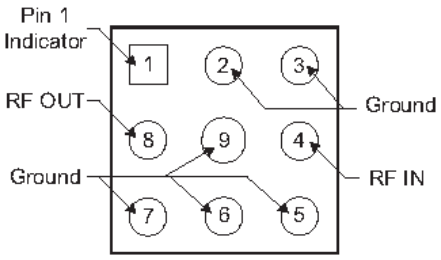
NBB-302

Cascadable Broadband GaAs MMIC Amplifier
DC to 12GHz

Package: MPGA, Bowtie,3x3, Ceramic

The NBB-302 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-302 provides flexibility and stability. The NBB-302 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 packaged or chip (NBB-300-D) form, where its gold metallization is ideal for hybrid circuit designs.



Functional Block Diagram

Features

- Reliable, Low-Cost HBT Design
- 12.0dB Gain, +13.7dBm P1dB at 2Ghz
- High P1dB of +14.0dBm at 6.0GHz and +11.0dBm at 14.0GHz
- Single Power Supply Operation
- 50Ω I/O Matched for High Frequency Use

Applications

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

Ordering Information

NBB-302	25 Piece bag
NBB-302-SB	5 Piece sample bag
NBB-302-SR	7” Reel with 100 pieces
NBB-302-T1	13” Reel with 1000 pieces
NBB-302-PCK	Populated evaluation board with 5 piece sample bag
NBB-X-K1	Extended Frequency InGaP Amp Designer’s Tool Kit

RF Micro Devices Inc. 7628 Thorndike Road, Greensboro, NC 27409-9421
DS131004
For sales or technical support, contact RFMD at +1.336.678.5570 or customerservice@rfmd.com.

Absolute Maximum Ratings

Parameter	Rating	Unit
RF Input Power	+20	dBm
Power Dissipation	300	mW
Device Current	70	mA
Channel Temperature	150	°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.

RFMD Green: RoHS compliant per EU Directive 2011/65/EU, halogen free per IEC 61249-2-21, <1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony solder.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

Nominal Operating Parameters

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					**V_D = +3.9V, I_{CC} = 50mA, Z_0 = 50Ω, T_A = +25°C**
Small Signal Power Gain, S21	12.0	13.5		dB	f = 0.1GHz to 1.0GHz
	11.0	13.0		dB	f = 1.0GHz to 4.0GHz
		12.5		dB	f = 4.0GHz to 6.0GHz
	9.0	10.5		dB	f = 6.0GHz to 12.0GHz
		9.5 (avg)		dB	f = 12.0GHz to 14.0GHz
Gain Flatness, GF		±0.6		dB	f = 0.1GHz to 8.0GHz
Input and Output VSWR		2.4:1			f = 0.1GHz to 4.0GHz
		2.0:1			f = 4.0GHz to 12.0GHz
		2.8:1			f = 12.0GHz to 15.0GHz
Bandwidth, BW		12.5		GHz	BW3 (3dB)
Output Power at -1dB Compression, P1dB		13.7		dBm	f = 2.0GHz
		14.8		dBm	f = 6.0GHz
		11.0		dBm	f = 14.0GHz
Noise Figure, NF		5.5		dB	f = 3.0GHz
Third Order Intercept, IP3		+23.5		dBm	f = 2.0GHz
Reverse Isolation, S12		-15		dB	f = 0.1GHz to 12.0GHz
Device Voltage, V_D	3.6	3.9	4.2	V	
Gain Temperature Coefficient, $\delta G_T/\delta T$		-0.0015		dB/°C	

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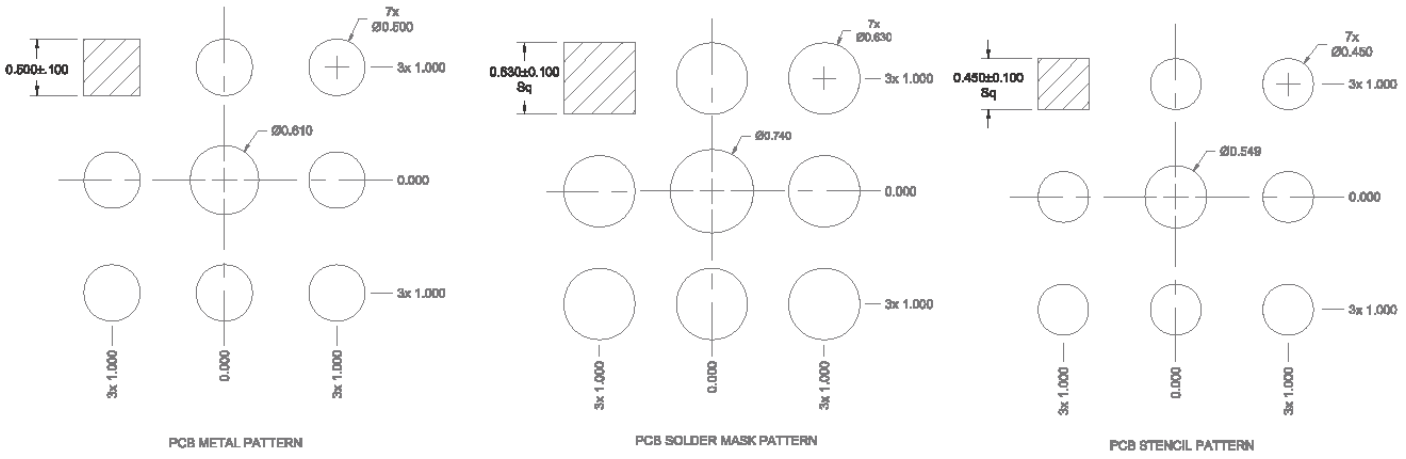
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
MTTF versus Temperature at I_{CC} = 50mA					
Case Temperature		85		°C	
Junction Temperature		122.9		°C	
MTTF		>1,000,000		hours	
Thermal Resistance					
θ_{JC}		194		°C/W	$\frac{J_T - T_{CASE}}{V_D \cdot I_{CC}} = \theta_{JC}(°C/Watt)$

Recommended PCB Layout



Mouser Electronics

Authorized Distributor

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Qorvo:

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