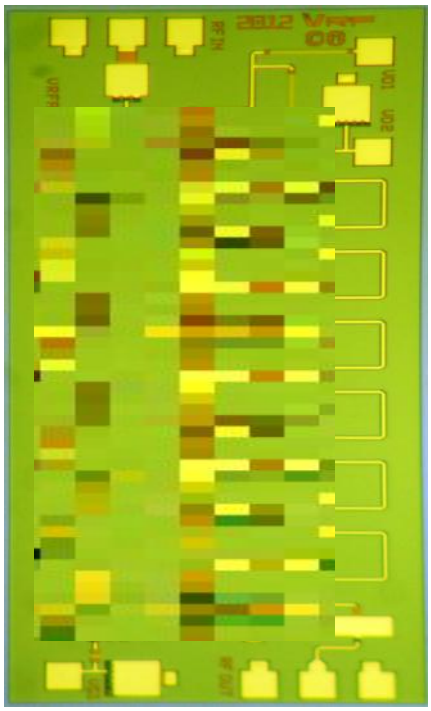
VRFA0031 - BD

2-20GHz GaAs MMIC Wideband Amplifier

Preliminary Datasheet v3

Features

- Frequency Range: 2 to 20GHz
- 14dB small signal Gain with a gain slope control of 6dB
- +18dBm P1dB Output power
- Bias: Vd = 8V, Idq = 110mA
- Die Size: 2.5mm x 1.5mm x 0.05mm



Description

The VRFA0031-BD is a wideband GaAs MMIC amplifier which operates over the frequency range of 2 to 20GHz. The amplifier typically delivers a small signal gain of 14dB with a positive gain slope of 6dB. The VRFA0031-BD draws 110mA from a +8VDC supply. The RF ports are DC blocked and matched to 50Ω. Typical applications for the VRFA0031-BD include EW systems, radar and Test and Instrumentation.

Electrical Specifications

T=+25°C baseplate, V_{DD} = +8V, Idq=110mA

Parameter	Specification			Unit
	Min	Typ	Max	
Frequency Bandwidth	2		20	GHz
Small Signal Gain		14		dB
I/P Return Loss		-10		dB
O/P Return Loss		-10		dB
Noise Figure		3 @ 12GHz		dB
P1dB Output Power @10V, 103mA		+18		dBm

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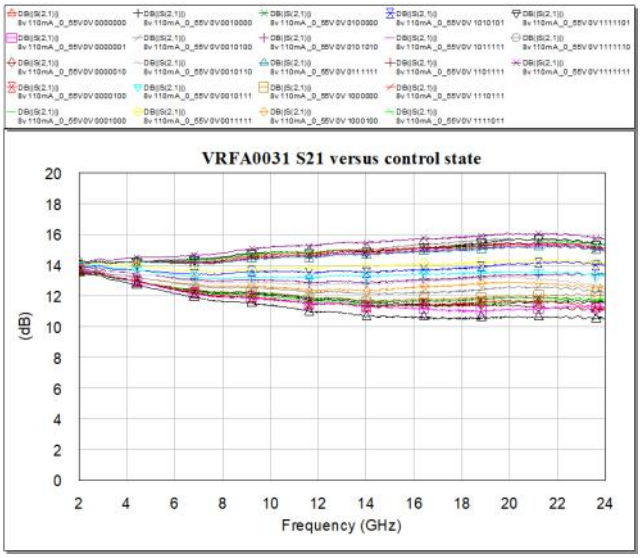
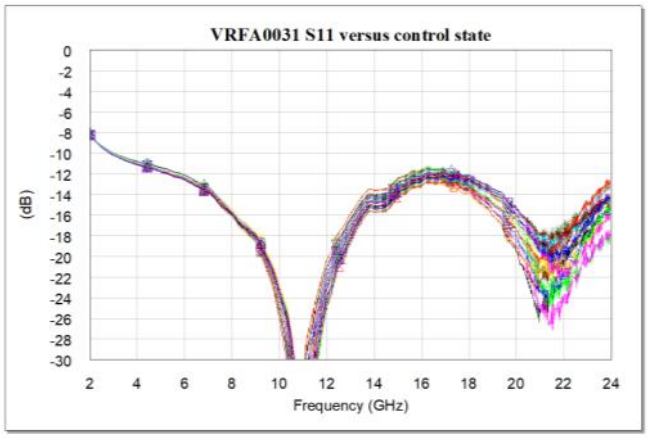
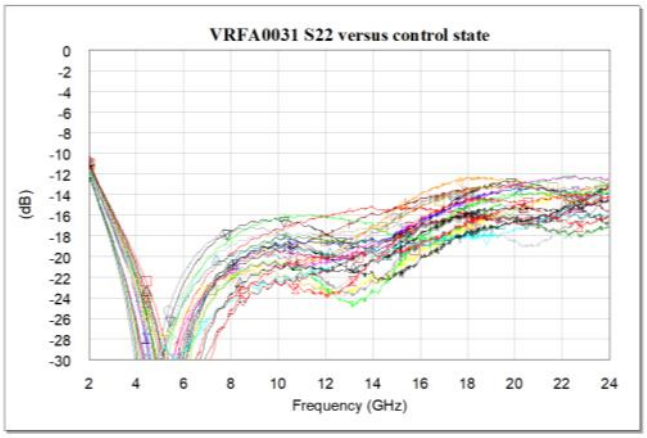
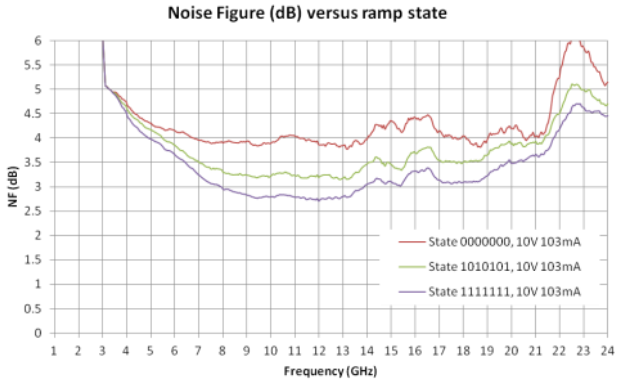
Measured Performance (on wafer)

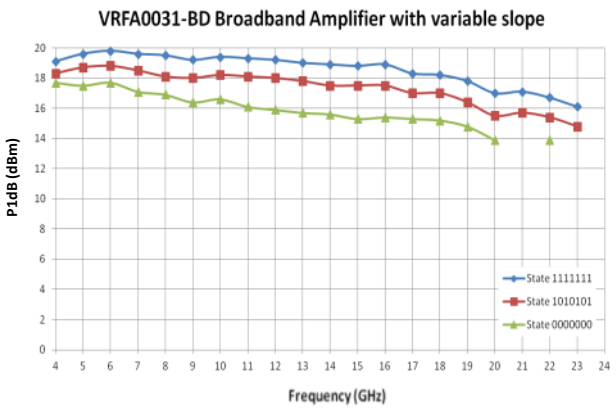
T=+25°C baseplate, V_{DD} = +10V, Idq=103mA











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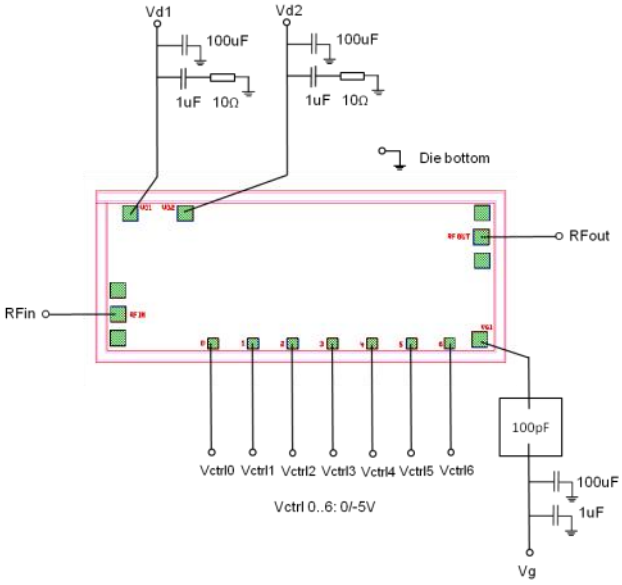
Recommended Absolute Maximum Ratings [1]

Parameter	Symbol	Value	Notes
Drain Bias Voltage	V_d	+10V	
Gate Bias Voltage	V_g	-5V	
Gate Current	I_g	5mA	
RF input power	RF_{in}	+5dBm	
Power Dissipation	P_d		Related to Junction Temperature
Junction Temperature	T_j	200°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



Note: The control voltages, Vctrl0 to Vctrl6, are used to control the gain slope.

The voltage levels are 0/-5V.

Die Size	2.5mm x 1.5mm
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.