AMT-A0391  2 GHz to 8 GHz
Low Noise Amplifier

Data Sheet

Features

- 2 GHz to 8 GHz Frequency Range
- Typical Gain 33 dB,
- Gain Flatness < ± 0.7 dB Typical
- Typical Noise Figure < 1.4 dB
- Typical P1dB > +12 dBm
- Internally Regulated
- Operates from a Single +8V Supply
- Unconditionally Stable
- State-of-the-Art GaAs Technology

Description

The AMT-A0391 is a Broadband Low Noise amplifier with Low noise 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-A0391 is ideal for use as gain block of receiver system, or where broadband amplification is required without adding lot of noise in a Hi-Rel communications system for Commercial or Military applications.

Applications

- Receiver Input
- 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>-40</td>
<td>+125</td>
</tr>
<tr>
<td>RF Input power (CW)</td>
<td>Pin</td>
<td>dBm</td>
<td>+16</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</td>
</tr>
</tbody>
</table>

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>2</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Gain</td>
<td>Small Signal</td>
<td>dB</td>
<td>30</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Gain Flatness</td>
<td></td>
<td>dB</td>
<td>±0.7</td>
<td>±1.2</td>
<td></td>
</tr>
<tr>
<td>Output Power (P1dB)</td>
<td>1 dB compression point @4 GHz</td>
<td>dBm</td>
<td>+12</td>
<td>+14</td>
<td></td>
</tr>
<tr>
<td>OIP3</td>
<td>OPI3 measured@4 GHz Two tone F1-F2= 10MHz</td>
<td>dB</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise Figure</td>
<td></td>
<td>dB</td>
<td>1.4</td>
<td>2</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>1:5:1</td>
<td>2:1</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage Positive:</td>
<td>Small signal current</td>
<td>V</td>
<td>+8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply Current Positive:</td>
<td></td>
<td>mA</td>
<td>175</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1/ Unconditional Stability:
2/ Maybe little higher above 7.5 GHz

Customized configurations of the above specifications are available
Typical S-Parameters 25C

![Graphs showing S-parameters for different channels with markers at specific frequencies.](image-url)
Typical Noise Figure @ 23C

AMT-A0391

Noise Figure

@ 23C

NF (dB)

2 3 4 5 6 7 8

Frequency (GHz)

2 3 4 5 6 7 8

SN 1023
SN 1024
SN 1025
SN 1026
Typical P1dB @ 23C

![Graph showing P1dB vs Frequency for AMT-A0391 at 23C. The graph displays four different SN numbers: SN 1023, SN 1024, SN 1025, SN 1026. Each SN number has a different line on the graph. The y-axis represents P1dB in dBm, ranging from 0 to 15 dBm. The x-axis represents Frequency in GHz, ranging from 2 to 8 GHz. The graph shows that P1dB decreases slightly as frequency increases. The P1dB values for each SN number are consistent across the frequency range.](image-url)
Housing: Aluminum Gold over Nickel plated
Removable SMA and Ground Slug

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Hermeticity</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMT-A0391</td>
<td>SMA Female</td>
<td>Non-Hermetic</td>
<td>Outline: M088</td>
</tr>
</tbody>
</table>
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:

701 Cascade Pointe Lane
Cary, NC 27513

Phone: (984) 228-8001     info@agilemwt.com     www.agilemwt.com

AMTI reserves the right to change at any time without notice the design, specifications, function/form or availability of its products described herein. The buyer/customer has the responsibility to validate the performance for their applications. No liability is assumed as result of use of this datasheet or product and no patent licenses are implied. AMTI reserves all rights.