

PG611

InGaP HBT Gain Block Amplifier



Features

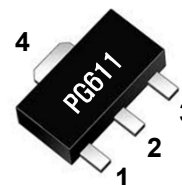
- ➔ 23.1 dB Gain at 900MHz
- ➔ 19.2 dBm P1dB at 900MHz
- ➔ 31.7 dBm Output IP3 at 900MHz
- ➔ Single 5V Supply Voltage
- ➔ Supply Current 62mA
- ➔ Lead-free / Green / RoHS-compliant SOT-89 Package



Applications

- ➔ Broadband Gain Block
- ➔ Mobile Infrastructure
- ➔ Cellular, GSM
- ➔ PCS, WCDMA, WiBro, WiMax
- ➔ W-LAN / ISM
- ➔ RFID / Fixed Wireless

Functional Diagram



* Marking : PG611

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

Description

The PG611 is a high performance InGaP HBT MMIC Amplifier and high linearity gain block amplifier in a high quality 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 low-current gain block amplifier for wireless infrastructure applications. The PG611 operates from a single +5.0 voltage supply and has an internal active bias. All devices are 100% RF and DC tested.

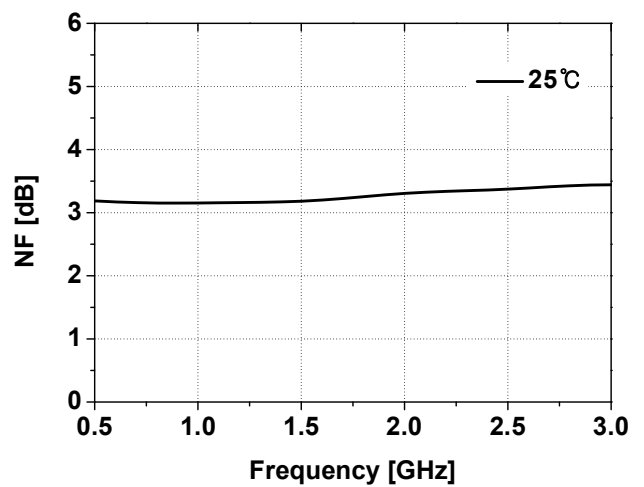
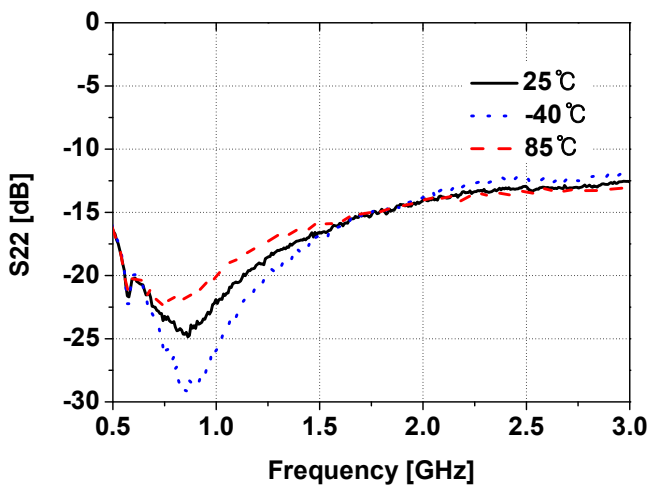
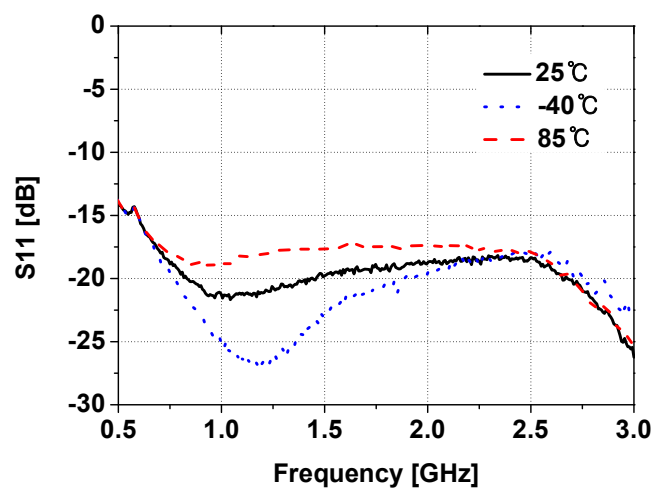
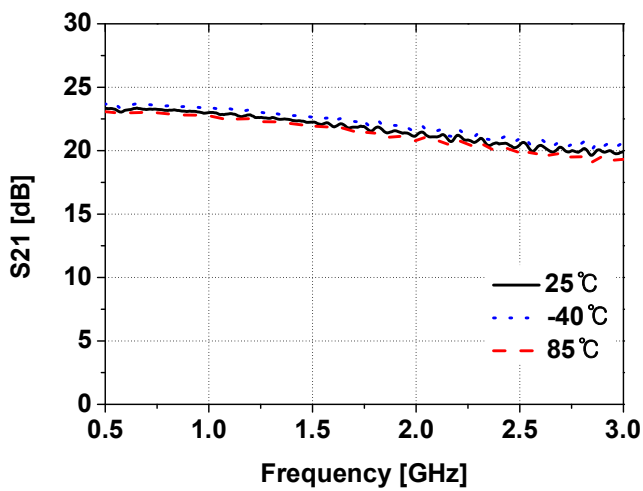
Specifications

Symbol	Units	Freq.	Min.	Typ.	Max.
S21	dB	900 MHz 1900 MHz 2100 MHz 2600 MHz		23.1 21.6 21.1 20.4	
S11	dB	900 MHz 1900 MHz 2100 MHz 2600 MHz		-20 -19 -19 -19	
S22	dB	900 MHz 1900 MHz 2100 MHz 2600 MHz		-24 -14 -14 -13	
P1dB	dBm	900 MHz 1900 MHz 2100 MHz 2600 MHz		19.2 17.2 17.4 17.0	
OIP3	dBm	900 MHz 1900 MHz 2100 MHz 2600 MHz		31.7 30.3 30.5 30.0	
NF	dB	900 MHz 1900 MHz 2100 MHz 2600 MHz		3.1 3.3 3.3 3.4	
Icc	mA		52	62	72
Vcc	V			5.0	
Rth	°C/W			70	

Test Conditions : T=25°C, Supply Voltage=+5V, 50ohm System, OIP3 measured with two tones at an output power of +3dBm/tone separated by 1MHz.

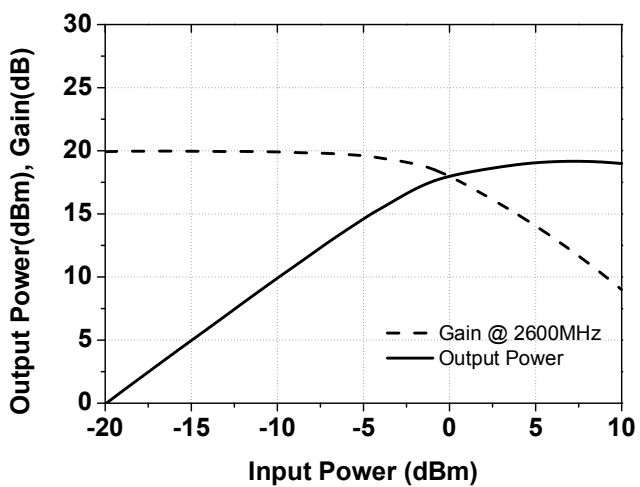
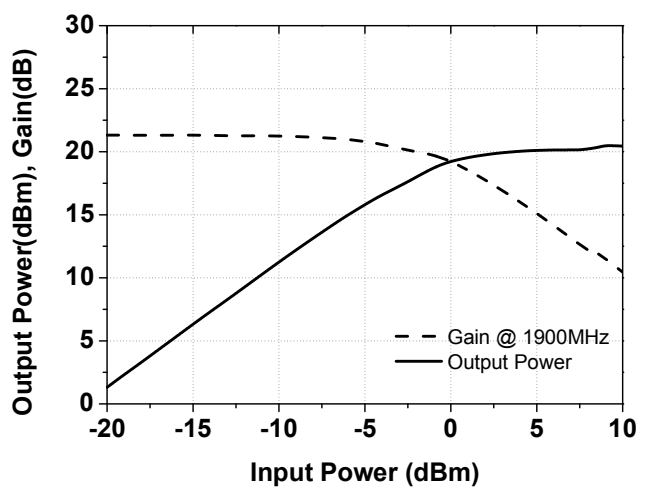
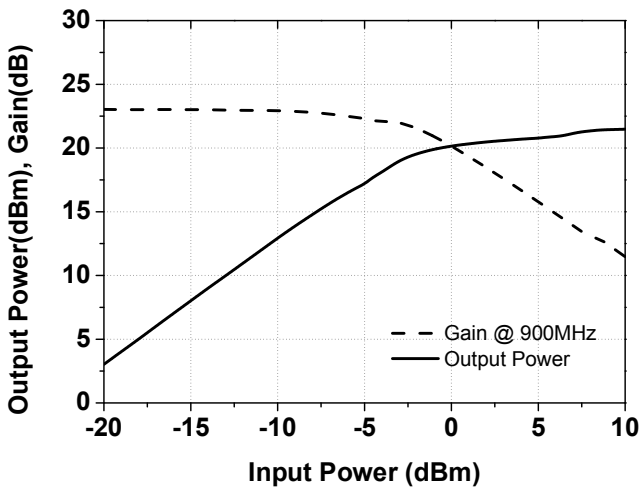
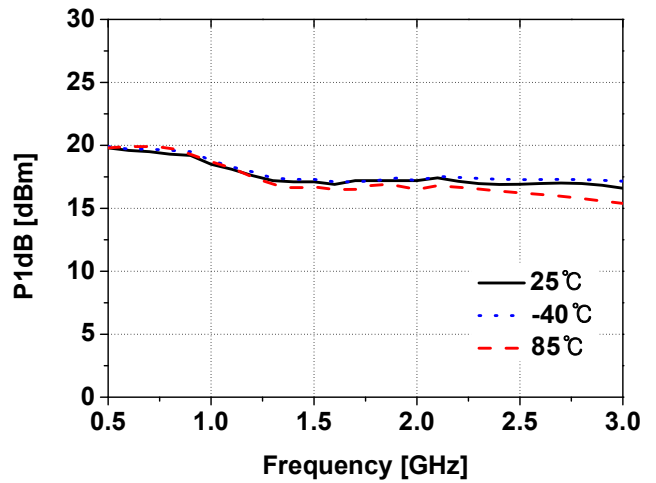
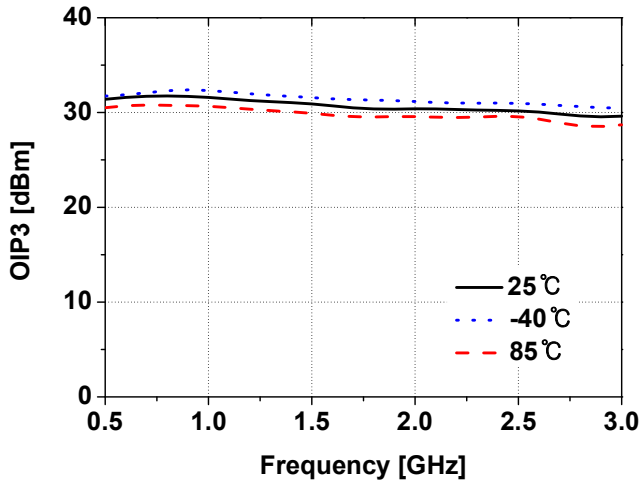
Typical RF Performance for 1.9GHz Tuned Application Circuit

Frequency	MHz	900	1500	1900	2100	2300	2600
S21	dB	23.1	22.2	21.6	21.1	20.9	20.4
S11	dB	-20	-20	-19	-19	-18	-19
S22	dB	-24	-16	-14	-14	-13	-13
P1dB	dBm	19.2	17.2	17.2	17.4	17.0	17.0
OIP3 @3dBm	dBm	31.7	31.0	30.3	30.5	30.3	30.0
Noise Figure	dB	3.1	3.1	3.3	3.3	3.3	3.4

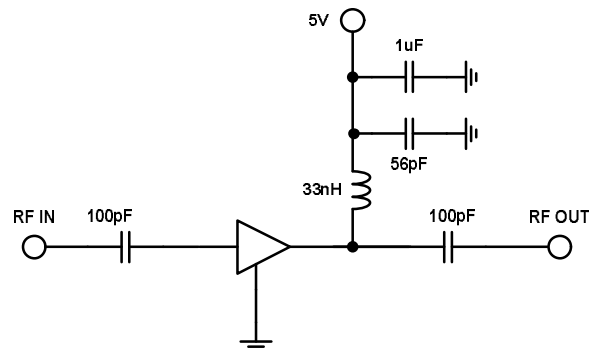


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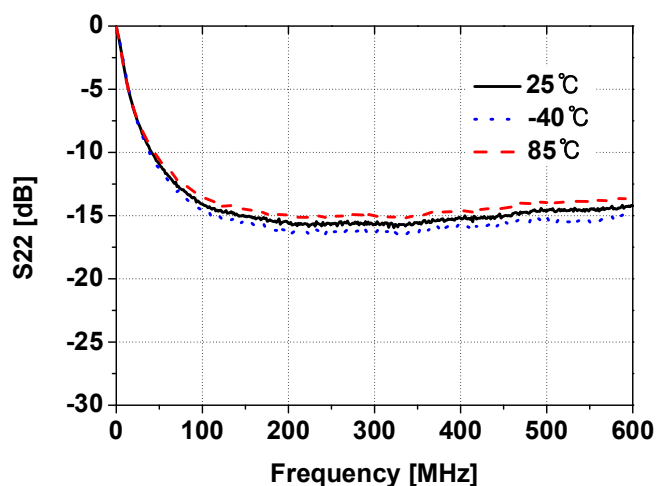
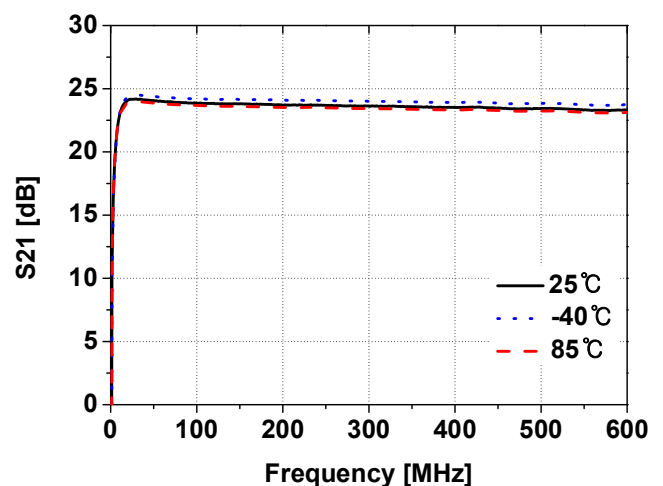
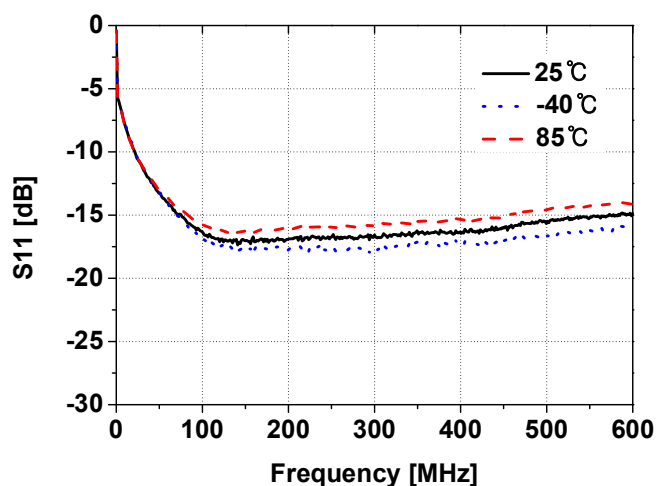


1.9GHz Tuned Application Circuit

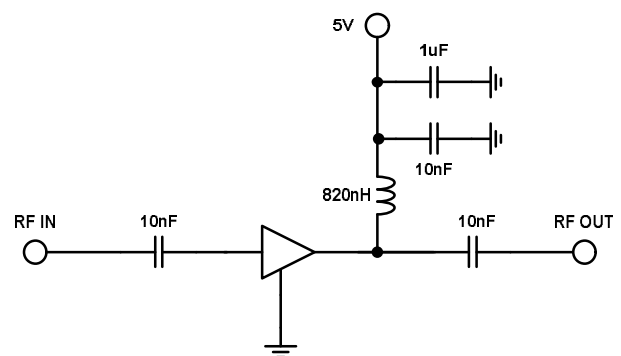


Typical RF Performance for 50MHz-500MHz Tuned Application Circuit

Frequency	MHz	70	140	250	500
S21	dB	23.8	23.6	23.5	23.2
S11	dB	-14	-16	-16	-15
S22	dB	-12	-14	-15	-14
P1dB	dBm	17.0	17.0	16.2	16.2
OIP3 @+3dBm	dBm	32.3	32.0	31.4	31.5
Noise Figure	dB	3.2	3.2	3.2	3.2



500MHz Tuned Application Circuit



Absolute Maximum Ratings

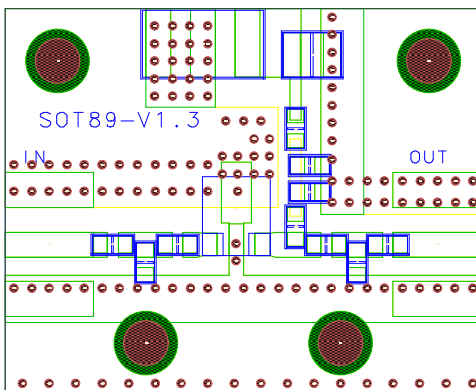
Parameter	Rating	Unit
Device Voltage	+6.5	V
Device Current	120	mA
RF Power Input	20	dBm
Storage Temperature	-55 to +150	°C
Ambient Operating Temperature	-40 to +85	°C
Junction Temperature for >10 ⁶ hours MTTF	187	°C

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

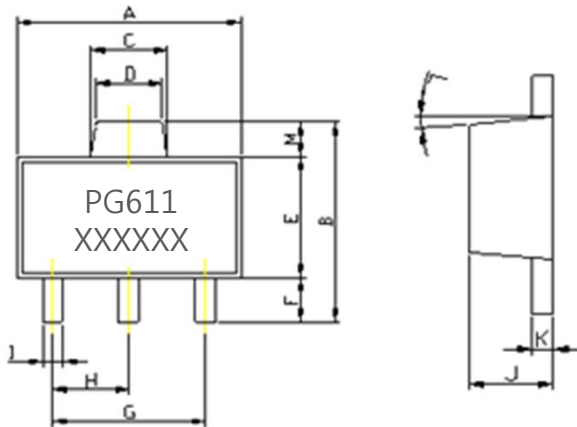
1. Use a large ground pad area with many plated through-holes as shown.
2. We recommend 1 oz copper minimum.
3. Measurement for our data sheet was made on 0.8mm thick FR-4 Board.
4. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
5. RF trace 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.	
J	0.40	0.52
K	1.40	1.60
L	5° TYP.	
M	0.70 REF.	

Land Pattern

