NBB-502

CASCADABLE BROADBAND GaAs MMIC AMPLIFIER DC TO 4GHz

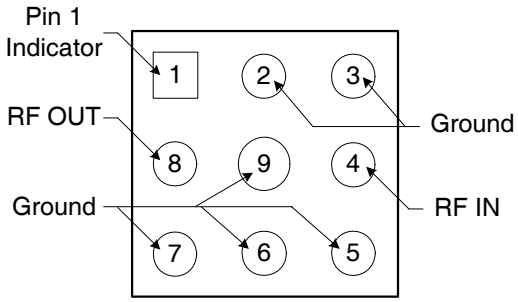
RoHS Compliant & Pb-Free Product
Package Style: MPGA, Bowtie, 3x3, Ceramic

Features

- Reliable, Low-Cost HBT Design
- 19.0dB Gain, +13.0dBm P1dB@2GHz
- High P1dB of +14.0dBm@6.0GHz
- Single Power Supply Operation
- 50Ω I/O Matched for High Freq. Use

Applications

- Narrow and Broadband Commercial and Military Radio Designs
- Linear and Saturated Amplifiers
- Gain Stage or Driver Amplifiers for MW Radio/Optical Designs (PTP/PMP/LMDS/UNII/VSAT/WLAN/Cellular/DWDM)



Functional Block Diagram

Product Description

The NBB-502 cascadable broadband InGaP/GaAs MMIC amplifier is a low-cost, high-performance solution for general purpose RF and microwave amplification needs. This 50Ω gain block is based on a reliable HBT proprietary MMIC design, providing unsurpassed performance for small-signal applications. Designed with an external bias resistor, the NBB-502 provides flexibility and stability. The NBB-502 is packaged in a low-cost, surface-mount ceramic package, providing ease of assembly for high-volume tape-and-reel requirements. It is available in either 1,000 or 3,000 piece-per-reel quantities.

Ordering Information

NBB-502	Cascadable Broadband GaAs MMIC Amplifier DC to 4GHz
NBB-502	Cascadable Broadband GaAs MMIC Amplifier DC to 4GHz
NBB-502-T1	Tape & Reel, 1000 Pieces
NBB-502-E	Fully Assembled Evaluation Board
NBB-X-K1	Extended Frequency InGaP Amp Designer's Tool Kit

Optimum Technology Matching® Applied

☐ GaAs HBT	☐ SiGe BiCMOS	☐ GaAs pHEMT	☐ GaN HEMT
☐ GaAs MESFET	☐ Si BiCMOS	☐ Si CMOS	
☑ InGaP HBT	☐ SiGe HBT	☐ Si BJT	

RF MICRO DEVICES®, RFMD®, Optimum Technology Matching®, Enabling Wireless Connectivity™, PowerStar®, POLARIS™ TOTAL RADIO™ and UltimateBlue™ are trademarks of RFMD, LLC. BLUETOOTH is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed for use by RFMD. All other trade names, trademarks and registered trademarks are the property of their respective owners. ©2006, RF Micro Devices, Inc.

7628 Thorndike Road, Greensboro, NC 27409-9421 · For sales or technical support, contact RFMD at (+1) 336-678-5570 or sales-support@rfmd.com.

Absolute Maximum Ratings

Parameter	Rating	Unit
RF Input Power	+20	dBm
Power Dissipation	300	mW
Device Current	70	mA
Channel Temperature	200	°C
Operating Temperature	-45 to +85	°C
Storage Temperature	-65 to +150	°C

Exceeding any one or a combination of these limits may cause permanent damage.

Caution! ESD sensitive device.

The information in this publication is believed to be accurate and reliable. However, no responsibility is assumed by RF Micro Devices, Inc. ("RFMD") for its use, nor for any infringement of patents, or other rights of third parties, resulting from its use. No license is granted by implication or otherwise under any patent or patent rights of RFMD. RFMD reserves the right to change component circuitry, recommended application circuitry and specifications at any time without prior notice.

RoHS status based on EU Directive 2002/95/EC (at time of this document revision).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					V_D=+3.9V, I_{CC}=35mA, Z_0=50Ω, T_A=+25°C
Small Signal Power Gain, S21	19.0	20.5		dB	f=0.1GHz to 1.0GHz
		19.0		dB	f=1.0GHz to 2.0GHz
	16.0	17.0		dB	f=2.0GHz to 4.0GHz
Gain Flatness, G_F		±0.8		dB	f=1.0GHz to 3.0GHz
Input and Output VSWR		1.55:1			f=0.1GHz to 4.0GHz
		1.50:1			f=4.0GHz to 6.0GHz
		1.55:1			f=6.0GHz to 10.0GHz
Bandwidth, BW		4.2		GHz	BW3 (3dB)
Output Power @ -1dB Compression, P1dB		13.0		dBm	f=2.0GHz
		14.0		dBm	f=6.0GHz
Noise Figure, NF		4.0		dB	f=3.0GHz
Third Order Intercept, IP3		+23.0		dBm	f=2.0GHz
Reverse Isolation, S12		-17.0		dB	f=0.1GHz to 10.0GHz
Device Voltage, V_D	3.6	3.9	4.2	V	
Gain Temperature Coefficient, $\delta G_T/\delta T$		-0.0015		dB/°C	
MTTF versus Temperature @ I_{CC}=35mA					
Case Temperature		85		°C	
Junction Temperature		109.4		°C	
MTTF		>1,000,000		hours	
Thermal Resistance					
θ_{JC}		179		°C/W	$\frac{J_T - T_{CASE}}{V_D \cdot I_{CC}} = \theta_{JC}(°C/Watt)$

7628 Thorndike Road, Greensboro, NC 27409-9421 · For sales or technical support, contact RFMD at (+1) 336-678-5570 or sales-support@rfmd.com.