

AM1144 – Amplifier

17 to 40 GHz Low Noise Amplifier

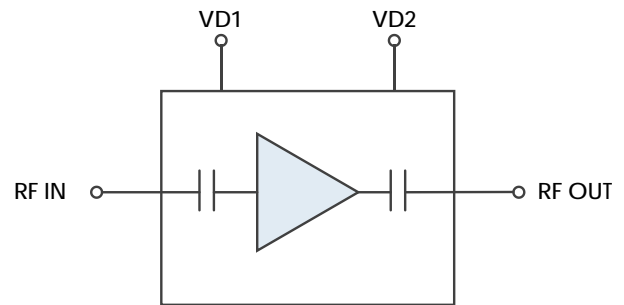
Description

The AM1144 is a wideband low noise amplifier that covers the 17 GHz to 40 GHz frequency range. The device exhibits 12dB gain with low noise figure and high output power which makes the AM1144 a useful component for many applications such as 5G wireless and K-band / Ka-band satcom. The device is packaged in a 3mm QFN with internal 50Ω matching and draws 360mW of DC power which makes the AM1144 ideal for demanding, low SWaP applications.

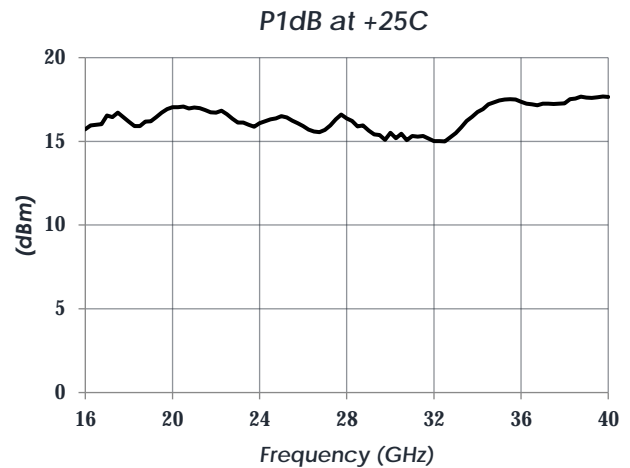
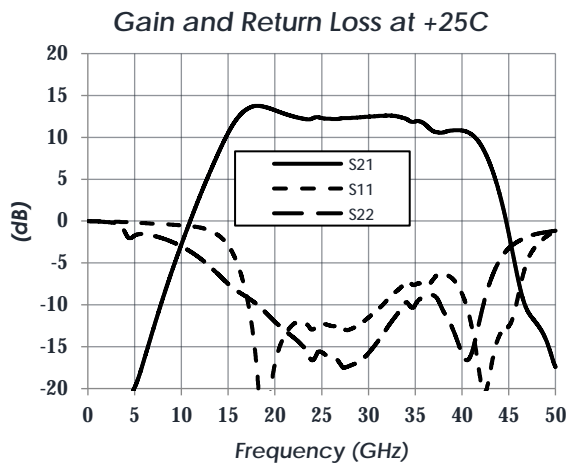
Features

- 12 dB Gain
- 3.5 dB Noise Figure
- +27 dBm OIP3
- +16.5 dB P1dB
- 360 mW DC Power Consumption
- +3.3V Supply
- 3mm QFN Package
- -40C to +85C Operation
- Unconditionally Stable

Functional Diagram



Characteristic Performance



To obtain price, delivery, or to place an order contact MMICSales@rcy.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

Table of Contents

Description	1	Recommended Operating Conditions ...	4
Features	1	Thermal Information	4
Functional Diagram	1	DC Electrical Characteristics	5
Characteristic Performance	1	RF Performance	5
Revision History	2	Typical Performance	6
Pin Layout and Definitions	3	Typical Application	7
Specifications	4	Evaluation PC Board	8
Absolute Maximum Ratings	4	Related Parts	8
Handling Information	4	Component Compliance Information	9

Revision History

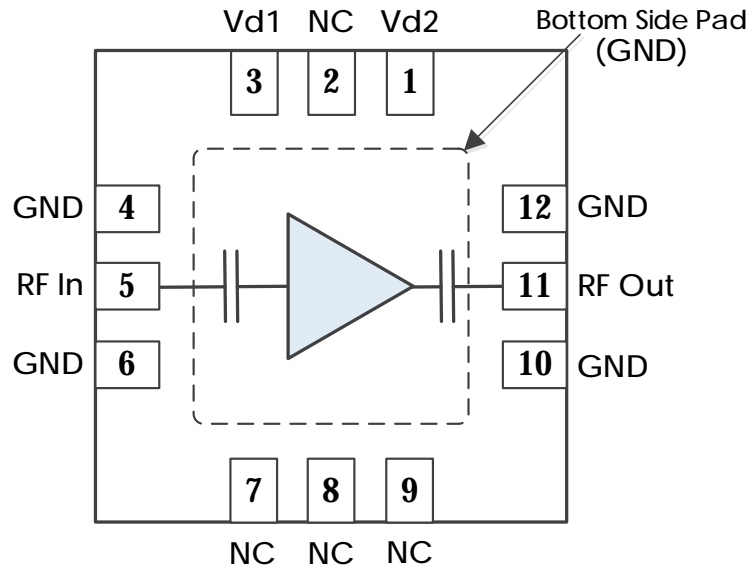
Date	Revision Number	Notes
March 21, 2022	1	Initial Release

AM1144 – Amplifier



17 to 40 GHz Low Noise Amplifier

Pin Layout and Definitions



Pin Number	Pin Name	Pin Function
1	Vd2	DC Power Input 2
2	NC	No Connect
3	Vd1	DC Power Input 1
4	GND	Ground - Common
5	RF In	RF Input - 50 Ohms - AC Coupled
6	GND	Ground - Common
7-9	NC	No Connect
10	GND	Ground - Common
11	RF Out	RF Output - 50 Ohms - AC Coupled
12	GND	Ground - Common

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

AM1144 – Amplifier



17 to 40 GHz Low Noise Amplifier

Specifications

Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	+3.6 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		+3.3 V	
Operating Case Temperature	-40 C		+85 C

Thermal Information

Junction to Case Thermal Resistance (θ_{JC})	171.9 C/W
Nominal Junction Temperature at +85C ambient	+147 C
Channel Temperature to Maintain 1 Million Hour MTF	+175 C

To obtain price, delivery, or to place an order contact MMICSales@mercy.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

AM1144 – Amplifier

17 to 40 GHz Low Noise Amplifier

DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
DC Supply Voltage			+3.3 V	
DC Supply Current	VDD = +3.3V		110 mA	
Power Dissipated	VDD = +3.3V		363mW	

RF Performance

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
Frequency Range		17 GHz		40 GHz
Gain	f = 17 GHz		13.5 dB	
	f = 28 GHz		12.3 dB	
	f = 40 GHz		10.8 dB	
Return Loss	f = 28 GHz		-13 dB	
Output IP3	f = 28 GHz		+27 dBm	
Output P1dB	f = 28 GHz		+16.4 dBm	
Noise Figure	f = 28 GHz		3.1 dB	

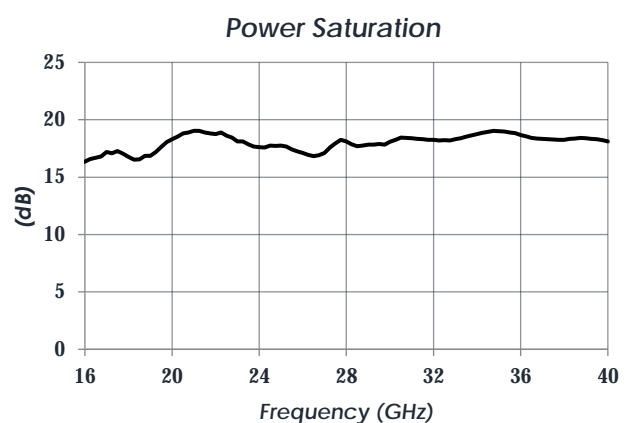
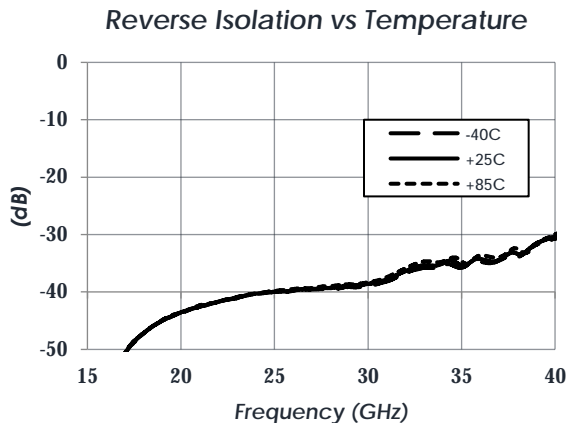
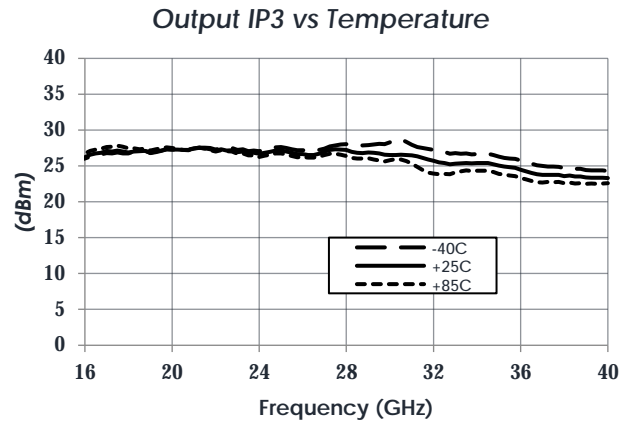
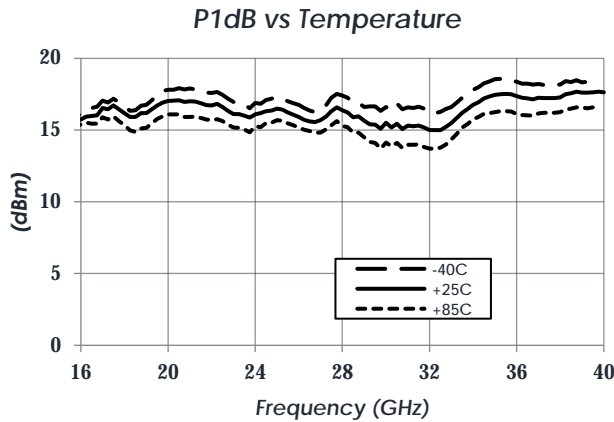
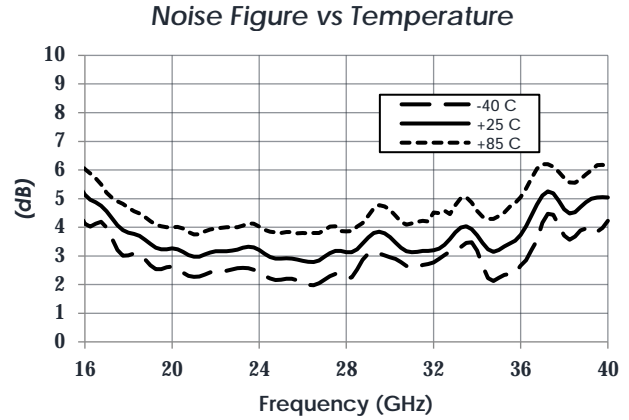
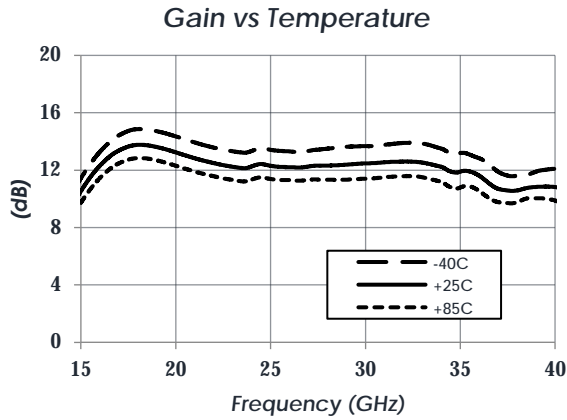
*Note: OIP3 measured with 10MHz tone spacing

AM1144 – Amplifier

17 to 40 GHz Low Noise Amplifier

Typical Performance

(T = 25 °C unless otherwise specified)

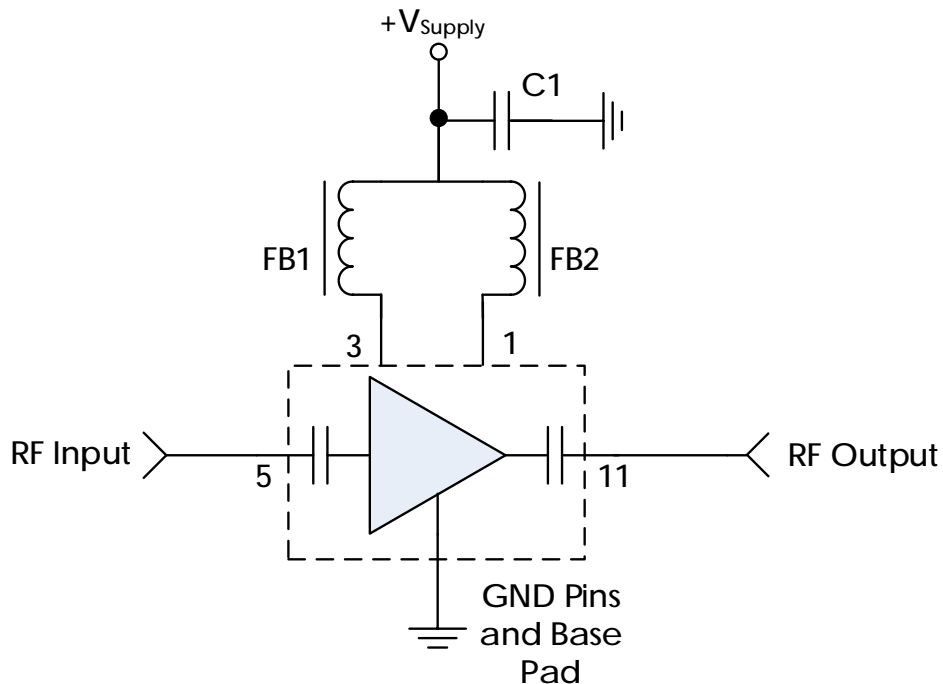


To obtain price, delivery, or to place an order contact MMICSales@mercy.com
 Atlanta Micro Inc., now a part of Mercury Systems
 3720 Davinci Ct, Suite 400, Peachtree Corners, GA 30092 • Phone: (470) 253-7640 • www.atlantamicro.com

AM1144 – Amplifier

17 to 40 GHz Low Noise Amplifier

Typical Application



Recommended Component List (or equivalent):

Part	Value	Part Number	Manufacturer
C1	0.1 uF	C1005X7R1H104K05BB	TDK
FB1	-	MMZ1005A222E	TDK

Notes:

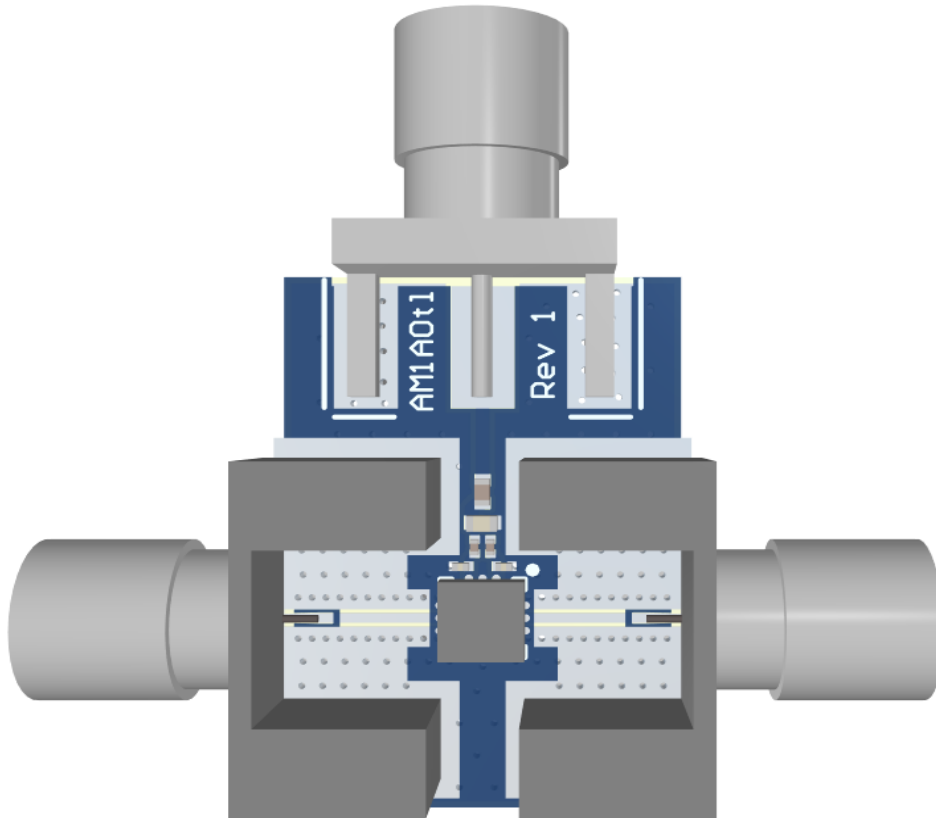
1. AM1144 is AC coupled. No external DC blocking caps are required.

AM1144 – Amplifier



17 to 40 GHz Low Noise Amplifier

Evaluation PC Board



Related Parts

Part Number	Description			
AM1099	26 GHz	to	32 GHz	Low Noise Amplifier
AM1100	2 GHz	to	26.5 GHz	Low Noise Amplifier
AM1102	DC	to	22 GHz	Low Noise Amplifier
AM1134	6 GHz	to	26.5 GHz	Low Noise Amplifier

To obtain price, delivery, or to place an order contact MMICSales@mercy.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

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.