AM-123 / AMC-123

High Performance Amplifier, 10 dB Gain
5 - 500 MHz

Features
- 3.5 dB Mid-band Noise Figure
- 42 dBm Mid-band Intercept

Description
The AM-123 is a coupler feedback amplifier with high intercept and compression points. The use of coupler feedback minimizes noise figure and current in a high intercept amplifier. This amplifier is available in both the flat pack (FP-7) and the connectorized (C-32) packages. Due to the internal power dissipation the thermal rise is minimized. The ground plane on the PC board should be configured to remove heat from under the package.

AM-123 is ideally suited for use where a high intercept, high reliability amplifier is required.

C-32

FP-7

Dimensions are in mm unless otherwise noted.
.xxx = ±0.010 (.xx = ±0.85)
.xx = ±0.02 (.x = ±0.5)
AM-123 Positive voltage only.
Weight (approx.) 0.09 ounces, 2.5 grams

Pin Configuration

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF OUT</td>
</tr>
<tr>
<td>2, 3, 6, 7</td>
<td>GND</td>
</tr>
<tr>
<td>4, 8</td>
<td>DC IN</td>
</tr>
<tr>
<td>5</td>
<td>RF IN</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-123 PIN</td>
<td>Flat pack (FP-7)</td>
</tr>
<tr>
<td>AMC-123 SMA</td>
<td>Connectorized (C32)</td>
</tr>
</tbody>
</table>
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Electrical Specifications\(^1,2\): \(T_A = -55°C\) to +85°C Case Temperature

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
<th>Units</th>
<th>Typical</th>
<th>Guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>25ºC</td>
<td>0º to 50ºC</td>
</tr>
<tr>
<td>Small Signal Gain (min.)</td>
<td>5 - 250 MHz</td>
<td>dB</td>
<td>9.8</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>250 - 500 MHz</td>
<td></td>
<td>9.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Gain Flatness (max.)</td>
<td>5 - 500 MHz</td>
<td>dB</td>
<td>±0.3</td>
<td>±0.7</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td>5 - 500 MHz</td>
<td>dB</td>
<td>16</td>
<td>—</td>
</tr>
<tr>
<td>Noise Figure (max.)</td>
<td>5 - 500 MHz</td>
<td>dB</td>
<td>4.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Power Output @ 1 dB comp. (min.)</td>
<td>—</td>
<td>dBm</td>
<td>19.0</td>
<td>18.0</td>
</tr>
<tr>
<td>IP3</td>
<td>5 - 500 MHz</td>
<td>dBm</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td>IP2</td>
<td>5 - 500 MHz</td>
<td>dBm</td>
<td>48</td>
<td>40</td>
</tr>
<tr>
<td>Second Order Harmonic IP</td>
<td>5 - 500 MHz</td>
<td>dBm</td>
<td>54</td>
<td>—</td>
</tr>
<tr>
<td>VSWR In/Out</td>
<td>5 - 500 MHz</td>
<td>Max.</td>
<td>2.1:1 / 2.1:1</td>
<td>2.3:1 / 2.2:1</td>
</tr>
<tr>
<td></td>
<td>20 - 400 MHz</td>
<td></td>
<td>1.6:1 / 1.8:1</td>
<td>2.0:1 / 2.0:1</td>
</tr>
<tr>
<td>DC Current @ 15 Volts (max.)</td>
<td>—</td>
<td>mA</td>
<td>65</td>
<td>69</td>
</tr>
</tbody>
</table>

1. All specifications apply when operated at 15 VDC, with 50 ohms source and load impedance.
2. Heat Sinking: Operation at case temperature above 95°C is not recommended. Heat sinking adequate to dissipate 1 W must be provided in use.

Absolute Maximum Ratings\(^3,4\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>23 dBm</td>
</tr>
<tr>
<td>(V_{\text{BIAS}})</td>
<td>15.75 V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +125°C</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 devices.

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### S-Parameter Data

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>S11 MAG/ANG</th>
<th>S21 MAG/ANG</th>
<th>S12 MAG/ANG</th>
<th>S22 MAG/ANG</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0.21/-69.9</td>
<td>3.15/-158.8</td>
<td>0.11/171.3</td>
<td>0.15/92.8</td>
</tr>
<tr>
<td>10</td>
<td>0.11/-81.5</td>
<td>3.17/-172.2</td>
<td>0.11/175.0</td>
<td>0.06/116.1</td>
</tr>
<tr>
<td>20</td>
<td>0.08/-88.5</td>
<td>3.18/-178.4</td>
<td>0.12/171.7</td>
<td>0.04/139.8</td>
</tr>
<tr>
<td>50</td>
<td>0.06/-108.4</td>
<td>3.17/162.9</td>
<td>0.13/159.9</td>
<td>0.03/174.7</td>
</tr>
<tr>
<td>100</td>
<td>0.05/-122.8</td>
<td>3.14/142.8</td>
<td>0.13/141.4</td>
<td>0.04/-163.9</td>
</tr>
<tr>
<td>200</td>
<td>0.05/-141.8</td>
<td>3.11/104.8</td>
<td>0.13/102.1</td>
<td>0.04/-119.4</td>
</tr>
<tr>
<td>300</td>
<td>0.07/-155.4</td>
<td>3.09/66.9</td>
<td>0.12/64.9</td>
<td>0.14/-114.6</td>
</tr>
<tr>
<td>400</td>
<td>0.15/177.2</td>
<td>3.08/26.7</td>
<td>0.11/27.3</td>
<td>0.22/-153.2</td>
</tr>
<tr>
<td>500</td>
<td>0.20/151.3</td>
<td>3.05/-21.9</td>
<td>0.09/-20.9</td>
<td>0.25/83.4</td>
</tr>
</tbody>
</table>
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Typical Performance Curves

**Gain**

![Gain Curve](image)

**VSWR**

![VSWR Curve](image)

**Noise Figure**

![Noise Figure Curve](image)

**P1dB**

![P1dB Curve](image)

**Intermodulation Intercept, IP2**

![IP2 Curve](image)

**Intermodulation Intercept, IP3**

![IP3 Curve](image)

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