

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 μ 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 |
| θ_{jb} | 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.

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 τ (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

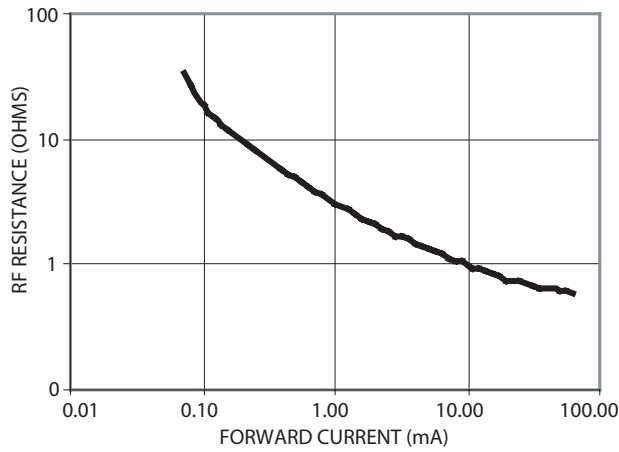


Figure 1. RF Resistance vs. Forward Bias Current

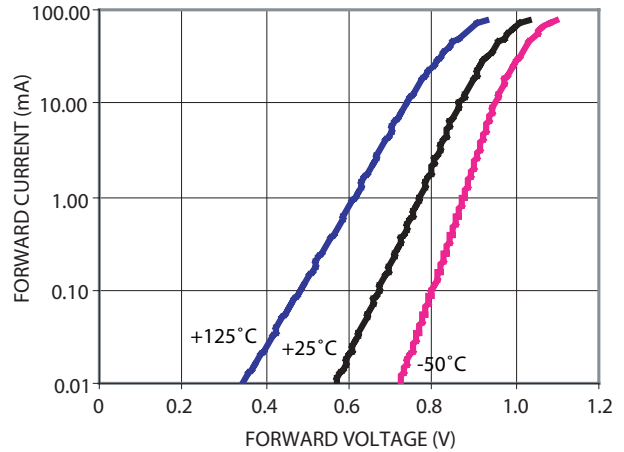


Figure 2. Forward Current vs. Forward Voltage

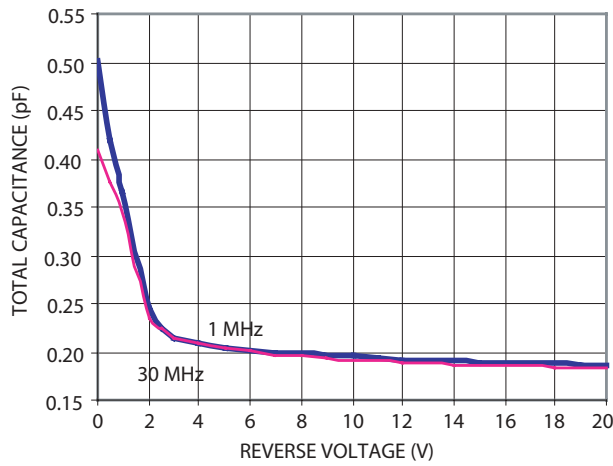


Figure 3. RF Capacitance vs. Reverse Bias

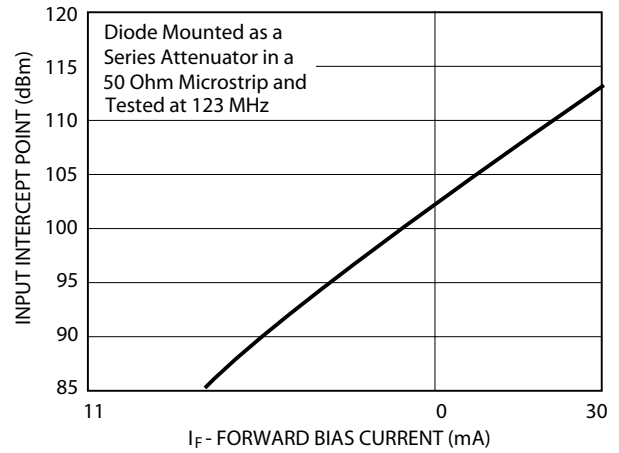


Figure 4. 2nd Harmonic Input Intercept Point vs. Diode RF Resistance

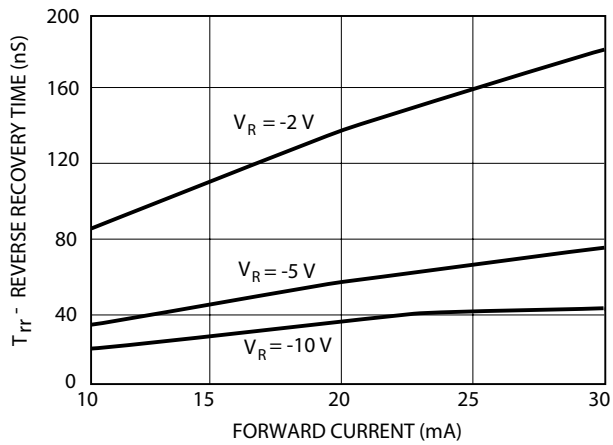
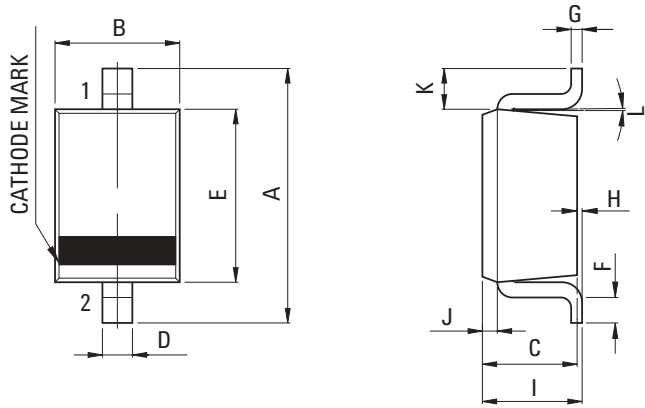
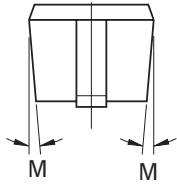
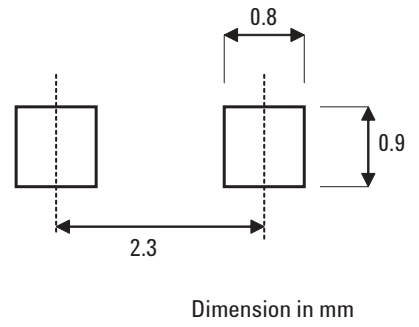


Figure 5. Typical Reverse Recovery Time vs. Reverse Voltage

Package Outline and Dimension

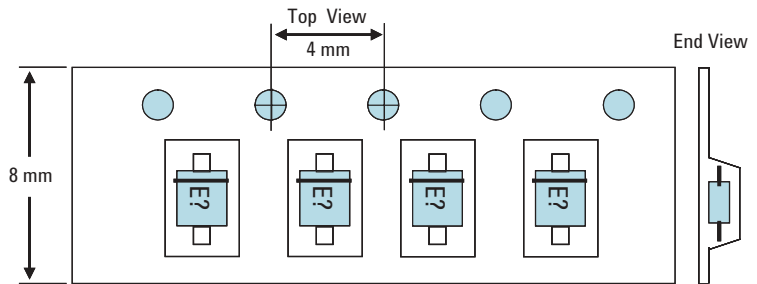
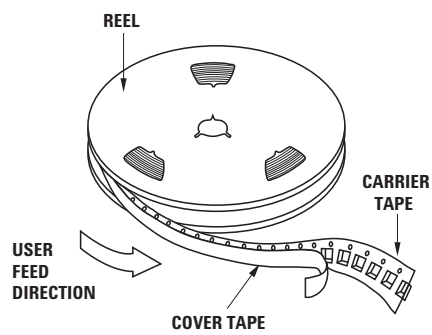


PCB Footprint



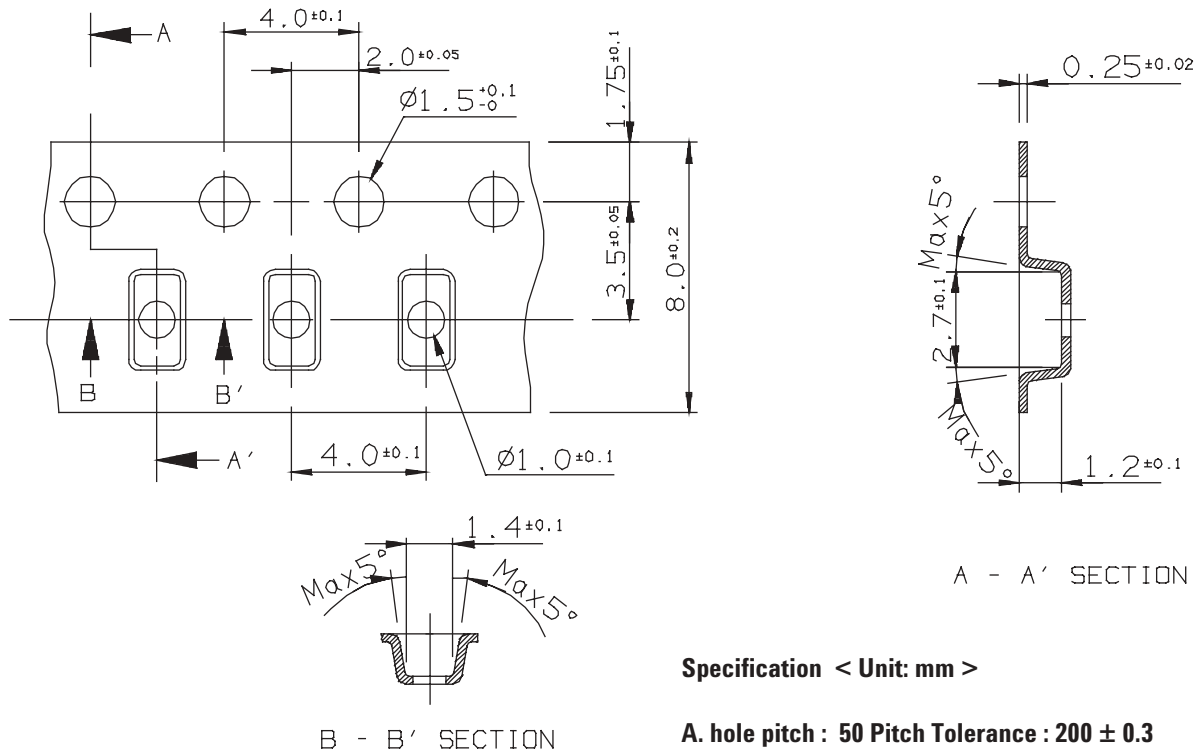
| DIM | MILLIMETERS |
|-----|-----------------|
| A | 2.50 ±0.2 |
| B | 1.25 ±0.05 |
| C | 0.90 ±0.05 |
| D | 0.30+0.06/-0.04 |
| E | 1.70 ±0.05 |
| F | MIN 0.17 |
| G | 0.126 ±0.03 |
| H | 0~0.1 |
| I | 1.0 MAX |
| J | 0.15 ±0.05 |
| K | 0.4 |
| L | 2°+4/-2 |
| M4 | ~6° |

Device Orientation



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

Tape Dimensions



Specification < Unit: mm >

A. hole pitch : 50 Pitch Tolerance : 200 ± 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

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