

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



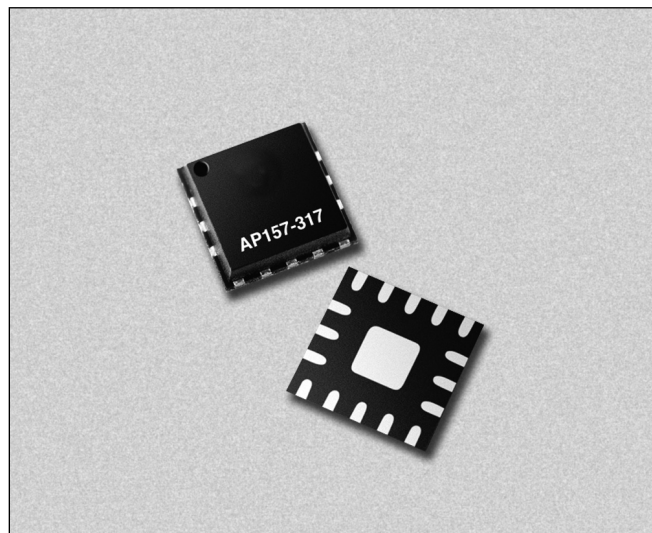
AP157-317

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

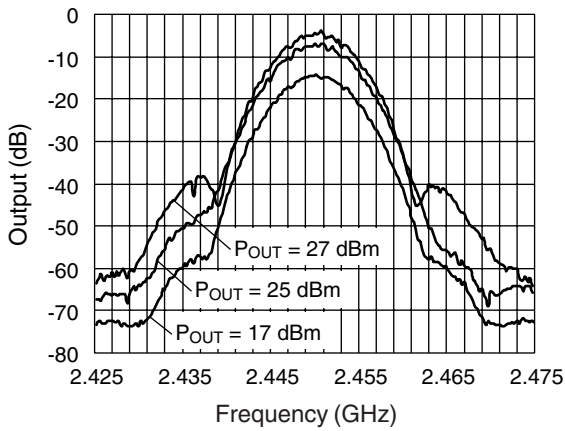
Characteristic	Value
RF Input Power	20 dBm
Supply Current	1000 mA
Supply Voltage	6 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

Electrical Specifications at 25°C

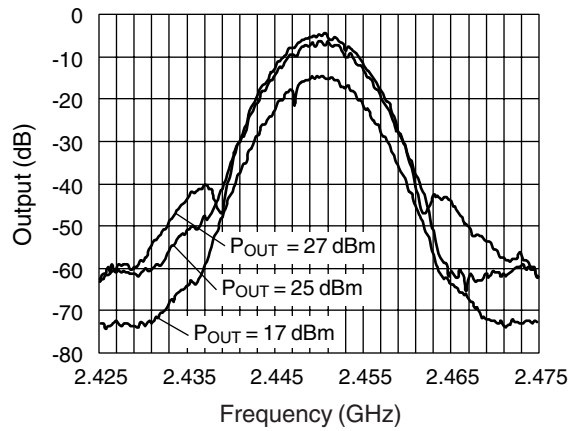
Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Frequency Range	I _C = 350 mA		1800		2500	MHz
Small Signal Gain	I _C = 350 mA	G _a	17	19	22	dB
Max. Saturated Output Power		P _{Max}	29	31		dBm
Max. Linear Output Power	802.11 Modulation 11 Mbits Meeting 802.11b Spectral Mask			27		dBm
Output Power at 1 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

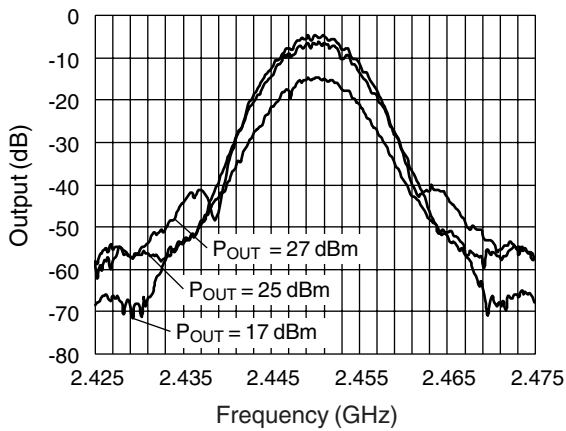
V_{CC} = +3.3 V, 802.11b Compliant Signal: 11 MBit/s, Filtering Gauss 0.3



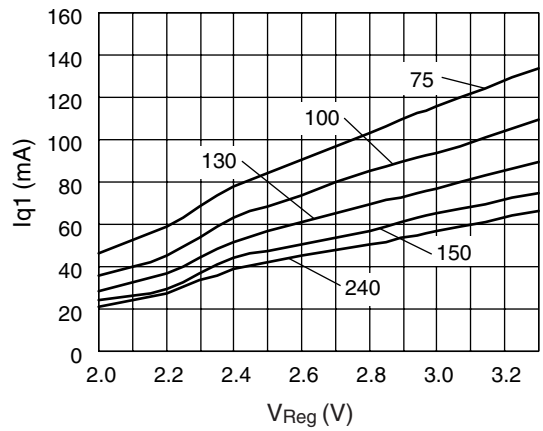
Output Spectrum for 802.11b Signal at I_q = 120 mA



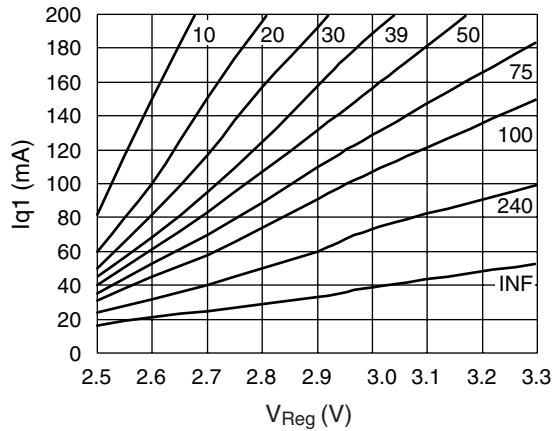
Output Spectrum for 802.11b Signal at I_q = 80 mA



Output Spectrum for 802.11b Signal at I_q = 50 mA



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

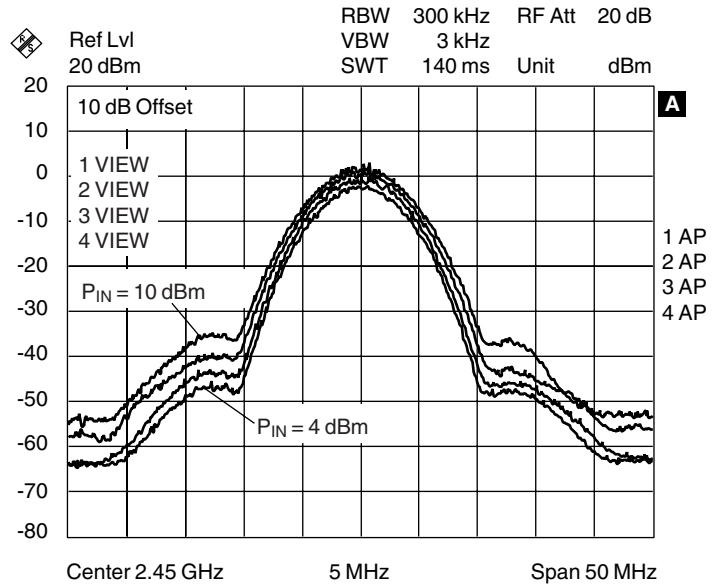


Quiescent Current of the 2nd Stage vs. V_{Reg} and R_{q2}

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

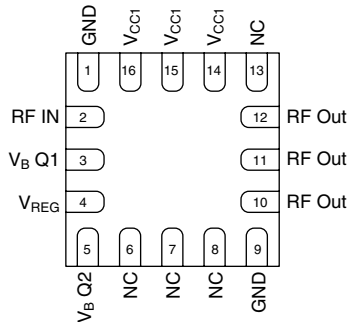
Test Signal — 11 MBit/s
 Filtering — Gaussian, 0.3
 Frequency — 2.45 GHz
 $V_{CC} = 3.3\text{ V}$
 $I_q = 150\text{ mA}$

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

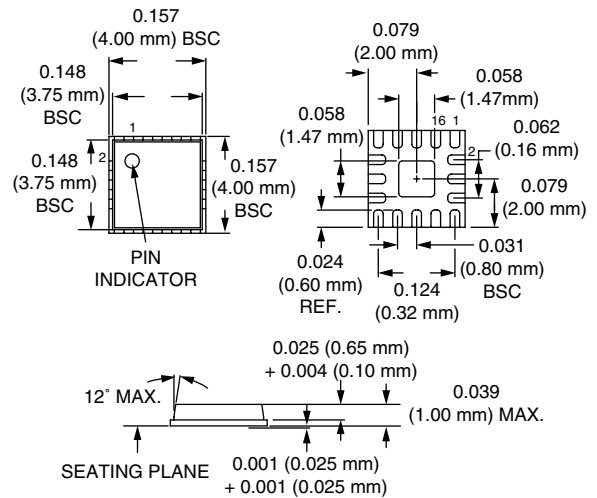


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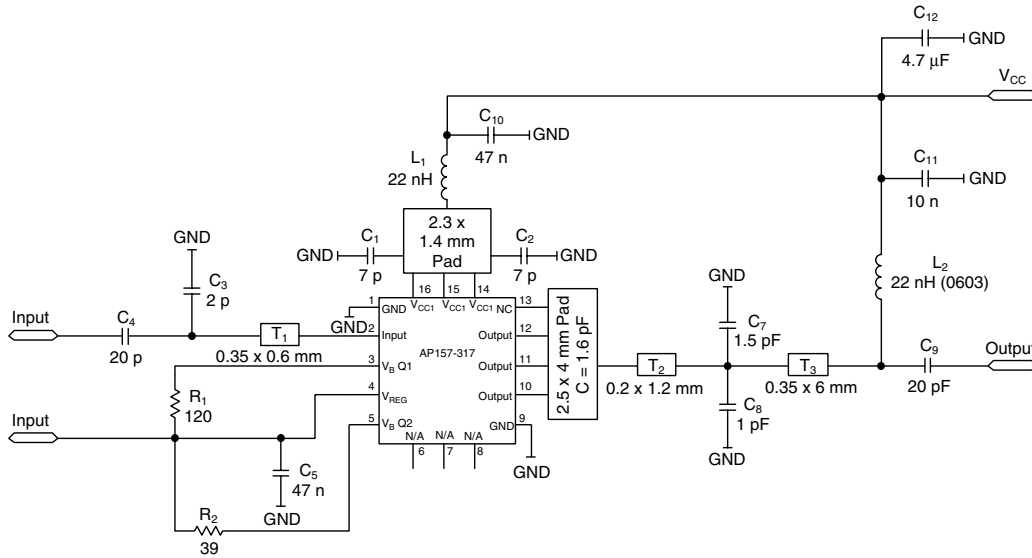
Pin Out



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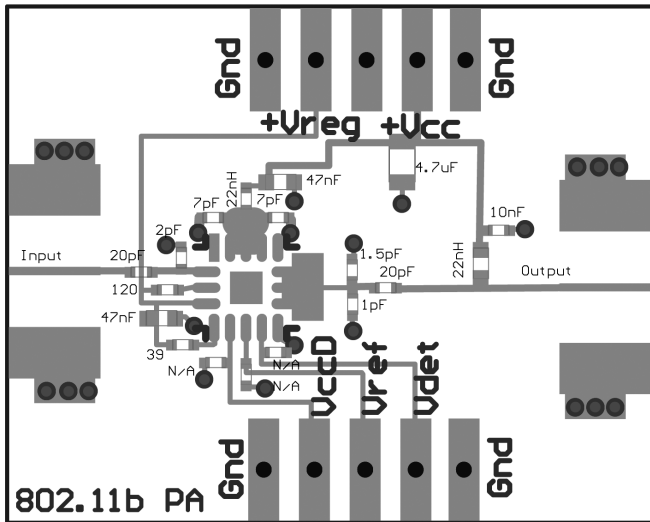


Evaluation Board Schematic



Board: FR4, 10 mils thick.

Test Board



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

