

PW11A

InGaP HBT IF Gain Block Amplifier



Features

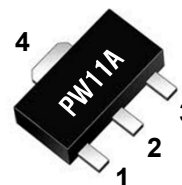
- ➔ 19.7 dB Gain at 140MHz
- ➔ 23.9 dBm P1dB at 140MHz
- ➔ 44 dBm Output IP3 at 70MHz
- ➔ Single 5.0V Supply Voltage
- ➔ Supply Current 80mA
- ➔ Lead-free / Green / RoHS-compliant SOT-89 Package



Applications

- ➔ Receive IF Amplifier
- ➔ Mobile Infrastructure
- ➔ Cellular, GSM
- ➔ PCS, WCDMA, WiBro, WiMax
- ➔ W-LAN / ISM
- ➔ RFID / Fixed Wireless

Functional Diagram



* Marking : PW11A

Function	Pin No.
RF IN	1
RF OUT / Bias	3
Ground	2,4

Description

The PW11A is a high performance InGaP HBT MMIC Amplifier and high linearity IF amplifier, housed in a standard SOT-89 package. The device features excellent Input and output return loss, highly linear performance. The device can be easily matched to obtain optimum power and linearity. The product is targeted for use as high OIP3 and P1dB performance for wireless infrastructure applications. The PW11A operates from a single +5.0 voltage supply and has an internal active bias. All devices are 100% RF and DC tested.

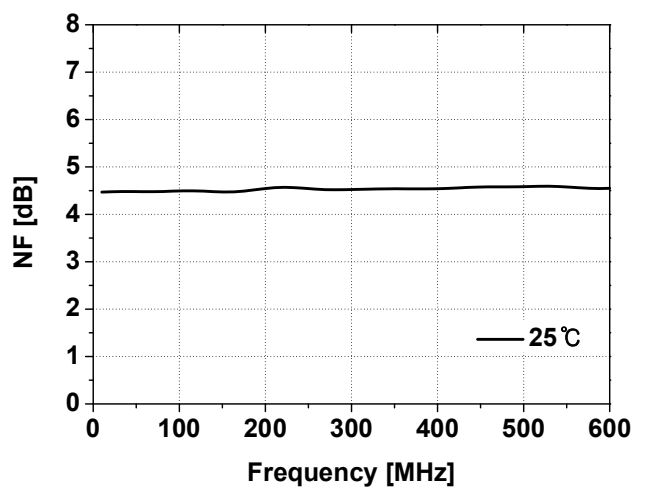
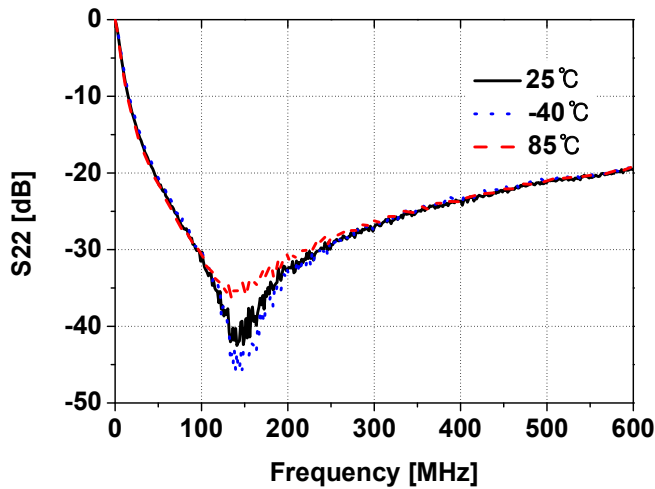
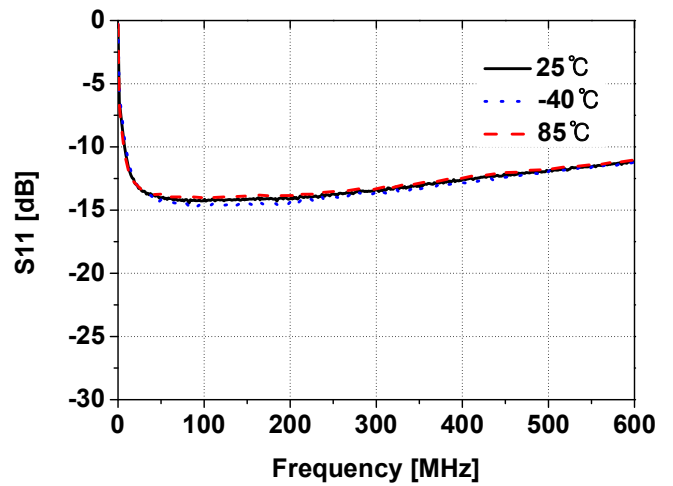
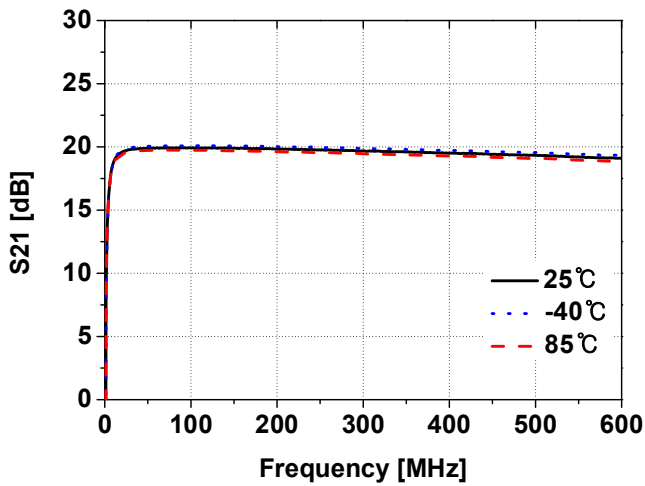
Specifications

Symbol	Units	Freq.	Min.	Typ.	Max.
S21	dB	70 MHz		19.7	
		140 MHz		19.7	
		250 MHz		19.5	
		500 MHz		19.1	
S11	dB	70 MHz		-14	
		140 MHz		-14	
		250 MHz		-13	
		500 MHz		-12	
S22	dB	70 MHz		-25	
		140 MHz		-40	
		250 MHz		-28	
		500 MHz		-21	
P1dB	dBm	70 MHz		23.5	
		140 MHz		24.0	
		250 MHz		24.2	
		500 MHz		24.0	
OIP3	dBm	70 MHz		44.0	
		140 MHz		43.4	
		250 MHz		41.6	
		500 MHz		41.2	
NF	dB	70 MHz		4.4	
		140 MHz		4.4	
		250 MHz		4.5	
		500 MHz		4.6	
Icc	mA		70	80	90
Vcc	V			5.0	
Rth	°C/W			65	

Test Conditions : T=25°C, Supply Voltage=+5V, 50ohm System, OIP3 measured with two tones at an output power of +8dBm/tone separated by 1MHz.

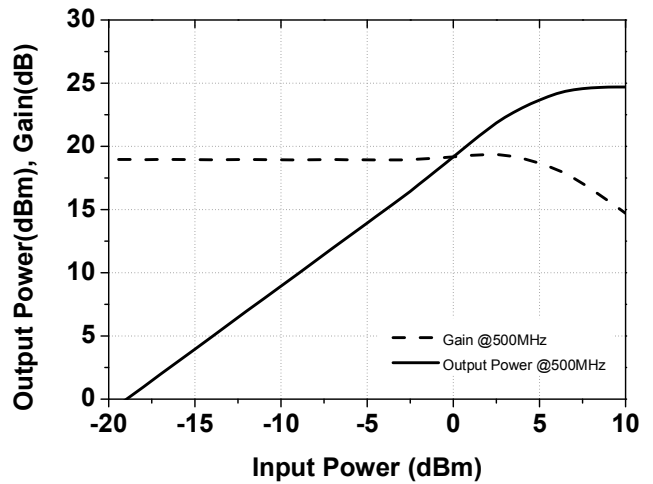
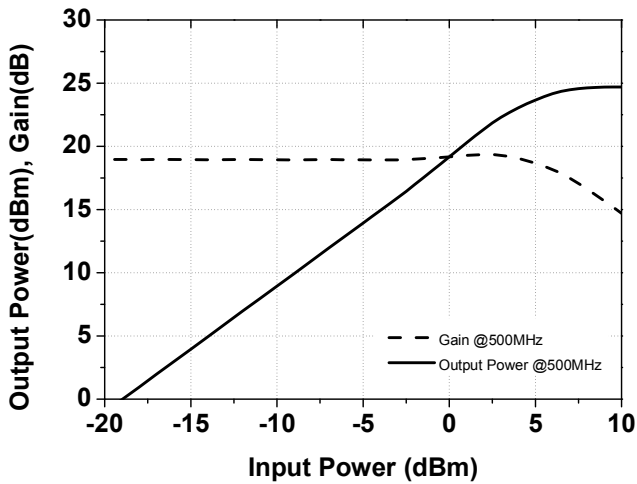
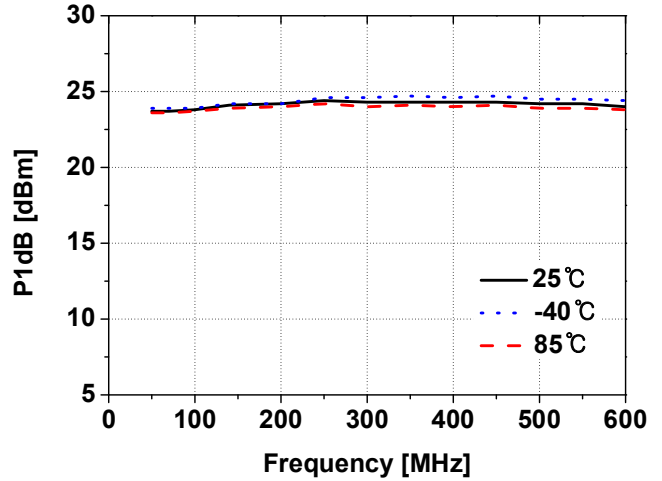
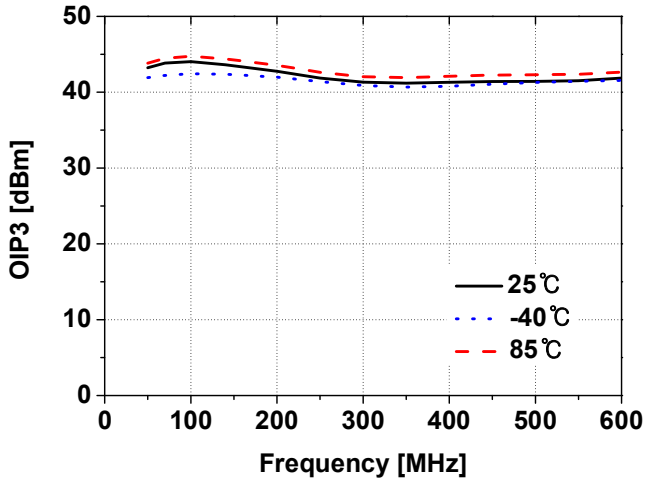
Typical RF Performance for 50MHz-500MHz Tuned Application Circuit

Frequency	MHz	70	140	250	500
S21	dB	19.7	19.7	19.5	19.1
S11	dB	-14	-14	-13	-12
S22	dB	-25	-40	-28	-21
P1dB	dBm	23.5	24.0	24.2	24.0
OIP3 @+8dBm	dBm	44.0	43.4	41.6	41.2
Noise Figure	dB	4.4	4.4	4.5	4.6

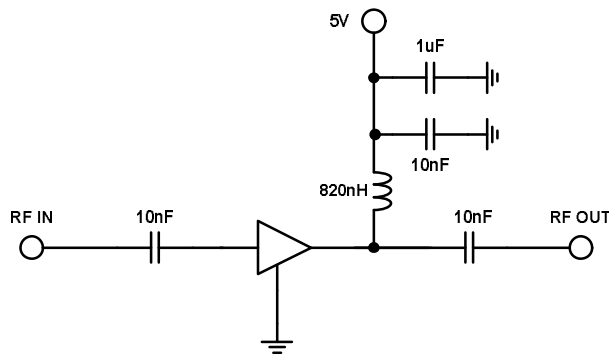


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500MHz Tuned Application Circuit



Absolute Maximum Ratings

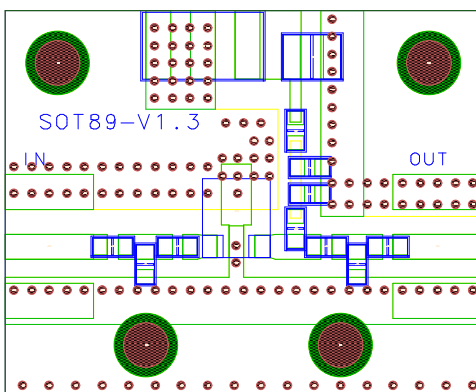
Parameter	Rating	Unit
Device Voltage	+6.0	V
Device Current	150	mA
RF Power Input	20	dBm
Storage Temperature	-55 to +150	°C
Ambient Operating Temperature	-40 to +85	°C
Junction Temperature for >10 ⁶ hours MTTF	187	°C

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

ESD / MSL Ratings

1. ESD sensitive device. Observe Handling Precautions.
2. ESD Rating : Class 1C (Passes at 1000V min.) Human Body Model (HBM), JESD22-A114
3. ESD Rating : Class 3 (Passes at 1000V min.) Charged Device Model (CDM), JESD22-C101
4. MSL (Moisture Sensitive Level) Rating : Level 1 at +260°C Convection reflow, J-STD-020

Evaluation Board Layout (2.7cm x 2.2cm)



Mounting Instructions

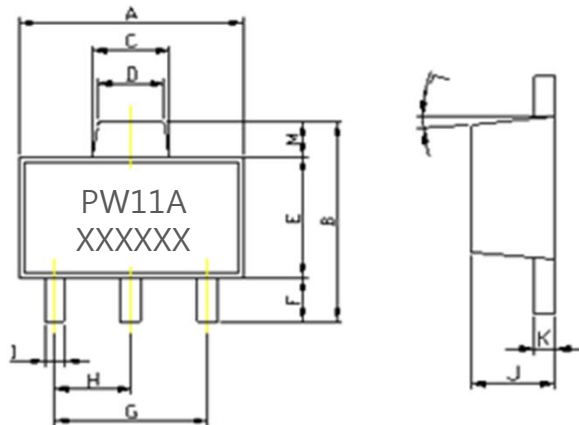
1. Use a large ground pad area with many plated through-holes as shown.
2. We recommend 1 oz copper minimum.
3. Measurement for our data sheet was made on 0.8mm thick FR-4 Board.
4. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
5. RF trace width depends on the board material and construction.
6. Add mounting screws near the part to fasten the board to a heatsink.

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Lead-free / RoHS Compliant / Green SOT-89 Package Outline



REF	DIMENSIONS Millimeters	
	Min.	Max.
A	4.40	4.60
B	4.05	4.25
C	1.50	1.70
D	1.30	1.50
E	2.40	2.60
F	0.89	1.20
G	3.00 REF.	
H	1.50 REF.	
I	0.40	0.52
J	1.40	1.60
K	0.35	0.41
L	5° TYP.	
M	0.70 REF.	

Land Pattern

