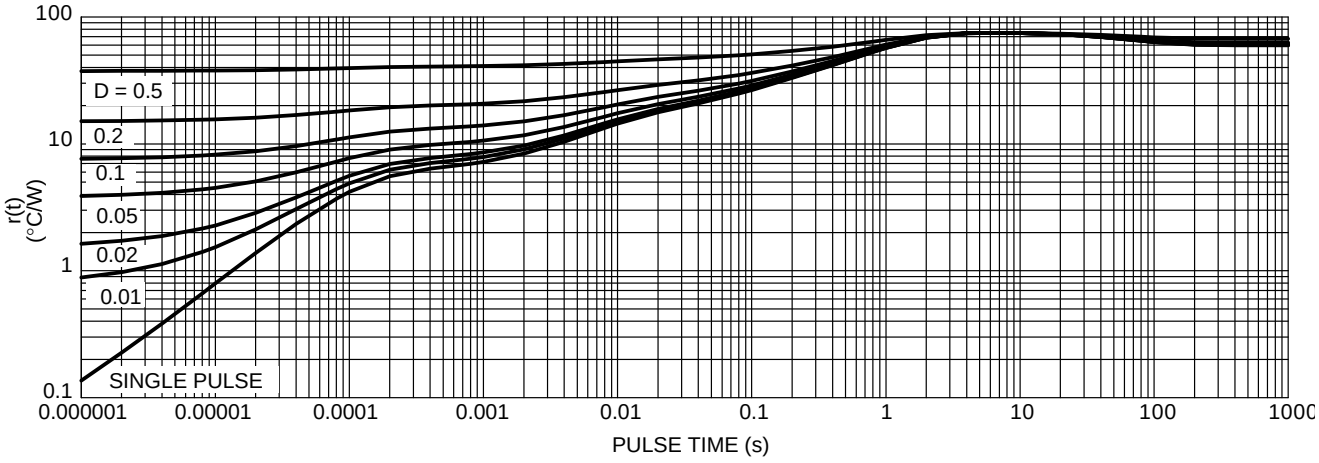


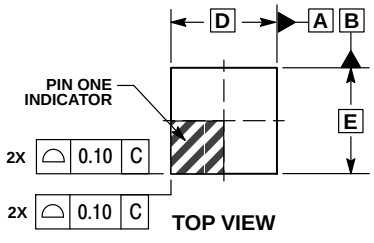
Figure 5. Thermal Response

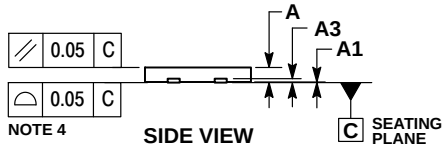


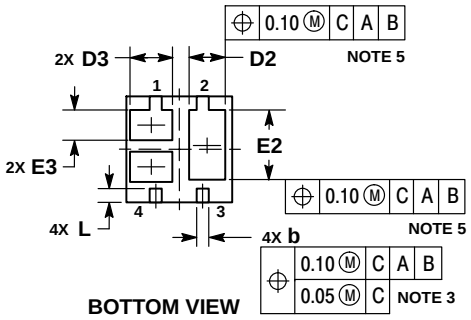
SCALE 2:1

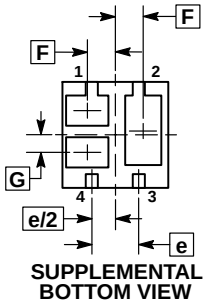
UDFN4 3.5x3.5, 1.55P
CASE 517DA
ISSUE A

DATE 25 SEP 2014









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

GENERIC MARKING DIAGRAM*

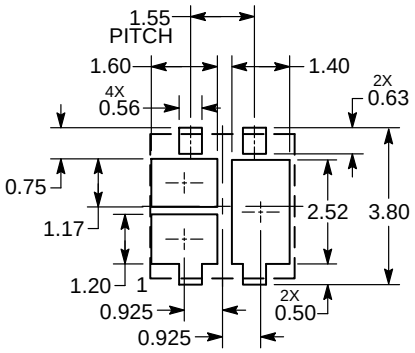


XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*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 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.

ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION. REQ. BY D. TRUHITTE.	24 SEP 2014
A	CORRECTED GENERIC MARKING DIAGRAM INFORMATION. REQ. BY D. TRUHITTE.	25 SEP 2014

ON Semiconductor and ON are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as−is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales