Cascadable Amplifier
10 to 250 MHz

Features
- LOW NOISE FIGURE: 1.7 dB (TYP.)
- HIGH GAIN: 26.0 dB (TYP.)
- HIGH EFFICIENCY: 16 mA at +5 Vdc
- MEDIUM OUTPUT LEVEL: +14 dBm at +8 Vdc (TYP.)

Description
The A231 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

The 2 stage silicon bipolar feedback amplifier design displays impressive performance over a broadband frequency range. An isolation transformer is used in the feedback loop, with the benefit of high reverse isolation.

Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>A231</td>
<td>TO-8</td>
</tr>
<tr>
<td>SMA231</td>
<td>Surface Mount</td>
</tr>
<tr>
<td>CA231 **</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

** The connectorized version is not RoHs compliant.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Typical 25°C</th>
<th>0° to 50°C</th>
<th>-54° to +85°C*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>10-300</td>
<td>10-250</td>
<td>10-250</td>
</tr>
<tr>
<td>Small Signal Gain (min)</td>
<td>dB</td>
<td>26.0</td>
<td>25.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Gain Flatness (max)</td>
<td>dB</td>
<td>±0.2</td>
<td>±0.5</td>
<td>±0.8</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td>dB</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise Figure (max)</td>
<td>dB</td>
<td>1.7</td>
<td>2.4</td>
<td>2.8</td>
</tr>
<tr>
<td>Power Output @ 1 dB comp. (min)</td>
<td>dBm</td>
<td>10.0</td>
<td>9.0</td>
<td>8.5</td>
</tr>
<tr>
<td>IP3</td>
<td>dBm</td>
<td>+22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP2</td>
<td>dBm</td>
<td>+25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Order Harmonic IP</td>
<td>dBm</td>
<td>+31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSWR Input / Output (max)</td>
<td></td>
<td>1.5:1 / 1.5:1</td>
<td>1.8:1 / 1.8:1</td>
<td>2.0:1 / 2.0:1</td>
</tr>
<tr>
<td>DC Current @ 5 Volts (max)</td>
<td>mA</td>
<td>16</td>
<td>19</td>
<td>21</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>(1 minute max.)</td>
<td></td>
</tr>
<tr>
<td>Peak Power (3 µsec max.)</td>
<td>0.5 W</td>
</tr>
<tr>
<td>“S” Series Burn-In</td>
<td>125°C</td>
</tr>
<tr>
<td>Temperature (case)</td>
<td></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>184°C/W</td>
</tr>
<tr>
<td>Transistor Power Dissipation ( P_d )</td>
<td>0.033 W</td>
</tr>
<tr>
<td>Junction Temperature Rise</td>
<td></td>
</tr>
<tr>
<td>Above Case ( T_{jc} )</td>
<td>6°C</td>
</tr>
</tbody>
</table>

1 * Over temperature performance limits for part number CA231, guaranteed from 0°C to +50°C only.

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Cascadable Amplifier
10 to 250 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.
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