

VRF250DV3 - BD



E-Band 81-86GHz GaAs MMIC Low Power Amplifier

Preliminary Datasheet v2

Features

- Frequency Range: 81 to 86GHz
- Saturated Output Power 17.5dBm CW typical
- Small Signal Gain 20dB
- Bias: $V_d = 4V$
- Die Size: 2.5mm x 1mm x 0.05 mm



Description

The VRF250DV3-BD is a GaAs MMIC driver amplifier which operates over the frequency range of 81 to 86GHz. The amplifier typically delivers a small signal gain of +20dB, output power P1dB of +17.5dBm CW typical. The RF ports are DC blocked and matched to 50Ω. Typical applications for the VRF250DV3-BD include point-to-point communications.

Electrical Specifications

$T = +25^{\circ}C$ baseplate, $V_{DD} = +4V$

Parameter	Specification			Unit
	Max.	Typ.	Min.	
Frequency Bandwidth	81		86	GHz
Small Signal Gain		20		dB
Output power for 1dB Compression (P1dB)		16		dBm
Saturated Output Power (Psat)		17.5		dBm
I/P Return Loss		-15		dB
O/P Return Loss		-9		dB

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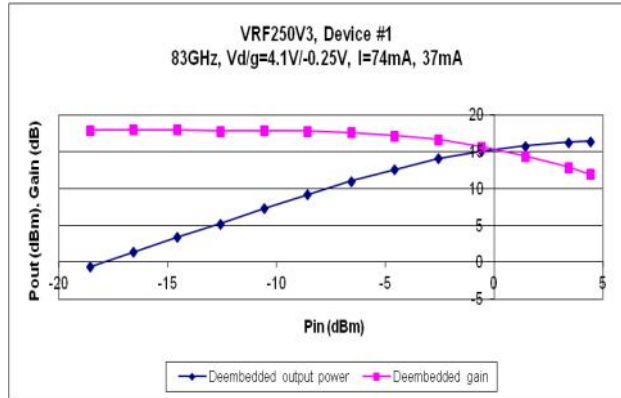
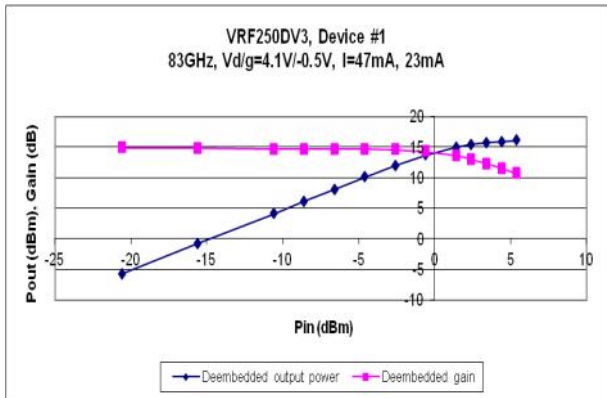
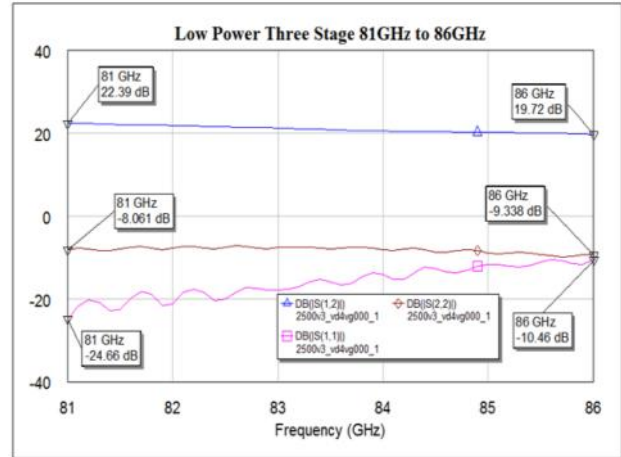
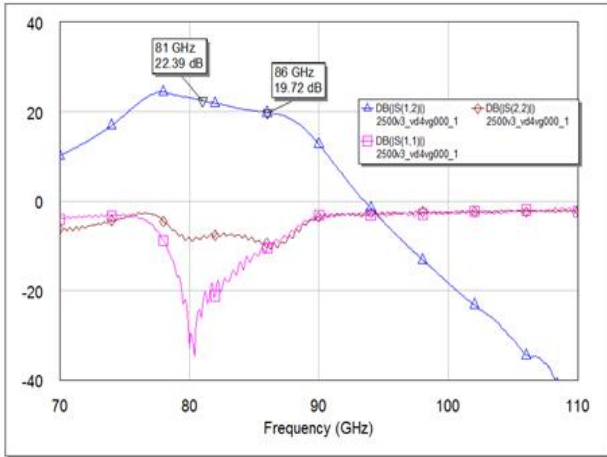


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Measured Performance (on wafer)

$T=+25^{\circ}\text{C}$ baseplate, $V_{DD} = +4\text{V}$



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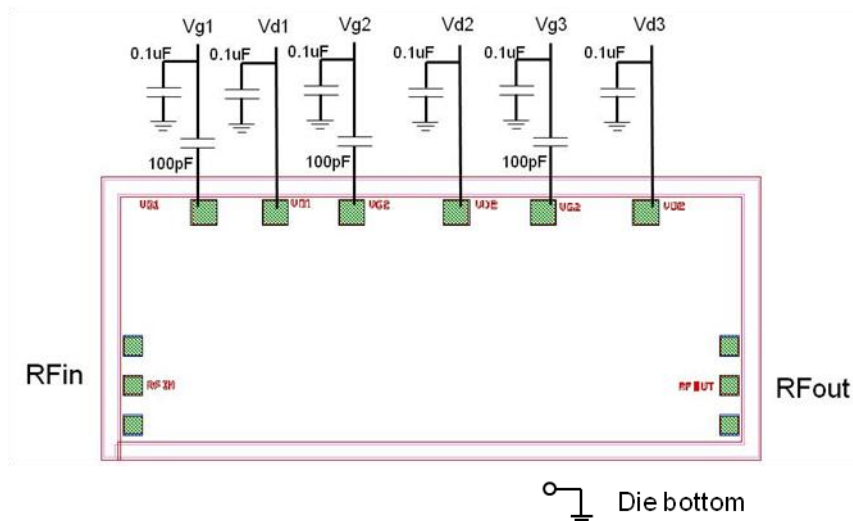
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Recommended Absolute Maximum Ratings ^[1]

Parameter	Symbol	Value	Notes
Drain Bias Voltage	V_d	+8V	
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



Die Size	2.5mm x 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.

