**A1031 / SMA1031**

Cascadable Amplifier
10 to 1000 MHz

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**Features**
- **HIGH EFFICIENCY**: 36 mA at +5 Vdc
- **LOW NOISE FIGURE**: 2.7 dB (TYP.)
- **HIGH GAIN, TWO STAGES**: 28.5 dB (TYP.)
- **MED OUTPUT POWER**: +10 dBm (TYP.)

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**Description**
The A1031RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for consistent performance and high reliability. This 2 stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network insures temperature-stable performance. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

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**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1031</td>
<td>TO-8</td>
</tr>
<tr>
<td>SMA1031</td>
<td>Surface Mount</td>
</tr>
<tr>
<td>CA1031 **</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

**Electrical Specifications**: \( Z_0 = 50\Omega, V_{CC} = +5 \text{ V}_{DC} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Typical</th>
<th>Guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>5-1100</td>
<td>10-1000</td>
</tr>
<tr>
<td>Small Signal Gain (min)</td>
<td>dB</td>
<td>28.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Gain Flatness (max)</td>
<td>dB</td>
<td>±0.4</td>
<td>±0.8</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td>dB</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Noise Figure (max)</td>
<td>dB</td>
<td>2.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Power Output @ 1 dB comp. (min)</td>
<td>dBm</td>
<td>10.0</td>
<td>9.0</td>
</tr>
<tr>
<td>IP3</td>
<td>dBm</td>
<td>+22</td>
<td></td>
</tr>
<tr>
<td>IP2</td>
<td>dBm</td>
<td>+33</td>
<td></td>
</tr>
<tr>
<td>Second Order Harmonic IP</td>
<td>dBm</td>
<td>+39</td>
<td></td>
</tr>
<tr>
<td>VSWR Input / Output (max)</td>
<td></td>
<td>1.5:1 / 1.5:1</td>
<td>1.9:1 / 1.9:1</td>
</tr>
<tr>
<td>DC Current @ 5 Volts (max)</td>
<td>mA</td>
<td>36</td>
<td>39</td>
</tr>
</tbody>
</table>

**Absolute Maximum Ratings**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-62°C to +125°C</td>
</tr>
<tr>
<td>Case Temperature</td>
<td>125°C</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>+10 V</td>
</tr>
<tr>
<td>Continuous Input Power</td>
<td>+10 dBm</td>
</tr>
<tr>
<td>Short Term Input power</td>
<td>50 mW</td>
</tr>
<tr>
<td>Peak Power (3 µsec max.)</td>
<td>0.5 W</td>
</tr>
<tr>
<td>“S” Series Burn-In Temperature (case)</td>
<td>125°C</td>
</tr>
</tbody>
</table>

**Thermal Data**: \( V_{CC} = +5 \text{ V}_{DC} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance ( \theta_{jc} )</td>
<td>160°C/W</td>
</tr>
<tr>
<td>Transistor Power Dissipation ( P_d )</td>
<td>0.103 W</td>
</tr>
<tr>
<td>Junction Temperature Rise Above Case ( T_{jc} )</td>
<td>16°C</td>
</tr>
</tbody>
</table>

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1. Over temperature performance limits for part number CA1031, guaranteed from 0°C to +50°C only.

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10 to 1000 MHz

Typical Performance Curves at +25°C

Outline Drawing: TO-8 *

Outline Drawing: Surface Mount *

Outline Drawing: SMA Connectorized *

Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

For further information and support please visit: https://www.macom.com/support
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10 to 1000 MHz

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