

3.3 V, 802.11g/b Linear Power Amplifier



AP178-321

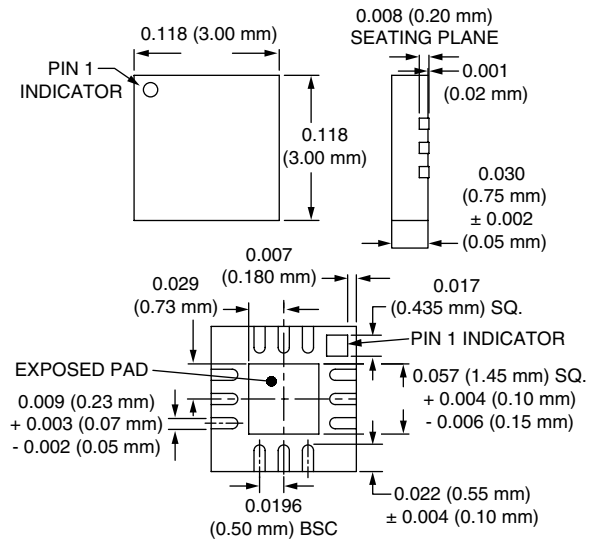
Features

- High Linearity @ 25 dBm
- DC Current: 110 mA @ 19 dBm
- 802.11b/g OFDM Compliant
- 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 AP178-321 is a linear, medium power amplifier designed for low voltage operation in a 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 12 Pin 3 x 3 mm QFN package.

-321



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

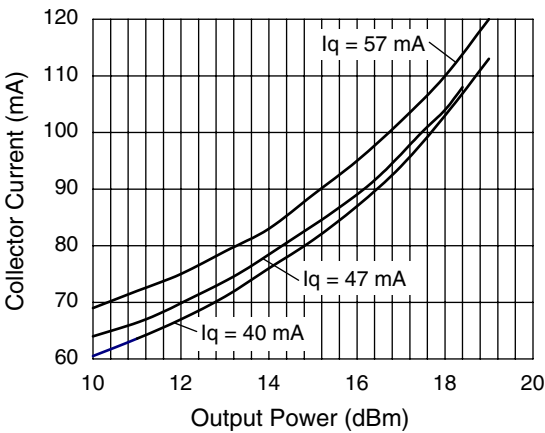
Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Frequency Range		MHz	1800		2500	dB
Small Signal Gain	F = 2.45 GHz	S_{21}	17	19	22	dB
Output Power at 1 dB compression	F = 2.45 GHz	P_1 dB	26	27		dBm
Linear Output Power ¹	F = 2.45 GHz, I_C = 110 mA	P_{Out}	17	18		dBm
First Sidelobe ²	F = 2.45 GHz, I_C = 170 mA, P_{Out} = 22.5 dBm			-40		dBc
Second Sidelobe ²	F = 2.45 GHz, I_C = 186 mA, P_{Out} = 22.5 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_{Out}^2 = 23.5 dBm P_{Out}^2 = 22.5 dBm P_{Out}^1 = 17 dBm Quiescent ¹	I_{QO}		186 170 95 47		mA mA mA mA

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

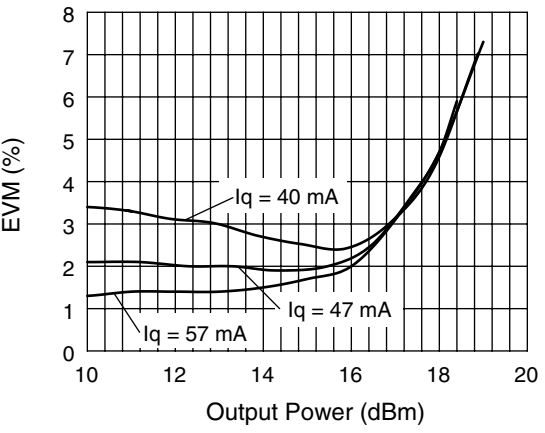
1. Specifications are defined for the evaluations board below with the 802.11g signal at 36 Mbit/s using 16 QAM OFDM.

2. Specifications are defined for the evaluations board below with the 802.11b signal at 11 Mbit/s with Cos = 0.85 filter.

Typical Performance Data

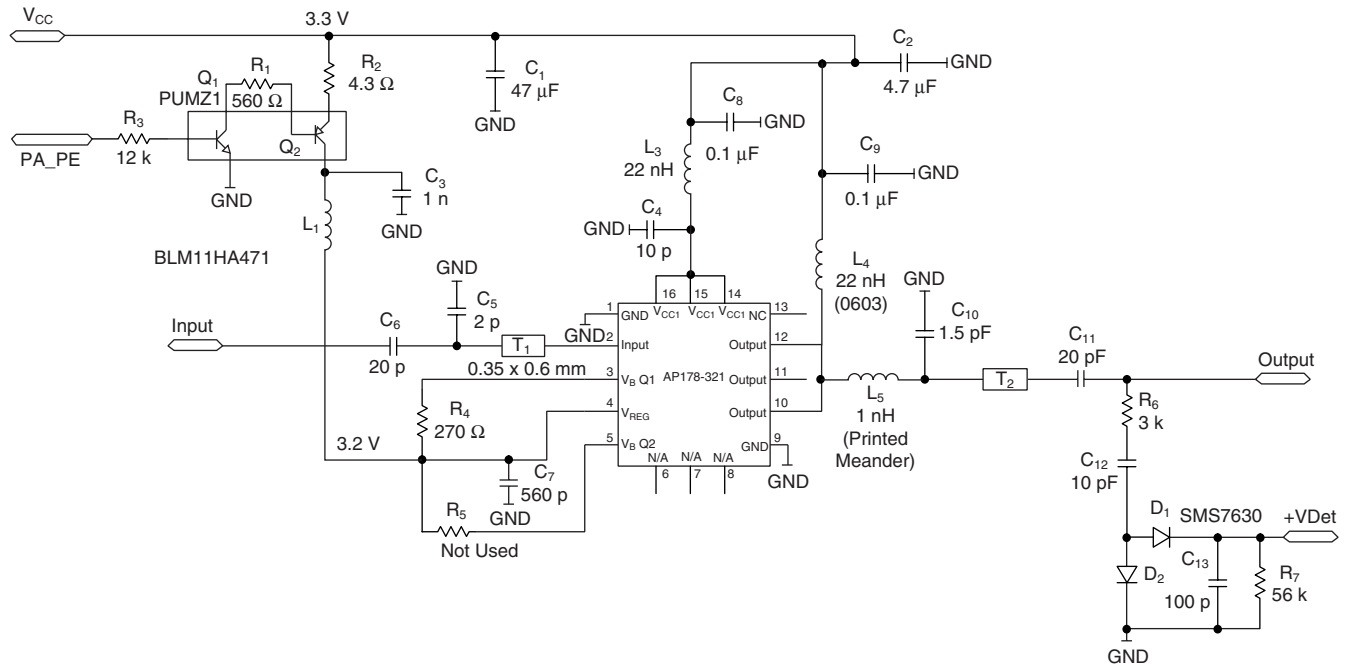


I_{CC} vs. Output Power

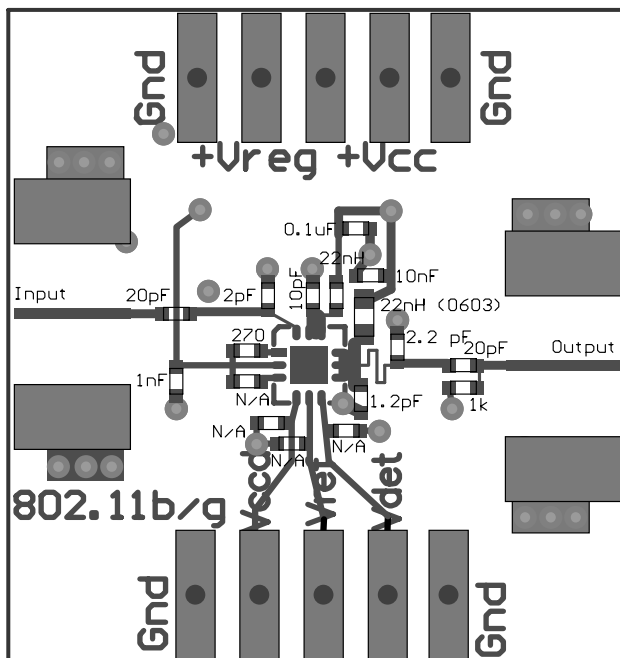


EVM vs. Output Power

Evaluation Board Schematic



Evaluation Board Layout (Top View)



Evaluation Board Layout (Bottom View)

