



**THE DATASHEET OF  
HSMP-389Z-TR1G**



# HSMP-389Z

## RF Switching PIN Diodes In Surface Mount SOD-323 Package



### Data Sheet

#### Description/Applications

Avago Technologies's HSMP-389Z is optimized for switching applications where low resistance at low current and low capacitance are required. It is housed in a low cost, industrial standard surface mount package - SOD-323. This package offers customers who already use them in SOT-23 and SOT-323 packages, a logical transition to a smaller package outline to accommodate end product design with limited board space.

A SPICE model is not available for PIN diodes as SPICE does not provide for a key PIN diode characteristic -- carrier lifetime.

#### Features

- 2 Leads Surface Mount Package
- Switching
  - Low Capacitance
  - Low Resistance at Low Current
- Tape and Reel Options Available
- Low Failure in Time (FIT) Rate
- MSL 1 & Lead Free

#### Package Marking and Pin Connections



Note:

Package marking provides orientation and identification

"E" = Device Code

"?" = Month code indicates the month of manufacture

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

Symbol	Parameter	Unit	Max Rating
$I_f$	Forward Current (1 $\mu$ s Pulse)	Amp	1
$P_{IV}$	Peak Inverse Voltage	V	100
$T_j$	Junction Temperature	°C	150
$T_{stg}$	Storage Temperature	°C	-60 to 150
$\theta_{jb}$	Thermal Resistance <sup>[2]</sup>	°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.

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

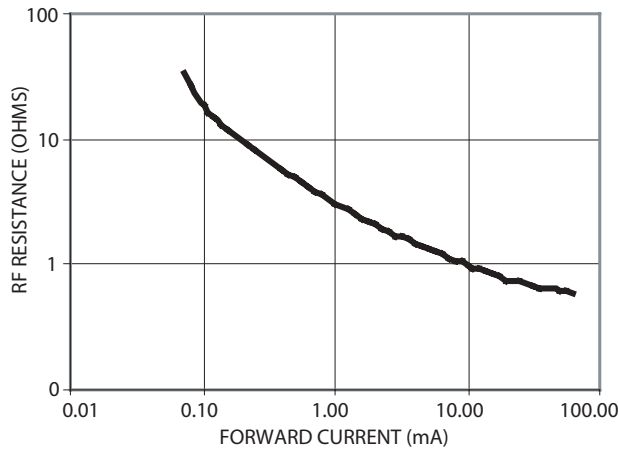
	Minimum Breakdown Voltage $V_{BR}$ (V)	Maximum Total Resistance $R_S$ (Ohm)	Maximum Total Capacitance $C_T$ (pF)
	100	2.5	0.30
Test Conditions	$V_R = V_{BR}$ Measure $I_R \leq 10\mu A$	$I_F = 5mA$ $f = 100$ MHz	$V_R = 5V$ $f = 1MHz$

Note : Rs parameter is tested under AQL 1.0

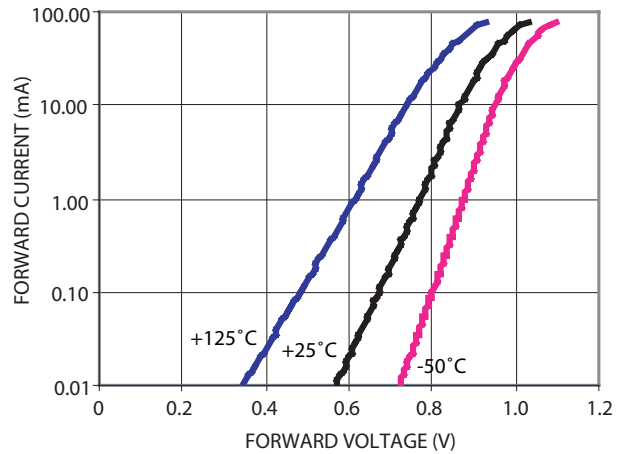
**Table 3. Typical Parameters at Tc = +25°C**

	Series Resistance $R_S$ (Ohm)	Carrier Lifetime $\tau$ (ns)	Total Capacitance $C_T$ (pF)
	3.8	200	0.20
Test Conditions	$I_F = 1$ mA $f = 100$ MHz	$I_F = 10mA$ $I_R = 6mA$	$V_R = 5V$ $f = 1MHz$

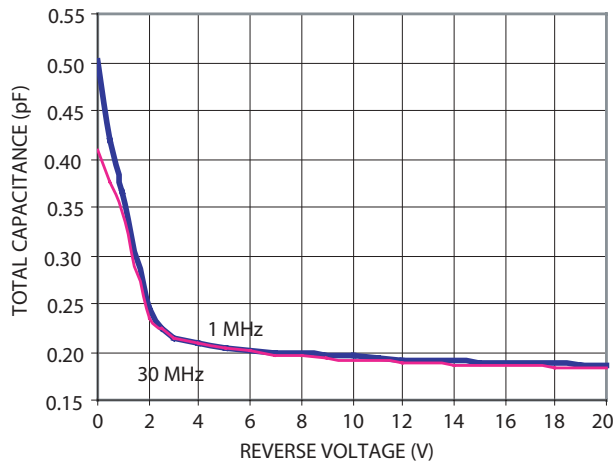
**Typical Performance Curves at Tc = +25°C**



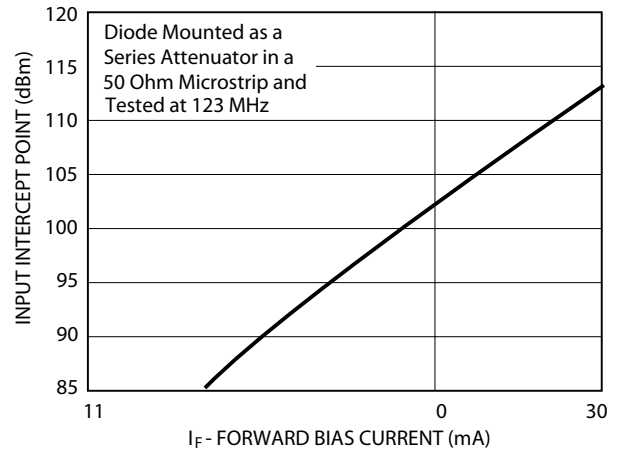
**Figure 1. RF Resistance vs. Forward Bias Current**



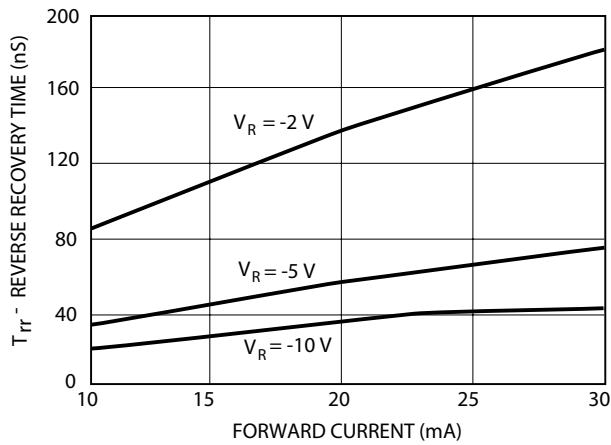
**Figure 2. Forward Current vs. Forward Voltage**



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

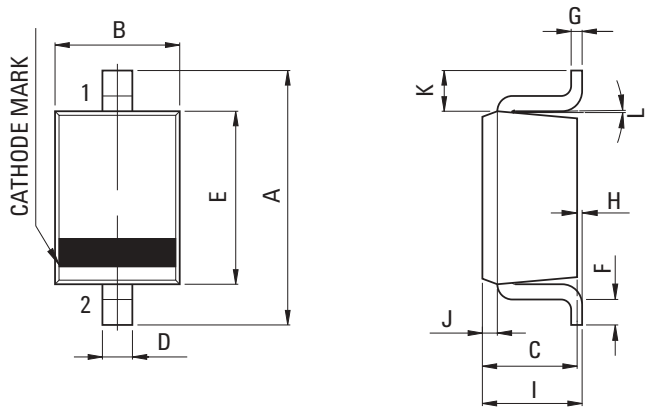


**Figure 4. 2nd Harmonic Input Intercept Point vs. Diode RF Resistance**

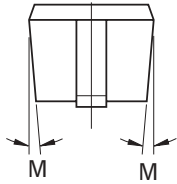
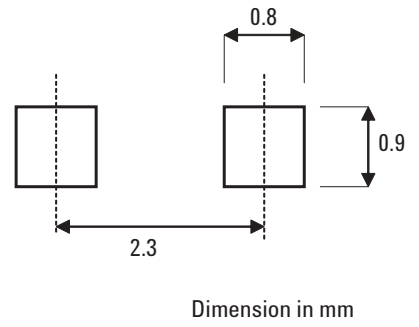


**Figure 5. Typical Reverse Recovery Time vs. Reverse Voltage**

### Package Outline and Dimension

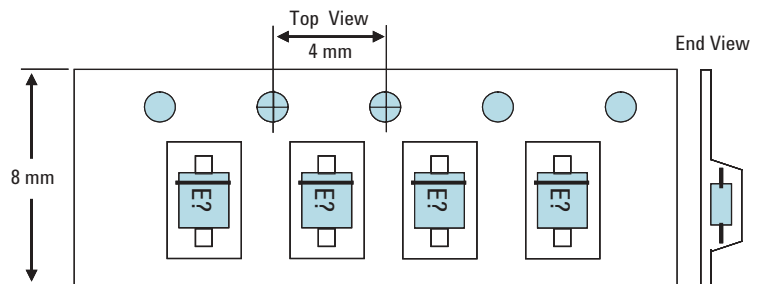
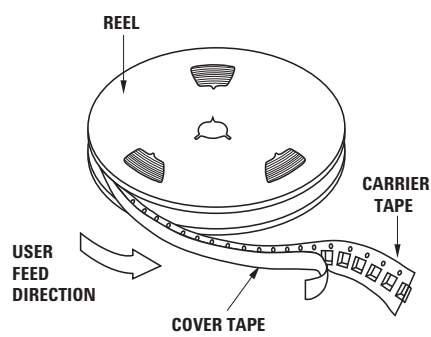


### PCB Footprint



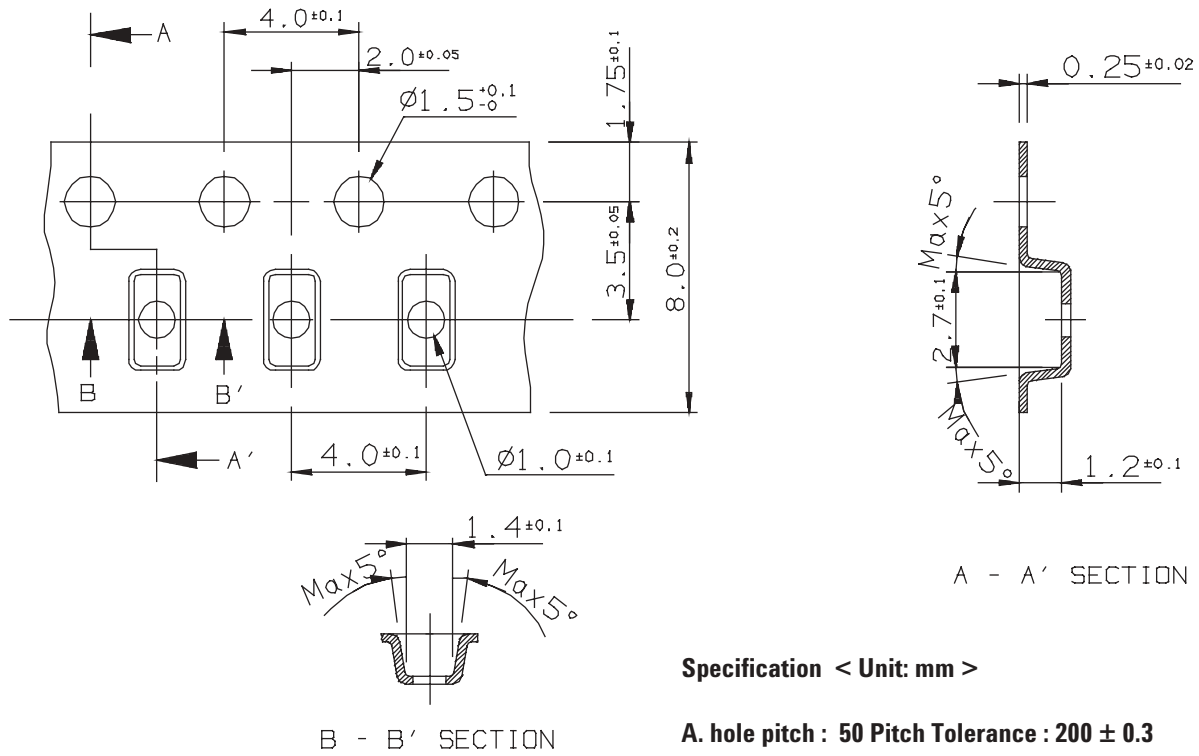
DIM	MILLIMETERS
A	2.50 ±0.2
B	1.25 ±0.05
C	0.90 ±0.05
D	0.30+0.06/-0.04
E	1.70 ±0.05
F	MIN 0.17
G	0.126 ±0.03
H	0~0.1
I	1.0 MAX
J	0.15 ±0.05
K	0.4
L	2°+4/-2
M4	~6°

### Device Orientation



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

## Tape Dimensions



Specification < Unit: mm >

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

## Part Number Ordering Information

Part number	No. of Units	Container
HSMP-389Z-BLKG	100	Anti-static bag
HSMP-389Z-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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