HSMS-282Z

RF Schottky Barrier Diodes In Surface Mount SOD-323 Package

AVAGO TECHNOLOGIES

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

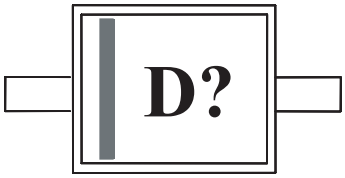
Symbol	Parameter	Unit	Max Rating
I_f	Forward Current (1 µs Pulse)	Amp	1
P_{IV}	Peak Inverse Voltage	V	15
T_j	Junction Temperature	°C	150
T_{stg}	Storage Temperature	°C	-60 to 150
θjc	Thermal Resistance [2]	°C/W	135

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^{0}C

	Minimum Breakdown Voltage V_{BR} (V)	Maximum Forward Voltage V_F (mV)	Maximum Forward Voltage V_F (V)	Maximum Reverse Leakage I_R (nA)	Minimum Capacitance C_T (pF)	Typical Dynamic Resistance R_D (Ohm)
	15	340	0.5	100	1.0	12
Test Conditions	$V_R = V_{BR}$ Measure $I_R \leq 100uA$	$I_F = 1mA$	$I_F = 10mA$	$V_R = 1V$	$V_R = 0\ V$ f = 1 MHz	$I_F = 5mA$

Typical Performance Curves at Tc = +25°C

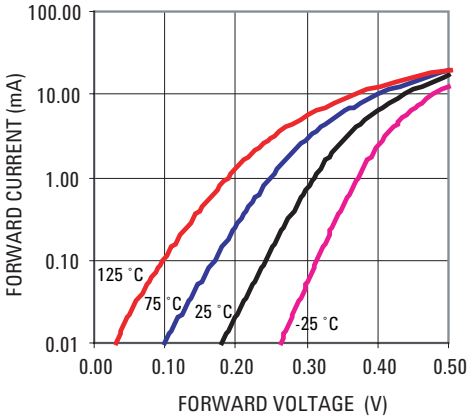


Figure 1. Forward Current vs. Forward Voltage

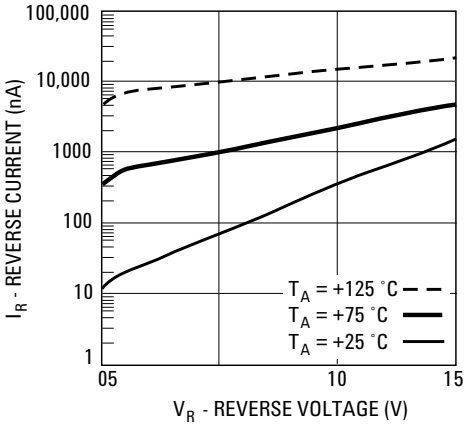


Figure 2. Reverse Current vs. Reverse Voltage

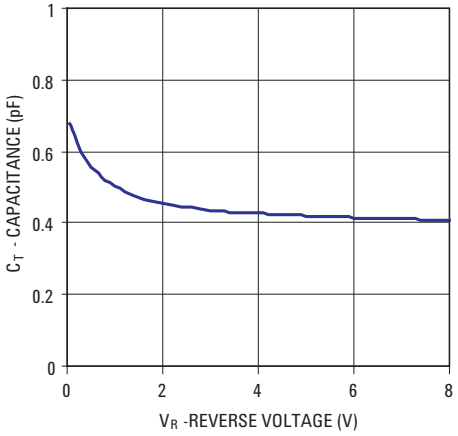


Figure 3. Total Capacitance vs. Reverse Bias

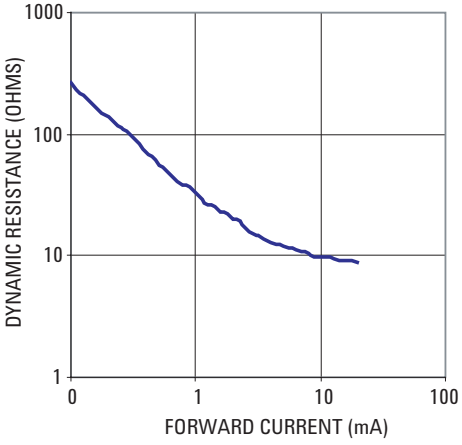


Figure 4. Dynamic Resistance vs. Forward Current

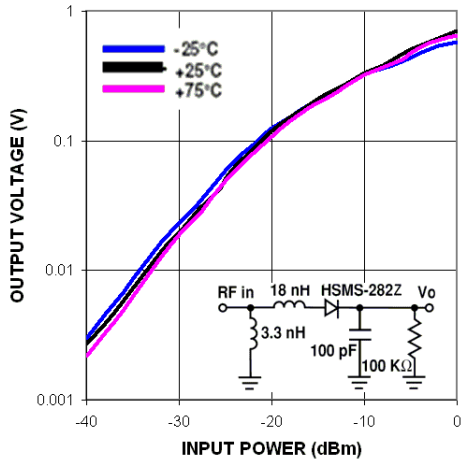


Figure 5. Typical Output Voltage vs. Input Power, Small Signal Detector perating at 850 MHz

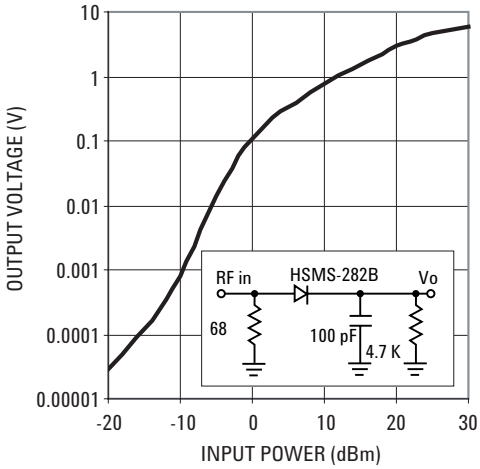
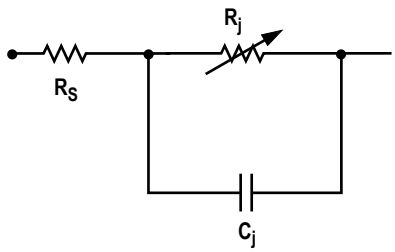


Figure 6. Typical Output Voltage vs. Input Power, Large Signal Detector Operating at 915 MHz.

Linear Equivalent Circuit Model Diode Chip



R_S = series resistance (see Table of SPICE parameters)

C_j = junction capacitance (see Table of SPICE parameters)

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

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)

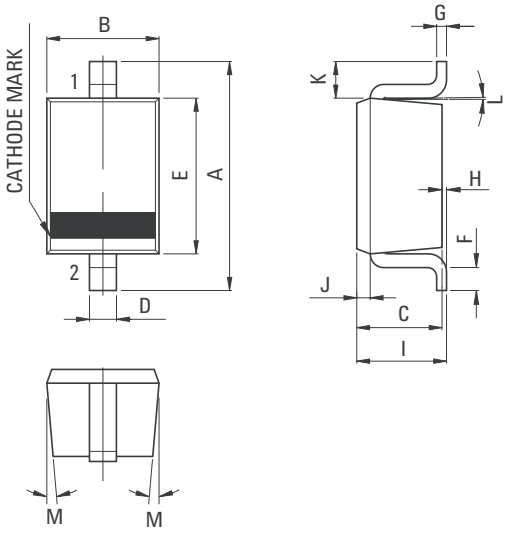
Note:

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

SPICE Parameters

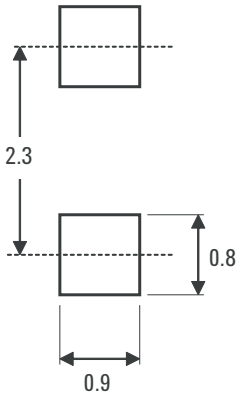
Parameter	Units	HSMS-282Z
B_V	V	15
C_{J0}	pF	0.7
E_G	eV	0.69
I_{BV}	A	1E-4
I_S	A	2.2E-8
N		1.08
R_S	Ω	6.0
P_B	V	0.65
P_T		2
M		0.5

Package Outline and Dimension



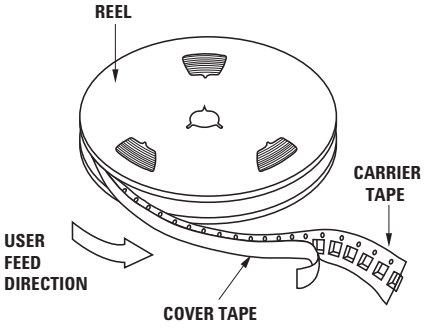
DIM	MILLIMETERS
A	2.50 ± 0.2
B	1.25 ± 0.05
C	0.90 ± 0.05
D	0.30+0.06/-0.04
E	1.70 ± 0.05
F	MIN 0.17
G	0.126 ± 0.03
H	0~0.1
I	1.0 MAX
J	0.15 ± 0.05
K	0.4
L	2° +4/-2
M4	~6°

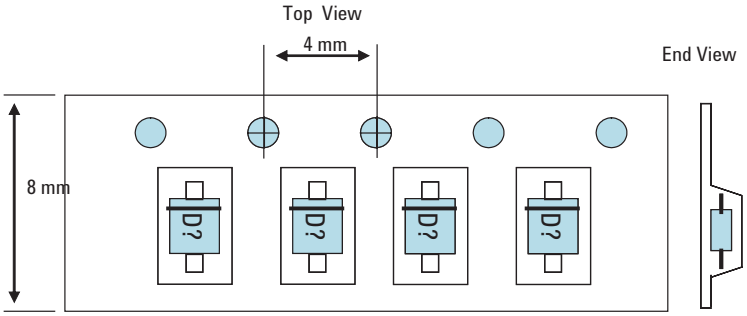
PCB Footprint



Dimension in mm

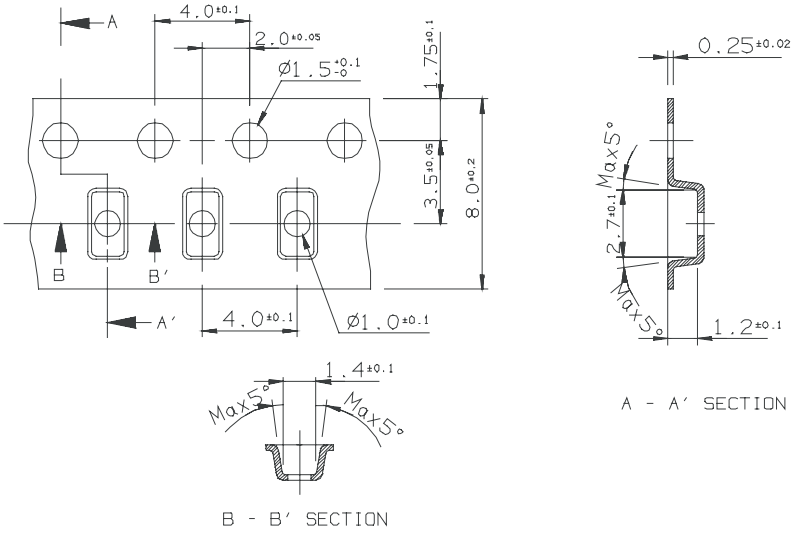
Device Orientation





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

Tape Dimensions



Specification < Unit: mm >

A. hole pitch : 50 Pitch Tolerance : 200 ± 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**

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