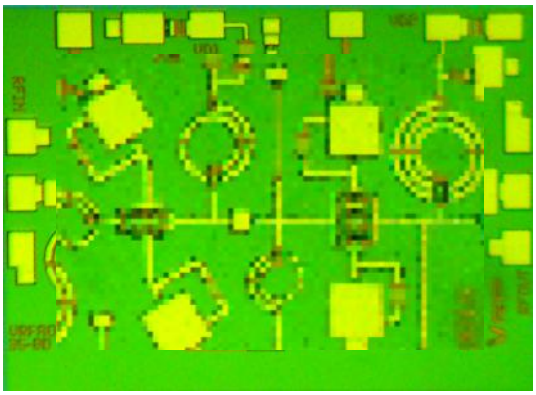
VRFA0035-BD

6-18GHz GaAs MMIC Low Noise Amplifier

Advance Product Information v2

Features



- Frequency Range: 6 to 18 GHz
- Single supply 3V, 75mA self bias
- 20dB small signal gain
- Rugged RFin handling capability
- 50Ω matched RF ports
- Engineering Sample Die Size: 1.5 x 1.1 x 0.05 mm
- Production Die Size: 1.5 x 1 x 0.05 mm

Description

The VRFA0035-BD is a low noise amplifier MMIC which operates over the frequency range of 6GHz to 18GHz. The device demonstrates a small signal gain of 20dB across the frequency band. The VRFA0035-BD draws 75mA from a +3VDC supply, the current can be adjusted between 50mA and 105mA through optional connection of sources to Ground. The RF ports are DC blocked and matched to 50Ω. Typical applications for the VRFA0035-BD include point to point radios, VSAT, radar and test & instrumentation.

Electrical Specifications

T=+25°C baseplate, V_{DD} = +3V, Id=75mA

Parameter	Specification			Unit
	Max.	Typ.	Min.	
Frequency Bandwidth	6		18	GHz
Small Signal Gain		19		dB
Noise Figure		1.2		dB
I/P Return Loss		-4.2		dB
O/P return Loss		-6.5		dB
P1dB Output Power		10		dBm

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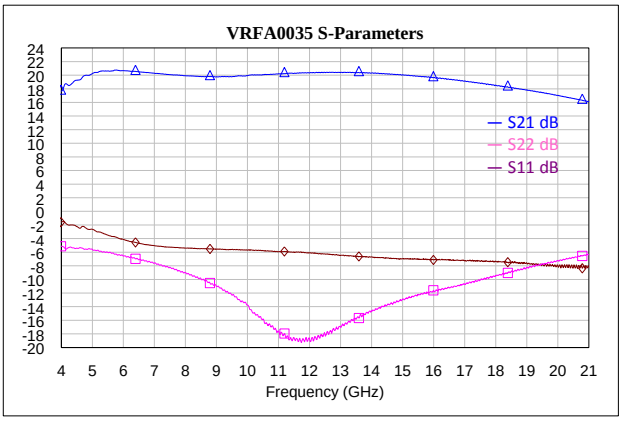
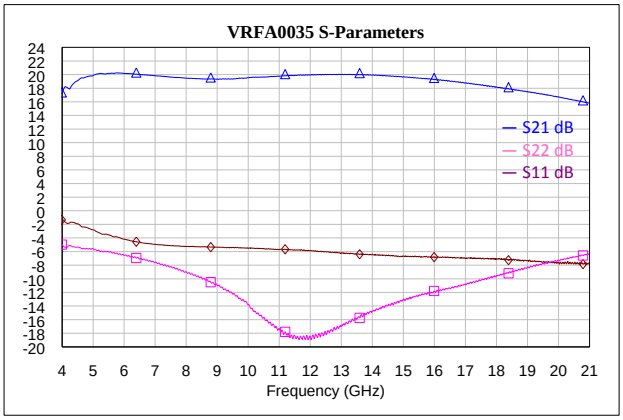
Measured Performance

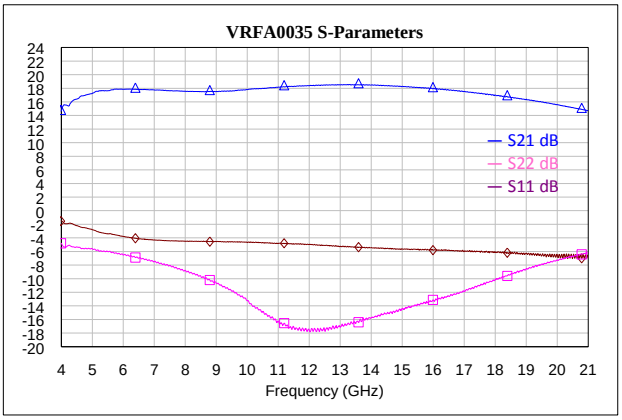
T=+25°C baseplate, V_{DD} = +3V. The bias current can be changed by optionally connecting Sources 1 / 2 / 3 to Ground.



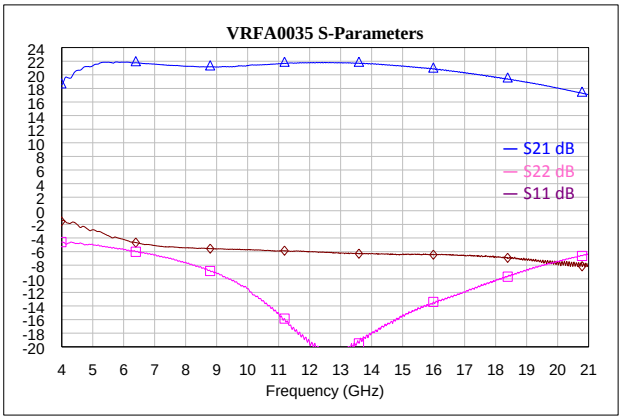
Id = 73mA, Source1 and Source2 Grounded



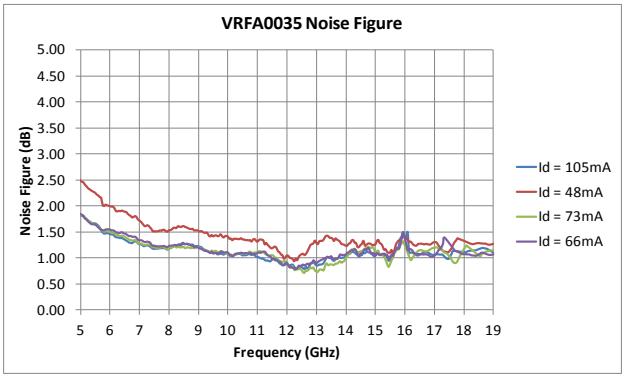
Id = 66mA, Source1 Grounded

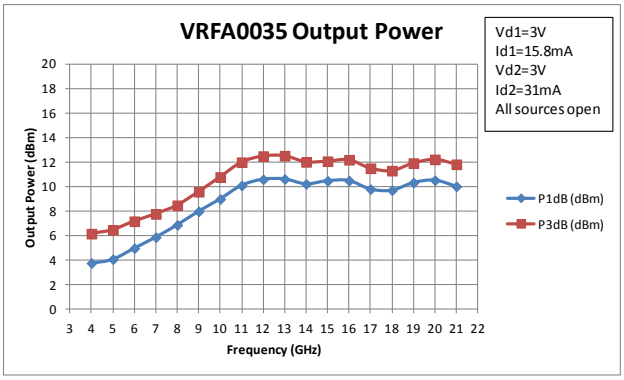


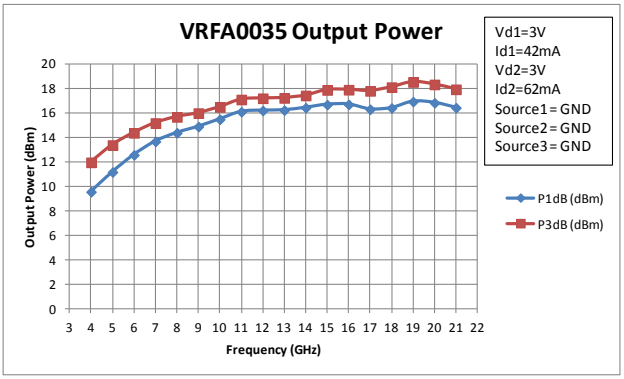
Id = 47mA, All Sources Open

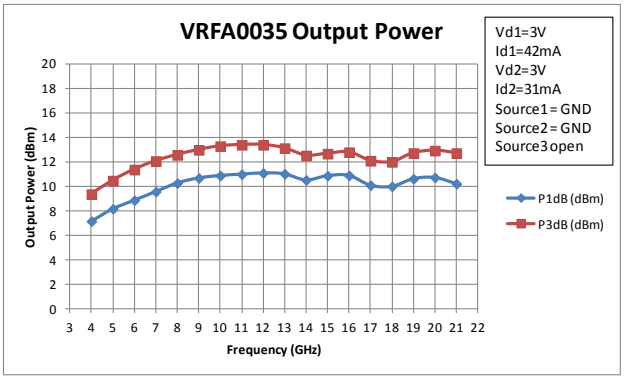


Id = 105mA, All Sources Grounded









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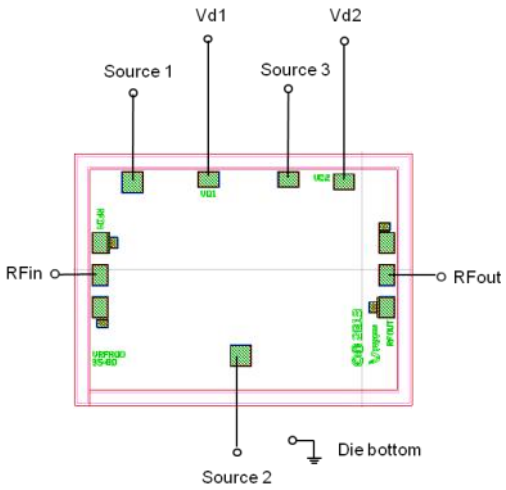
Recommended Absolute Maximum Ratings [1]

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}	Tbc (estimate 28dBm)	Test under 20% 40us Recommended maximum is dependant on bias
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.

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 1.1mm
Die Thickness	50µm
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.