AMT-A0303 8 GHz to 18 GHz
Ultra Low Noise Broadband Amplifier

Features

- 8 GHz to 18 GHz Frequency Range
- Typical Noise Figure 1.2 dB, 1.4 dB max
- Typical Gain 32 dB
- Gain Flatness < ± 1.5 dB typical
- P1dB +15 dBm Typical
- Internally Regulated
- Operates from a Single +12V Supply
- Unconditionally Stable
- State-of-the-Art GaAs Technology

Description

The AMT-A0303 is a Broadband Ultra Low Noise amplifier with very low noise figure over the full frequency range. The performance is achieved through the use of AMTI’s proprietary technology. The amplifier I/Os are Internally matched to 50 Ohms. The AMT-A0303 is ideal for use as Front End of receiver system, or where amplification is required without adding excessive noise in a Hi-Rel communications system for Commercial or Military applications.

Applications

- Receiver front end,
- Radar
- Communication systems
- Microwave Radio systems
- Test Equipment

MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Units</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature – Case</td>
<td>T_MO</td>
<td>°C</td>
<td>-40</td>
<td>+85</td>
</tr>
<tr>
<td>Storage Temperature - Case</td>
<td>T_MS</td>
<td>°C</td>
<td>-55</td>
<td>+125</td>
</tr>
<tr>
<td>RF Input power (CW)</td>
<td>Pin</td>
<td>dBm</td>
<td>+10</td>
<td></td>
</tr>
<tr>
<td>Die T Junction</td>
<td>T_J</td>
<td>°C</td>
<td></td>
<td>+150</td>
</tr>
<tr>
<td>Positive Supply Voltage</td>
<td>V_+SS</td>
<td>V</td>
<td></td>
<td>+12.5</td>
</tr>
</tbody>
</table>

Do NOT apply DC to RF Input

1. Stresses above those listed under “Absolute Maximum Rating” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.
## ELECTRICAL SPECIFICATIONS @ 23°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conditions</th>
<th>Units</th>
<th>MIN</th>
<th>Typical</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td></td>
<td>GHz</td>
<td>8</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Gain</td>
<td>Small Signal</td>
<td>dB</td>
<td>30</td>
<td>32</td>
<td></td>
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<tr>
<td>Gain Flatness</td>
<td></td>
<td>dB</td>
<td>±1.5</td>
<td>± 2.5</td>
<td></td>
</tr>
<tr>
<td>Input Power</td>
<td>CW, without damage</td>
<td>dBm</td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>Output Power (P1dB)</td>
<td>1 dB compression point @ 12GHz</td>
<td>dBm</td>
<td>10</td>
<td>15.5</td>
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<tr>
<td>OIP3</td>
<td>OPI3 measured @ 15 GHz Two tone F1-F2=10MHz</td>
<td>dB</td>
<td>20</td>
<td></td>
<td></td>
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<tr>
<td>Noise Figure</td>
<td></td>
<td>dB</td>
<td>1.2</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>RF Input Impedance</td>
<td>Reference to 50 ohms VSWR</td>
<td></td>
<td>1.8:1</td>
<td>2.4:1</td>
<td></td>
</tr>
<tr>
<td>RF Output Impedance</td>
<td>Reference to 50 ohms</td>
<td></td>
<td>1:8:1</td>
<td>2.3:1</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage Positive:</td>
<td></td>
<td>V</td>
<td>+12</td>
<td></td>
<td></td>
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<tr>
<td>Supply Current Positive:</td>
<td></td>
<td>mA</td>
<td>70</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1/ Unconditional Stability

Customized configurations of the above specifications are available
Typical Performance  S-Parameters  @ 23C

CH1  LOG  10 dB/REF 0 dB
S11  3–14.695 GHz  13,000,000,000 GHz

CH2  LOG  10 dB/REF 0 dB
S21  3–34.239 GHz  13,000,000,000 GHz

CH3  LOG  10 dB/REF -10 dB
S12  3–54.900 GHz  13,000,000,000 GHz

CH4  LOG  10 dB/REF 0 dB
S22  3–13.749 GHz  13,000,000,000 GHz

CH1 Markers
1: 9.4839 dB  8.00000 GHz
2: 9.7860 dB  10.00000 GHz
3: 15.478 dB  15.00000 GHz
4: 12.939 dB  18.00000 GHz

CH2 Markers
1: 12.907 dB  8.00000 GHz
2: 33.543 dB  10.00000 GHz
3: 31.063 dB  15.00000 GHz
4: 31.939 dB  18.00000 GHz

CH3 Markers
1: 53.765 dB  8.00000 GHz
2: 54.724 dB  10.00000 GHz
3: 50.523 dB  15.00000 GHz
4: 50.194 dB  18.00000 GHz

CH4 Markers
1: 11.063 dB  8.00000 GHz
2: 18.579 dB  10.00000 GHz
3: 11.818 dB  15.00000 GHz
4: 14.593 dB  18.00000 GHz

START 8000.000 MHz  STOP 18000.000 MHz

Typical Performance  S-Parameters  @ 23C
Typical Performance

Noise Figure @ 23C

![Graph showing the Noise Figure (NF) in dB versus Frequency (GHz) for AMT-A0303. The graph indicates typical performance and includes a note: "Noise Figure @ 23C - Typical."](image-url)
Package Outline: M088 SMA Connectorized mm(inches)

- **Model Number**: AMT-A0303
- **Description**: SMA Female
- **Hermeticity**: Non-Hermetic
- **Package**: Outline: M088

Housing: Aluminum Gold over Nickel plated
Removable SMA and Ground Slug
Contact us for custom configurations and special requirements.

Our highly experienced team of engineers can quickly identify and implement innovative solutions using latest technology to improve performance and reduce cost.

- Add additional functionality: Input limiter, Temperature compensation, Amplitude/Phase matching, Amplitude/Phase Tracking, Automatic Gain control, Gain sloping, Bypass path, Specific supply voltage, Regulation, Power detector, Health status, and others

- Integrated: Filters, Switches, Limiter, Digital attenuator, Phase shifter, Microcontroller, Multiple amplifiers, Switch matrix, Comb generators and others

- Mechanical: Custom packages - Surface Mount, Connectorized, Waveguide, Carrier, Drop-in, Hermetic and others

Agile Microwave Technology Inc is the logical choice for all your commercial or military RF/Microwave components/module requirements.

Contact Information:

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Cary, NC 27513

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