

# AM1302 – Amplifier

## 2 to 18 GHz Power Limiting Amplifier



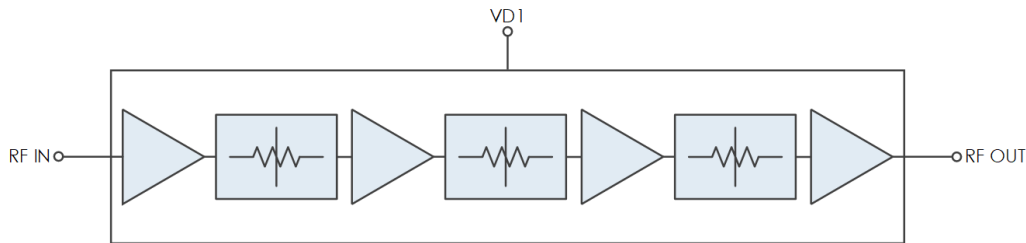
### Description

AM1302 is a wideband, power limiting amplifier servicing the 2 to 18 GHz frequency range. The device exhibits high small signal gain across a large frequency band and high output power over a wide input power range which makes the AM1302 a useful component for many broadband applications.

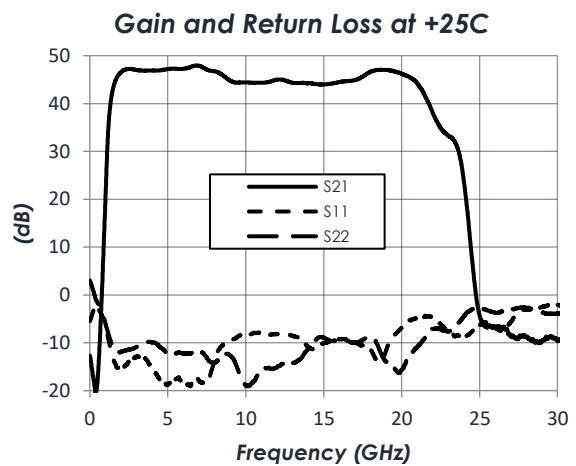
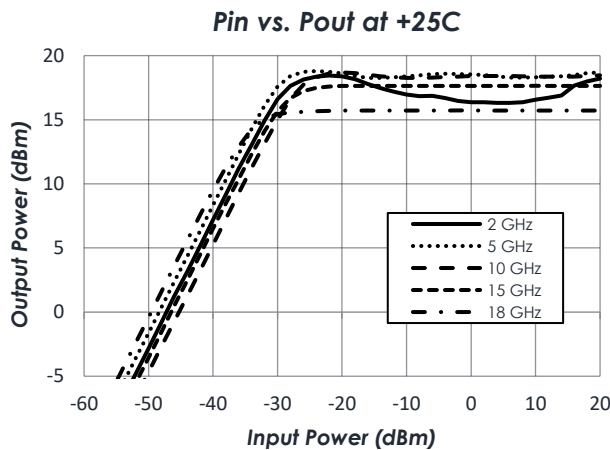
### Features

- 45 dB Gain
- 3 dB Noise Figure
- +25 dBm Small Signal OIP3
- 18 dBm Saturation Power
- +3.5 V Operation
- -40 C to +85 C Operation

### Functional Diagram



### Characteristic Performance



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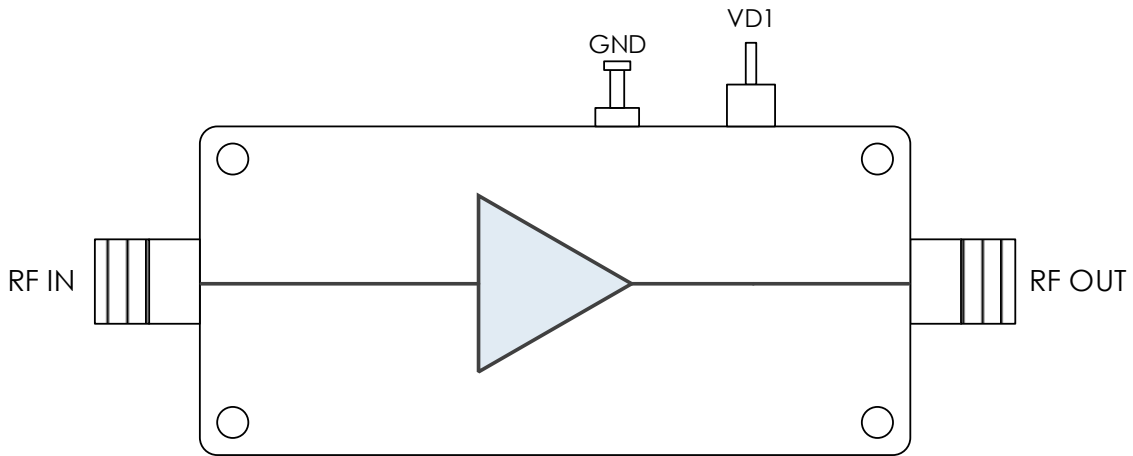
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### Revision History

Date	Revision Number	Notes
June 27, 2023	1	Initial Release

**AM1302 – Amplifier**  
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**Port Layout and Definitions**



Port Name	Port Function
RF IN	RF Input – 50 Ohms
RF OUT	RF Output – 50 Ohms
GND	Ground – Common
VD1	DC Power Input

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### Specifications

#### Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	+6.0 V
RF Input Power		+20 dBm
Operating Case Temperature	-40 C	+85 C
Storage Temperature Range	-55 C	+150 C

**Note:** Any device operation beyond the Absolute Maximum Ratings may result in permanent damage to the device. The values listed in this table are extremes and do not imply functional operation of the device at these or any other conditions beyond what is listed under Recommended Operating Conditions. Any part subjected to conditions outside of what is recommended for an extended amount of time may suffer from reliability concerns.

#### Handling Information

	Minimum	Maximum
Storage Temperature Range (Recommended)	-50 C	+125 C
Moisture Sensitivity Level	MSL 3	



Atlanta Micro products are electrostatic sensitive.  
Follow safe handling practices to avoid damage

#### DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
DC Supply Voltage		+3.4 V	+3.5 V	+4.0 V
DC Supply Current			226 mA	
Power Dissipated			0.79 W	

#### RF Performance

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
Frequency Range		2 GHz		18 GHz
Gain <sup>1</sup>	f = 2 GHz		46.6 dB	
	f = 10 GHz		44.4 dB	
	f = 18 GHz		46.6 dB	
Return Loss <sup>1</sup>	f = 2 GHz		-15.1 dB	
	f = 10 GHz		-8.2 dB	
	f = 18 GHz		-11.4 dB	
Output IP3 <sup>2</sup>			25 dBm	
Output P1 dB			1.3 dBm	
Noise Figure			2.9 dB	

#### Notes:

1. Small signal gain and return loss measured with -60 dBm input signal.
2. OIP3 measured with 10 MHz tone spacing with  $P_{in}/tone = -50$  dBm.

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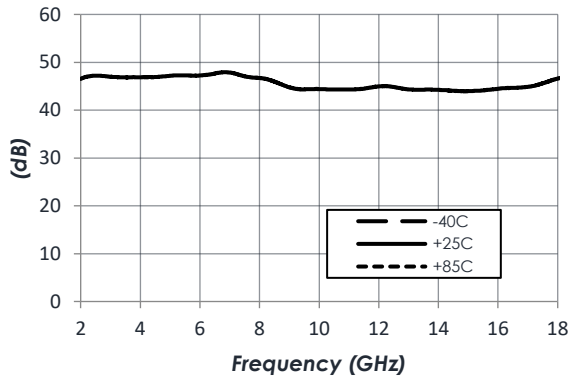
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## 2 to 18 GHz Power Limiting Amplifier

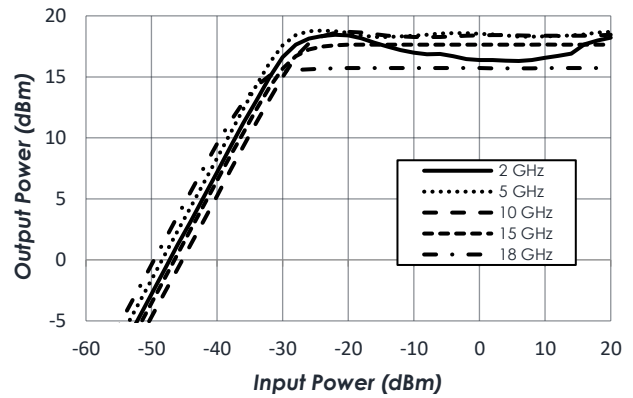
### Typical Performance

(VDD = +3.5 V, T = 25°C unless otherwise specified)

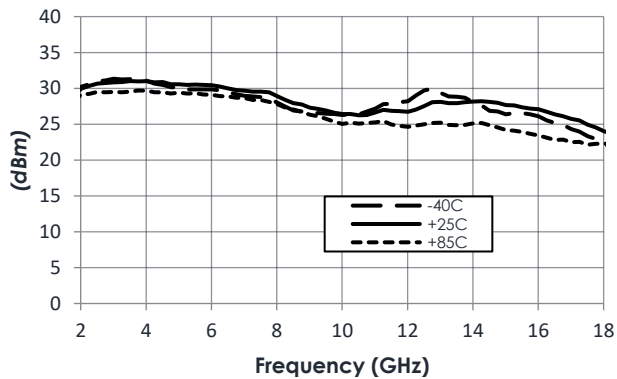
**Gain vs Temperature**



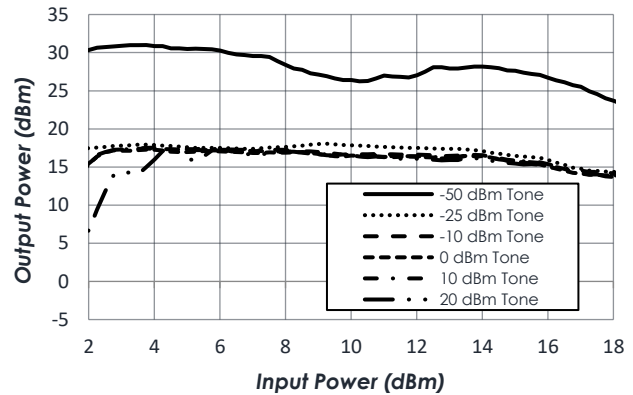
**Pin vs. Pout at +25C**



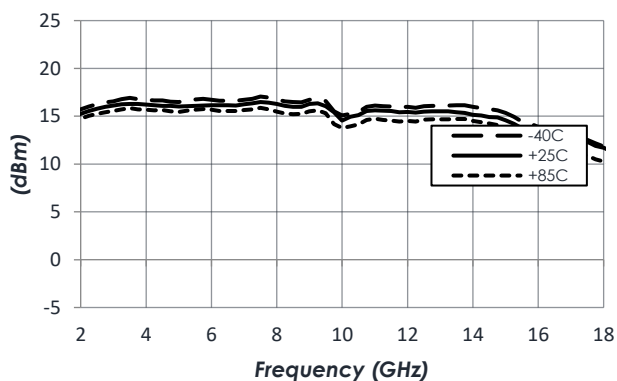
**Output IP3 vs Temperature**



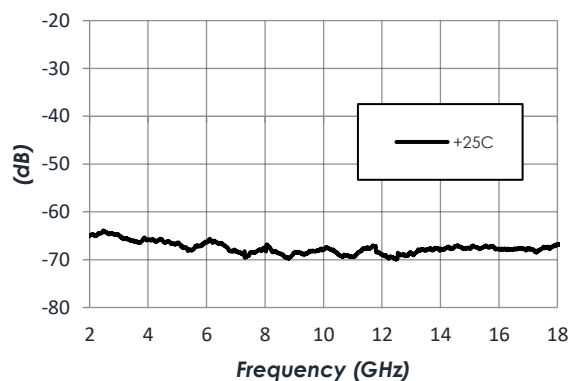
**OIP3 vs Power Tone Levels**



**P1dB vs Temperature**



**Reverse Isolation vs Temperature**



### Typical Performance (continued)

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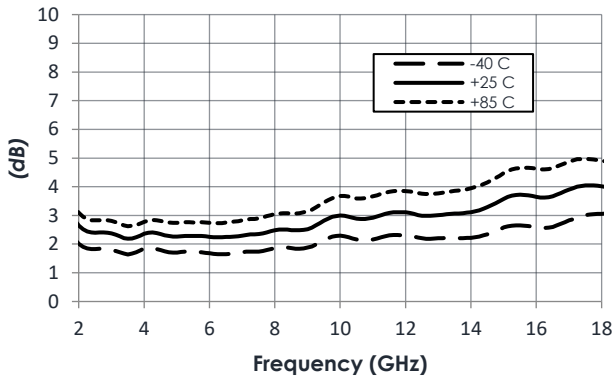
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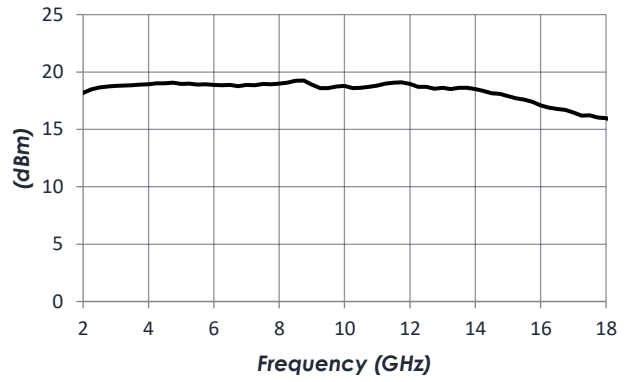
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(VDD = +3.5 V, T = 25 °C unless otherwise specified)

**Noise Figure vs Temperature**



**Power Saturation**



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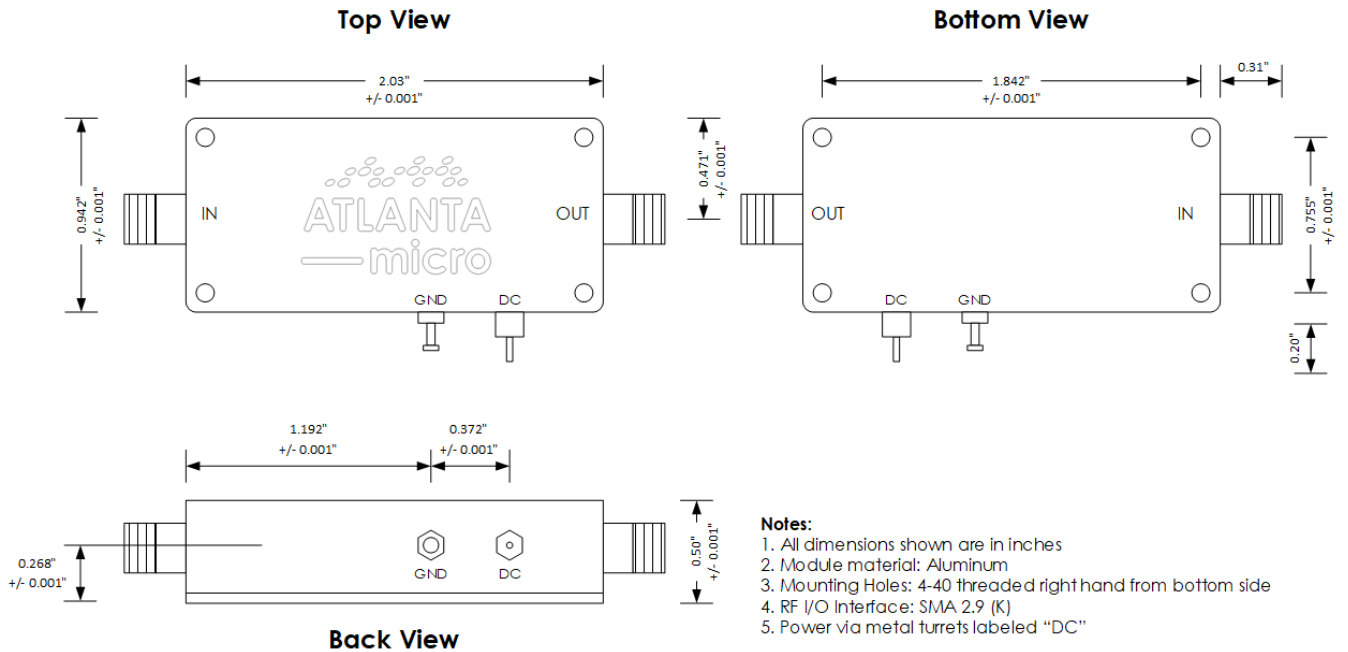
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### Module Dimensions



## Related Parts

Part Number	Description		
AM1300	20 MHz	to 8 GHz	Power Limiting Amplifier
AM1301	20 MHz	to 6 GHz	Power Limiting Amplifier
AM1303	6 GHz	to 22 GHz	Power Limiting Amplifier

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### Component Compliance Information

**RoHS:** Atlanta Micro, Inc. hereby certifies that all products comply with the EC Directive 2011/65/EC on the Restriction of Hazardous Substances, commonly known as EU-RoHS 6 and 10. All products supplied by Atlanta Micro shall be compliant with the European Directive 2011/65/EC based on the following substance list.

Substance List	Allowable Maximum Concentration
Lead (Pb)	<1000 PPM (0.1% by weight)
Mercury (Hg)	<1000 PPM (0.1% by weight)
Cadmium (Cd)	<75 PPM (0.0075% by weight)
Hexavalent Chromium (CrVI)	<1000 PPM (0.1% by weight)
Polybrominated Biphenyls (PBB)	<1000 PPM (0.1% by weight)
Polybrominated Diphenyl ethers (PBDE)	<1000 PPM (0.1% by weight)
Decabromodiphenyl Deca BDE	<1000 PPM (0.1% by weight)
Bis (2-ethylhexyl) Phthalate (DEHP)	<1000 PPM (0.1% by weight)
Butyl Benzyl Phthalate (BBP)	<1000 PPM (0.1% by weight)
Dibutyl Phthalate (DBP)	<1000 PPM (0.1% by weight)
Diisobutyl Phthalate (DIBP)	<1000 PPM (0.1% by weight)

**REACH:** Atlanta Micro, Inc. neither uses nor intentionally adds any of the substances considered to be a Substance of Very High Concern (SVHC) as defined by the EU Regulation (EC) No. 1907-2006 on Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH).

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Atlanta Micro takes its responsibility as a global partner seriously and will use due diligence within our supply chain to ensure all standards are met to the best of our knowledge.