

General Description

The VWA 5000048 AA is a low noise amplifier MMIC operating in the frequency range 8 to 12 GHz.

The device has a noise figure of 1.1 dB with a minimum gain of 32 dB.

It is manufactured on a PHEMT Technology and is especially suited for radar and for telecommunication applications.

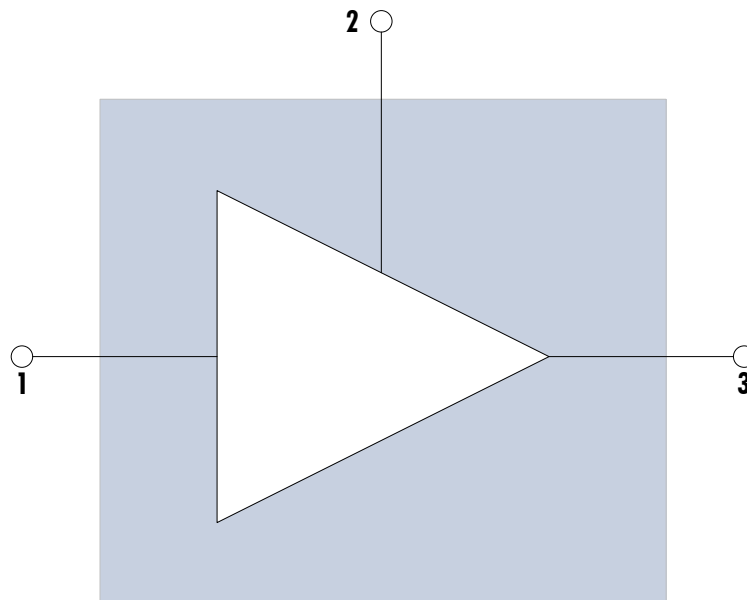
Features

- Low Noise pHEMT GaAs Amplifier
- Noise Figure: 1.1 dB
- Wide band : 8 to 12 GHz
- Gain > 32 dB
- Gain Flatness : +/- 0.8 dB
- Input Return Loss: 12 dB
- Output Return Loss: 12 dB
- Power supply: 55mA @ +5 V
- 2,4 x 1,56 x 0.1 mm

Applications

- Telecommunications
- Radar
- Test and measurement

Pins Assignment & Functional Block Diagram



Symbol	Pad N°
RF In	1
V _D	2
RF Out	3

Electrical Specifications

• $T_{amb.} = +25^{\circ}\text{C}$

• $V_D = +5\text{V}$

Symbol	Parameter	Min	Typ	Max	Unit
F	Frequency Range	8		12	Ghz
NF	Simulated Noise figure	1	1.1	1.3	dB
G	Small signal gain	32	33	34	dB
S11	Input return loss		-12		dB
S22	Output return loss		-12		dB
P_{1dB}	Output P1dB		10		dBm
I_D	Drain Current	45	55		mA
V_D	Drain voltage		5		V

Environmental parameters

Symbol	Parameter	Values	Unit
T_a	Operating temperature range	-55/+85	$^{\circ}\text{C}$
T_{stg}	Storage temperature range	-55/+150	$^{\circ}\text{C}$
$T_{process}$	Soldering temperature (max 20 secondes)	+300	$^{\circ}\text{C}$

Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit
V_D	Drain Voltage		6	V
I_D	Drain current		100	mA
P_{in}	RF input power		10	dBm
T_j	Junction temperature		150	$^{\circ}\text{C}$

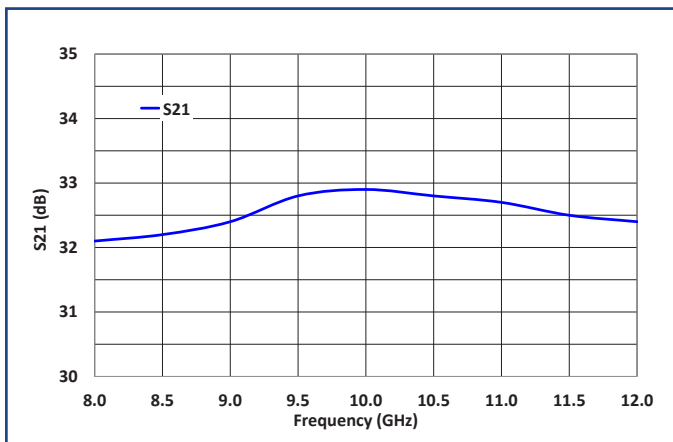
(*) R_{th} , thermal resistance from junction to backside : TBD.

Care should be taken to avoid supply transient and over voltage. Over voltage above the maximum specified in absolute maximum rating section may cause permanent damage to the device.

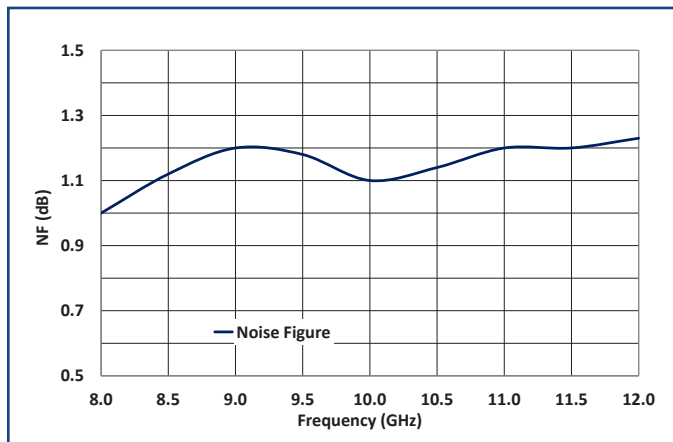
Typical Performance (Test under probes)

- $T_{amb.} = +25^{\circ}C$
- $V_D = +5V$
- $I_D = 55mA$

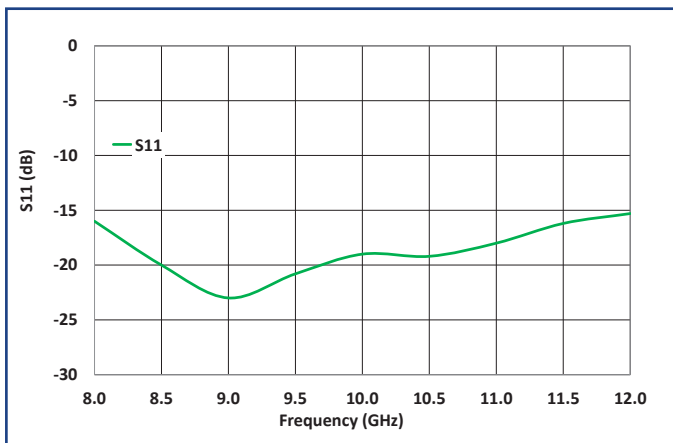
S21 (dB)



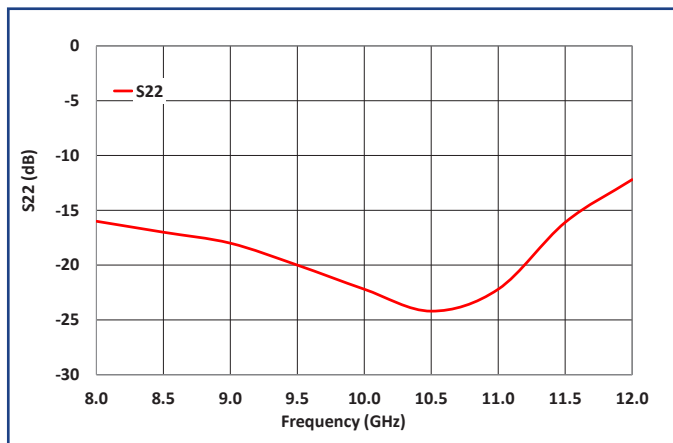
Noise Figure (dB)



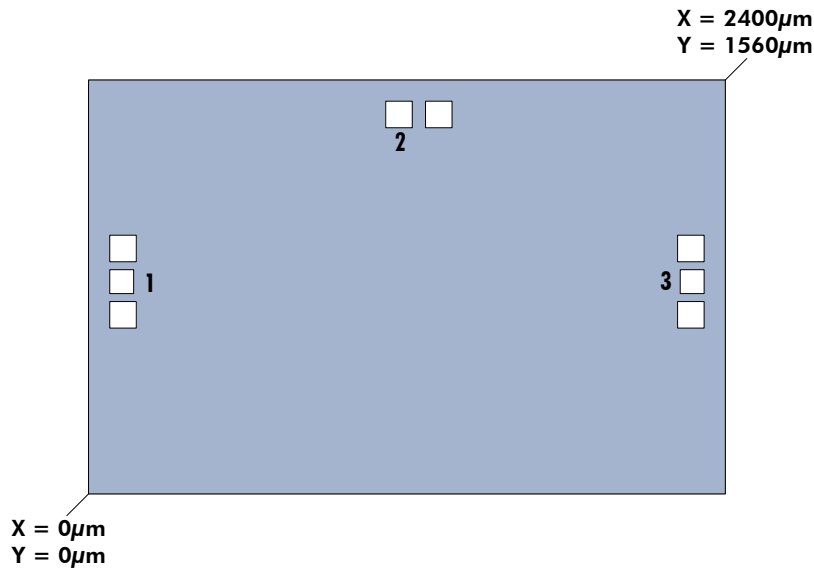
S11 (dB)



S22 (dB)



Die Layout



Pinout and Bonding Pad Coordinates

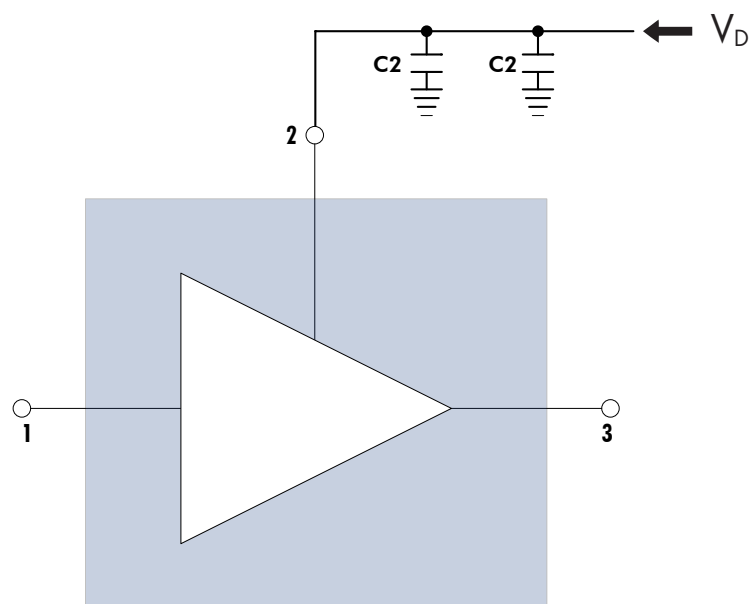
Die Pin Out				
Pad	X (µm)	Y (µm)	Size (µm x µm)	Function
1	125	800	90x90	RF Input
2	2275	760	100x100	V _D
3	1170	1430	75x75	RF Output

Die thickness = 100µm

Die bottom must be connected to ground (RF and DC)

Application Circuit

- C1= 47pF - Should be Mim capacitors close to the die
- C2 = 10nF



Ordering Information

Product Code	Definition
VWA 5000048 AA	8 to 12GHz - 32dB - 1.1dB NF

Associated Material

Material	Status
Packaged die	Contact factory
Die Evaluation Board (die EVB)	Contact factory
Packaged die Evaluation Board (packaged die EVB)	Contact factory
Mechanical files (DXF)	Contact factory
Measurements files (S2P)	Contact factory

Product Compliance Information

Solderability :

Use only AuSn (80/20) solder and limit exposure to temperature above 300 °C TO 3 - 4 minutes, maximum

ESD Sensitivity Rating :

Test : Human Body Model (HBM)
 Standard : JEDEC Standard JESD22-A114



CAUTION ! ESD-Sensitive device

RoHS-Compliance :

This part is compliant with EU 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A (C15H12Br4O2) Free
- PFOS Free
- SVHC Free

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about Vectrawave:

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