

## General Description

The VWA 0001150 AAAA is 3 stage Medium-Power Low-Noise amplifier MMIC operating in the frequency range 24 to 30 GHz.

The device is packaged in a 4x4 mm 24 lead Plastic Surface Mount Package (ROHS). This component uses VWA 5001174AA Vectrawave die.

The device has a linear gain of 26 dB and a typical noise figure of 2 dB. Output RF power is 20 dBm for a biasing current of 120 mA at 4V supply voltage.

It is manufactured with a 100nm pHEMT GaAs process and is especially suited for radar and for telecommunication applications.

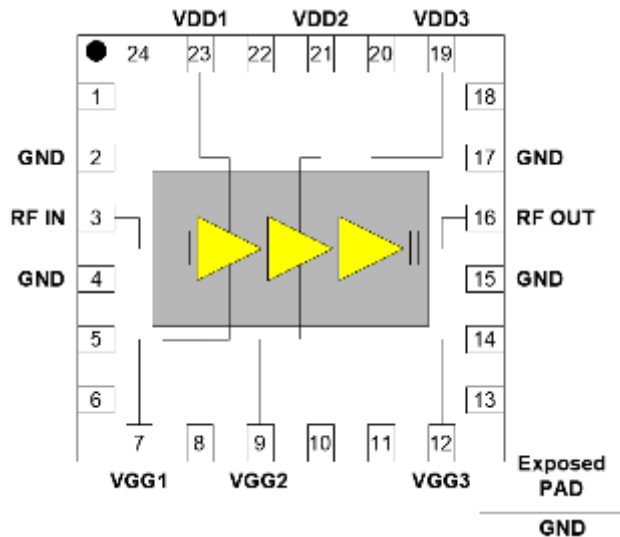
## Typical Features

- Operating frequency range: 24 to 30 GHz
- Gain: 26 dB
- Noise figure: 2.2 dB
- P1dB = 20dBm - Psat= 22dBm
- Gain Flatness: +/- 1 dB
- Input Return Loss: -10 dB typ.
- Output Return Loss: -10 dB typ.
- Power supply: 120 mA @ VDD=+4 V, VGG=-0.5V typ.
- Package Used: QFN 4x4 mm 24 Lead

## Applications

- Radar
- Test and Measurement
- Telecommunications

## Functional Block Diagram



## Electrical Specifications

Operating conditions unless otherwise noted:

- VDD=VDD1=VDD2=VDD3=+4V
- VGG=VGG1=VGG2=VGG3=-0.5V
- IDD=IDD1+IDD2+IDD3=120mA
- Tamb.= 25 ° C

Symbol	Parameter	Min	Typ	Max	Unit
F	Frequency range	24		30	GHz
G	Linear gain		26		dB
P1dB	Output power at 1dB gain compression		20		dBm
Psat	Output saturated power		22		dBm
NF	Noise Figure		2.2		dB
PAE	Power Added Efficiency		26		%
S11	Input Return loss		-10		dB
S22	Output Return loss		-12		dB
VDD1_2	Operating supply voltage		+4		V
IDD	Supply current		120		mA
VGG1/2/3	Gate voltage	-0.6	-0.5	-0.4	V

## Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit
VDD	Drain voltage		+8	V
IDD	Supply Current	0	190	mA
VGG	Gate Voltage	-2	0	V
Pin	CW Input Power		+10	dBm
Tst	Storage temperature	-55	+125	°C
Top	Operating temperature	-40	+85	°C
Tch	Channel temperature		+150	°C

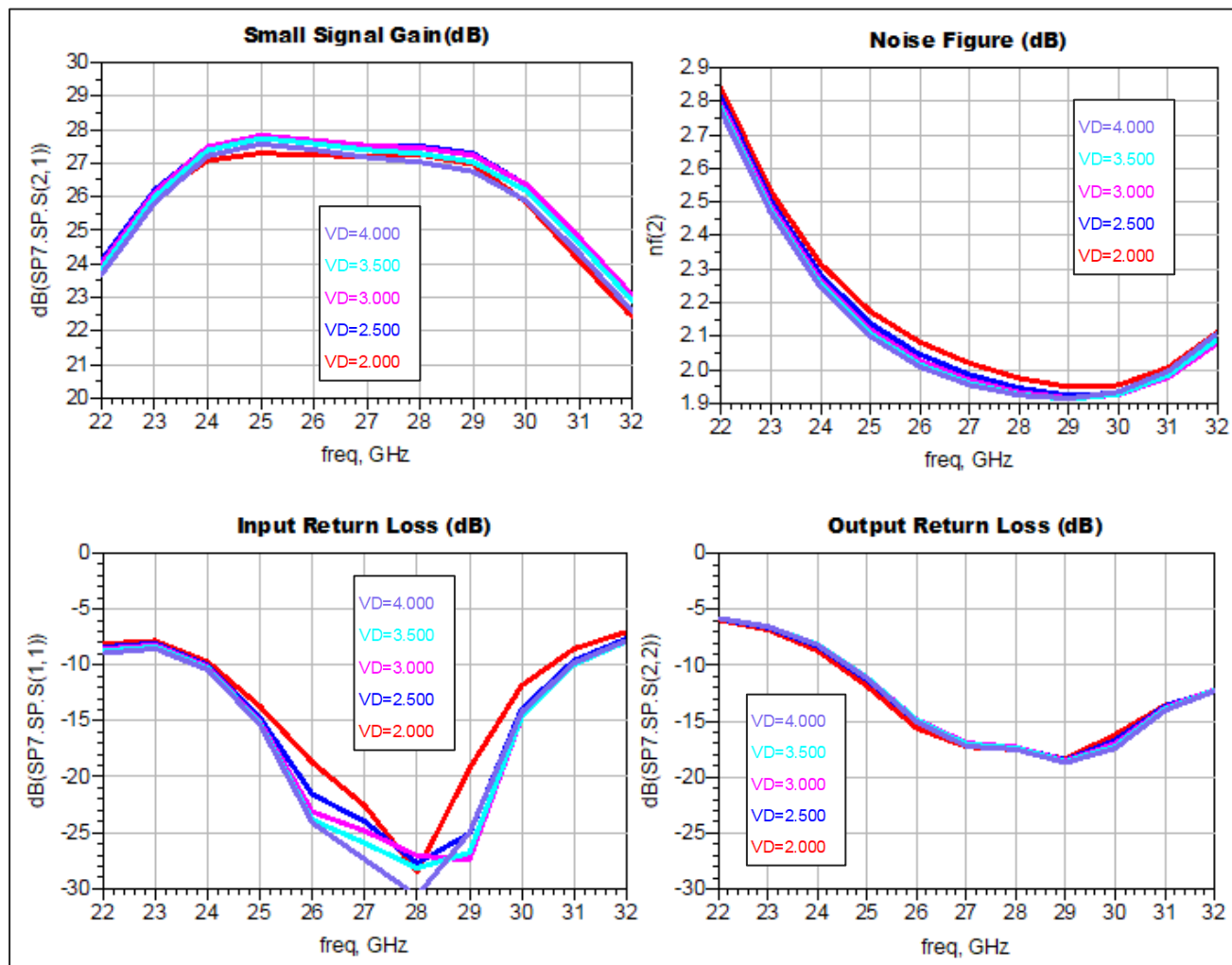
Operation of this device above any of these parameters may cause permanent damage.

### Typical Performance (Post-layout Simulations)

#### Small signal performances Versus Supply Voltage

Simulation conditions unless otherwise noted:

- VDD=VDD1=VDD2=VDD3=+4V
- VGG=VGG1=VGG2=VGG3=-0.5V
- $I_{DD}=I_{DD1}+I_{DD2}+I_{DD3}=120\text{mA}$
- $T_{amb.}=25^\circ\text{C}$

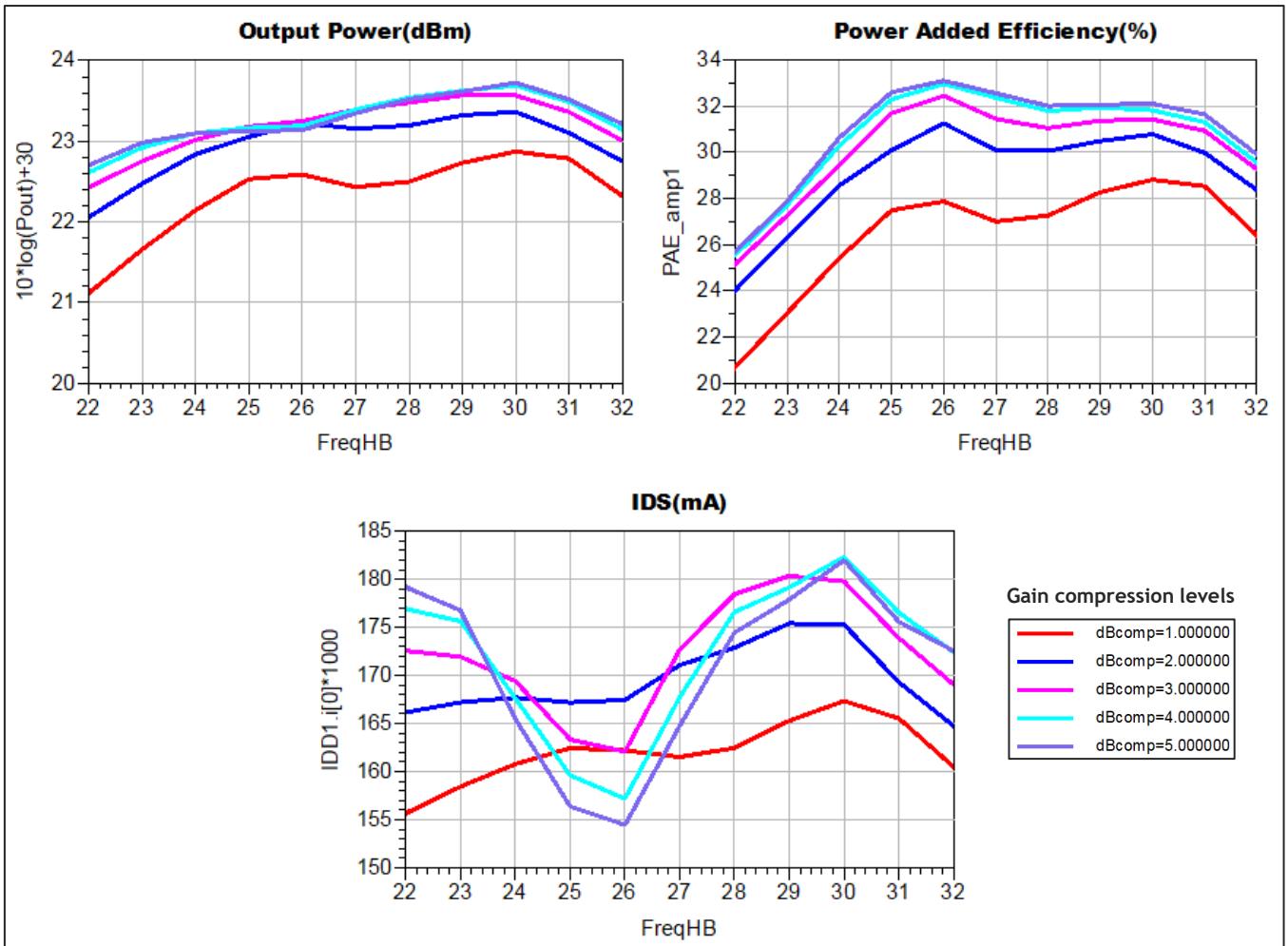


Typical Performance (Post-layout Simulations)

Large signal performances Versus Supply Voltage

Simulation conditions unless otherwise noted:

- VDD=VDD1=VDD2=VDD3=+4V
- VGG=VGG1=VGG2=VGG3=-0.5V
- Tamb.= 25 ° C

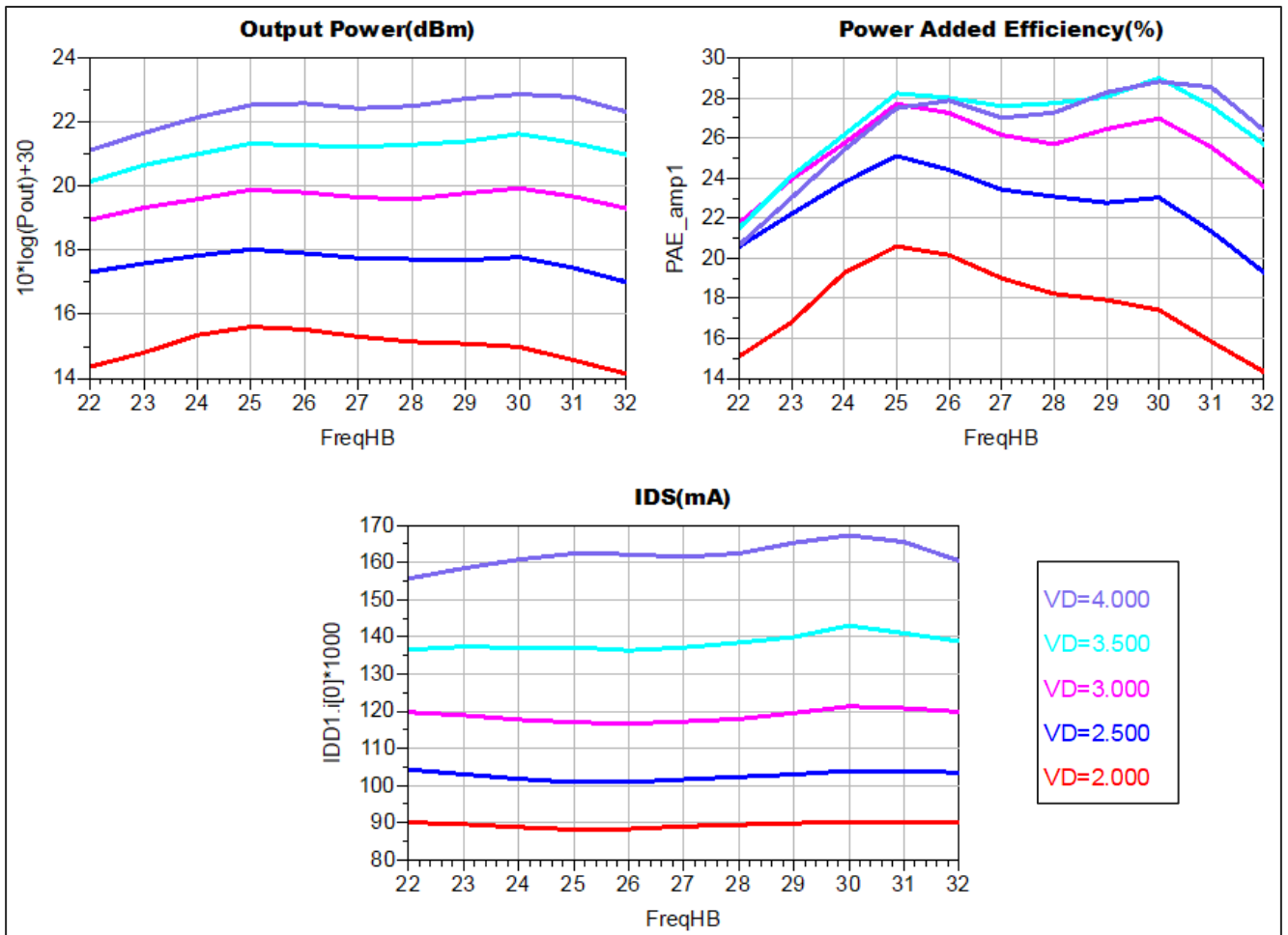


Typical Performance (Post-layout Simulations)

Large signal performances Versus VDD - at 1dB gain compression

Simulation conditions unless otherwise note:

- VDD=+2.0V to + 4V, VGG=-0.5V typ.
- Tamb.= 25 ° C

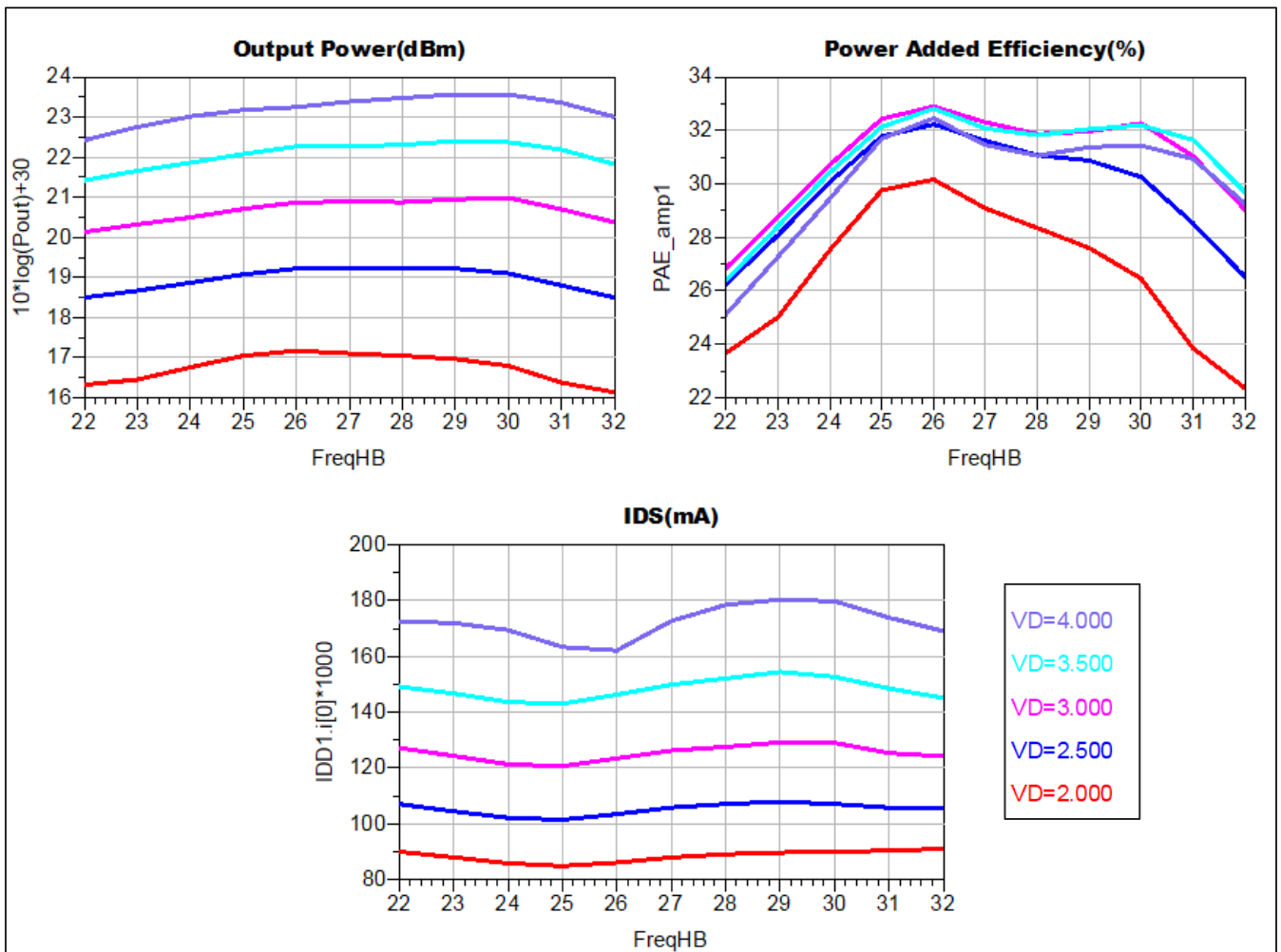


Typical Performance (Post-layout Simulations)

Large signal performances Versus VDD - at 3dB gain compression

Simulation conditions unless otherwise note:

- VDD=+2.0V to + 4V, VGG=-0.5V typ.
- Tamb.= 25 ° C



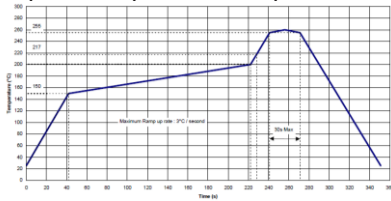
Ordering Information	
Product Code	Definition
VWA 0001150 AA	24-30GHz Medium Power Noise Amplifier

Associated Material	
Material	Status
Packaged die Evaluation Board (packaged die EVB)	Contact factory
Mechanical files (DXF)	Contact factory

### Product Compliance Information

#### Solderability:

Solder Stencil thickness: 127µm  
Solder: SAC 305 (ROHS)  
Temperature profile example:



#### 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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