



**THE DATASHEET OF
HSMP-386Z-TR1G**



HSMP-386Z

General Purpose RF PIN Diodes In Surface Mount SOD-323 Package



Data Sheet

Description/Application

Avago Technologies's HSMP-386Z is a General Purpose PIN Diode housed in a low cost surface mount SOD-323 package. This package offers customers who already use the PIN Diode in SOT-23 and SOT-323 packages, a logical transition to a smaller package outline to accommodate end product design with limited board space.

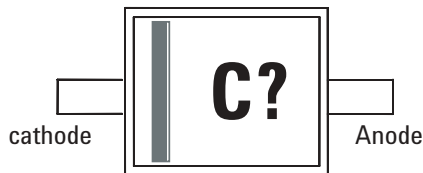
The HSMP-386Z is designed for two classes of applications. The first is attenuator where current consumption is the most important design consideration. The second application is switches where low capacitance is the driving issue for the designer.

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 Distortion Switching
 - Low Capacitance
- Attenuating
 - Low Current Attenuating for Less Power Consumption
- MSL 1 & Lead Free
- Tape and Reel Options Available
- Low Failure in Time (FIT) Rate

Package Marking and Pin Connections



Note:

Package marking provides orientation and identification

"C" = 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 | $^{\circ}$ C | 150 |
| T_{stg} | Storage Temperature | $^{\circ}$ C | -60 to 150 |
| θ_{jb} | Thermal Resistance ^[2] | $^{\circ}$ 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) | Typical Total Resistance R_S (Ohm) | Typical Total Capacitance C_T (pF) |
|-----------------|--|---|---|
| | 50 | 3.0/1.5* | 0.20 |
| Test Conditions | $V_R = V_{BR}$ Measure $I_R \leq 10\mu A$ | $I_f = 10mA/100mA^*$ $f = 100$ MHz | $V_R = 50V$ $f = 1MHz$ |

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

| | Series Resistance R_S (Ohm) | Carrier Lifetime τ (ns) | Reverse Recovery Time T_{rr} (ns) | Total Capacitance C_T (pF) |
|-----------------|----------------------------------|---------------------------------|---|---------------------------------|
| | 22 | 500 | 80 | 0.20 |
| Test Conditions | $I_f = 1$ mA $f = 100$ MHz | $I_f = 50mA$ $I_R = 250mA$ | $V_R = 10V$ $I_f = 20mA$ 90% Recovery | $V_R = 50V$ $f = 1MHz$ |

Typical Performance Curves at $T_c = +25^\circ\text{C}$

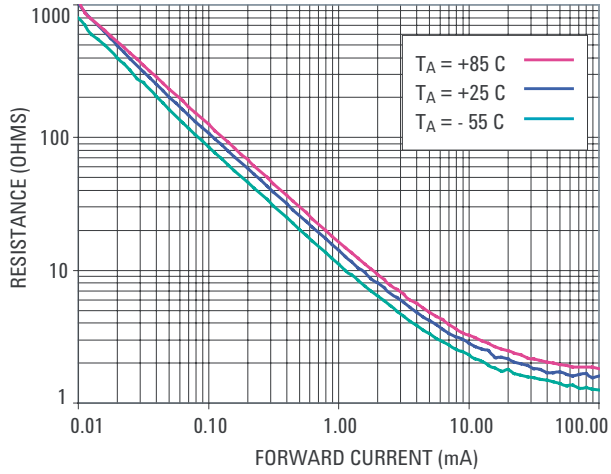


Figure 1. RF Resistance vs. Forward Bias Current

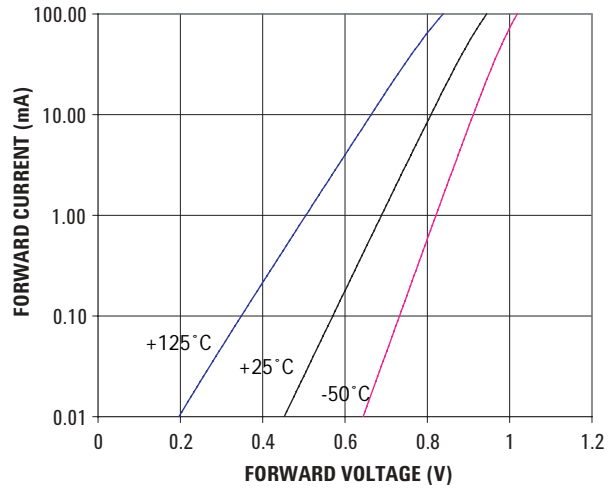


Figure 2. Forward Current vs. Forward Voltage

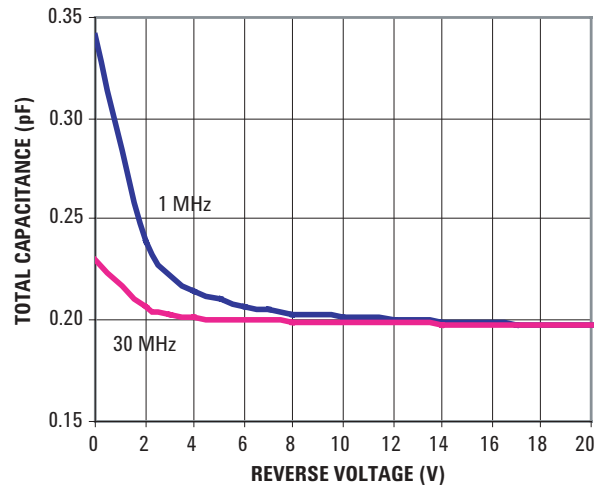


Figure 3. RF Capacitance vs. Reverse Bias

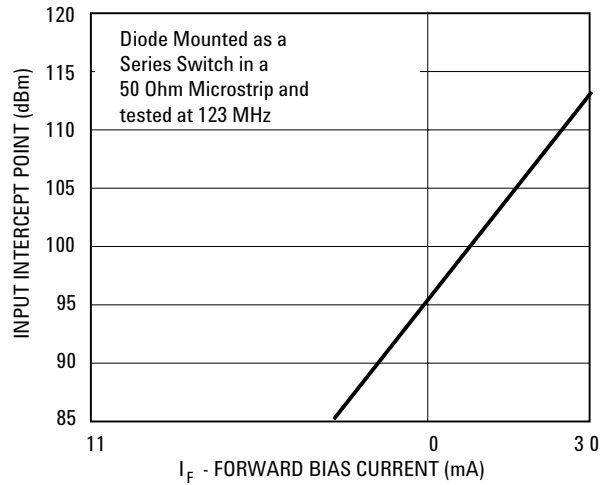


Figure 4. 2nd Harmonic Input Intercept Point vs. Diode RF Resistance

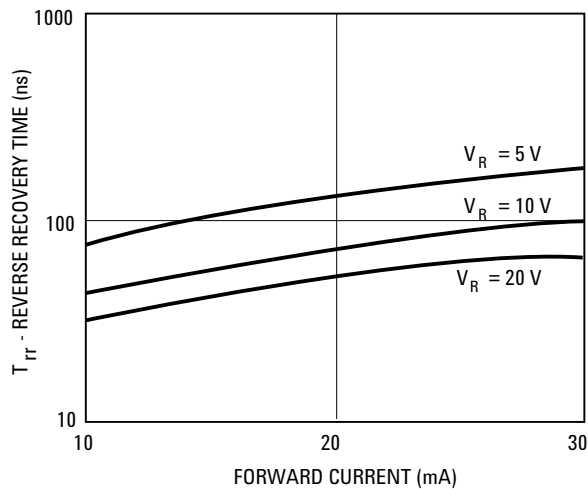
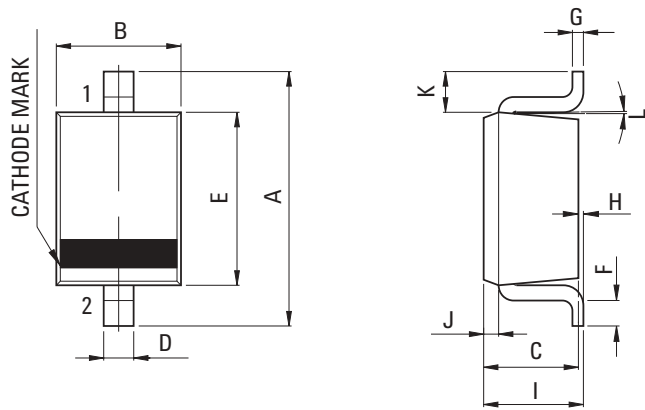
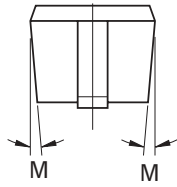
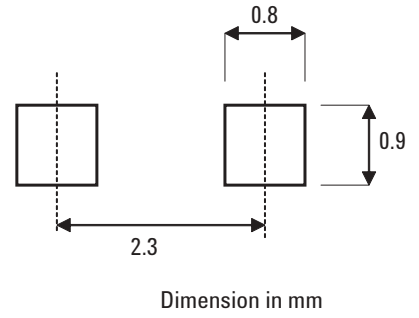


Figure 5. Typical Reverse Recovery Time vs. Reverse Voltage

Package Outline and Dimension

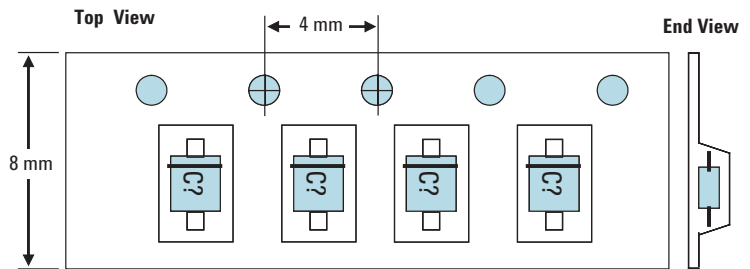
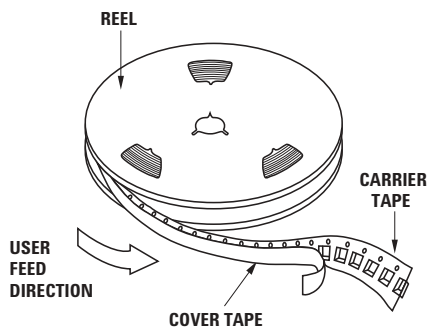


PCB Footprint



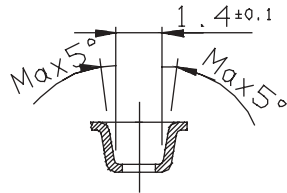
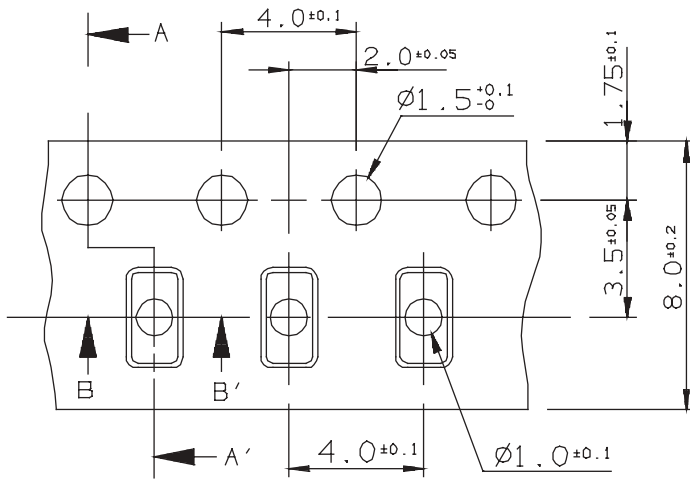
| DIM | MILLIMETERS |
|-----|-----------------|
| A | 2.50 ±0.2 |
| B | 1.25 ±0.05 |
| C | 0.90 ±0.05 |
| D | 0.30+0.06/-0.04 |
| E | 1.70 ±0.05 |
| F | MIN 0.17 |
| G | 0.126 ±0.03 |
| H | 0~0.1 |
| I | 1.0 MAX |
| J | 0.15 ±0.05 |
| K | 0.4 |
| L | 2°+4/-2 |
| M4 | ~6° |

Device Orientation

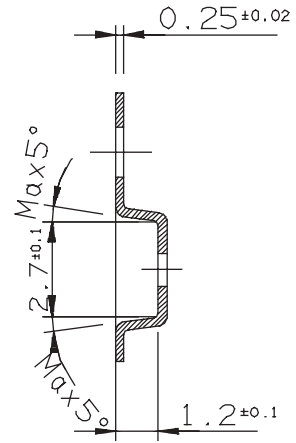


Note: "C" represents package marking code
 "?" represents date code

Tape Dimensions



B - B' SECTION



A - A' SECTION

Specification < Unit: mm >

A. hole pitch : 50 Pitch Tolerance : 200 ± 0.3

Part Number Ordering Information

| Part number | No. of Units | Container |
|----------------|--------------|-----------------|
| HSMP-386Z-BLKG | 100 | Anti-static bag |
| HSMP-386Z-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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