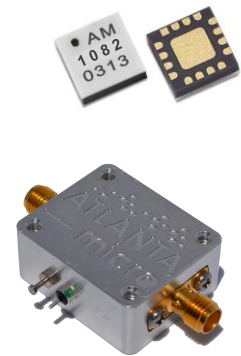


AM1082- Amplifier

5 to 17 GHz Gain Block

Description

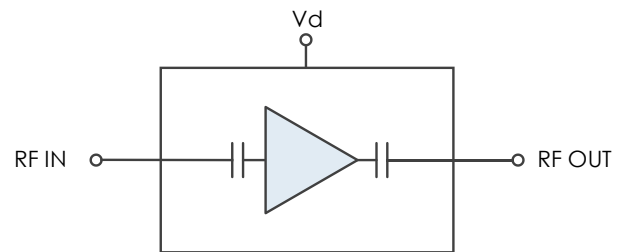
The AM1082 is a high dynamic range, cascadable gain block covering the 5 to 17 GHz frequency range. The amplifier exhibits high gain and output power across its bandwidth, useful for many LO driver applications. Packaged in a 3mm QFN with internal 50Ω matching and DC blocking capacitors, the AM1082 represents a compact total PCB footprint.



Features

- 22 dB Gain
- < 3.0 dB Noise Figure
- +31 dBm OIP3
- +20 dBm P1dB
- +22 dBm Psat
- +5.0 V, 126 mA Supply
- 3mm QFN
- -40C to +85C Operation
- No DC Blocking Caps Required

Functional Diagram



Characteristic Performance

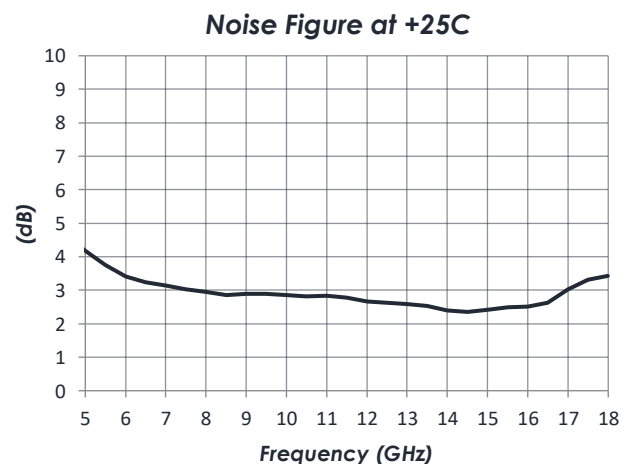
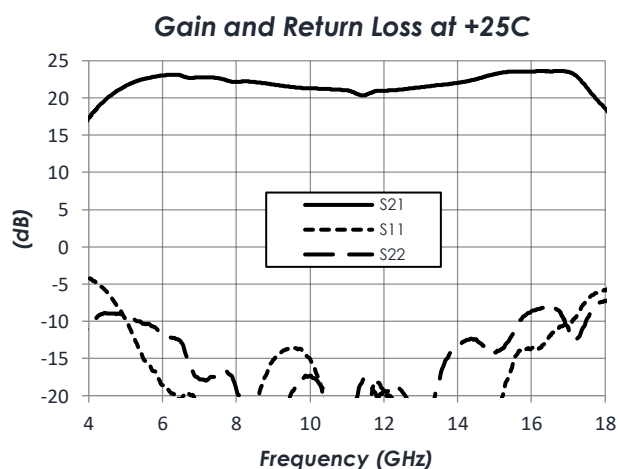


Table of Contents

Description	1	DC Electrical Characteristics.....	5
Features	1	RF Performance	5
Functional Diagram	1	Typical Performance	6
Characteristic Performance	1	Typical Application	8
Revision History	2	Part Ordering Details	9
Pin Layout and Definitions	3	Related Parts	9
Specifications	4	Evaluation PC Board	9
Absolute Maximum Ratings.....	4	Package Details	10
Handling Information.....	4	RF Shielded Module Details	11
Recommended Operating Conditions....	4	Component Compliance Information	12
Thermal Information.....	4		

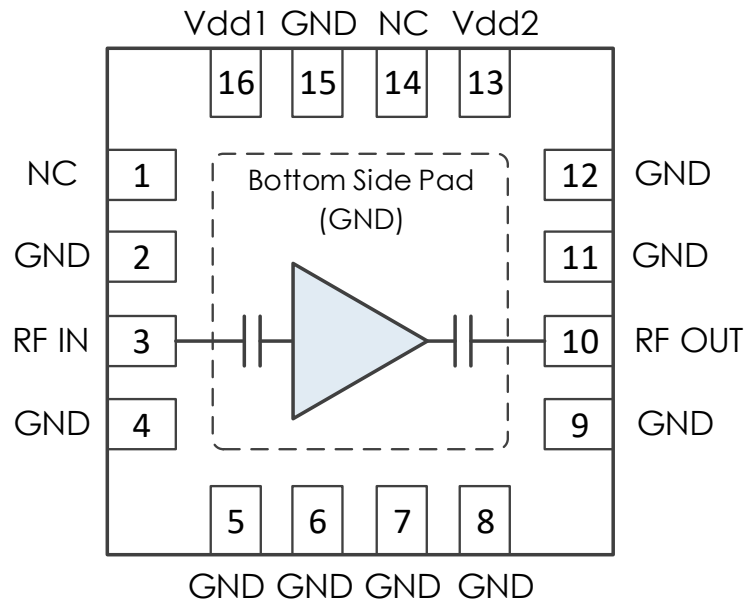
Revision History

Date	Revision Number	Notes
July 19, 2019	1	Initial Release

AM1082– Amplifier

5 to 17 GHz Gain Block

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 – AC Coupled
4-9	GND	Not Connected*
10	RF Out	RF Output – 50 Ohms – AC Coupled
11,12	GND	Ground – Common
13	Vdd2	DC Power Input
14	NC	Not Connected*
15	GND	Ground – Common
16	Vdd1	DC Power Input

*NC pins may be grounded or left open.

AM1082– Amplifier

5 to 17 GHz Gain Block



Specifications

Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	+6.0 V
RF Input Power		+20 dBm
Operating Junction Temperature	-40 C	+150 C
Storage Temperature Range	-50 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

Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage	+4.5 V	+5.0 V	+5.5 V
Operating Case Temperature	-40 C		+85 C
Operating Junction Temperature	-40 C		+130 C

Thermal Information

	Thermal Resistance (°C / W)
Junction to Case Thermal Resistance (θ_{JC})	72

AM1082– Amplifier

5 to 17 GHz Gain Block

DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
DC Supply Voltage			+5.0 V	
DC Supply Current	Vdd1 = Vdd2 = +5.0 V		126 mA	
Power Dissipated	Vdd1 = Vdd2 = +5.0 V		0.63 W	

RF Performance

(T = 25 °C unless otherwise specified)

Parameter	Testing Conditions	Minimum	Typical	Maximum
Frequency Range		5 GHz		17 GHz
Insertion Loss	Vdd1 = Vdd2 = +5.0 V		22 dB	
Return Loss	Vdd1 = Vdd2 = +5.0 V		20 dB	
Output IP3	Vdd1 = Vdd2 = +5.0 V		31 dBm	
Output P1dB	Vdd1 = Vdd2 = +5.0 V		20 dBm	
Noise Figure	Vdd1 = Vdd2 = +5.0 V		3 dB	

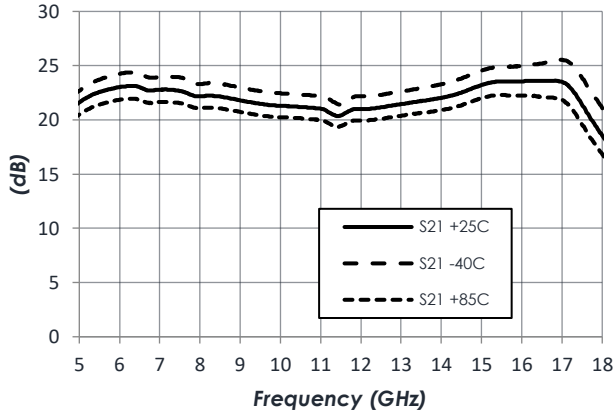
AM1082- Amplifier

5 to 17 GHz Gain Block

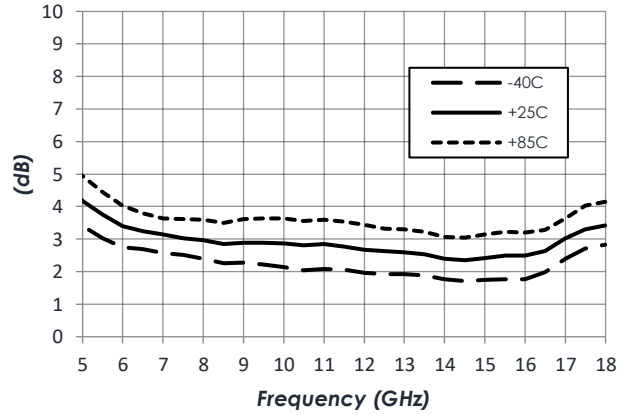
Typical Performance

(Vd = +5.0 V, Id = 126 mA)

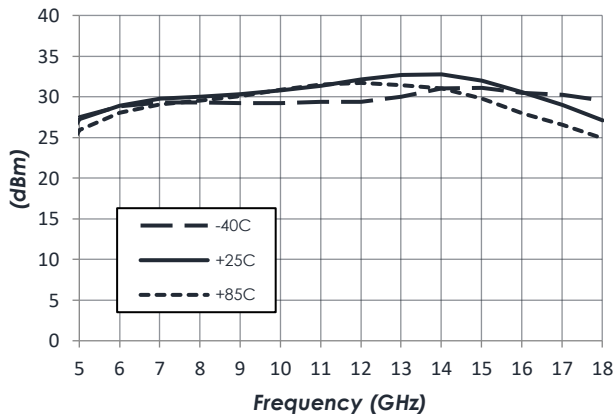
Gain vs Temperature



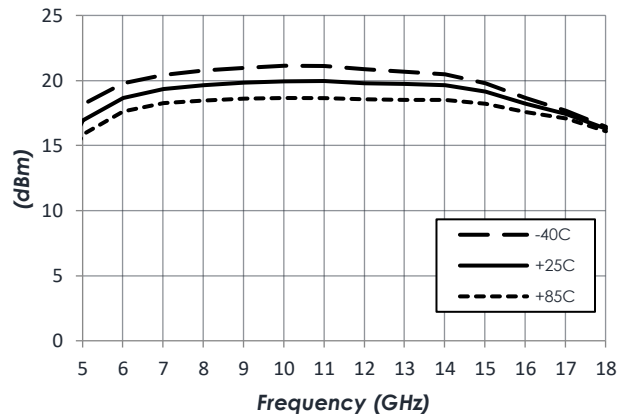
Noise Figure vs Temperature



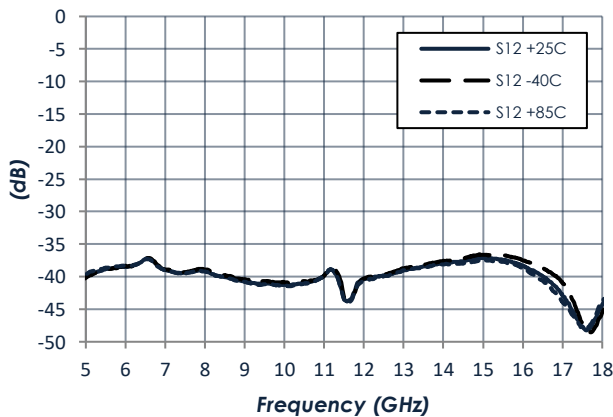
Output IP3 vs Temperature



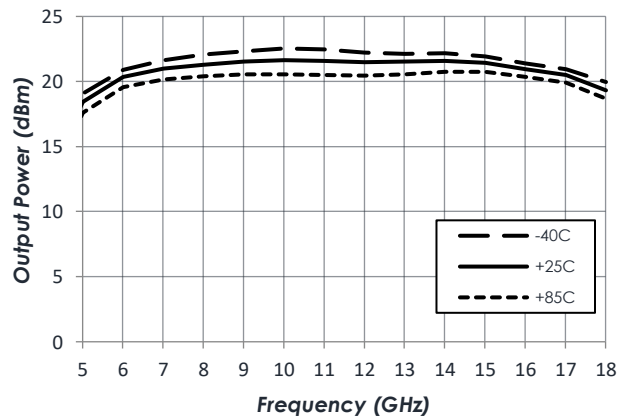
P1dB vs Temperature



Reverse Isolation vs Temperature



P_Sat vs Temperature



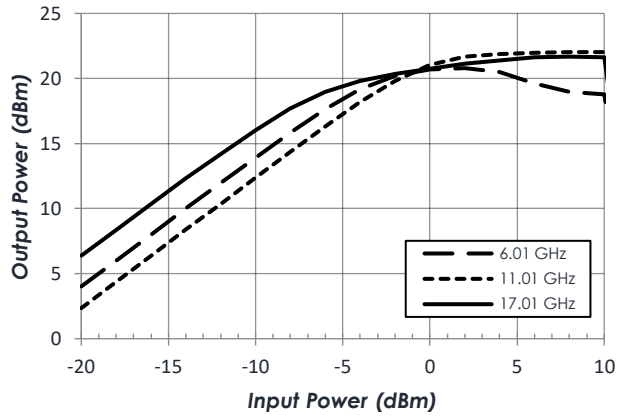
AM1082- Amplifier

5 to 17 GHz Gain Block

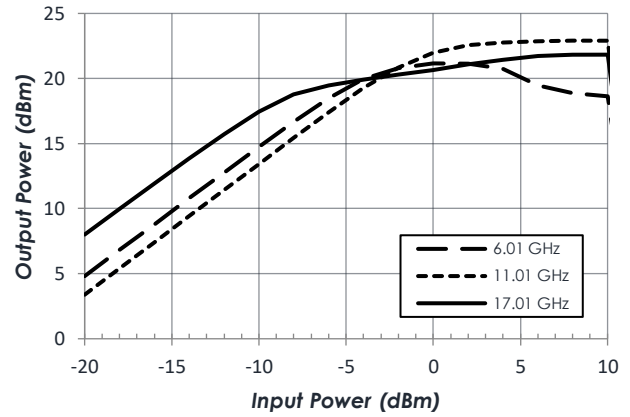
Typical Performance (continued)

(Vd = +5.0 V, Id = 126 mA)

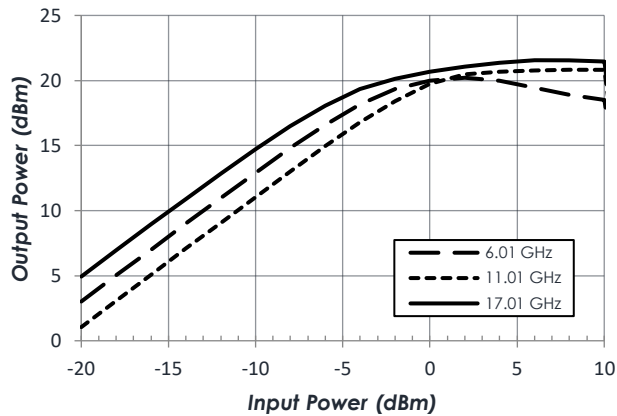
Pin vs. Pout at +25C



Pin vs. Pout at -40C



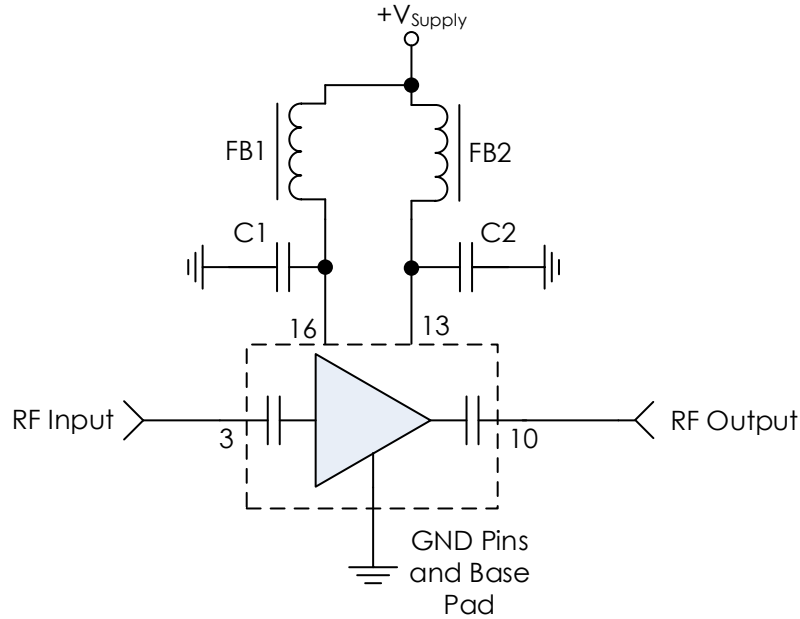
Pin vs. Pout at +85C



AM1082– Amplifier

5 to 17 GHz Gain Block

Typical Application



Recommended Component List (or equivalent):

Part	Value	Part Number	Manufacturer
C1, C2	0.1 μ F	C1005X7R1H104K050BB	TDK
FB1, FB2	-	MMZ1005A222E	TDK

Notes:

1. RF Input and Output pins are internally DC blocked.

AM1082– Amplifier

5 to 17 GHz Gain Block

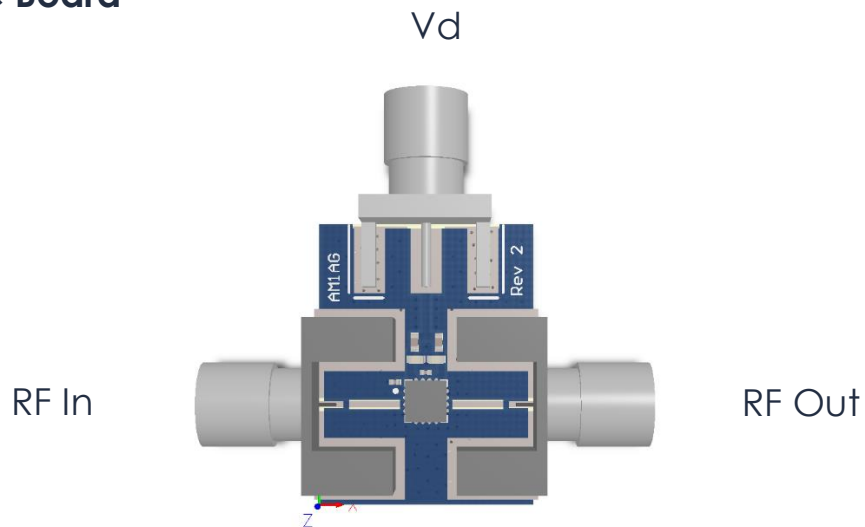
Part Ordering Details

Description	Part Number
3mm 16 Lead QFN	AM1082
AM1082 Evaluation Board	AM1082 Eval
AM1082 in 0.95" x 1.13" x 0.6" RF-Shielded Module with Integrated Bias Tee and Field Replaceable SMA Connectors	AM1082-M

Related Parts

Part Number	Description
AM1053	5 GHz to 20 GHz +3.3V Gain Block
AM1067	5 GHz to 20 GHz Bypassable Gain Block
AM1075	5 GHz to 26.5 GHz Bypassable Gain Block
AM1077	5 GHz to 20 GHz Bypassable Gain Block w/ Isolation State
AM1070	DC to 18 GHz +3.3V Broadband Gain Block
AM1071	DC to 18 GHz +5.0V Broadband Gain Block
AM1085	DC to 6 GHz +5.0V Gain Block
AM1090	DC to 6 GHz +5.0V or +8.0V Gain Block

Evaluation PC Board

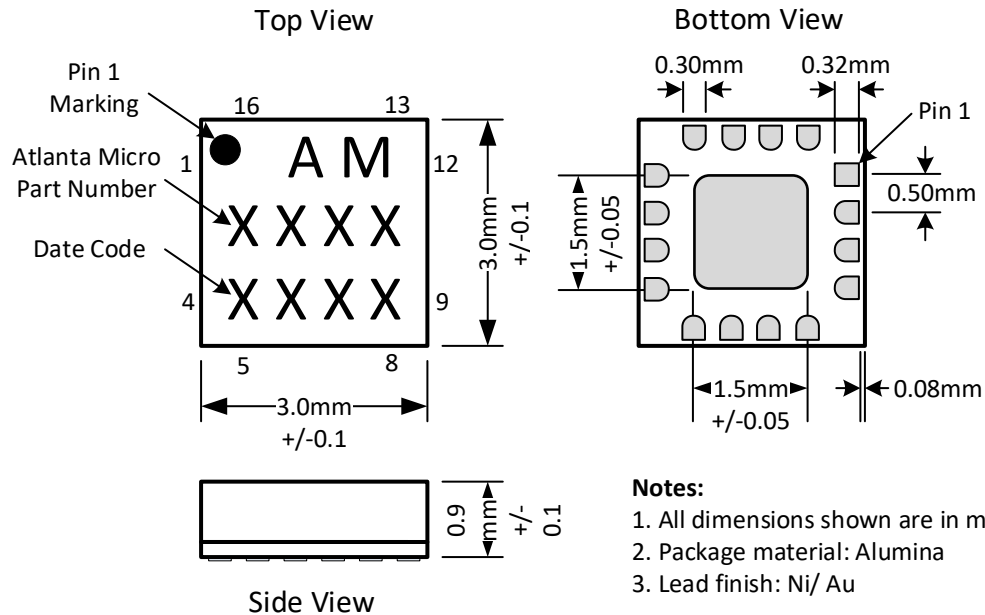


AM1082- Amplifier

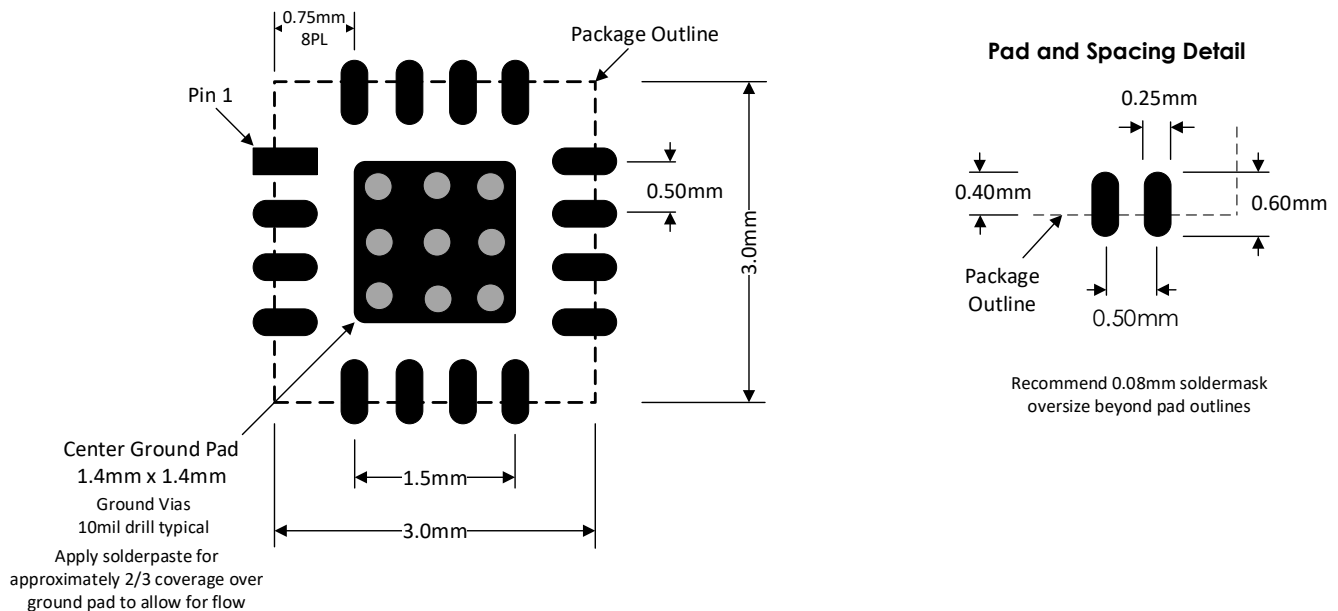
5 to 17 GHz Gain Block

3mm 16 Lead QFN Details

Package Drawing



Recommended Footprint



AM1082- Amplifier

5 to 17 GHz Gain Block

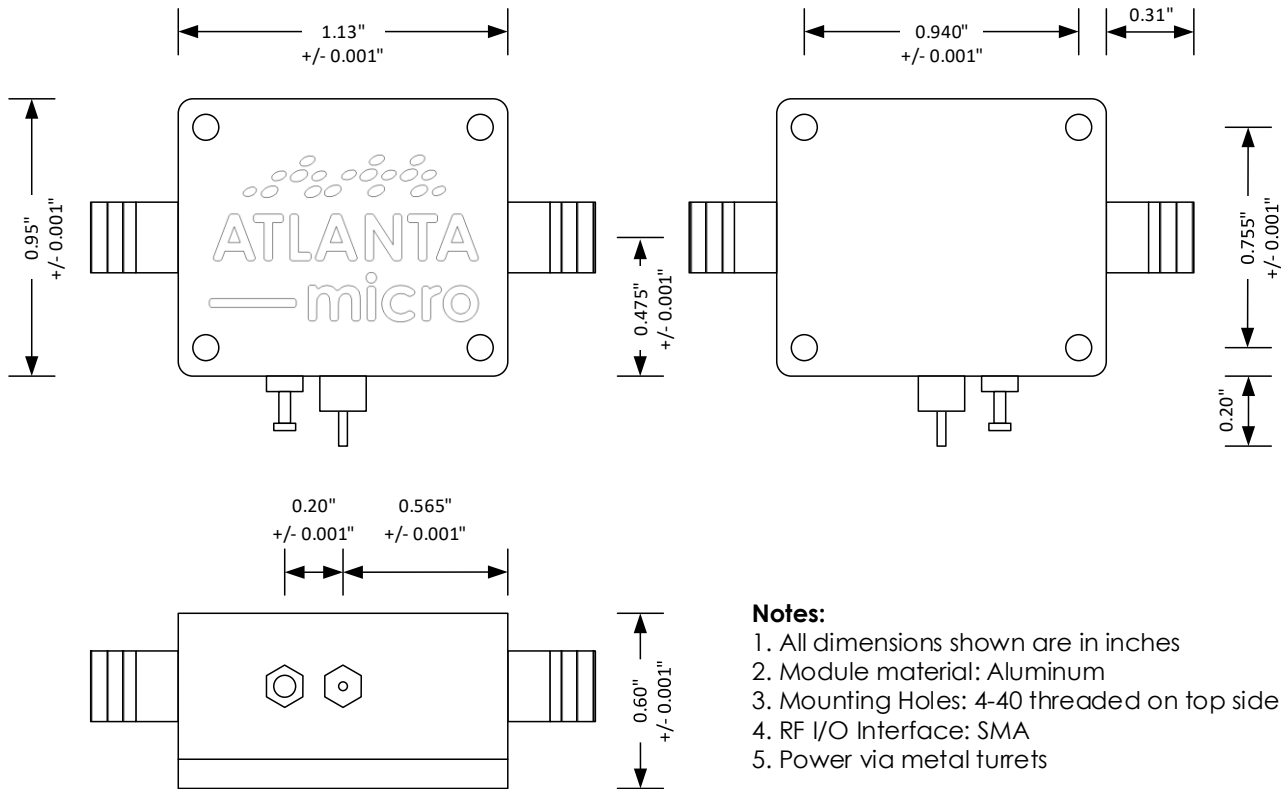


RF Shielded Module Details



Top View

Bottom View



Notes:

- 1. All dimensions shown are in inches
- 2. Module material: Aluminum
- 3. Mounting Holes: 4-40 threaded on top side
- 4. RF I/O Interface: SMA
- 5. Power via metal turrets

Front View

To obtain price, delivery, or to place an order contact sales@atlantamicro.com
Atlanta Micro Inc., 3720 Davinci Ct, Suite 125, Norcross, GA 30092 • Phone: (470) 253-7640 • www.atlantamicro.com

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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)

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