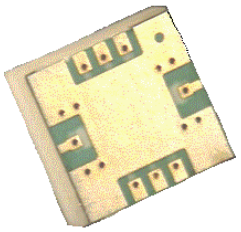
Preliminary Information

AMMP-5618

6-20 GHz General Purpose Amplifier

Data Sheet

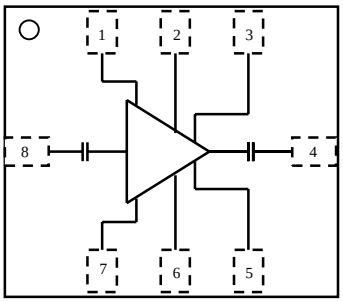


Features

- **5x5mm Surface Mount Package**
- **Broad Frequency Range: 6-20 GHz**
- **High Output Power: 19 dBm**
- **Medium Gain: 13 dB**
- **50 Ω Match on input and output**
- **Single Supply Bias : 5V, 107 mA**

Applications

- Microwave Radio systems
- Satellite VSAT and DBS systems
- Test Instruments
- 802.16 & 802.20 WiMax BWA systems
- WLL and MMDS loops
- Military Radios, Radar, and ECM



PACKAGE
BASE
GND

Pin	Function
1	
2	V_d
3	
4	RF $_{Out}$
5	
6	
7	
8	RF $_{In}$

Description

Agilent's AMMP-5618 6–20 GHz packaged MMIC is an efficient two-stage amplifier designed to be used as a cascadable intermediate gain block. In communication systems, it can be used as a LO buffer, or as a transmit driver amplifier. It is fabricated using a PHEMT integrated circuit structure and packaged in an easy-to-use surface mount package. During typical operation with a single 5-V supply, each gain stage is biased for Class-A operation for optimal power output with minimal distortion. The RF input and output have matching circuitry for use in 50-Ω environments. The backside of the package is both RF and DC ground. The MMIC has fully integrated input and output DC blocking capacitors, bias choke, and single supply self bias. This packaged MMIC is a cost effective alternative to hybrid (discrete FET) amplifiers or "chip & wire" assembly that require complex tuning and assembly processes.

AMMP-5618: DC & RF Specifications [1]

Sym	Parameters/Conditions		Typ.	Min/ Max
V_D	Drain Supply Voltage	V	5	
I_D	Drain Supply Current	mA	107	
Gain	Small-signal Gain	dB	13	11
NF	Noise Figure	dB	4.5	
RL_{in}	Input Return Loss	dB	-12	
RL_{out}	Output Return Loss	dB	-12	-10
P-1dB	Power @ 1dB Gain Comp	dBm	19	17
Isol	Reverse Isolation	dB	-45	-40
OIP3	Output 3rd Order Intercept Pt	dBm	+27	

Revision Date: 5/6/04
Revision Number: 5.1

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AMMP-5618 Typical Performances

(T_A = 25°C, V_d =5 V, I_D = 107 mA, Z_{in} = Z_{out} = 50 Ω)

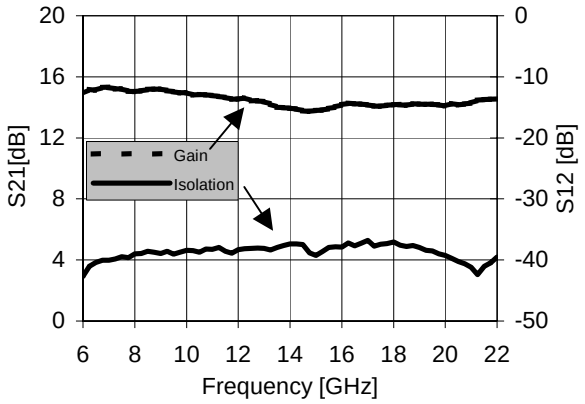

Figure 1. Typical Gain and Reverse Isolation

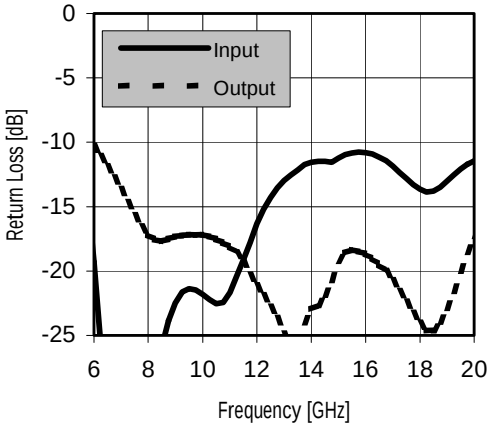

Figure 2. Typical Input & Output Return Loss

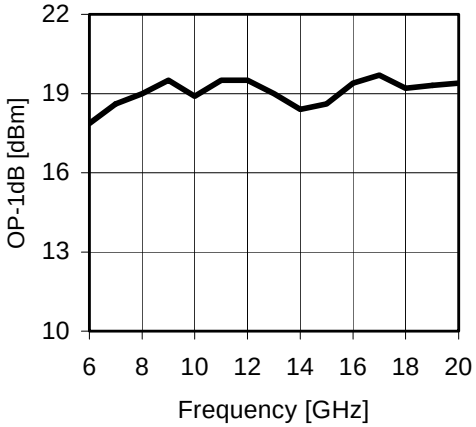

Figure 3. Typical Output Power P-1dB

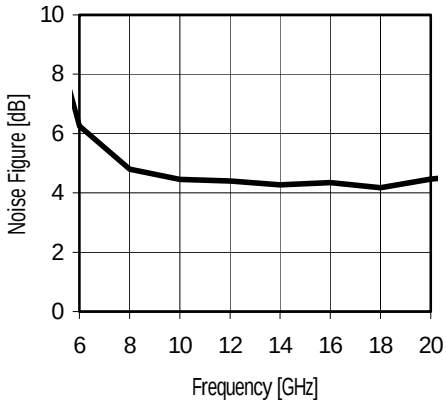

Figure 4. Typical Noise Figure

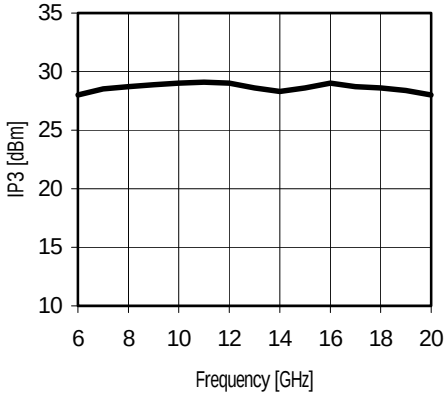

Figure 5. Typical OIP3 (Third Order Intercept)

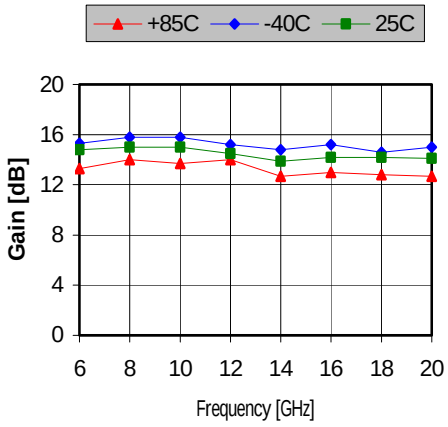

Figure 6. Gain over Temperature

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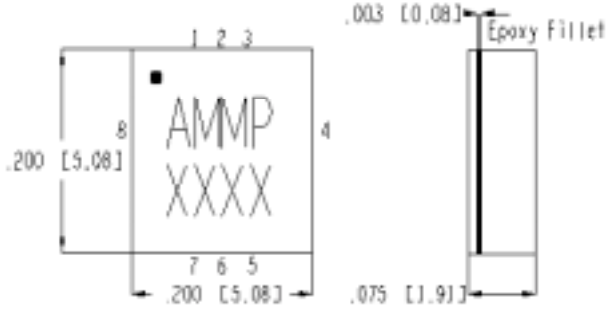
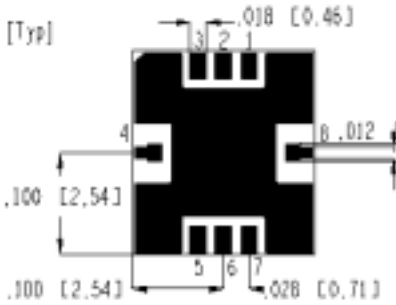
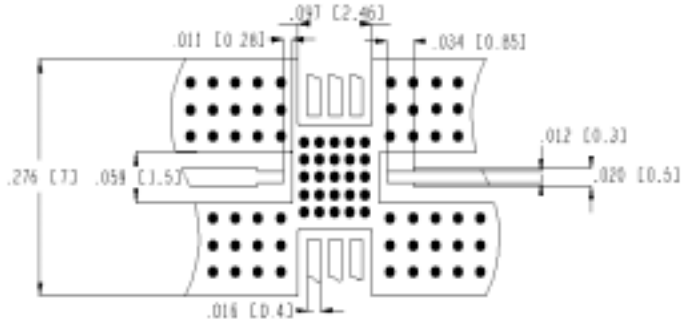
Outline Drawing





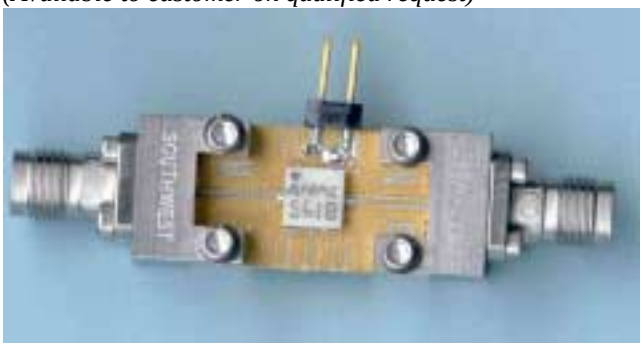
NOTES:
1. • INIDICATES PIN 1
2. DIMENSIONS ARE IN INCHES [MILIMETERS]
3. ALL GROUNDS MUST BE SOLDERED TO PCB RF GROUND

Suggested PCB Material and Land Pattern



Evaluation Test Circuit (Demo Board)

(Available to customer on qualified request)



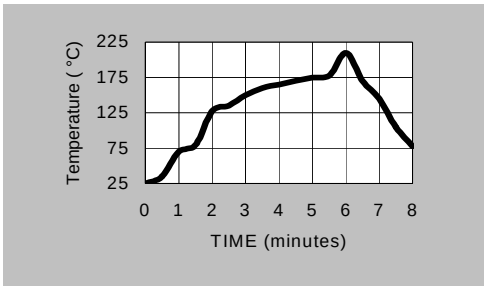
Recommended SMT Attachment

The AMMP Packaged Devices are compatible with high volume surface mount PCB assembly processes.

The PCB material and mounting pattern, as defined in the data sheet, optimizes RF performance and is strongly recommended. An electronic drawing of the land pattern is available from www.agilent.com/view/rf or upon request from Agilent Application Engineering.

Manual Assembly for Prototypes

1. Follow ESD precautions while handling packages.
2. Handling should be along the edges with tweezers or from topside if using a vacuum collet.
3. Recommended attachment is solder paste. Please see recommended solder reflow profile. Conductive epoxy is not recommended. Hand soldering is not recommended.
4. Apply solder paste using either a stencil printer or dot placement. The volume of solder paste will be dependent on PCB and component layout and should be controlled to ensure consistent mechanical and electrical performance. ***Excessive solder will degrade RF performance.***
5. Follow solder paste and vendor's recommendations when developing a solder reflow profile. A standard profile will have a steady ramp up from room temperature to the pre-heat temperature to avoid damage due to thermal shock.
6. Packages have been qualified to withstand a peak temperature of 235°C for 15 seconds. Verify that the profile will not expose device beyond these limits.
7. Clean off flux per vendor's recommendations.
8. Clean the module with Acetone. Rinse with alcohol. Allow the module to fully dry before testing.



Recommended solder reflow profile

For product information and a complete list of Agilent contacts and distributors, please go to our website:

Revision Date: 5/6/04
Revision Number: 5.1

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www.agilent.com/semiconductors
E-mail: SemiconductorSupport@agilent.com
Data subject to change.

Revision Date: 5/6/04
Revision Number: 5.1