

3.3 V, 802.11b/g Linear Power Amplifier



AP163-317

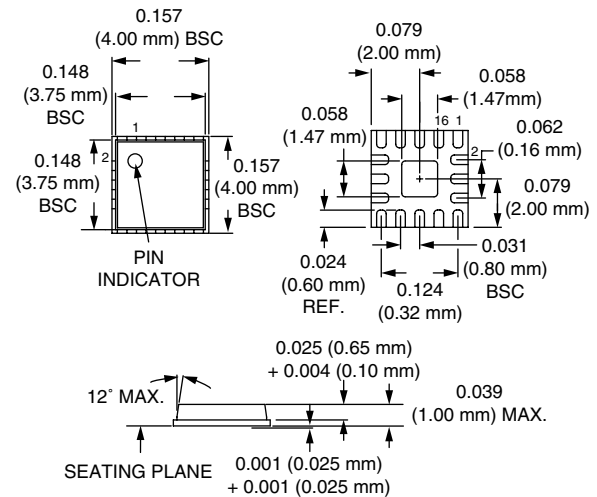
Features

- High Linearity @ 23 dBm
- DC Current: 180 mA @ 3.3 V
- 802.11b/g Compliant
- 1800–2500 MHz Operation
- 19 dB Small Signal Gain
- 27 dBm $P_{1\text{ dB}}$ @ 2.4 GHz
- Uses Single DC Bias Supply
- Low Cost Plastic Package
- Available on Tape & Reel

Description

The AP163-317 is a linear, medium power amplifier designed for low voltage operation in 2.4–2.5 GHz ISM band having linear and high-efficiency performance with 802.11b/g signals. The device is manufactured on advanced InGaP HBT process and housed in a 16 Pin 4 x 4 mm micro lead package.

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Absolute Maximum Ratings

Characteristic	Value
RF Input Power	20 dBm
Supply Current	800 mA
Supply Voltage	5 V
Operating Temperature	-65°C to +125°C
Storage Temperature	-65°C to +125°C

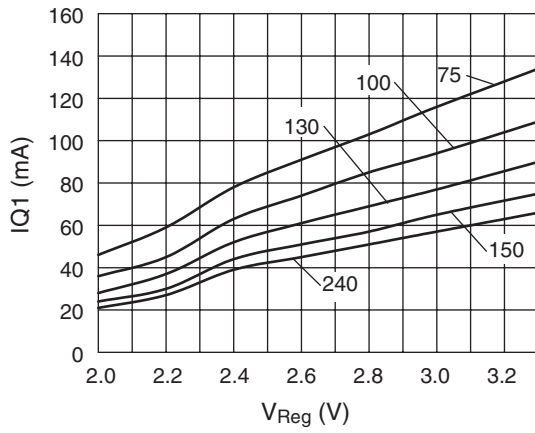
Electrical Specifications at 25°C

Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Frequency Range		MHz	1800		2500	dB
Small Signal Gain	F = 2.45 GHz	S_{21}	17	19	22	dB
Output Power at 1 dB compression	F = 2.45 GHz	$P_{1\text{ dB}}$	26	27		dBm
Linear Output Power ¹	F = 2.45 GHz, $I_C = 186\text{ mA}$	P_{Out}	23	23.5		dBm
First Sidelobe ¹	F = 2.45 GHz, $I_C = 170\text{ mA}$, $P_{\text{Out}} = 22.5\text{ dBm}$			-40		dBc
Second Sidelobe ¹	F = 2.45 GHz, $I_C = 186\text{ mA}$, $P_{\text{Out}} = 22.5\text{ dBm}$			-54		dBc
Operating Voltage	Amplifier DC voltage	V_D	2.5	3.3	4.5	V
Reverse Isolation		Isol.		30		dB
Current Consumption	$P_{\text{Out}} = 23.5\text{ dBm}$ $P_{\text{Out}} = 22.5\text{ dBm}$ $P_{\text{Out}} = 17\text{ dBm}$ Quiescent	I_{QO}		186 170 120 90		mA mA mA mA

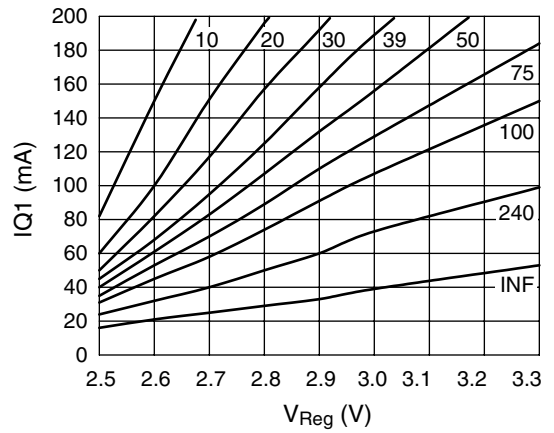
$V_{CC} = 3.3\text{ V}$, $I_C = 90\text{ mA}$ (unless otherwise specified)

1. Specifications are defined for the evaluations board below with the 802.11b signal at 11Mbit/s and having Cosine (0.95) filtering.

Typical Performance Data

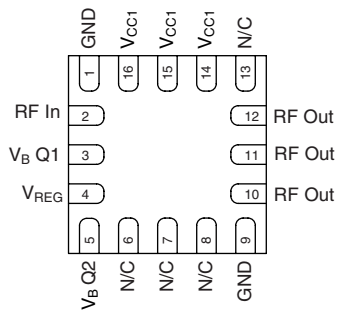


Quiescent Current of the 1st Stage vs. V_{Reg} and $RQ1$

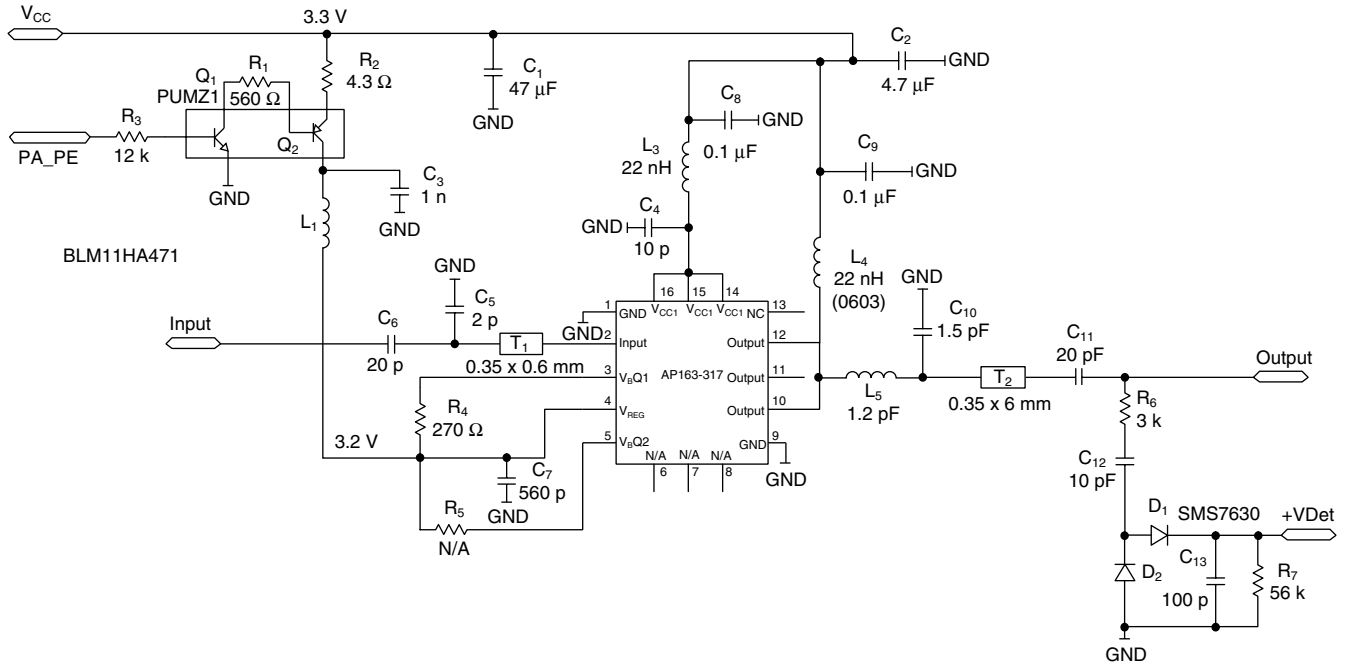


Quiescent Current of the 2nd Stage vs. V_{Reg} and $RQ2$

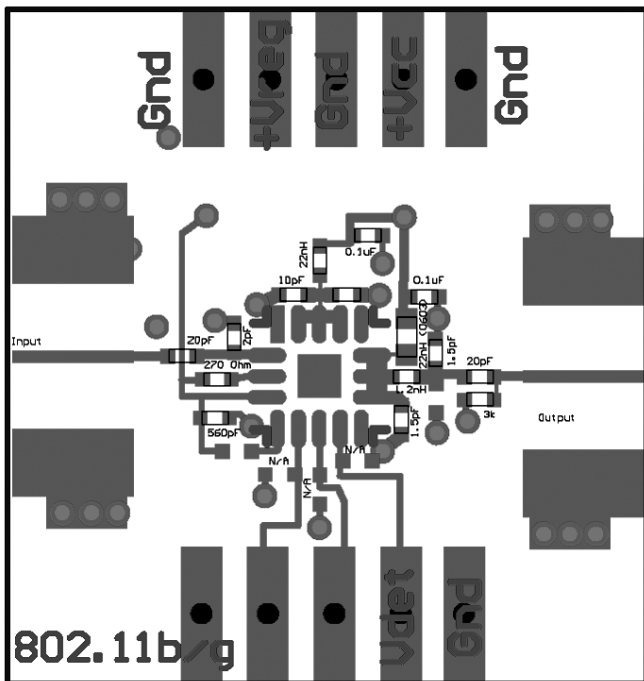
Pin Out



Evaluation Board Schematic



Evaluation Board Layout (Top View)



Evaluation Board Layout (Bottom View)

