

3.3 V, 2.5 GHz Wi-Fi™ Linear Power Amplifier

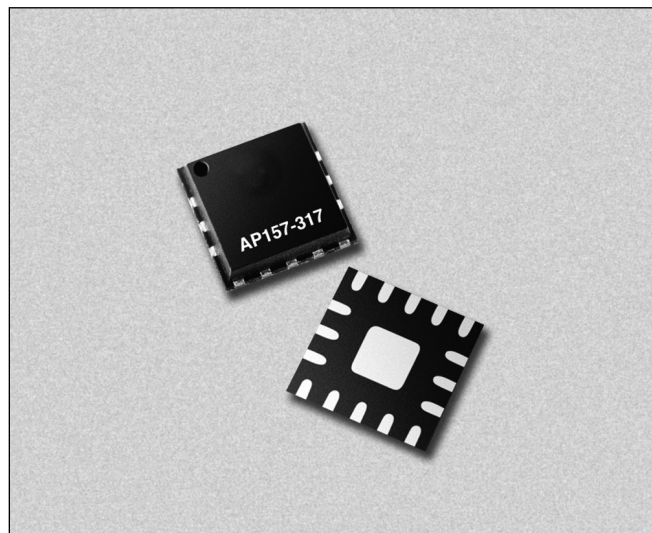

AP157-317

Features

- IEEE 802.11b/g +27 dBm
- 1800–2500 MHz Operation
- 19 dB Small Signal Gain
- 27 dBm P_1 dB @ 2.4 GHz
- Uses Single DC Bias Supply
- Low Cost Plastic Package
- Available on Tape & Reel

Description

The AP157-317 is a linear, medium power amplifier designed for low voltage operation. The device is manufactured on our advanced InGaP HBT process. It is designed for use as the power amplifier in WLAN and other 2.4–2.5 GHz spread spectrum transmitters. The amplifier is packaged in a 16 pin 4 x 4 mm micro lead package.



Absolute Maximum Ratings

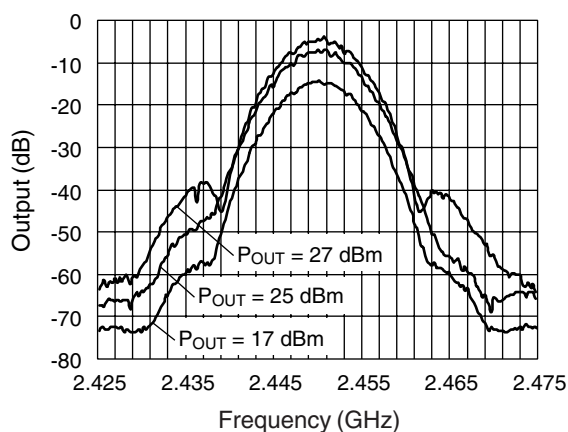
Characteristic	Value
RF Input Power	20 dBm
Supply Current	1000 mA
Supply Voltage	6 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

Electrical Specifications at 25°C

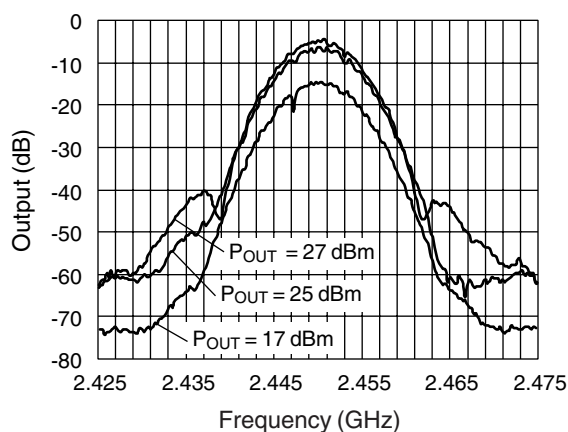
Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Frequency Range	$I_C = 350$ mA		1800		2500	MHz
Small Signal Gain	$I_C = 350$ mA	Ga	17	19	22	dB
Max. Saturated Output Power		P_{Max}	29	31		dBm
Max. Linear Output Power	802.11 Modulation 11 Mbits Meeting 802.11b Spectral Mask			27		dBm
Output Power at 1 dB Compression	F = 2.4 GHz	P_1 dB	26	27		dBm
Input and Output VSWR	F = 1800–2500 MHz	VSWR		1.8		
Operating Voltage	Amplifier DC Voltage	V_{CC}	2.7	3.3	5.0	V
Reverse Isolation				30		dB
Current Consumption	$P_{Out} = P_{Max}$	I_{CC}		600		mA
	$P_{Out} = 27$ dBm	I_{CC}		450		mA
	$P_{Out} = 25$ dBm	I_{CC}		350		mA
	Quiescent	I_Q		125		mA

Typical Performance Data

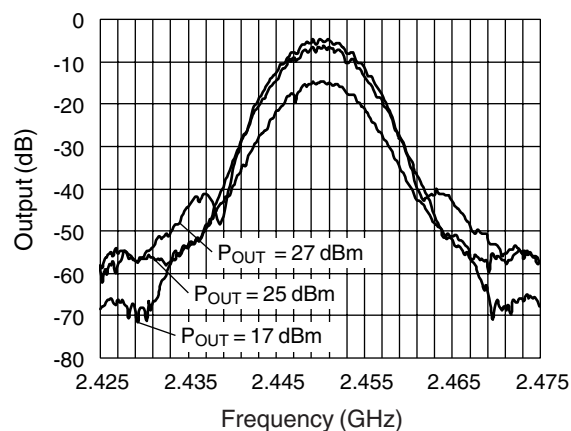
$V_{CC} = +3.3$ V, 802.11b Compliant Signal: 11 MBit/s, Filtering Gauss 0.3



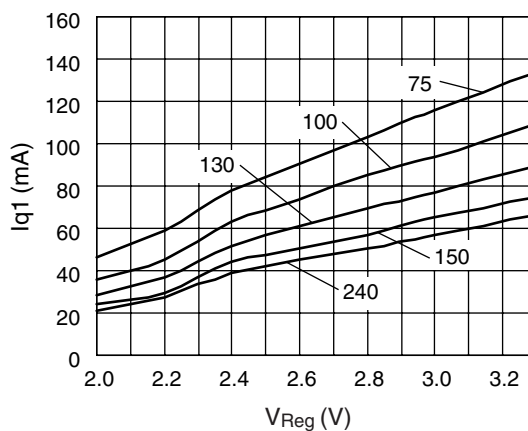
Output Spectrum for 802.11b
Signal at $I_q = 120$ mA



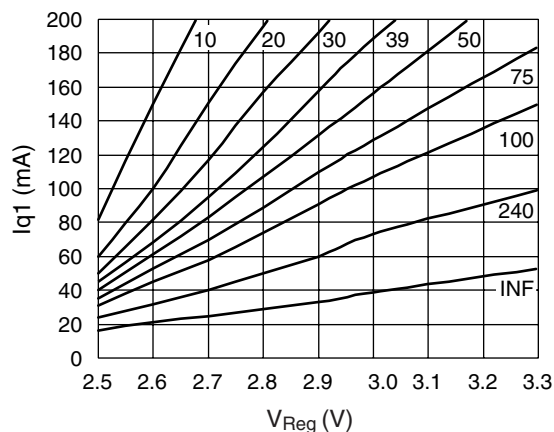
Output Spectrum for 802.11b
Signal at $I_q = 80$ mA



Output Spectrum for 802.11b
Signal at $I_q = 50$ mA



Quiescent Current of the 1st Stage
vs. V_{Reg} and R_{q1}

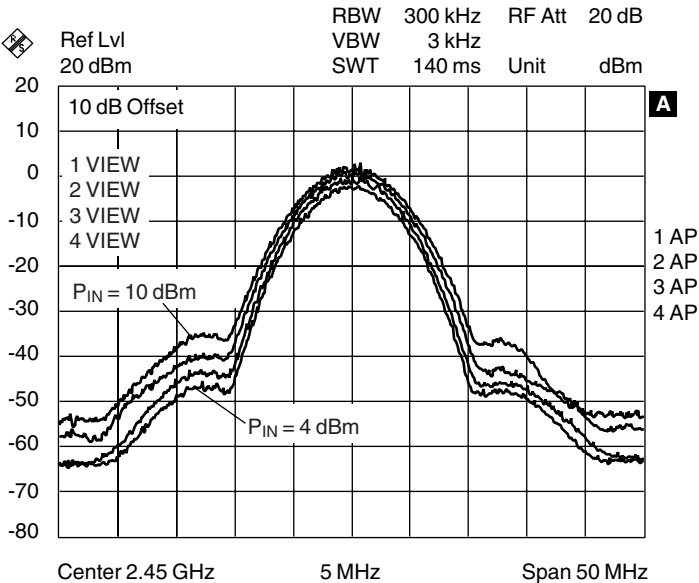


Quiescent Current of the 2nd Stage
vs. V_{Reg} and R_{q2}

2.45 GHz 802.11b Spectrums at the PA Output Measured With the Evaluation Test Board

Test Signal — 11 MBit/s
Filtering — Gaussian, 0.3
Frequency — 2.45 GHz
V_{CC} = 3.3 V
I_q = 150 mA

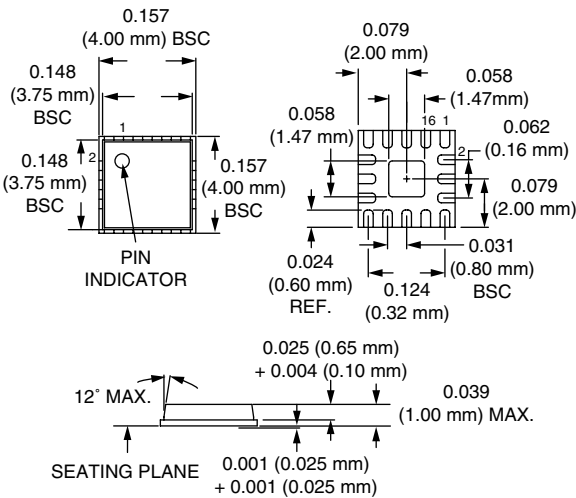
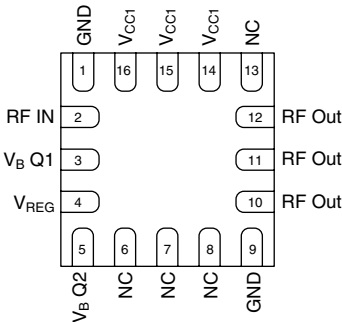
P _{IN} (dBm)	P _{OUT} (dBm)	I _{CC} (mA)
4	24.3	335
6	26	400
8	27.4	470
10	28.6	546



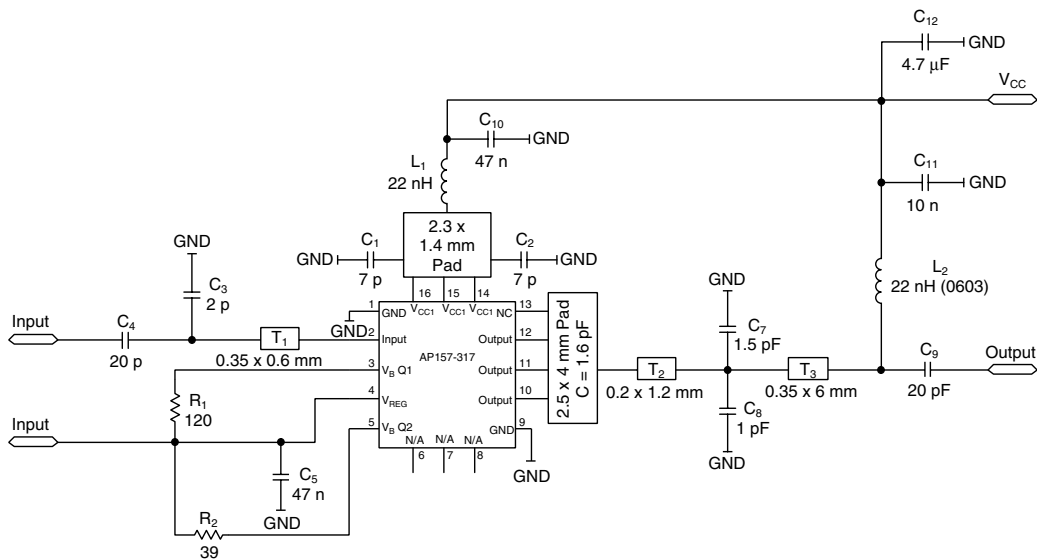
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Pin Out

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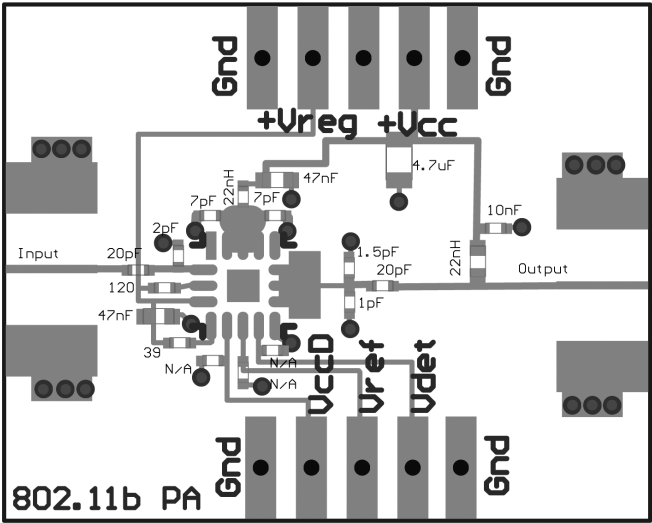


Evaluation Board Schematic



Board: FR4, 10 mils thick.

Test Board



Application Schematic for 802.11b/g Transmitter Having 30 dB Gain and Power Control Circuitry

