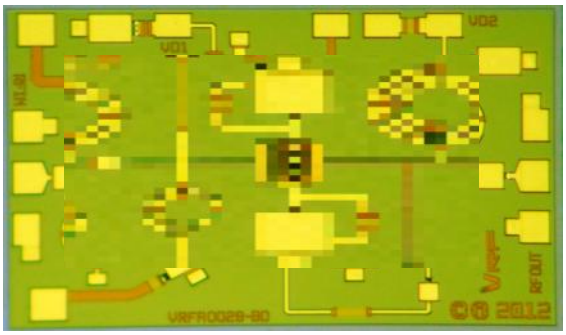
VRFA0028-BD

10-16GHz GaAs MMIC Low Noise Amplifier

Preliminary Datasheet v2

Features



- Frequency Range: 10 to 16 GHz
- Single supply 3V, 70mA self bias
- 1.1dB Noise Figure @ 13GHz typical
- 21dB small signal gain
- Rugged RFin handling capability
- 50Ω matched RF ports
- Die size: 1.5mm x 1mm

Description

The VRFA0028-BD is a low noise amplifier MMIC which operates over the frequency range of 10GHz to 16GHz. The circuit demonstrates a nominal 1.1dB noise figure at 13GHz with small signal gain of 21dB across the frequency band. The VRFA0028-BD draws 70mA from a +3VDC supply. The RF ports are DC blocked and matched to 50Ω. Typical applications for the VRFA0028-BD include point to point radios, VSAT, radar and test & instrumentation.

Electrical Specifications

T=+25°C baseplate, V_{DD} = +3V, Id=70mA

Parameter	Specification			Unit
	Max.	Typ. @13GHz	Min.	
Frequency Bandwidth	10		16	GHz
Small Signal Gain		21		dB
Noise Figure		1.1		dB
I/P Return Loss		-20		dB
O/P return Loss		-10		
P1dB Ouput Power		14		dBm

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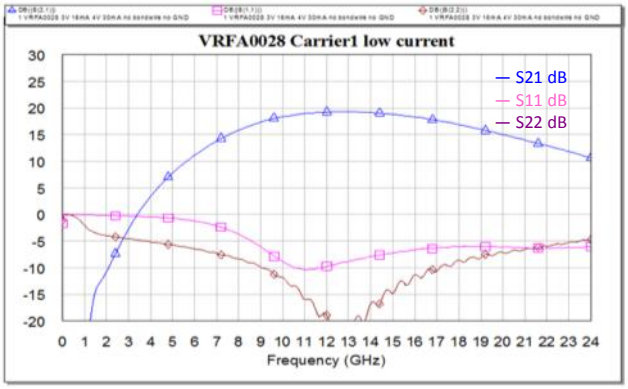
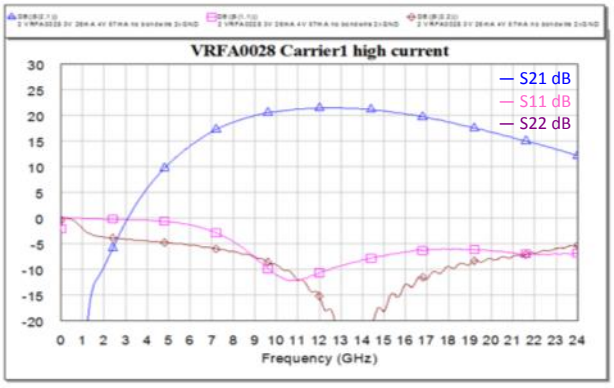
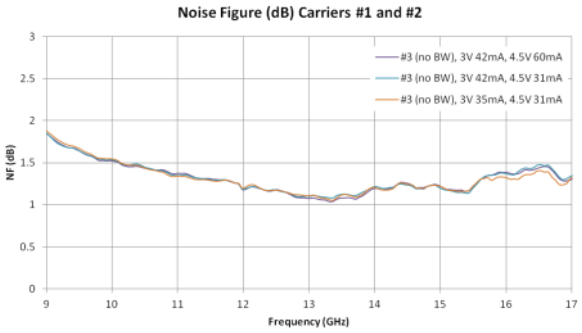
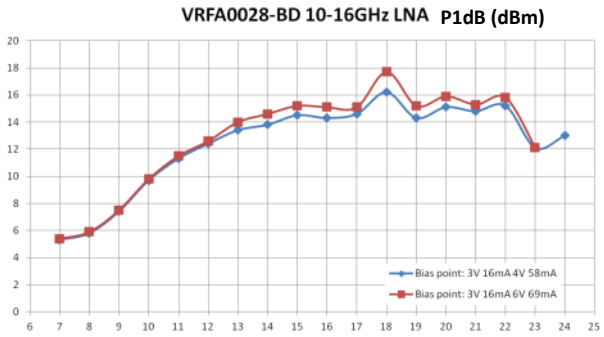
Measured Performance

T=+25°C baseplate, V_{DD} = +3V. The bias current may be changed by optionally connecting Sources 1 / 2 / 3 to Ground.









Recommended Absolute Maximum Ratings [1]

Parameter	Symbol	Value	Notes
Drain Bias Voltage	V_d	+4V	
Gate Bias Voltage	V_g	-5V	
Gate Current	I_g	50mA	
RF input power (Pulsed)	RF_{in}	28dBm	Tested under 20% 40us Recommended maximum is dependant
Junction Temperature	T_j	175°C	For maximum median device lifetime, T_j should be minimised
Storage temperature	$T_{storage}$	-55 to 150°C	

[1] Operation outside these conditions may cause permanent damage to the device. Combination of maximum rating conditions may reduce the values. Device performance at these ratings is not implied.

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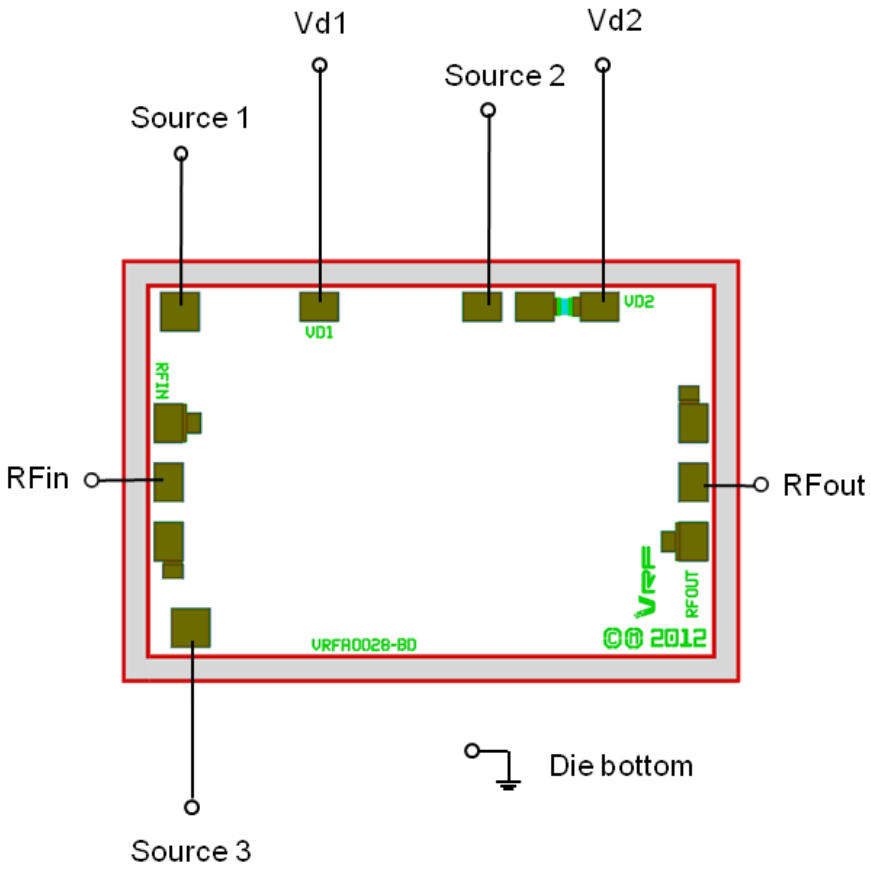
Assembly & Bonding Diagram



PAD	CONNECTION
Vd1, Vd2	Device is self-biased, both connections are required
Source 1/2/3	Optional Connections to GND modifying the bias point, to adjust gain/NF/compression
Die bottom	GND

Die Size	1.5mm x 1.0mm
Die Thickness	100µm
Minimum Bondpad opening	70µm x 70µm

Minimal length (0.15nH) are recommended for RF bondwires. The RF input and output ports are DC blocked.

GaAs devices are ESD sensitive and precautions should be observed during storage, handling, assembly and testing.