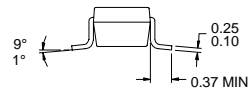
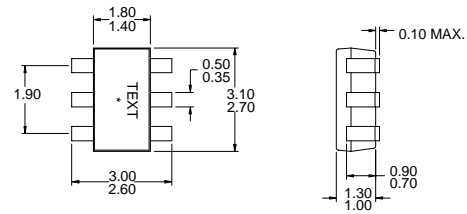


Typical Applications

- CDMA PCS Bypass LNA
- CDMA PCS Bypass Driver Amplifier
- General Purpose Amplification
- Commercial and Consumer Systems

Product Description

The RF2366 is a switchable low noise amplifier with a very high dynamic range designed for digital cellular applications. The device functions as an outstanding front end low noise amplifier. When used as an LNA, the bias current can be set externally. When used as a PA driver, the IC can operate directly from a single cell Li-ion battery and includes a power down feature that can be used to completely turn off the device. The IC is featured in a standard SOT 6-lead package.



\*When Pin 1 is in upper left, text reads downward (as shown).

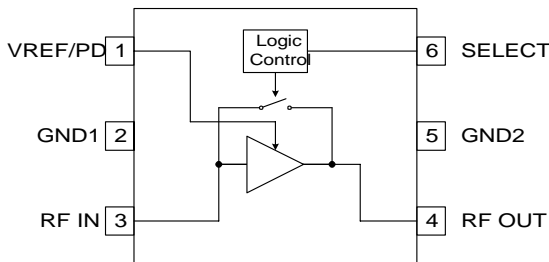
All dimensions in mm.

Optimum Technology Matching® Applied

- Si BJT       GaAs HBT       GaAs MESFET  
 Si Bi-CMOS       SiGe HBT       Si CMOS

Package Style: SOT 6-Lead

- Features
- Low Noise and High Intercept Point
  - Adjustable Bias Current
  - Power Down Control
  - Single 2.5V to 6.0V Power Supply
  - 1000MHz to 2500MHz Operation
  - Meets IS-98B Single-Tone and IMD



Functional Block Diagram

Ordering Information

RF2366      3V Low Noise Amplifier/ 3V PA Driver Amplifier)  
RF2366 PCBA-PCS Fully Assembled Evaluation Board (LNA)

RF Micro Devices, Inc.      Tel (336) 664 1233  
7625 Thorndike Road      Fax (336) 664 0454  
Greensboro, NC 27409, USA      <http://www.rfmd.com>

# RF2366

## Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +8.0	V <sub>DC</sub>
Input RF Level	+10	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C



Caution! ESD sensitive device.

RF Micro Devices believes the furnished information is correct and accurate at the time of this printing. However, RF Micro Devices reserves the right to make changes to its products without notice. RF Micro Devices does not assume responsibility for the use of the described product(s).

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>Overall</b>					T <sub>AMB</sub> =25°C, V <sub>CC</sub> =3.0V
<b>PCS Low Noise Amplifier</b>					RF=1930MHz to 1990MHz
Frequency Range		1930 to 1990		MHz	
<i>HIGH GAIN MODE</i>					Gain Select<0.8V, V <sub>PD</sub> /V <sub>REF</sub> =3V
Gain	10	12.5		dB	
Noise Figure		1.4	1.8	dB	
IIP3	9	14		dBm	
Current Drain		6.5		mA	
Input VSWR		1.8:1			
Output VSWR		1.6:1			
<i>BYPASS MODE</i>					Gain Select>1.8V, V <sub>PD</sub> /V <sub>REF</sub> =0V
Gain	-4.0	-2.5		dB	
IIP3		18.5		dBm	
Input VSWR		1.8:1	3:1		
Output VSWR		1.8:1	2.5:1		
Current Drain		0.85		mA	
<b>PCS CDMA Driver</b>					RF=1850MHz to 1910MHz
Frequency		1850 to 1910		MHz	
<i>HIGH GAIN MODE</i>					Gain Select<0.8V, V <sub>PD</sub> /V <sub>REF</sub> =3V
Gain		12		dB	
Noise Figure		1.6		dB	
Output Power	4			dBm	
ACPR1		-60		dBc/30kHz	P <sub>OUT</sub> =+4dBm, ±1.25MHz offset
Input VSWR		1.9:1			
Output VSWR		1.6:1			
Current Drain		6.5		mA	
<i>BYPASS MODE</i>					Gain Select>1.8V, V <sub>PD</sub> /V <sub>REF</sub> =0V
Gain		-3		dB	
IIP3		17		dBm	
Input VSWR		2:1			
Output VSWR		1.5:1			
Current Drain		0.85		mA	
<b>Power Supply</b>					
Voltage (V <sub>CC</sub> )		3		V	
V <sub>SELECT</sub> Low			0.8	V	High Gain mode. Select<0.8V, V <sub>PD</sub> /V <sub>REF</sub> =3V
V <sub>SELECT</sub> High	1.8			V	Low Gain mode. Select>1.8V, V <sub>PD</sub> /V <sub>REF</sub> =0V
Power Down		10		µA	Gain Select<0.8V, V <sub>PD</sub> /V <sub>REF</sub> =0V, V <sub>CC</sub> =0V

**Bypass Possibility**

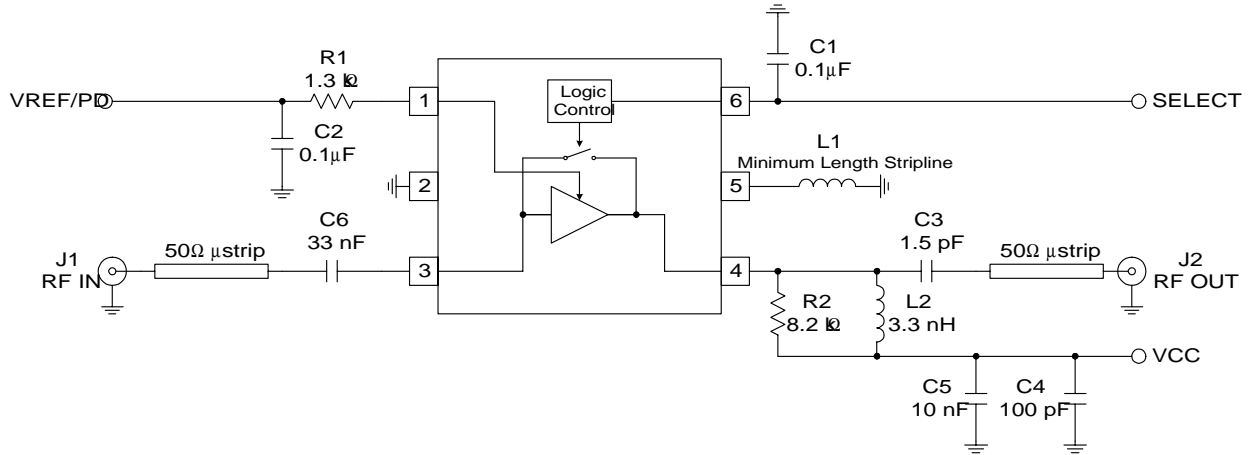
Gain Select	$V_{PD}/V_{REF}$	$V_{CC}$	Current	Comments
>1.8V	0V	3V	0.85mA	Recommended Bypass Mode
>1.8V	3V	3V	2mA	Alternative Bypass Mode

# RF2366

## 4 GENERAL PURPOSE AMPLIFIERS

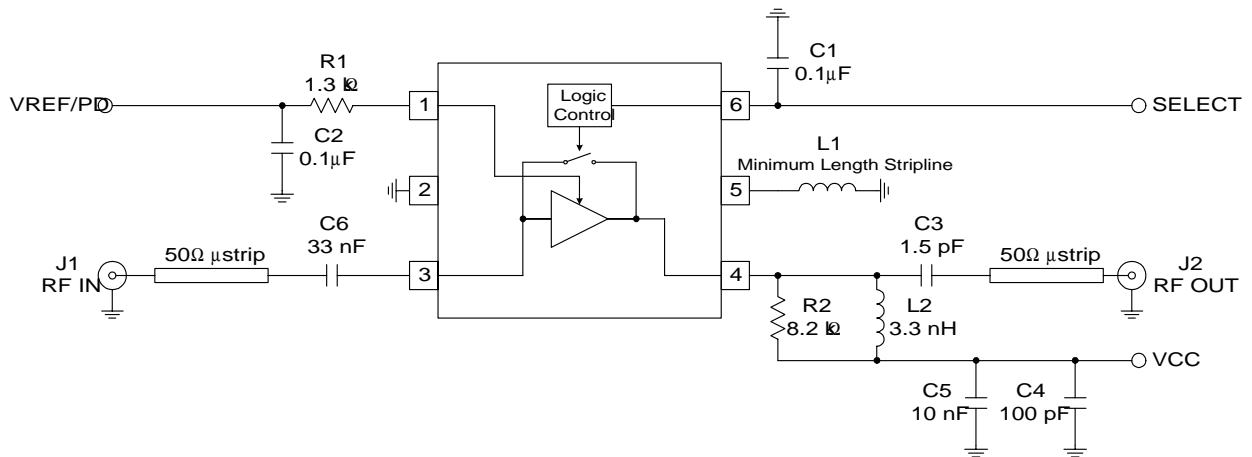
Pin	Function	Description	Interface Schematic
1	VREF/PD	For low noise amplifier applications, this pin is used to control the bias current. An external resistor can be used to set the bias current for any $V_{PD}$ voltage.	
2	GND1	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
3	RF IN	RF input pin.	
4	RF OUT	Amplifier output pin. This pin is an open-collector output. It must be biased to $V_{CC}$ through a choke or matching inductor. This pin is typically matched to $50\Omega$ with a shunt bias/matching inductor and series blocking/matching capacitor. Refer to application schematics.	
5	GND2	LNA emittance inductance. Total inductance is comprised of package+bondwire+stripline (L1) on PCB.	
6	SELECT	This pin selects high gain and bypass. Select $\leq 0.8V$ , high gain. Select $\geq 1.8V$ , low gain.	

## Application Schematic PCS Low Noise Amplifier ~ 1950MHz



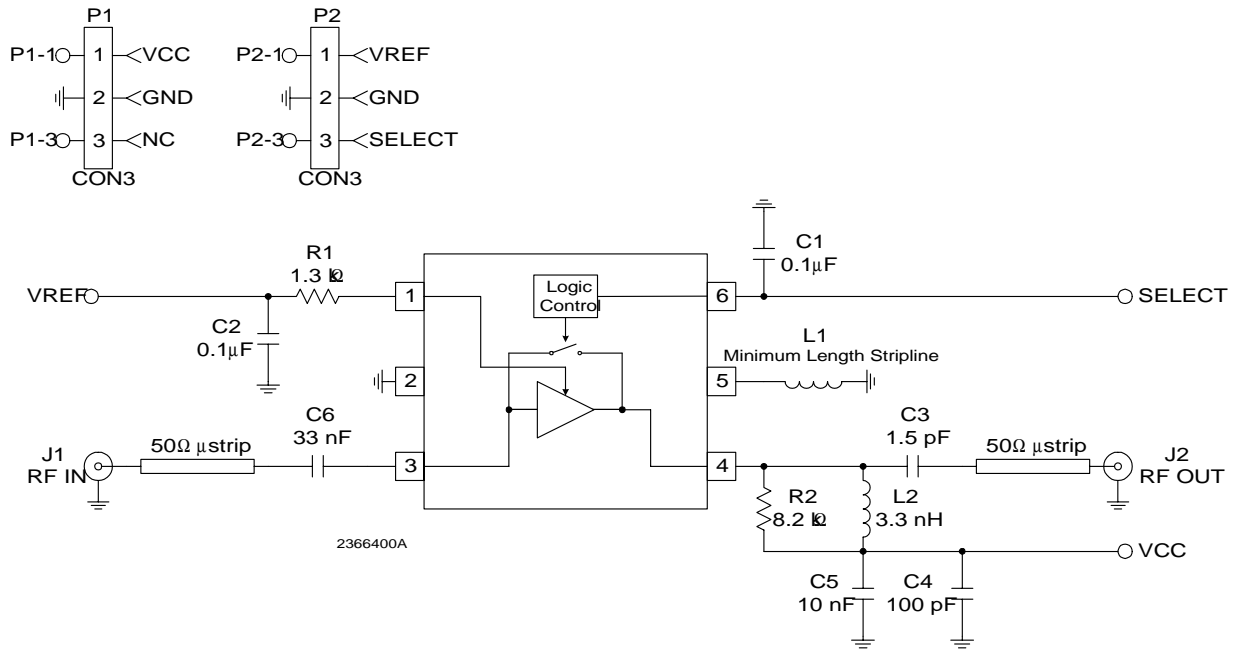
**4**  
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## Application Schematic PCS Driver Amplifier ~ 1880MHz



# RF2366

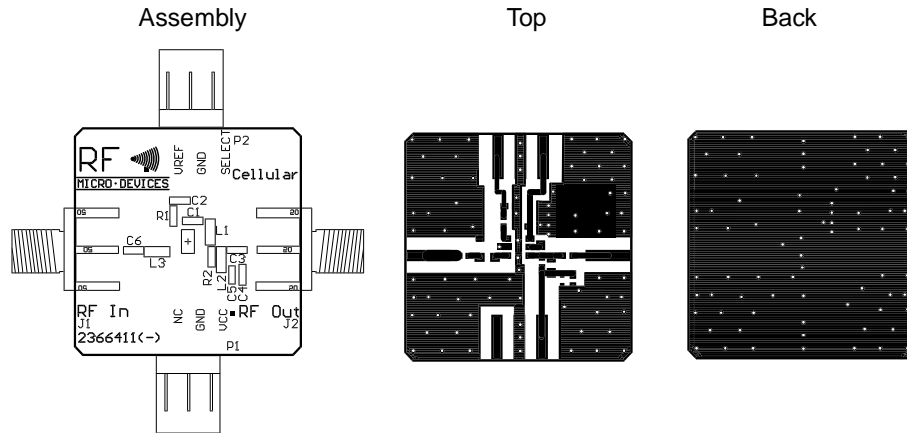
## Evaluation Board Schematic - PCS LNA



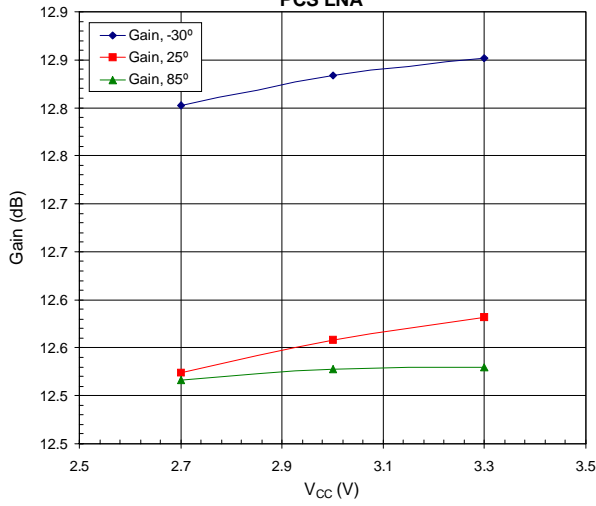
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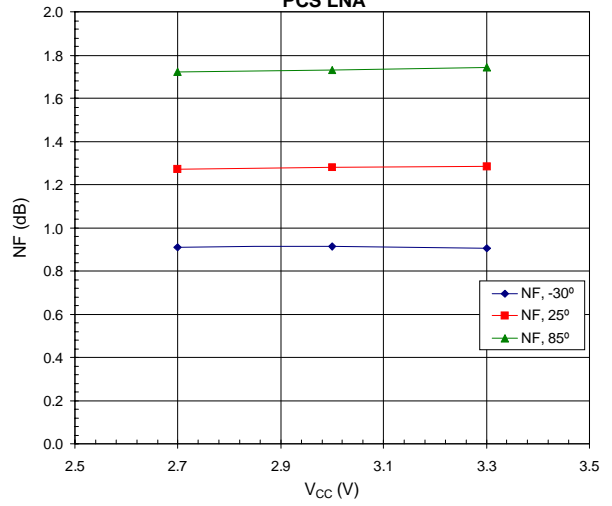
Evaluation Board Layout - PCS  
Board Size 1.0" x 1.0"  
Board Thickness 0.031", Board Material FR-4



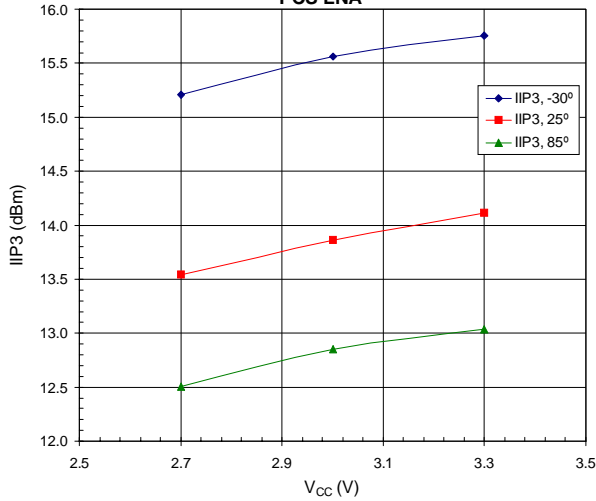
High Gain Mode Gain versus  $V_{CC}$ ,  
PCS LNA



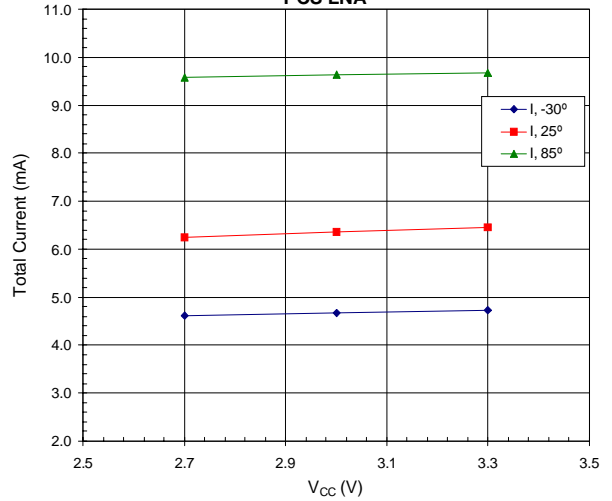
High Gain Mode NF versus  $V_{CC}$ ,  
PCS LNA



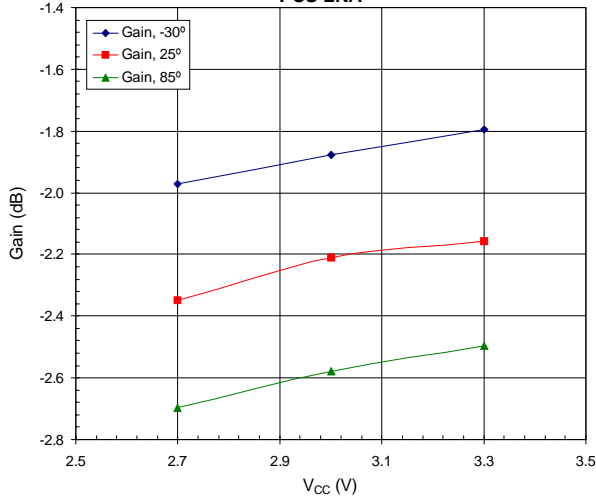
High Gain Mode IIP3 versus  $V_{CC}$ ,  
PCS LNA



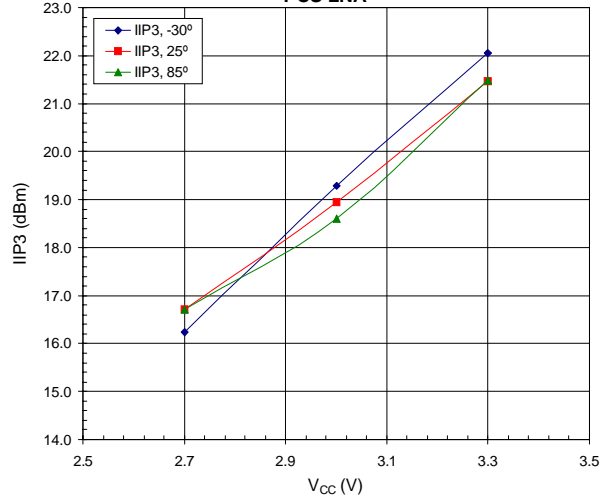
High Gain Mode Total Current versus  $V_{CC}$ ,  
PCS LNA



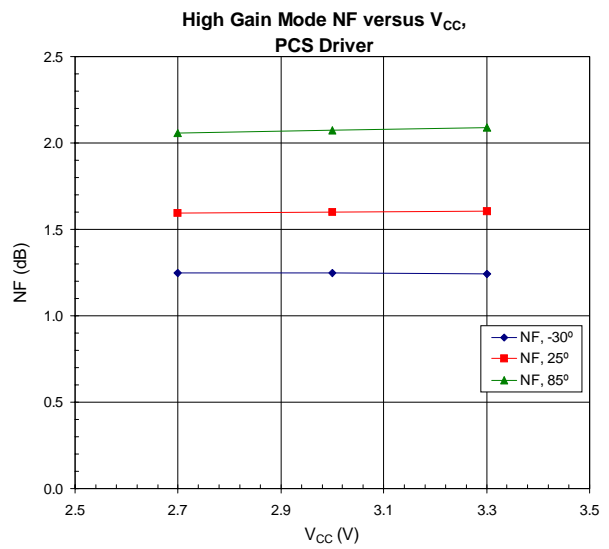
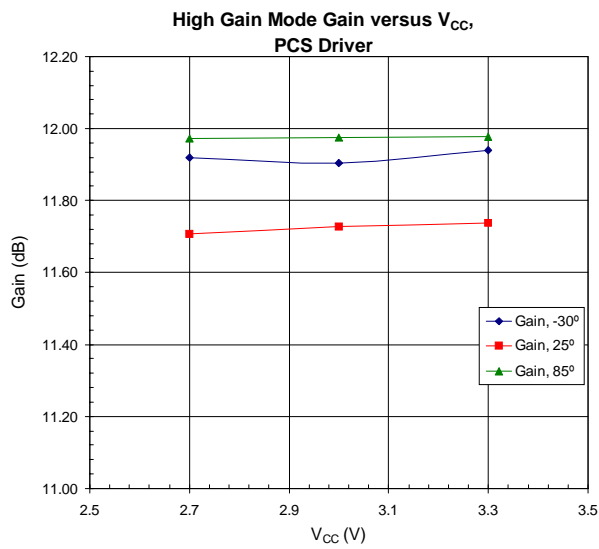
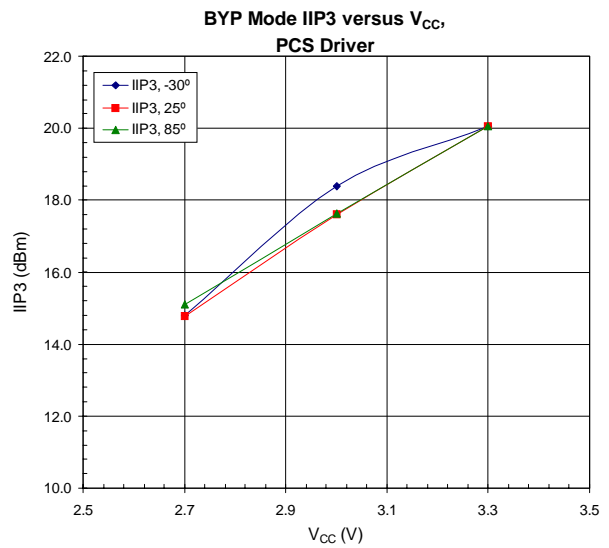
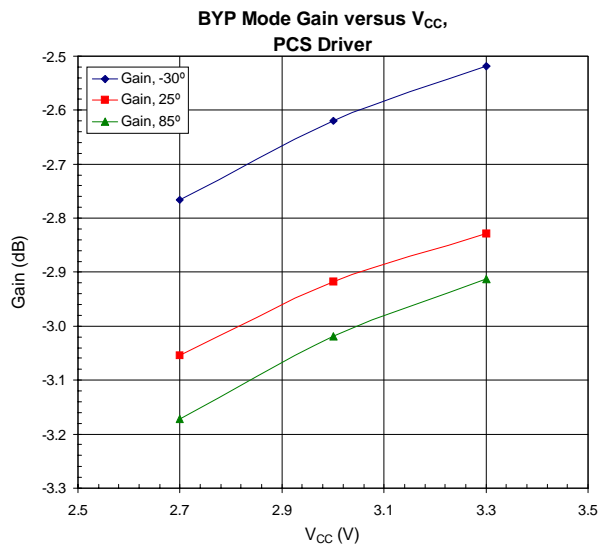
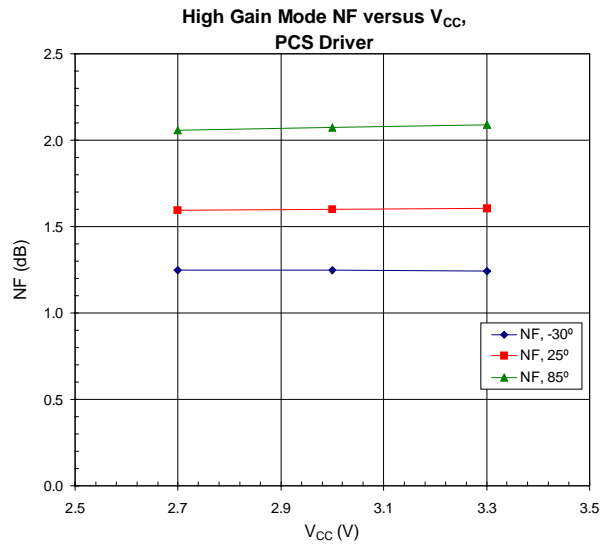
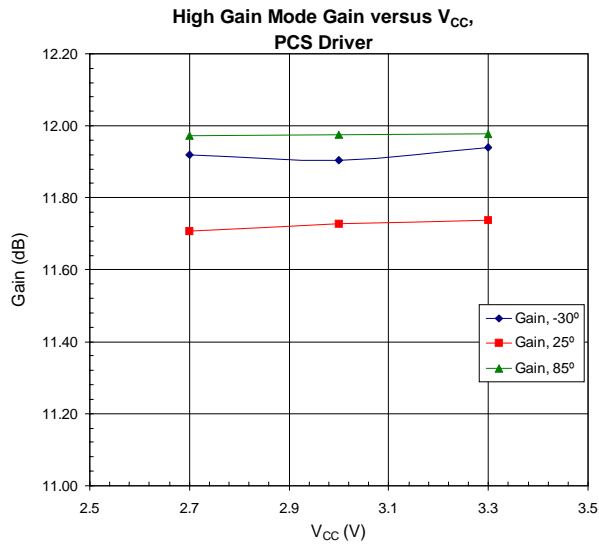
BYP Mode Gain versus  $V_{CC}$ ,  
PCS LNA



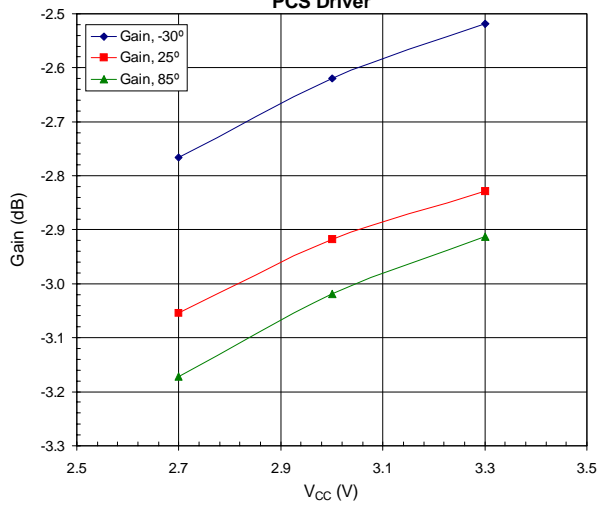
BYP Mode IIP3 versus  $V_{CC}$ ,  
PCS LNA







BYP Mode Gain versus  $V_{CC}$ ,  
PCS Driver



BYP Mode IIP3 versus  $V_{CC}$ ,  
PCS Driver

