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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# HSMS-282Z

## RF Schottky Barrier Diodes In Surface Mount SOD-323 Package



### Data Sheet

#### Description/Applications

Avago Technologies's HSMS-282Z is a RF Schottky Barrier Diode, featuring low series resistance, low forward voltage at all current levels and good RF characteristics.

It is housed in a low cost, industrial standard surface mount package - SOD-323. This package offers customer who already use SOT-23 and SOT-323 packages, a logical transition to a smaller package outline to accommodate end product design with limited board space.

The HSMS-282Z is specially designed for both analog and digital applications. The typical applications are mixing, detecting, switching, sampling, clamping and wave shaping.

**Table 1. Absolute Maximum Ratings [1] at Tc = +25°C**

Symbol	Parameter	Unit	Max Rating
I <sub>f</sub>	Forward Current (1 μs Pulse)	Amp	1
P <sub>IV</sub>	Peak Inverse Voltage	V	15
T <sub>j</sub>	Junction Temperature	°C	150
T <sub>stg</sub>	Storage Temperature	°C	-60 to 150
θ <sub>jc</sub>	Thermal Resistance [2]	°C/W	135

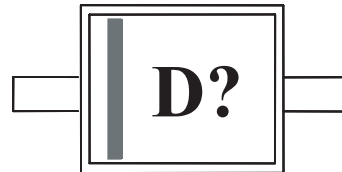
Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to the device.
2. Thermal Resistance is measured from junction to board using IR method.

#### Features

- 2 Leads Surface Mount Package
- Low Turn-On Voltage
- Low Series Resistance
- Microwave Frequency Operation
- Tape and Reel Options Available
- Low Failure in Time (FIT) Rate
- MSL1 & Lead Free

#### Package Marking and Pin Connections

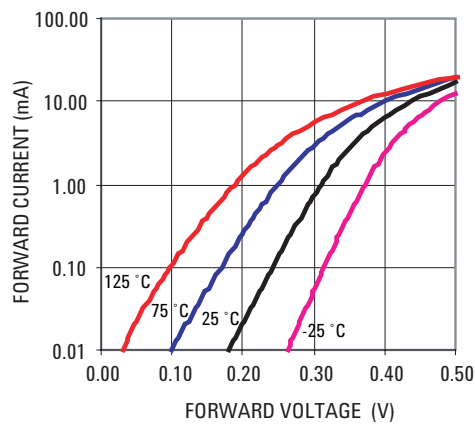


Note: Package marking provides orientation and identification  
"D" = Device Code  
"?" = Month code indicates the month of manufacture

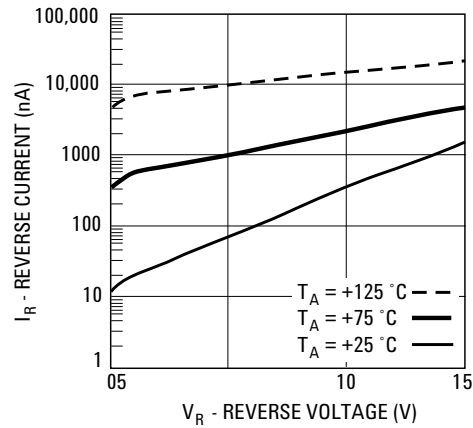
**Table 2. Electrical Specifications at Tc = +25°C**

	Minimum Breakdown Voltage V <sub>BR</sub> (V)	Maximum Forward Voltage V <sub>F</sub> (mV)	Maximum Forward Voltage V <sub>F</sub> (V)	Maximum Reverse Leakage I <sub>R</sub> (nA)	Minimum Capacitance C <sub>T</sub> (pF)	Typical Dynamic Resistance R <sub>D</sub> (Ohm)
	15	340	0.5	100	1.0	12
Test Conditions	V <sub>R</sub> = V <sub>BR</sub> Measure I <sub>R</sub> ≤ 100uA	I <sub>F</sub> = 1mA	I <sub>F</sub> = 10mA	V <sub>R</sub> = 1V	V <sub>R</sub> = 0 V f = 1 MHz	I <sub>F</sub> = 5mA

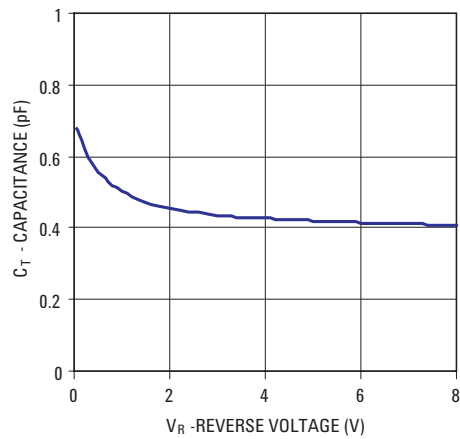
**Typical Performance Curves at Tc = +25°C**



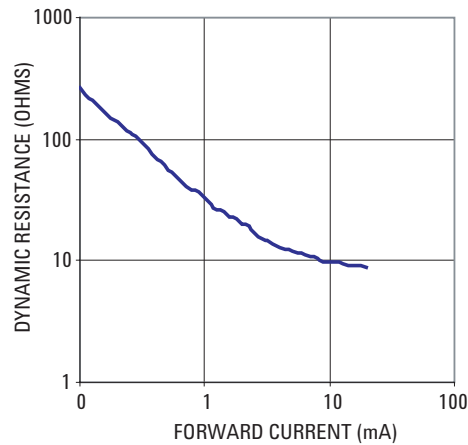
**Figure 1. Forward Current vs. Forward Voltage**



**Figure 2. Reverse Current vs. Reverse Voltage**



**Figure 3. Total Capacitance vs. Reverse Bias**



**Figure 4. Dynamic Resistance vs. Forward Current**

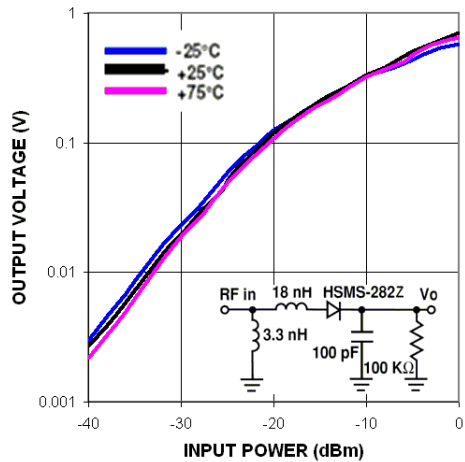


Figure 5. Typical Output Voltage vs. Input Power, Small Signal Detector operating at 850 MHz

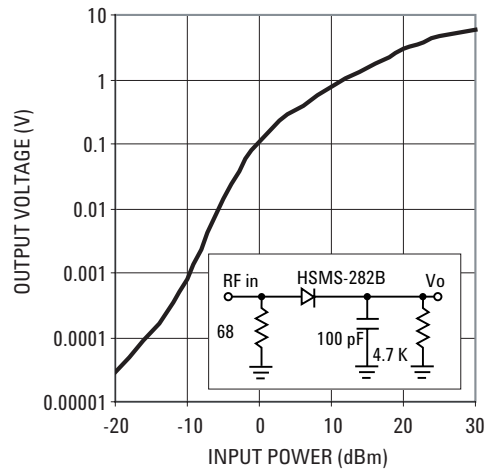
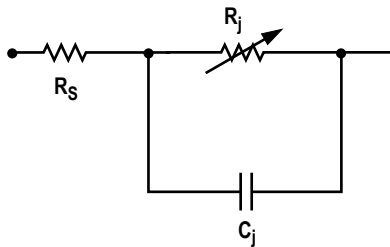


Figure 6. Typical Output Voltage vs. Input Power, Large Signal Detector Operating at 915 MHz.

### Linear Equivalent Circuit Model Diode Chip



$R_S$  = series resistance (see Table of SPICE parameters)

$C_j$  = junction capacitance (see Table of SPICE parameters)

$$R_j = \frac{8.33 \times 10^{-5} \text{ nT}}{I_b + I_s}$$

where

$I_b$  = externally applied bias current in amps

$I_s$  = saturation current (see table of SPICE parameters)

$T$  = temperature, K

$n$  = ideality factor (see table of SPICE parameters)

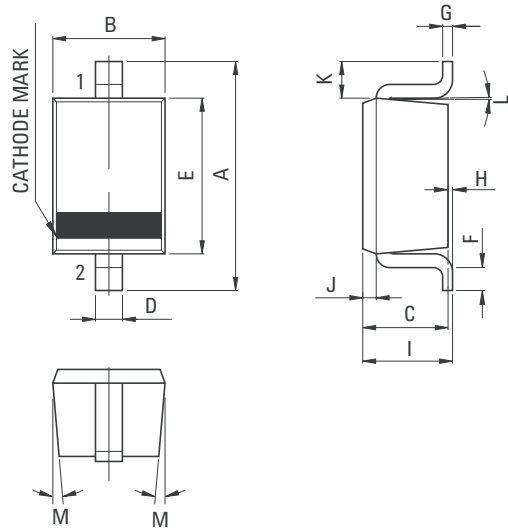
Note:

To effectively model the packaged HSMS-282x product, please refer to Application Note AN1124.

### SPICE Parameters

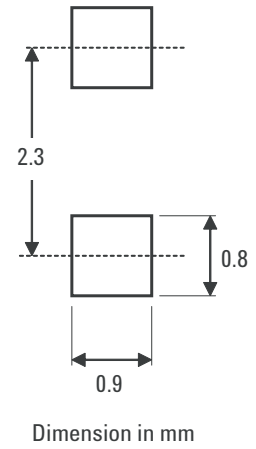
Parameter	Units	HSMS-282Z
$B_V$	V	15
$C_{J0}$	pF	0.7
$E_G$	eV	0.69
$I_{BV}$	A	1E-4
$I_S$	A	2.2E-8
$N$		1.08
$R_S$	$\Omega$	6.0
$P_B$	V	0.65
$P_T$		2
$M$		0.5

### Package Outline and Dimension

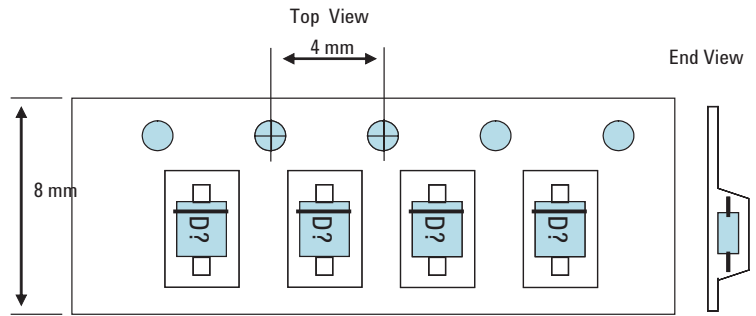
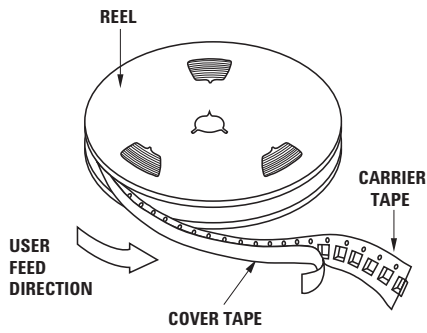


DIM	MILLIMETERS
A	2.50 ± 0.2
B	1.25 ± 0.05
C	0.90 ± 0.05
D	0.30+0.06/-0.04
E	1.70 ± 0.05
F	MIN 0.17
G	0.126 ± 0.03
H	0~0.1
I	1.0 MAX
J	0.15 ± 0.05
K	0.4
L	2°+4/-2
M4	~6°

### PCB Footprint



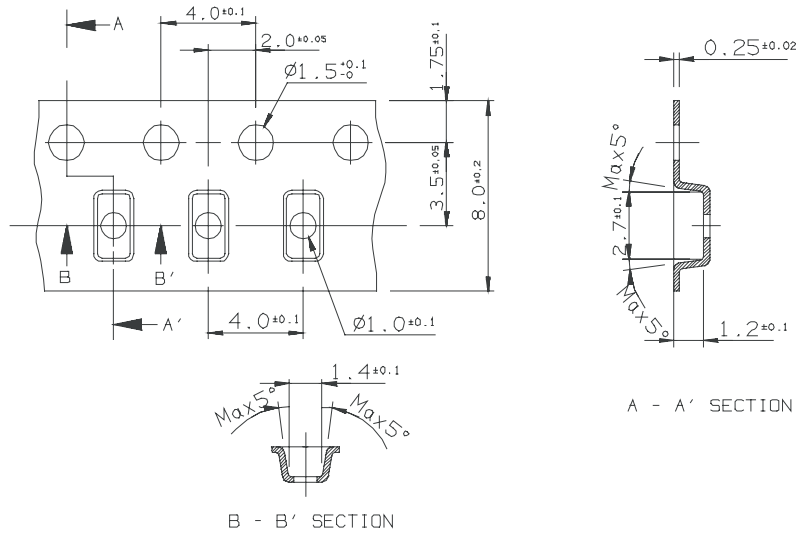
### Device Orientation



Note: "D" represents package marking code  
 "?" represents date code



## Tape Dimensions



Specification < Unit: mm >

A. hole pitch : 50 Pitch Tolerance :  $200 \pm 0.3$

## Order Information

Part Number	No. of Units	Container
HSMS-282Z-BLKG	100	Anti-static bag
HSMS-282Z-TR1G	3000	7" reel

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

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