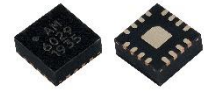


# AM1137 – Amplifier

## 10 MHz to 18 GHz Driver Amplifier

### Description

AM1137 is a wideband, cascadable amplifier that covers the 10 MHz to 18 GHz frequency range. The device exhibits strong linearity and output power handling along with high gain and moderate noise figure across its frequency range. The AM1137 performs well down to 10 MHz and its low frequency performance is limited only by the frequency response of the input and output bias tees present in the application circuit. With internal 50Ω matching and packaged in a 3mm QFN, the AM1137 represents a compact total PCB footprint.

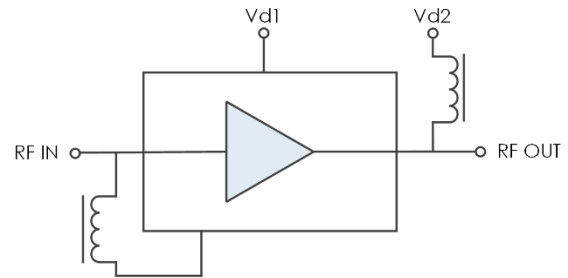


**NOTE:** Similar part picture shown. Size and footprint identical.

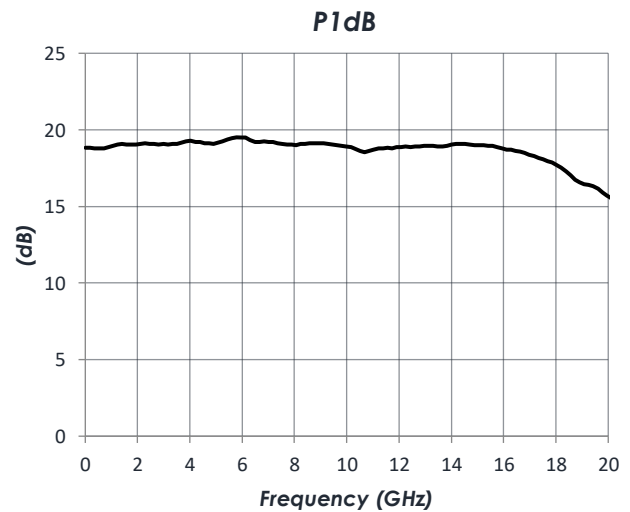
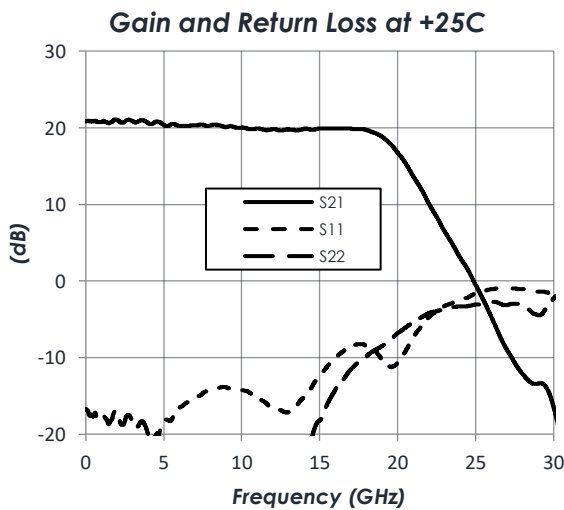
### Features

- 20 dB Gain
- +19 dBm P1dB
- +29 dBm OIP3
- 4.1 dB Noise Figure
- +4.2V and +5.0V Operation
- 3mm QFN
- -40C to +85C Operation

### Functional Diagram



### Characteristic Performance



To obtain price, delivery, or to place an order contact [sales@atlantamicro.com](mailto:sales@atlantamicro.com)  
Atlanta Micro Inc., Now a part of Mercury Systems  
3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • [www.atlantamicro.com](http://www.atlantamicro.com)

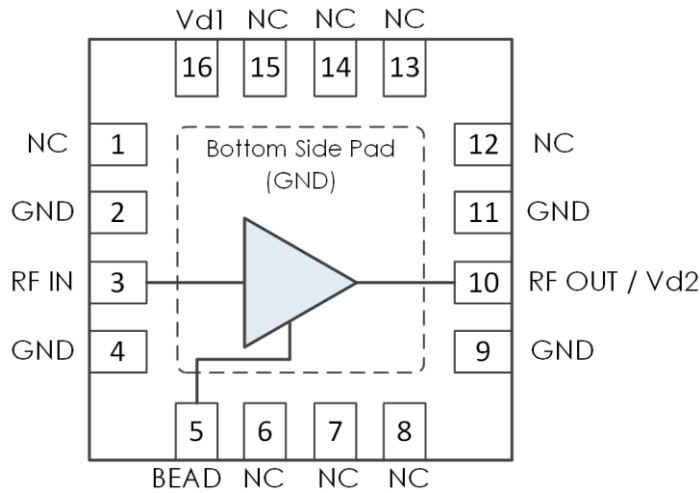
## Table of Contents

<b>Description .....</b>	<b>1</b>	Recommended Operating Conditions....	4
<b>Features.....</b>	<b>1</b>	Thermal Information .....	4
<b>Functional Diagram.....</b>	<b>1</b>	10 MHz Electrical Characteristics.....	5
<b>Characteristic Performance .....</b>	<b>1</b>	RF Performance.....	5
<b>Revision History .....</b>	<b>2</b>	Typical Performance .....	6
<b>Pin Layout and Definitions.....</b>	<b>3</b>	<b>Typical Application.....</b>	<b>8</b>
<b>Specifications .....</b>	<b>4</b>	<b>Evaluation PC Board .....</b>	<b>9</b>
Absolute Maximum Ratings.....	4	<b>Related Parts.....</b>	<b>9</b>
Handling Information .....	4	<b>Component Compliance Information.....</b>	<b>10</b>

## Revision History

<b>Date</b>	<b>Revision Number</b>	<b>Notes</b>
June 26, 2023	1	Initial Release

**Pin Layout and Definitions**



Pin Number	Pin Name	Pin Function
1	NC	Not Connected
2	GND	Ground – Common
3	RF IN	RF Input – 50 Ohms – DC Coupled. External DC Blocking Capacitor Required
4	GND	Ground – Common
5	BEAD	Connect to RF IN through external ferrite bead or large inductor
6-8	NC	Not Connected
9	GND	Ground – Common
10	RF OUT / Vd2	RF Output and DC Power Input– 50 Ohms – DC Coupled. External DC Blocking Capacitor Required
11	GND	Ground – Common
12-15	NC	Not Connected
16	Vd1	DC Power Input

**Note:** NC pins may be grounded or left open.

# AM1137 – Amplifier

## 10 MHz to 18 GHz Driver Amplifier

### Specifications

#### Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	6 V
RF Input Power		+20 dBm
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
Moisture Sensitivity Level	MSL 3	



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

#### Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage (Vd1)		5.0 V	
Supply Voltage (Vd2)		4.2 V	4.4 V
Operating Case Temperature	-40 C		+85 C

#### Thermal Information

Junction to Case Thermal Resistance ( $\theta_{JC}$ )	152 C/W
Nominal Junction Temperature at +85C Ambient	+165 C
Channel Temperature to Maintain 1 Million Hour MTF	+175 C

# AM1137 – Amplifier

## 10 MHz to 18 GHz Driver Amplifier

### DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
DC Supply Voltage (Vd1)			5.0 V	
DC Supply Voltage (Vd2)			4.2 V	4.4 V
DC Supply Current (Vd1)			53 mA	
DC Supply Current (Vd2)			63 mA	
Power Dissipated	Vd1 = 5.0 V, Vd2 = 4.2 V		0.53 W	

### RF Performance

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
Frequency Range		10 MHz		18 GHz
Gain <sup>2</sup>	f = 10 MHz		21 dB	
	f = 9 GHz		20 dB	
	f = 18 GHz		20 dB	
Return Loss <sup>2</sup>	f = 10 MHz		-21 dB	
	f = 9 GHz		-14 dB	
	f = 18 GHz		-8.5 dB	
Output IP3 <sup>1,2</sup>			+29 dBm	
Output P1dB <sup>2</sup>			+19 dBm	
Noise Figure			4.1 dB	

#### Notes:

1. OIP3 measured with 10 MHz tone spacing with  $P_{out/tone} = 0$  dBm.
2. Measured directly at output of device with board probes. Output bias voltage supplied through equipment bias tee and is measured exclusive of bias tee effects.

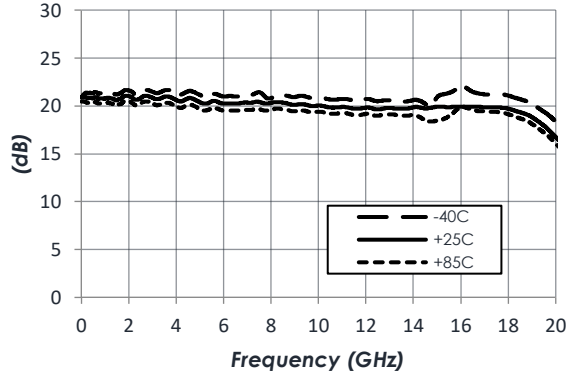
# AM1137 – Amplifier

## 10 MHz to 18 GHz Driver Amplifier

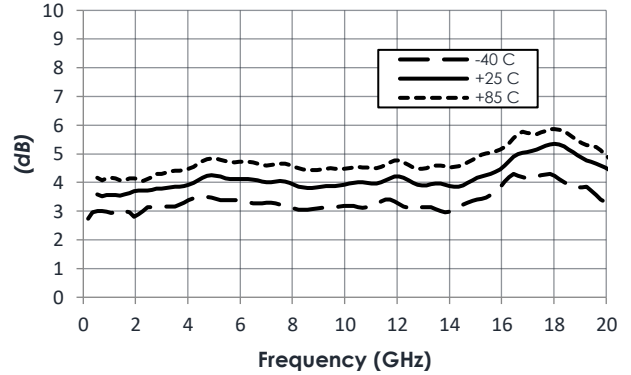
### Typical Performance

(Vd1 = 4.2 V, Vd2 = 5.0 V, T = 25 °C unless otherwise specified)

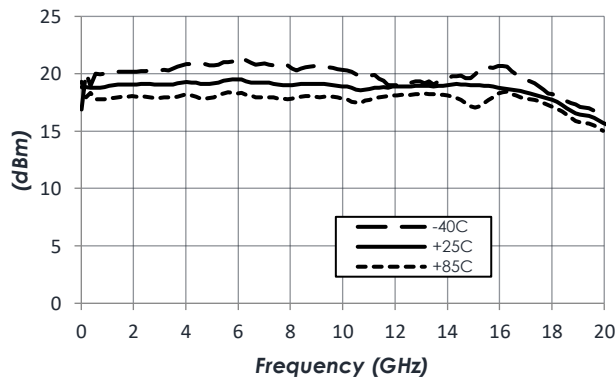
**Gain vs Temperature**



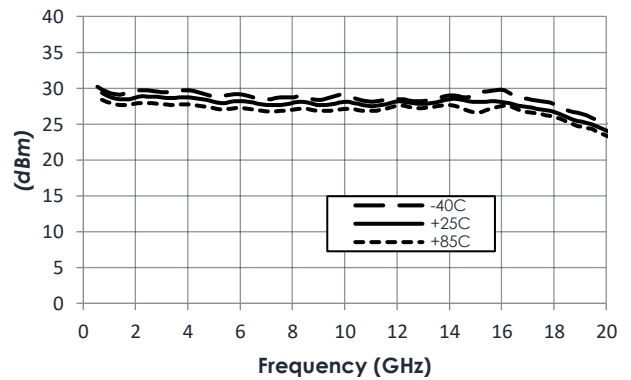
**Noise Figure vs Temperature**



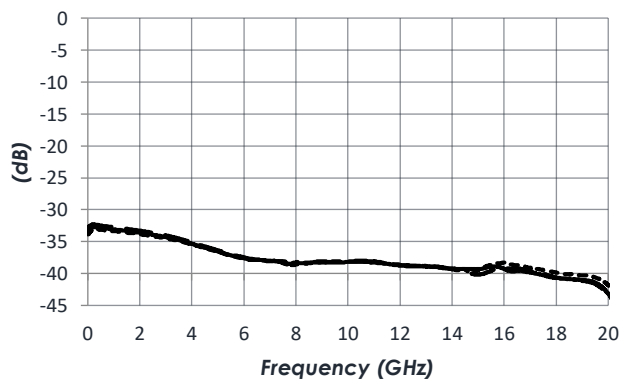
**P1dB vs Temperature**



**Output IP3 vs Temperature**



**Reverse Isolation vs Temperature**



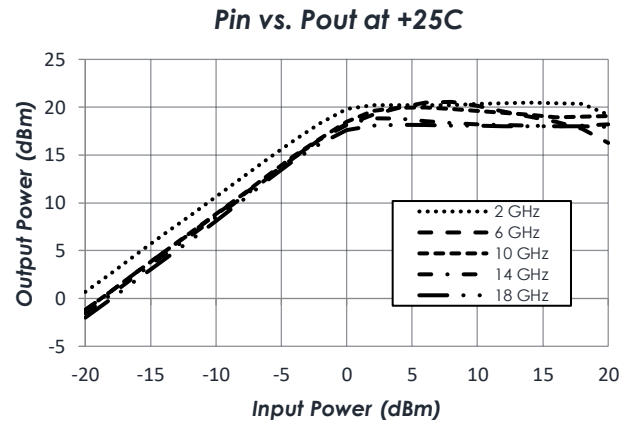
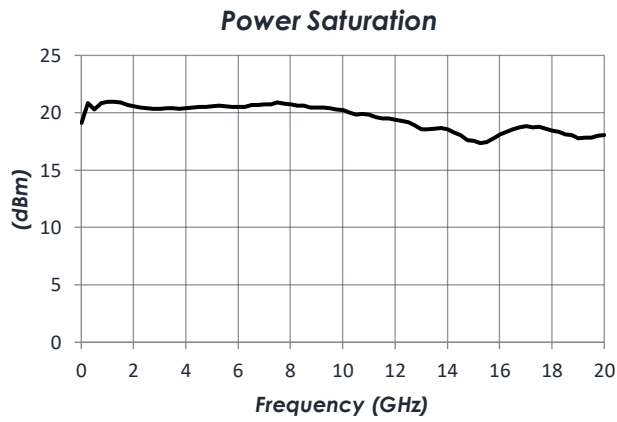
To obtain price, delivery, or to place an order contact [sales@atlantamicro.com](mailto:sales@atlantamicro.com)  
 Atlanta Micro Inc., Now a part of Mercury Systems  
 3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • [www.atlantamicro.com](http://www.atlantamicro.com)

# AM1137 – Amplifier

## 10 MHz to 18 GHz Driver Amplifier

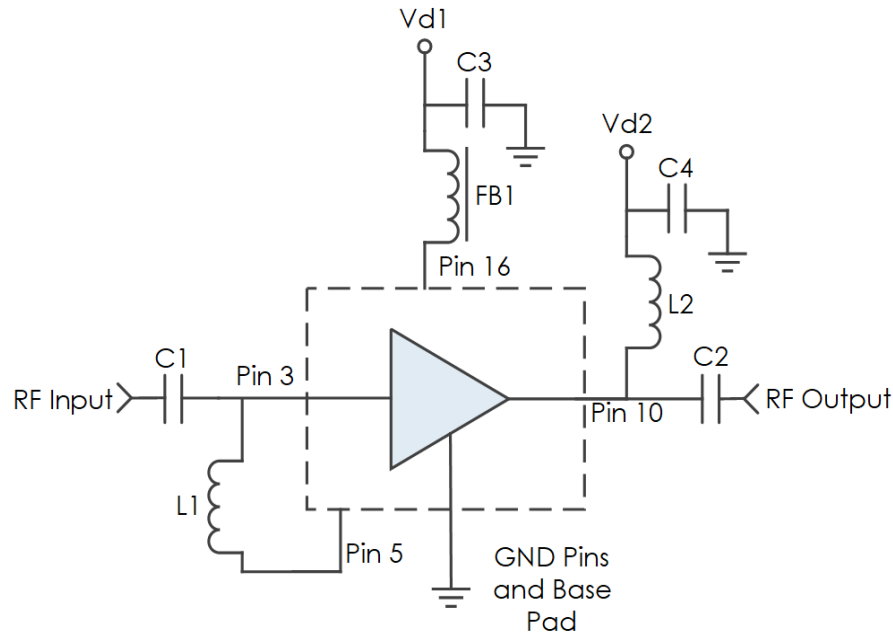
### Typical Performance (continued)

(Vd1 = 4.2 V, Vd2 = 5.0 V, T = 25 °C unless otherwise specified)



To obtain price, delivery, or to place an order contact [sales@atlantamicro.com](mailto:sales@atlantamicro.com)  
Atlanta Micro Inc., Now a part of Mercury Systems  
3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • [www.atlantamicro.com](http://www.atlantamicro.com)

**Typical Application**



**Recommended Component List (or equivalent):**

Part	Value	Part Number	Manufacturer
C1, C2	0.1 $\mu$ F	0201BB104KW160	Passives Plus
C3, C4	0.1 $\mu$ F	GRM155R71C104KA88	Murata
FB1	-	MMZ1005A222E	TDK
L1, L2	250 nH	CC25T47K240G5-C	Piconics

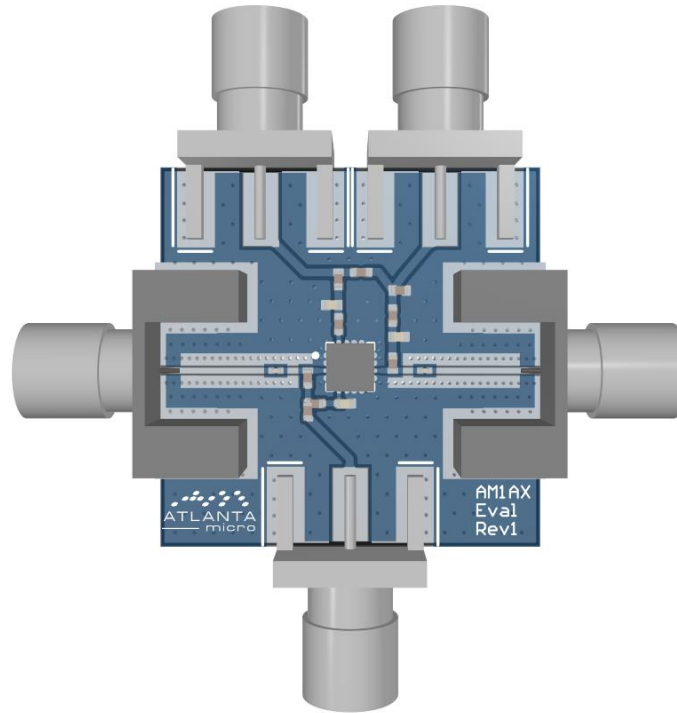
**Notes:**

1. NC pins may be grounded or left open
2. DC blocking capacitors should be high performance, low-loss, broadband capacitors for optimum performance
3. The AM1137 performs well down to 10 MHz, and its low frequency performance is limited only by the frequency response of the input and output bias tees present in the application circuit. The components shown here offer performance to approximately 20 MHz.

To obtain price, delivery, or to place an order contact [sales@atlantamicro.com](mailto:sales@atlantamicro.com)  
 Atlanta Micro Inc., Now a part of Mercury Systems  
 3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • [www.atlantamicro.com](http://www.atlantamicro.com)



## Evaluation PC Board



## Related Parts

Part Number				Description
AM1053	5 GHz	to	20 GHz	Gain Block
AM1102	DC	to	22 GHz	Low Noise Amplifier
AM1111	2 GHz	to	18 GHz	Driver Amplifier
AM1136	1.4 GHz	to	20 GHz	Driver Amplifier
AM1142	20 MHz	to	18 GHz	Gain Block

---

To obtain price, delivery, or to place an order contact [sales@atlantamicro.com](mailto:sales@atlantamicro.com)  
Atlanta Micro Inc., Now a part of Mercury Systems  
3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • [www.atlantamicro.com](http://www.atlantamicro.com)

## 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).

**Conflict Materials:** Atlanta Micro does not knowingly use materials that are sourced from the Democratic Republic of Congo (DRC) or any other known conflict regions. Atlanta Micro's supply chain is comprised of sources that are both environmentally and socially responsible. We periodically review this requirement with our vendors to ensure continued compliance.

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.