SMOS201

Silicon Schottky Diode

Features
- Small Footprint, only 50 x 30 mils.
- Simplest Broadband Detector as no DC bias Required
- Very Low Barrier Height, Good Sensitivity, -54 dBm, also Low Flick Noise
- Very Low Parasitic Package Inductance and Low Package Capacitance
- RoHS* Compliant

Description
The SMS201 is a silicon Schottky diode in a molded plastic DFN package. It is designed for a broadband zero bias detector. It has a high cutoff frequency and can be used beyond 26.5 GHz for power detection up to 10 dBm.

Electrical Specifications: \( T_A = +25°C \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown Voltage ( (V_B) )</td>
<td>( I_R = 100 \mu A )</td>
<td>V</td>
<td>1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Forward Voltage ( (V_F) )</td>
<td>( I_F = 100 \mu A )</td>
<td>mV</td>
<td>60</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Total Capacitance ( (C_T) )</td>
<td>( V_R = 0 V, 6 - 8 \text{ GHz} )</td>
<td>pF</td>
<td>—</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>Video Resistance ( (R_V) )</td>
<td>( I_F = 50 \text{ mA} )</td>
<td>Ω</td>
<td>2000</td>
<td>4000</td>
<td>8000</td>
</tr>
<tr>
<td>Tangential Signal Sensitivity ( (T_{ss}) )</td>
<td>NF -3 dB, 10 GHz</td>
<td>dBm</td>
<td>—</td>
<td>-54</td>
<td>—</td>
</tr>
<tr>
<td>Voltage Sensitivity ( (y) )</td>
<td>( P_{IN} = -30 \text{ dBm}, \text{ Video BW} = 500 \text{ KHz}, 10 \text{ GHz} )</td>
<td>mV/mW</td>
<td>—</td>
<td>8000</td>
<td>—</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse DC Voltage</td>
<td>1 V</td>
</tr>
<tr>
<td>Forward Current</td>
<td>20 mA</td>
</tr>
<tr>
<td>Dissipated Power</td>
<td>100 mW (de-rated to 0 @ +175°C)</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+175°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Solder Temperature</td>
<td>+260°C per JEDEC J-STD-20C</td>
</tr>
</tbody>
</table>

Handling Procedures
Please observe the following precautions to avoid damage:

Static Sensitivity
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these (HBM) Class 0 devices.

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Typical RF Performance: \( T_A = +25^\circ C \), \( Z_O = 50 \, \Omega \)

*Small Signal Capacitance vs. Frequency*

![Capacitance vs. Frequency graph](image)

Typical Dynamic Transfer Characteristics: \( R_L = 10 \, m\Omega \), \( F_O = 10 \, GHz \)

*Output Voltage vs. Input Power*

![Output Voltage vs. Input Power graph](image)
**Lead-Free 0503 Plastic DFN Package**

- Lead Width: 0.014±0.001 [0.355±0.025]
- Lead Height: 0.018±0.003 [0.457±0.076]
- Body Width: 0.030±0.003 [0.762±0.076]
- Body Height: 0.028±0.002 [0.711±0.051]

**Soldering Footprint**

- Lead Width: 0.014±0.001 [0.355±0.025]
- Lead Height: 0.031±0.001 [0.787±0.025]
- Body Width: 0.050±0.003 [1.270±0.076]
- Body Height: 0.051±0.003 [1.293±0.076]

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)
Silicon Schottky Diode

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