

Typical Characteristics (Ambient temperature T= 25°C)

Operating conditions:

$$VD = VG1 = VD1 = VG2 = VD2 = +5V$$

$$\text{Typically } I_{\text{Total}} = IG1 + ID1 + IG2 + ID2 = 70\text{mA}$$

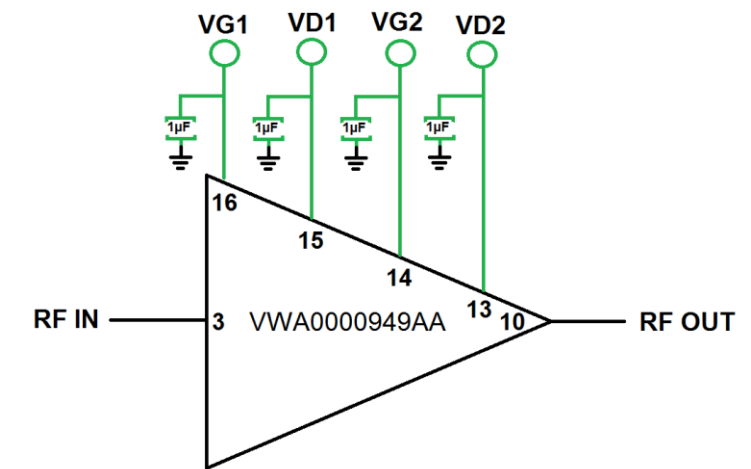
Measured parameters	Symbol	Min	Typ	Max	Unit
Frequency range	F	7		13	GHz
Linear gain	G		18		dB
Small signal gain flatness	ΔG		+/-1		dB
Noise Figure	NF		1.6		dB
Output power at 1dB compression	P1dBc		9		dBm
Input Reflection coefficient	S11		-14		dB
Output Reflection coefficient	S22		-12		dB
Operating supply voltage	VD1_2, VG1_2		5		V
Supply current	I_{Total}		70		mA

Absolute maximum ratings

Maximum ratings	Symbols	Min	Max	Units
Drain voltage	VD1_2		+6	V
Gate voltage	VG1_2		+6	V
Supply current	I_{Total}		90	mA
CW Input Power	Pin		+20	dBm
Storage temperature	Tst	-55	+125	°C
Operating temperature	Top	-40	+85	°C
Channel temperature	Tch		+150	°C

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

Application circuit



1µF : 0402 capacitor, must be placed as closed as possible to the QFN access

Pin description

Pin number	Name	Description	Electrical interface
3	RFin	AC coupled, amplifier input access. Internally matched 50 Ohms.	
10	RFout	AC coupled amplifier output access. Internally matched 50 Ohms.	
13, 15	VD2, VD1 (*)	1rst stage and second stage drain biasing access. External 1µF 0402 decoupling capacitor are required on each VD access if use independently.	
16, 14	VG2, VG1 (*)	1rst stage and second stage gate biasing access. External 1µF 0402 decoupling capacitor are required on each VG access if use independently.	
Exposed PAD	GND	Ground paddle must be connected to HF and DC Ground	
2, 4, 9, 11	GND	This PINS must be connected to HF and DC Ground	

(*) : if a single supply voltage is used for VD1, VG1, VG2, VD2, only one external 1µF 0402 decoupling capacitor is required for all the accesses.

Typical performances measurements (Ambient temperature T= 25°C)

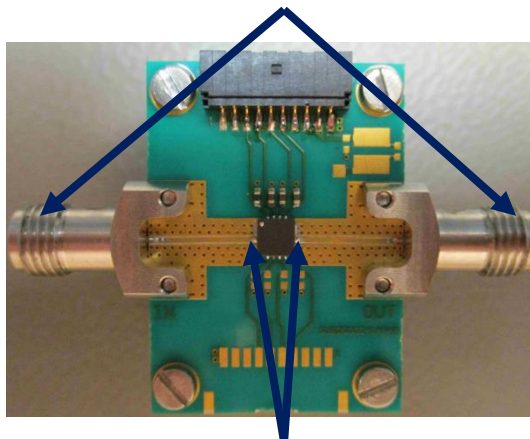
Operating conditions:

VD = VG1 = VD1 = VG2 = VD2 = +5V

Typically $I_{Total} = I_{G1} + I_{D1} + I_{G2} + I_{D2} = 70mA$

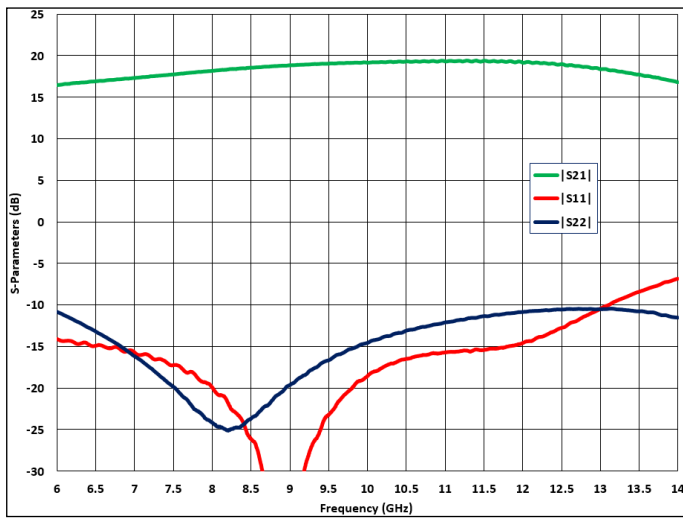
Measurement conditions : structure VWA0000951AA

Measurement at SMA connectors

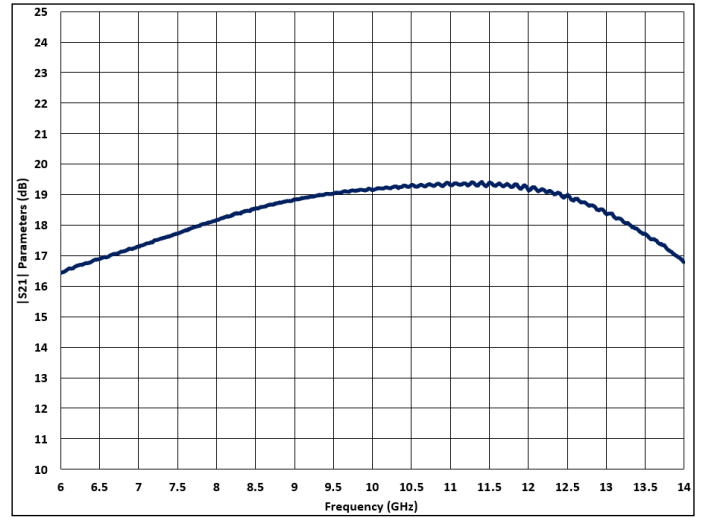


Measurement reference plane at the component.

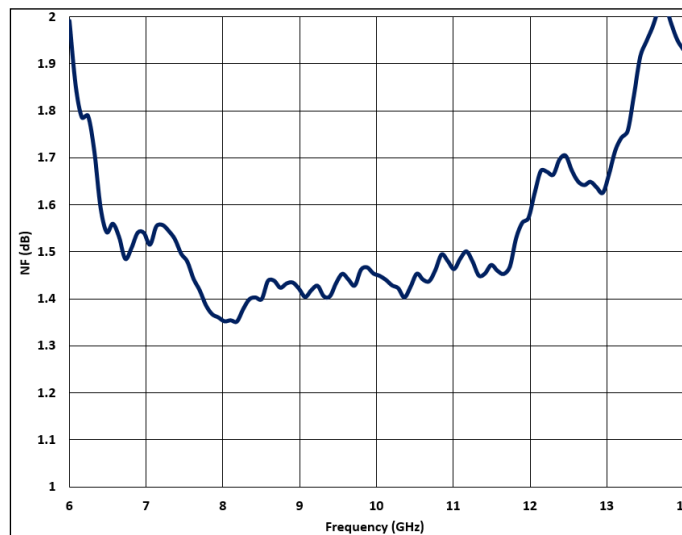
S-parameters (dB)



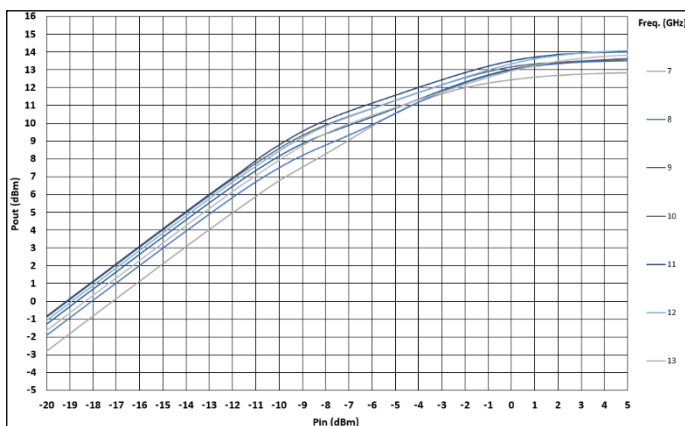
Gain (dB)



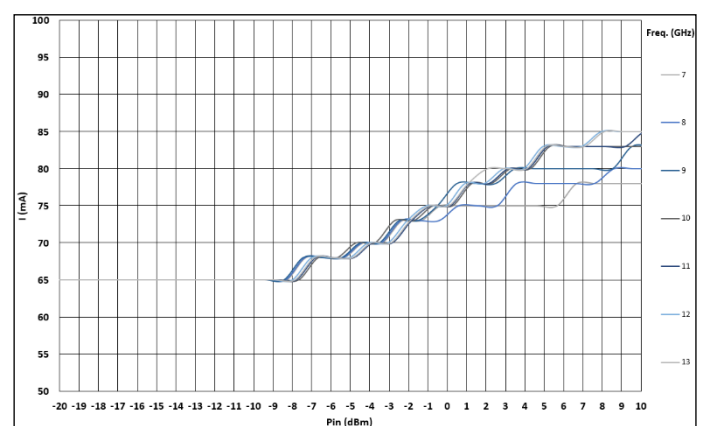
Noise Figure (dB):



Output power VS Input Power :



Total current VS Input power



Biassing

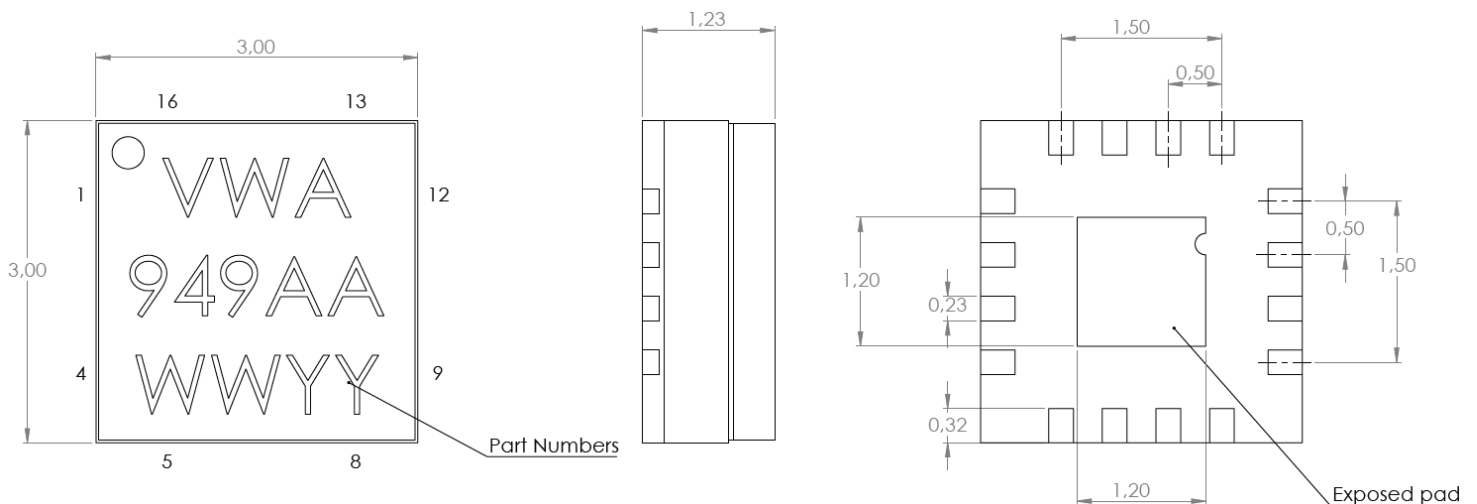
Switch on

1. Set VD1, VD2, VG1 and VG2 to +5V
2. optional: VG1 and VG2 can be tuned between 0V and +5V (will reduce supply current but will affect other electrical parameters)
3. Turn RF ON

Switch off

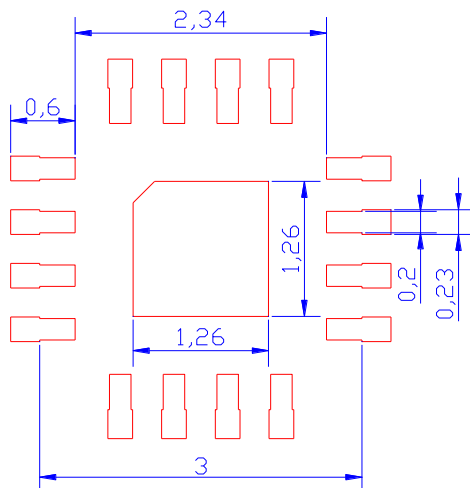
1. Turn RF OFF
2. Decrease VD1, VD2, VG1 and VG2 to 0V

Mechanical Drawing

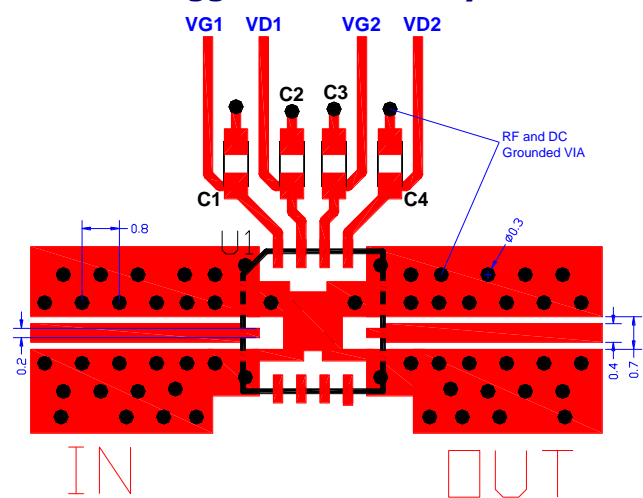


- QFN exposed PAD must be connected to ground (RF and DC).

Recommended Land pattern



Suggested Board Layout



C1, C2, C3, C4 : 0402 1 μ F/16V capacitor

Substrate : RO4350B, thickness 0.254mm

Soldering recommendation

Solder Stencil thickness : 127µm
 Solder : SAC 305 (ROHS)

Temperature profile example : maximum recommended reflow profile (leadfree)

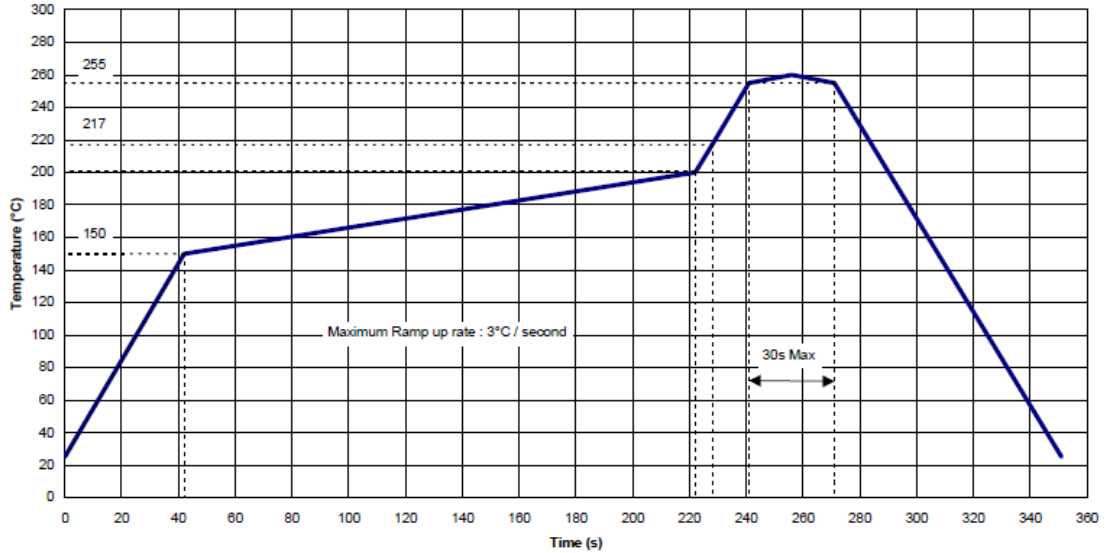


Figure 1: Temperature reflow profile example

Handling

This product is sensitive to electrostatic discharge and should not be handled except at a static free workstation. Take precautions to prevent ESD; use wrist straps, grounded work surfaces and recognized anti-static techniques when handling the **VWA 0000949 AA** device.

