

VRFA0042V3 - BD

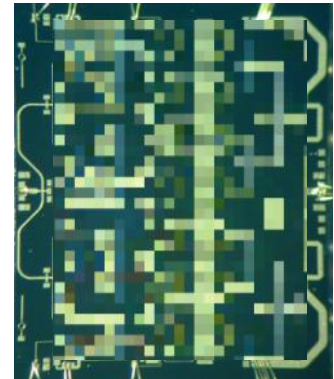


X-Band 17W GaAs MMIC High Power Amplifier

Preliminary Datasheet v1.0

Features

- Frequency Range: 8 to 11 GHz
- Saturated CW Output Power > 17W
- Saturated Efficiency 35% typ
- Bias: $V_d = 8V$, $I_{dq} = 4A$
- Die Size: 5 x 5.95 x 0.1 mm



Description

The VRFA0042V3-BD is a 17W CW GaAs high power amplifier MMIC which operates over the frequency range of 8GHz to 11GHz. The amplifier typically delivers a small signal gain of +22dB, saturated output power P_{sat} of +42dBm with a typical efficiency of 35%. The VRFA0042V3-BD draws 4A from a +8VDC supply. The RF ports are DC blocked and matched to 50Ω. Typical applications for the VRFA0042V3 include radar and test & instrumentation.

Electrical Specifications

$T = +25^{\circ}C$ baseplate, $V_{DD} = +8V$, $I_{dq} = 4A$

Parameter	Specification			Unit
	Max.	Typ.	Min.	
Frequency Bandwidth	8.5		11	GHz
Small Signal Gain		22		dB
Saturated Output Power (P_{sat})		42.5		dBm
I/P Return Loss		-10		dB
Power Added Efficiency (PAE)		38		%

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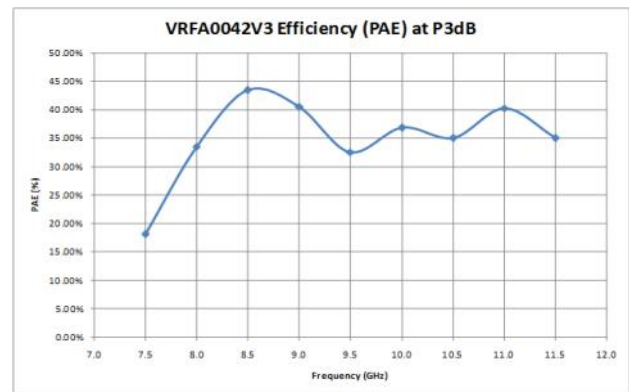
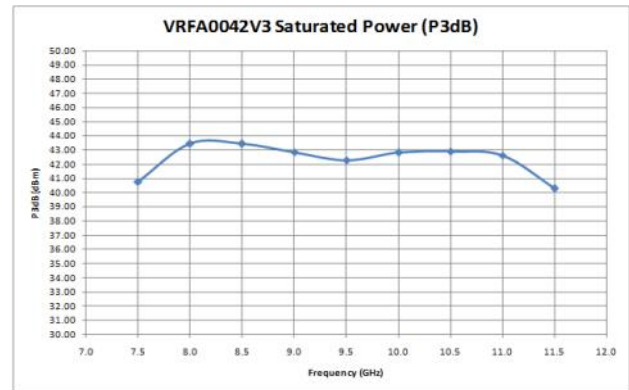
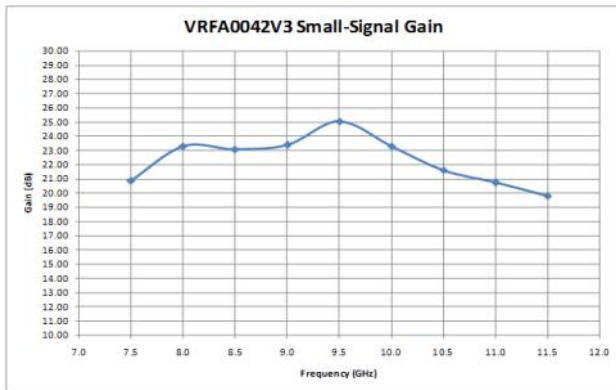


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Measured Performance

$T=+25^{\circ}\text{C}$ baseplate, $V_{DD}=+8\text{V}$, $I_{dq}=4\text{A}$



Recommended Absolute Maximum Ratings [1]

Parameter	Symbol	Value	Notes
Drain Bias Voltage	Vd	+10V	
Gate Bias Voltage	Vg	-5V	
Gate Current	Ig	50mA	
RF input power	RFin	25dBm	
Power Dissipation	Pd		Related to Junction Temperature
Junction Temperature	Tj	200°C	For maximum median device lifetime, Tj should be minimised
Operating temperature	Tstorage	-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.

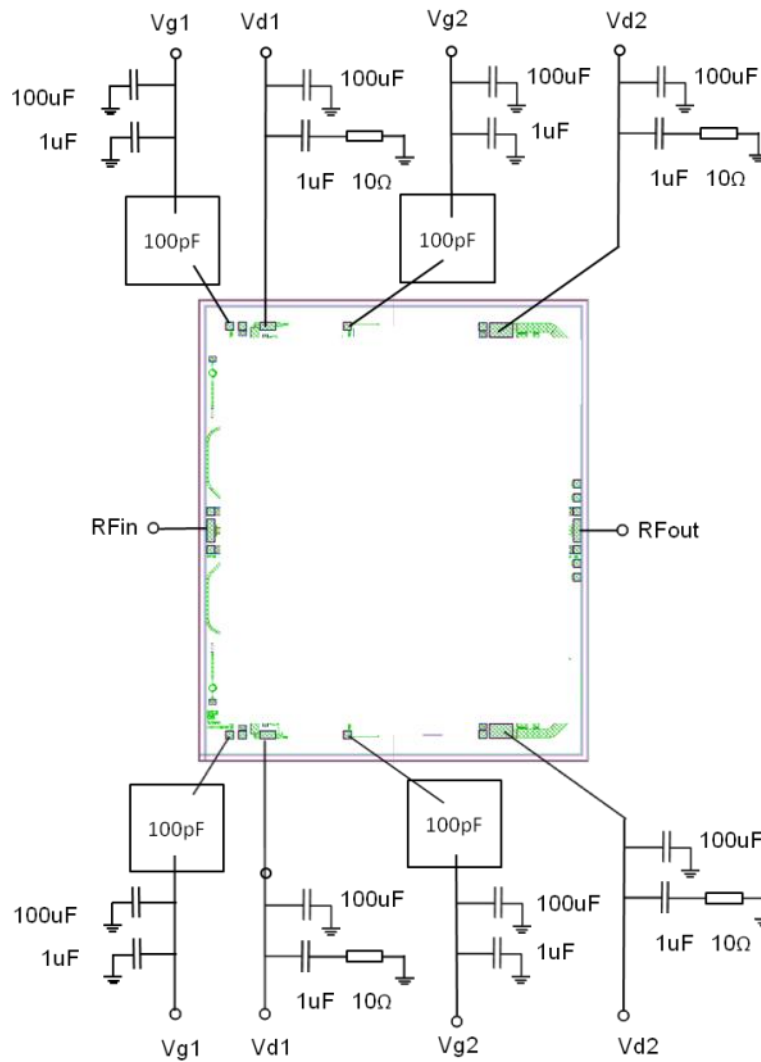
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Assembly & Bonding Diagram



Die Size	5mm x 5.95mm
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.

