

# ON Semiconductor

## Is Now

# onsemi™

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# NSR15DW1

## Dual RF Schottky Diode

These diodes are designed for analog and digital applications, including DC based signal detection and mixing applications.

### Features

- Low Capacitance (<1 pF)
- Low  $V_F$  (390 mV typical @ 1 mA)
- Low  $V_{F\Delta}$  (1 mV typical @ 1 mA)
- Pb-Free Package is Available

### Benefits

- Reduced Parasitic Losses
- Accurate Signal Measurement

### MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Peak Reverse Voltage	$V_R$	15	V
Forward Current	$I_F$	30	mA
Operating and Storage Temperature Range	$T_J, T_{stg}$	-65 to +150	°C
ESD Rating: Class 1 per Human Body Model Class A per Machine Model			

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	500	°C/W

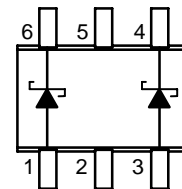
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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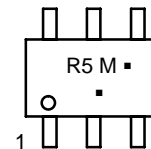
<http://onsemi.com>

### RF SCHOTTKY BARRIER DIODES 15 VOLTS, 30 mA



SC-88  
CASE 419B  
STYLE 21

### MARKING DIAGRAM



R5 = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
NSR15DW1T1	SC-88	3000/Tape & Reel
NSR15DW1T1G	SC-88 (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 Specifications Brochure, BRD8011/D.

# NSR15DW1

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{BR}$	15	20	-	V
Reverse Leakage ( $V_R = 1 \text{V}$ )	$I_R$	-	2	50	nA
Forward Voltage ( $I_F = 1 \text{mA}$ )	$V_{F1}$	-	390	415	mV
Forward Voltage ( $I_F = 10 \text{mA}$ )	$V_{F2}$	-	530	680	mV
Delta $V_F$ ( $I_F = 1 \text{mA}$ , All Diodes)	$\Delta V_F$	-	1	15	mV
Capacitance ( $V_F = 0 \text{V}$ , $f = 1 \text{MHz}$ )	$C_T$	-	0.8	1	pF

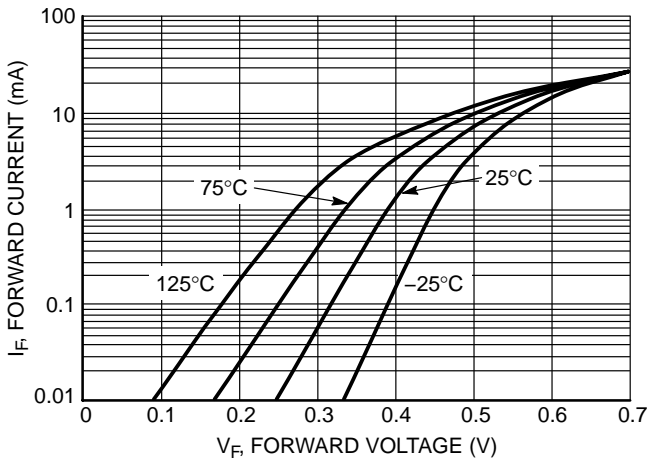


Figure 1. Forward Current versus Forward Voltage at Temperatures

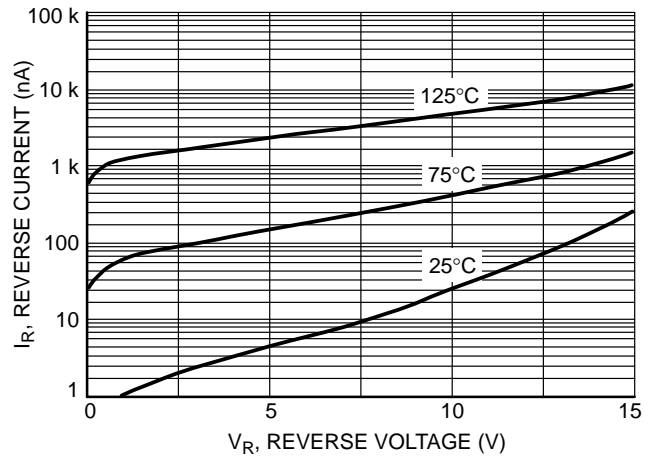


Figure 2. Reverse Current versus Reverse Voltage

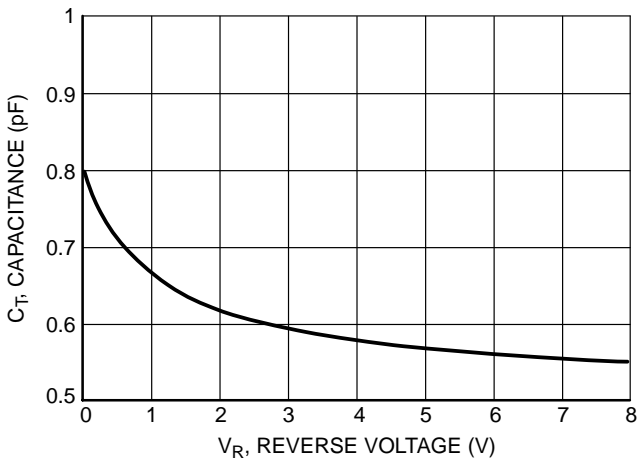


Figure 3. Total Capacitance versus Reverse Voltage

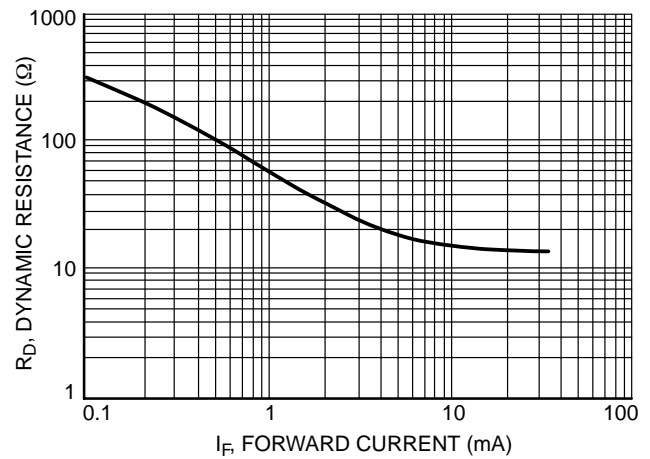


Figure 4. Dynamic Resistance versus Forward Current

# NSR15DW1

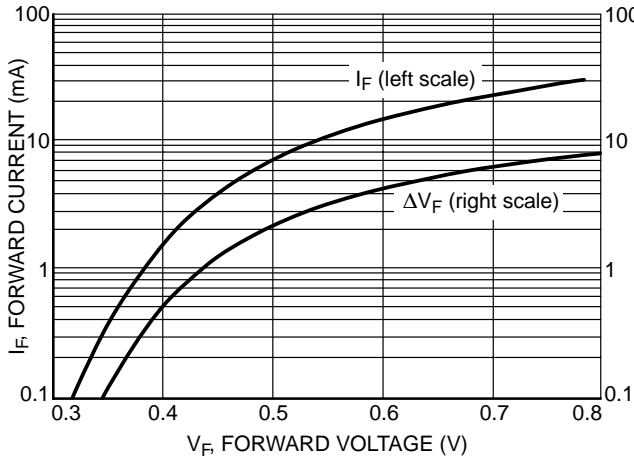


Figure 5. Typical  $V_F$  Match at Mixer Bias Levels

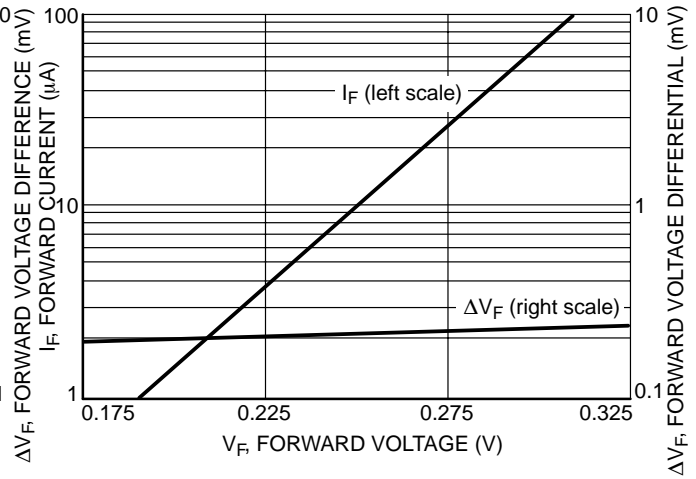


Figure 6. Typical  $V_F$  Match at Detector Bias Levels

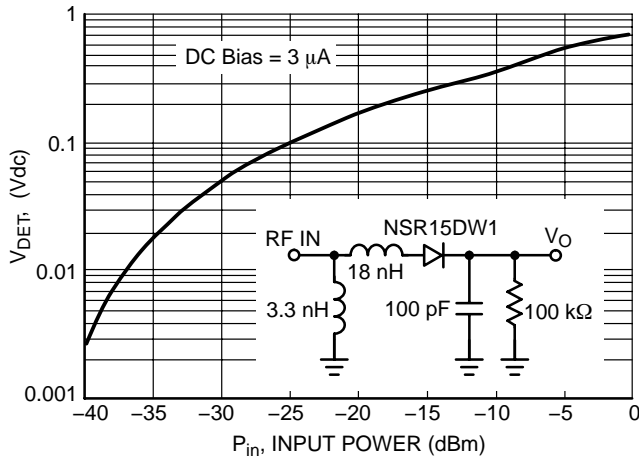


Figure 7. Typical Output Voltage versus Input Power, Small Signal Detector Operating at 850 MHz

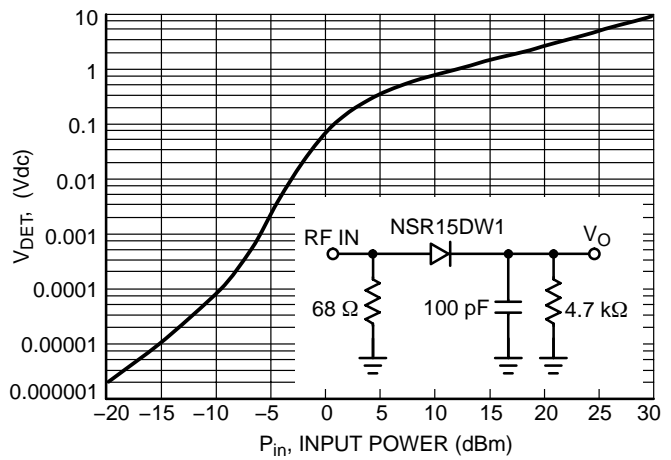


Figure 8. Typical Output Voltage versus Input Power, Large Signal Detector Operating at 915 MHz

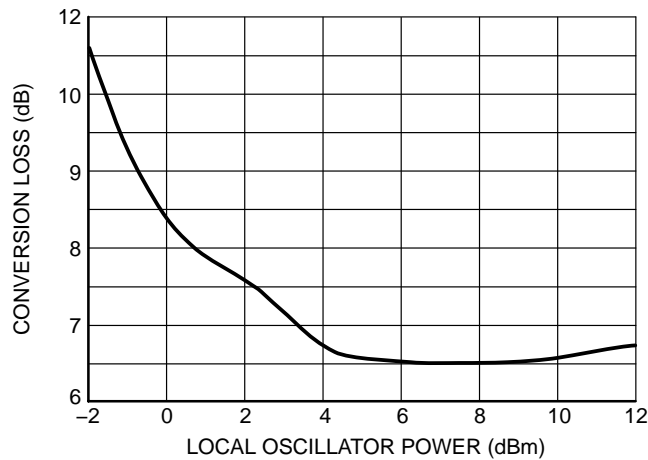


Figure 9. Typical Conversion Loss versus L.O. Drive, 2.0 GHz

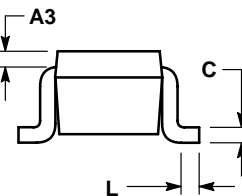
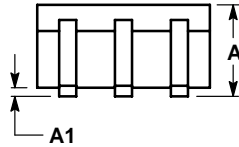
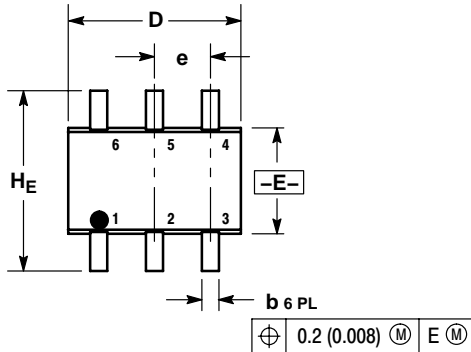
# NSR15DW1

## PACKAGE DIMENSIONS

SC-88/SC70-6/SOT-363

CASE 419B-02

ISSUE W



NOTES:

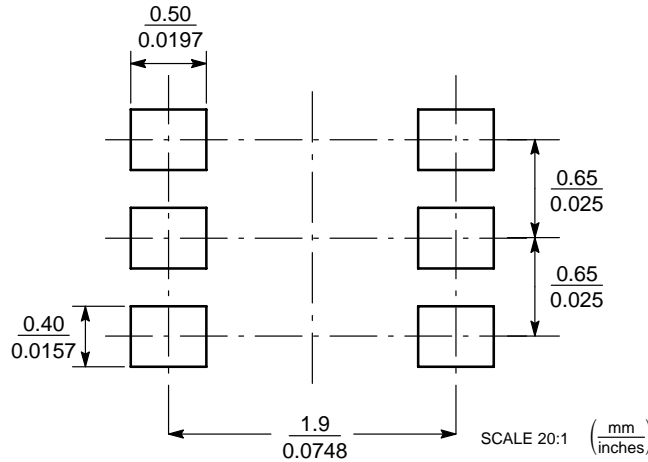
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.95	1.10	0.031	0.037	0.043
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.20 REF			0.008 REF		
b	0.10	0.21	0.30	0.004	0.008	0.012
C	0.10	0.14	0.25	0.004	0.005	0.010
D	1.80	2.00	2.20	0.070	0.078	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
HE	2.00	2.10	2.20	0.078	0.082	0.086

STYLE 21:

- PIN 1. ANODE 1
- 2. N/C
- 3. ANODE 2
- 4. CATHODE 2
- 5. N/C
- 6. CATHODE 1

### SOLDERING FOOTPRINT\*



\*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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