RF2367

PCS CDMA/TDMA/GSM1800
3V PA DRIVER AMPLIFIER

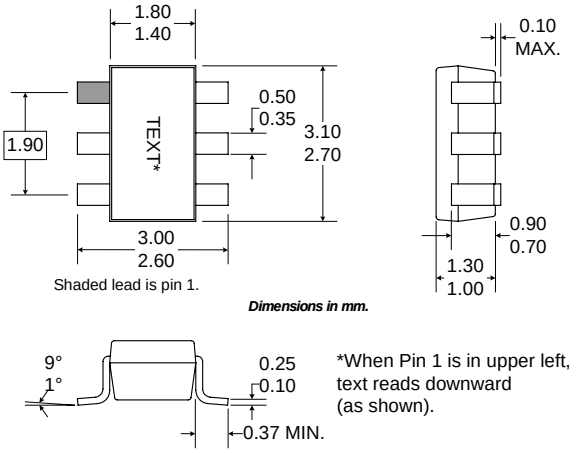
RoHS Compliant & Pb-Free Product

Typical Applications

- TDMA/CDMA/FM PCS Tx Amplifier
- Low Noise Transmit Driver Amplifier
- 2.4GHz WLAN Systems
- GSM1800 Driver Amplifier
- General Purpose Amplification
- Commercial and Consumer Systems

Product Description

The RF2367 is a low noise CDMA/TDMA/GSM PA driver amplifier with a very high dynamic range designed for transmit digital PCS applications with frequency ranges between 1700MHz and 2000MHz. The device functions as an outstanding PA driver amplifier in the transmit chain of digital subscriber units where low transmit noise power is a concern. The IC includes a power down feature that can be used to completely turn off the device. The RF2367 is featured in a standard SOT23-6 plastic package.



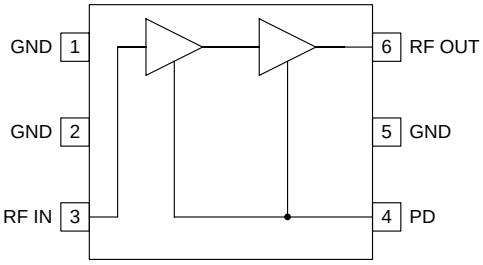
Package Style: SOT23-6

Optimum Technology Matching® Applied

- ☐ Si BJT
- ☑ GaAs HBT
- ☐ GaAs MESFET
- ☐ Si Bi-CMOS
- ☐ SiGe HBT
- ☐ Si CMOS
- ☐ InGaP/HBT
- ☐ GaN HEMT
- ☐ SiGe Bi-CMOS

Features

- Low Noise and High Intercept Point
- Adjustable Bias Current
- Power Down Control
- Single 2.5V to 6.0V Power Supply
- 150MHz to 2500MHz Operation
- Extremely Small SOT23-6 Package



Functional Block Diagram

Ordering Information

RF2367	PCS CDMA/TDMA/GSM1800 3V PA Driver Amplifier
RF2367PCBA-41X	Fully Assembled Evaluation Board

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Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +8.0	V_{DC}
Input RF Level	+10	dBm
Storage Temperature	-40 to +150	°C

Caution! ESD sensitive device.

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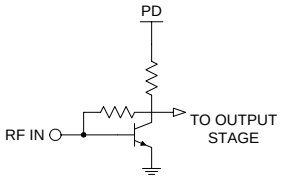
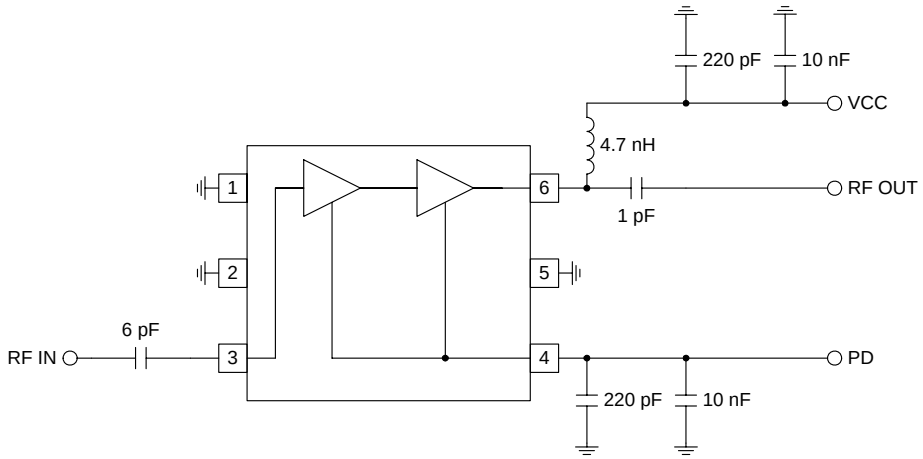
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Operating Range					
Overall Frequency Range		150 to 2500		MHz	
Supply Voltage (V_{CC})	2.5		6.0	V	
Power Down Voltage (V_{PD})	2.7		2.9	V	For normal operation
			0.9	V	For power down operation
Total Current Consumption	24	37	45	mA	V_{CC}=3.0V, V_{PD}=2.8V
			10	μA	V_{CC}=3.0V, V_{PD}<0.9V
Operating Ambient Temperature	-40		+85	°C	
Input Impedance		50		Ω	
Output Impedance		50		Ω	
1880MHz Performance					All parameters measured from evaluation board with T=25°C, RF=1880MHz, V_{CC}=3.0V, V_{PD}=2.8V
Gain	20	21.5	23	dB	
Output IP3	+20	+24		dBm	
Noise Figure		2.2	2.5	dB	
Reverse Isolation	32	34		dB	
Input VSWR		1.9:1	2:1		
Output VSWR		1.5:1	2:1		Using External LC network used on Evaluation Board
Output P_{1dB}	+13	+14	+15	dBm	

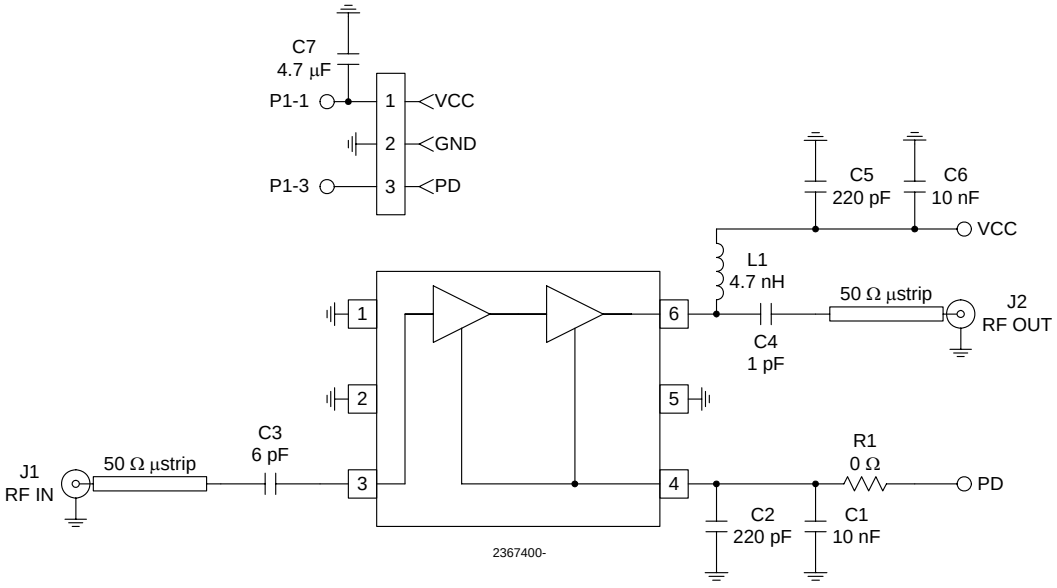
Pin	Function	Description	Interface Schematic
1	GND	Ground connection. Keep traces physically short and connect immediately to ground plane for best performance.	
2	GND	Same as pin 1.	
3	RF IN	RF input pin. This pin is DC coupled and internally matched to a <2:1 VSWR at 1880MHz.	
4	PD	Power Down for the IC. V_{PD} = 2.8V +/- 0.1V turns on the Part. V_{PD}<0.9V turns off the Part. Lower threshold for device operation is approximately 1.2V. External RF bypassing is required. The trace length between the pin and the bypass capacitors should be minimized. The ground side of the bypass capacitors should connect immediately to ground plane. Nominal current for this pin for V_{PD} = 2.8V is 8mA typical.	See pin 3.
5	GND	Same as pin 1.	
6	RF OUT	Amplifier Output pin. This pin is an open-collector output. It must be biased to either V_{CC} or pin 4 through a choke or matching inductor. This pin is typically externally matched to 50Ω with a shunt bias/matching inductor and series blocking/matching capacitor. Refer to application/evaluation board schematics.	

Application Schematic: ~1880 MHz Operation

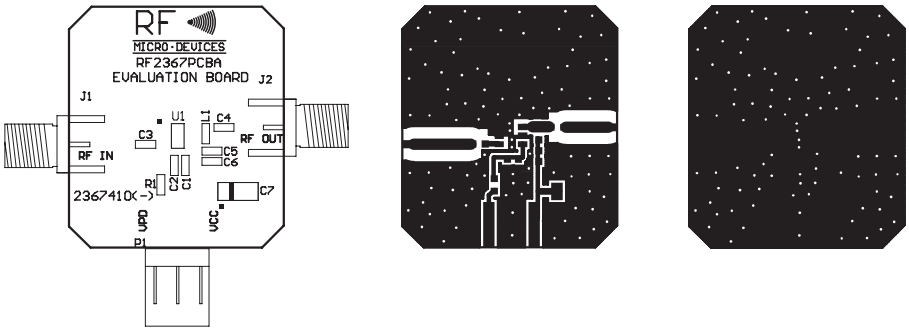


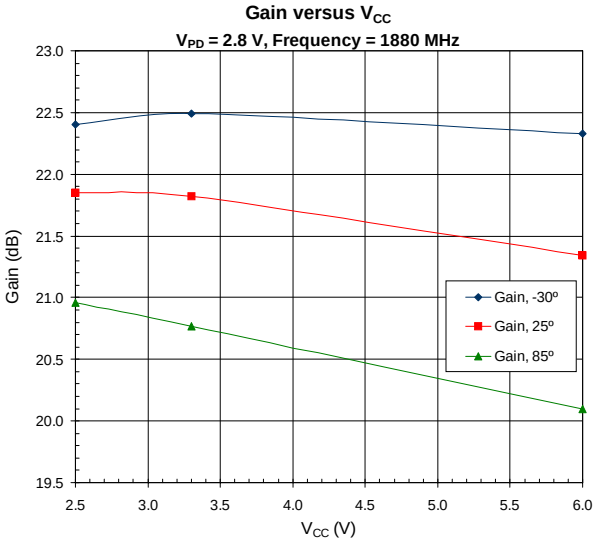
Evaluation Board Schematic

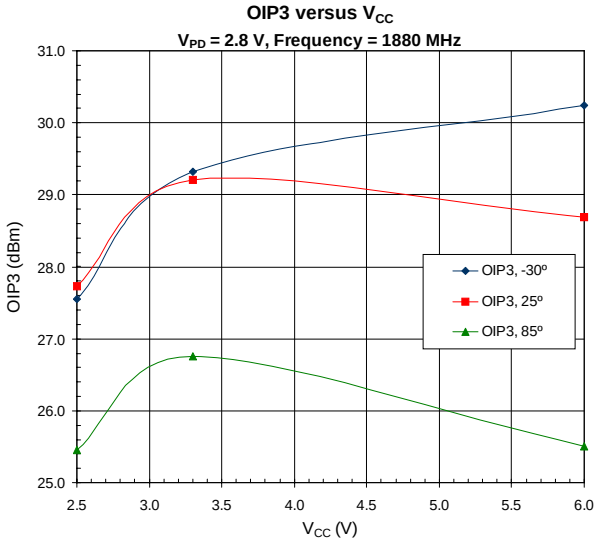
(Download Bill of Materials from www.rfmd.com.)

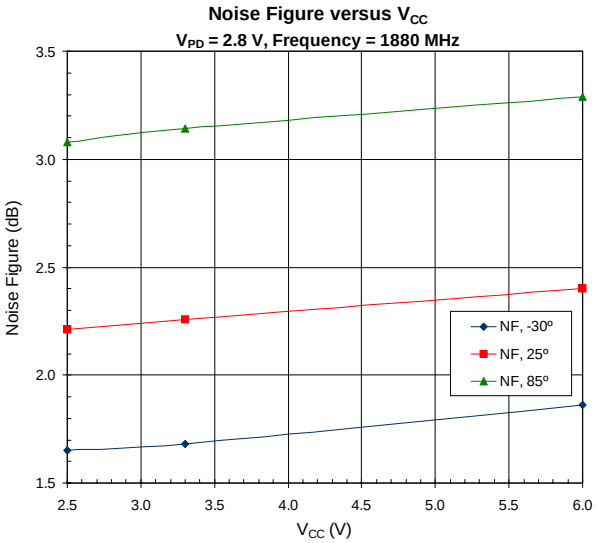


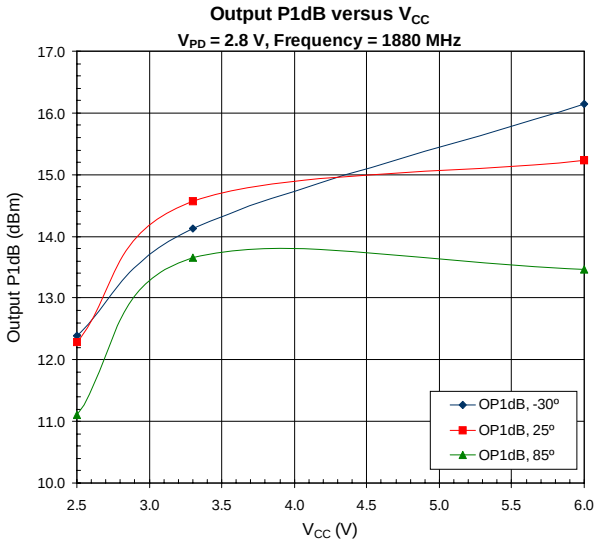
Evaluation Board Layout
Board Size 0.948” x 1.063”
Board Thickness 0.031”, Board Material FR-4

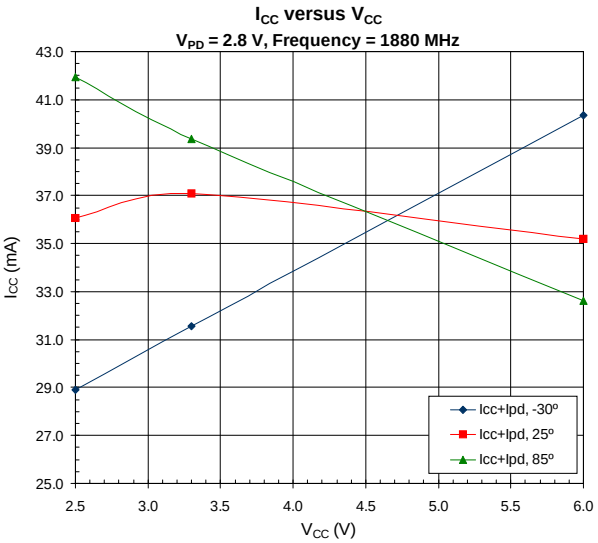


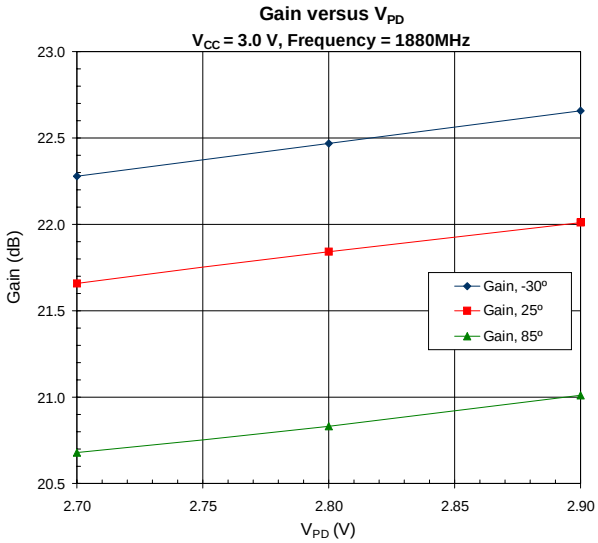

Gain versus V_{CC}
V_{PD} = 2.8 V, Frequency = 1880 MHz
Gain (dB)
V_{CC} (V)
Gain, -30º
Gain, 25º
Gain, 85º


OIP3 versus V_{CC}
V_{PD} = 2.8 V, Frequency = 1880 MHz
OIP3 (dBm)
V_{CC} (V)
OIP3, -30º
OIP3, 25º
OIP3, 85º

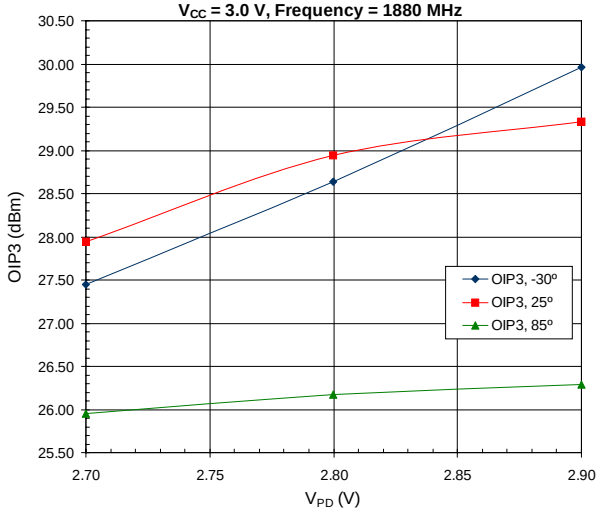

Noise Figure versus V_{CC}
V_{PD} = 2.8 V, Frequency = 1880 MHz
Noise Figure (dB)
V_{CC} (V)
NF, -30º
NF, 25º
NF, 85º


Output P1dB versus V_{CC}
V_{PD} = 2.8 V, Frequency = 1880 MHz
Output P1dB (dBm)
V_{CC} (V)
OP1dB, -30º
OP1dB, 25º
OP1dB, 85º

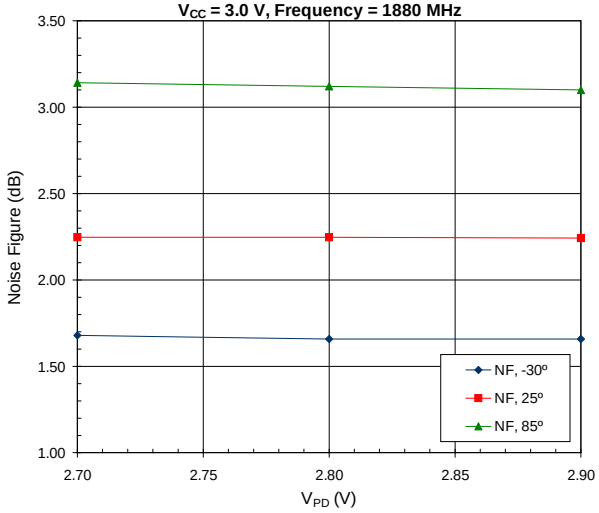

I_{CC} versus V_{CC}
V_{PD} = 2.8 V, Frequency = 1880 MHz
I_{CC} (mA)
V_{CC} (V)
Icc+Ipd, -30º
Icc+Ipd, 25º
Icc+Ipd, 85º


Gain versus V_{PD}
V_{CC} = 3.0 V, Frequency = 1880MHz
Gain (dB)
V_{PD} (V)
Gain, -30º
Gain, 25º
Gain, 85º

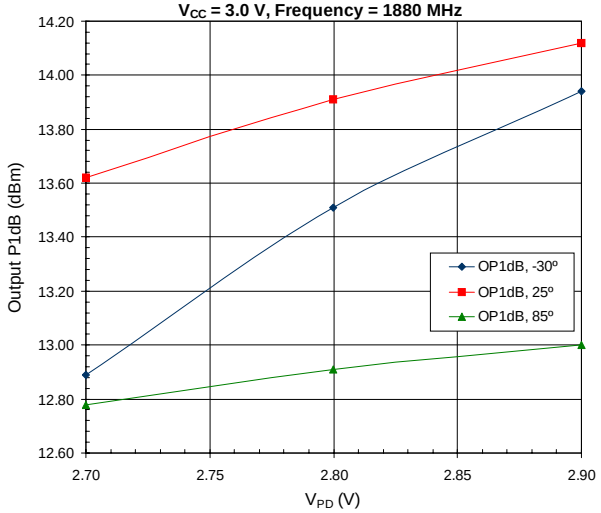
OIP3 versus V_{PD}
V_{CC} = 3.0 V, Frequency = 1880 MHz



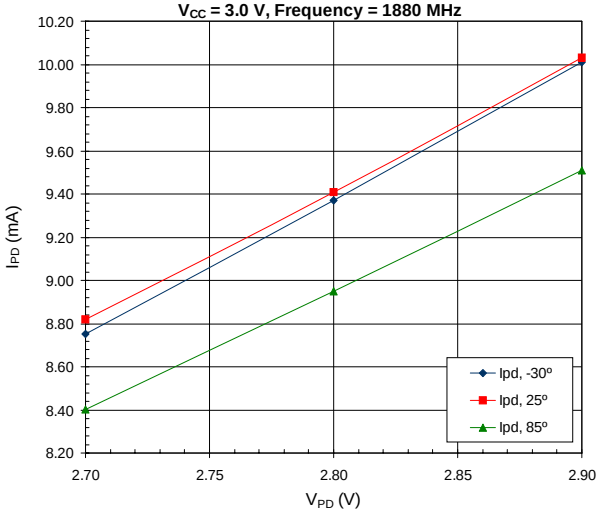
Noise Figure versus V_{PD}
V_{CC} = 3.0 V, Frequency = 1880 MHz



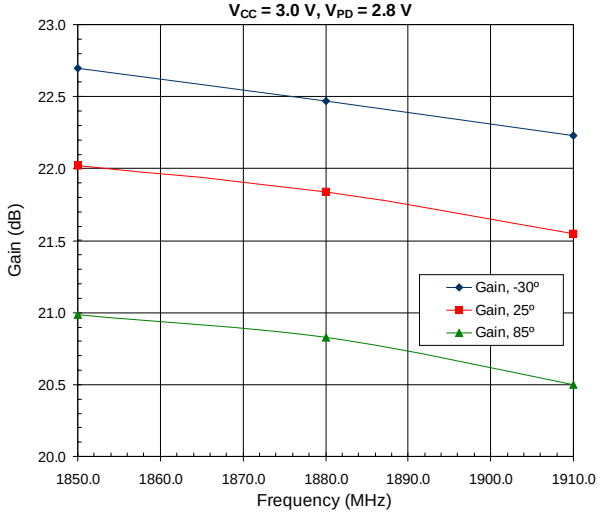
Output P1dB versus V_{PD}
V_{CC} = 3.0 V, Frequency = 1880 MHz



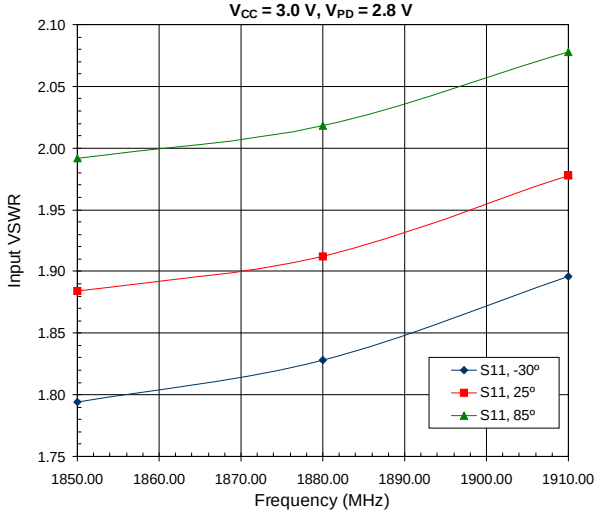
I_{PD} versus V_{PD}
V_{CC} = 3.0 V, Frequency = 1880 MHz

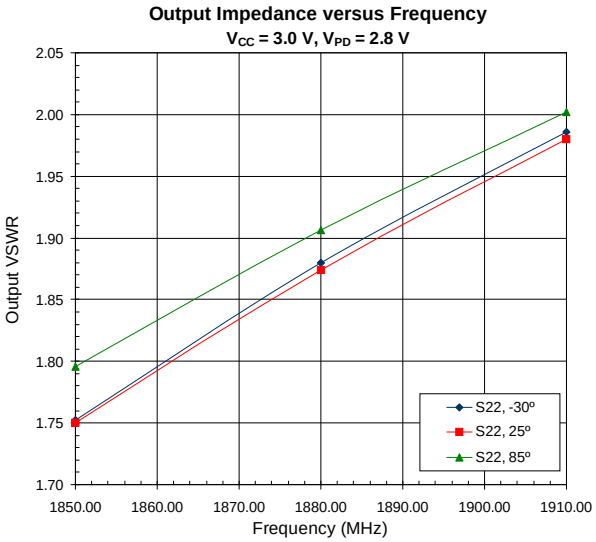


Gain versus Frequency
V_{CC} = 3.0 V, V_{PD} = 2.8 V



Input Impedance versus Frequency
V_{CC} = 3.0 V, V_{PD} = 2.8 V




Output Impedance versus Frequency
VCC = 3.0 V, VPD = 2.8 V
Output VSWR
2.05
2.00
1.95
1.90
1.85
1.80
1.75
1.70
1850.00
1860.00
1870.00
1880.00
1890.00
1900.00
1910.00
Frequency (MHz)
S22, -30º
S22, 25º
S22, 85º