Bias Tee
0.03 - 67 GHz

Features
- Low Insertion Loss: 2 dB @ 55 GHz
- Return Loss: Well Matched >15 dB
- High Current: 300 mA max.
- SMT Compatible
- Post SMT Aqueous Wash Compatible
- Lead-Free 4 mm Laminate Package
- RoHS* Compliant

Applications
- Test & Measurement
- Wideband Amplifiers & Wideband Switches

Description
The MABT-011011 is a wideband high current Bias Tee. It functions as an RF-DC de-coupling network as well as the DC return and contains a series DC blocking capacitor and shunt DC decoupling capacitor on the DC feed. Providing a high performance robust solution suitable for use on a standard SMT production line. Ideal biasing solution for wideband amplifier and switch circuits.

AC Electrical Specifications: Freq. = 0.03 - 67 GHz, V_{CC} = 0 V, Z_0 = 50 \Omega, T_A = 25^\circ 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>Insertion Loss</td>
<td>0.03 - 2 GHz</td>
<td>dB</td>
<td>1.0</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>2 - 10 GHz</td>
<td></td>
<td>0.4</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>10 - 20 GHz</td>
<td></td>
<td>0.7</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>20 - 40 GHz</td>
<td></td>
<td>1.1</td>
<td>1.7</td>
<td>1.7</td>
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<tr>
<td></td>
<td>40 - 55 GHz</td>
<td></td>
<td>2.0</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>55 - 67 GHz</td>
<td></td>
<td>2.7</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Input &amp; Output Return Loss</td>
<td>0.03 - 45 GHz</td>
<td>dB</td>
<td>15</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>45 - 67 GHz</td>
<td></td>
<td>13</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>RF- DC Isolation</td>
<td>0.03 - 67 GHz</td>
<td>dB</td>
<td>22</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABT-011011</td>
<td>Cut Tape or Tray</td>
</tr>
<tr>
<td>MABT-011011-TR0300</td>
<td>300 Piece Reel</td>
</tr>
<tr>
<td>MABT-011011-TR0500</td>
<td>500 Piece Reel</td>
</tr>
<tr>
<td>MABT-011011-SB1</td>
<td>Sample Board</td>
</tr>
</tbody>
</table>

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power (pin 1 &amp; 3)</td>
<td>30 dBm</td>
</tr>
<tr>
<td>DC Bias Voltage (pin 2)</td>
<td>25 V</td>
</tr>
<tr>
<td>DC Bias Current (pin 2)</td>
<td>300 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55°C to +105°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
</tbody>
</table>

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.
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Typical Performance Curves: \( T_A = 25^\circ C, V_{CC} = 0 \text{ V}, Z_0 = 50 \Omega \)

**Insertion Loss (pin 1 to 3) Broadband Span**

- **Insertion Loss (pin 1 to 3) Low Frequency Sweep**

- **Return Loss: (pin 1 solid and pin 3 dashed)**

- **Isolation (pin 1 to 2)**

For further information and support please visit:
https://www.macom.com/support
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DC Bias Current Robustness

*Insertion Loss Delta from 0 to 300 mA (pin 1 to pin 3)*

![Graph showing Insertion Loss Delta from 0 to 300 mA (pin 1 to pin 3)]

*Input Return Loss: Input (pin 1) Blue 0 mA, Pink 300 mA*

![Graph showing Input Return Loss for Blue 0 mA and Pink 300 mA]

*Output Return Loss: Output (pin 3) Blue 0 mA, Pink 300 mA*

![Graph showing Output Return Loss for Blue 0 mA and Pink 300 mA]
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**Recommended PCB Footprint**

**Solder Mask Coverage**

**Solder Paste Template**

**RF Line Dimensions**

6. Dimensions in mm.
7. Use Rogers RO4350 dielectric, thickness 254 µm.
Lead-Free 4 mm Air-Cavity Laminate Module†

† Reference Application Note J-STD-020E for both Lead (Pb) or Lead free solder reflow recommendations.
Meets JEDEC moisture sensitivity level MSL1 requirements.
Plating is ENEPIG
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