3.3 V, 802.11g/b
Linear Power Amplifier

SKYWORKS

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.

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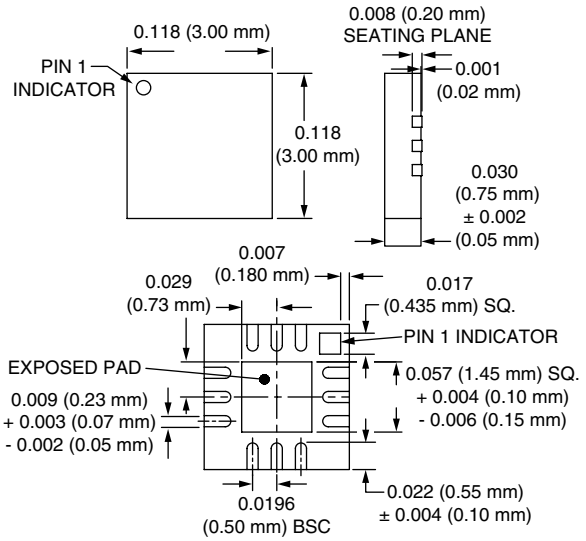


Absolute Maximum Ratings

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

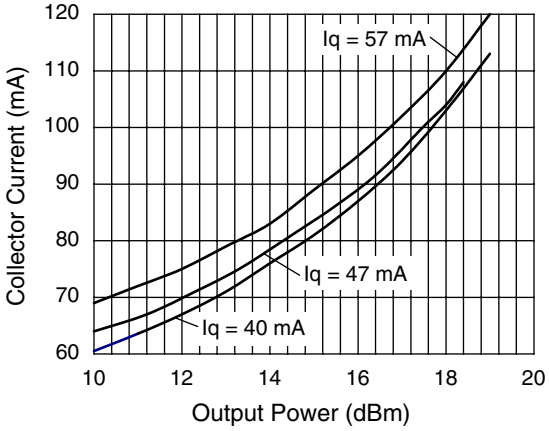
Electrical Specifications at 25°C

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	$P_{1\ dB}$	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

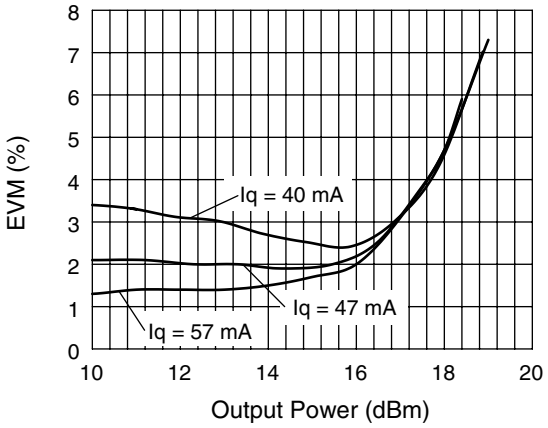
V_{CC} = 3.3 V, I_C = 90 mA (unless otherwise specified)

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

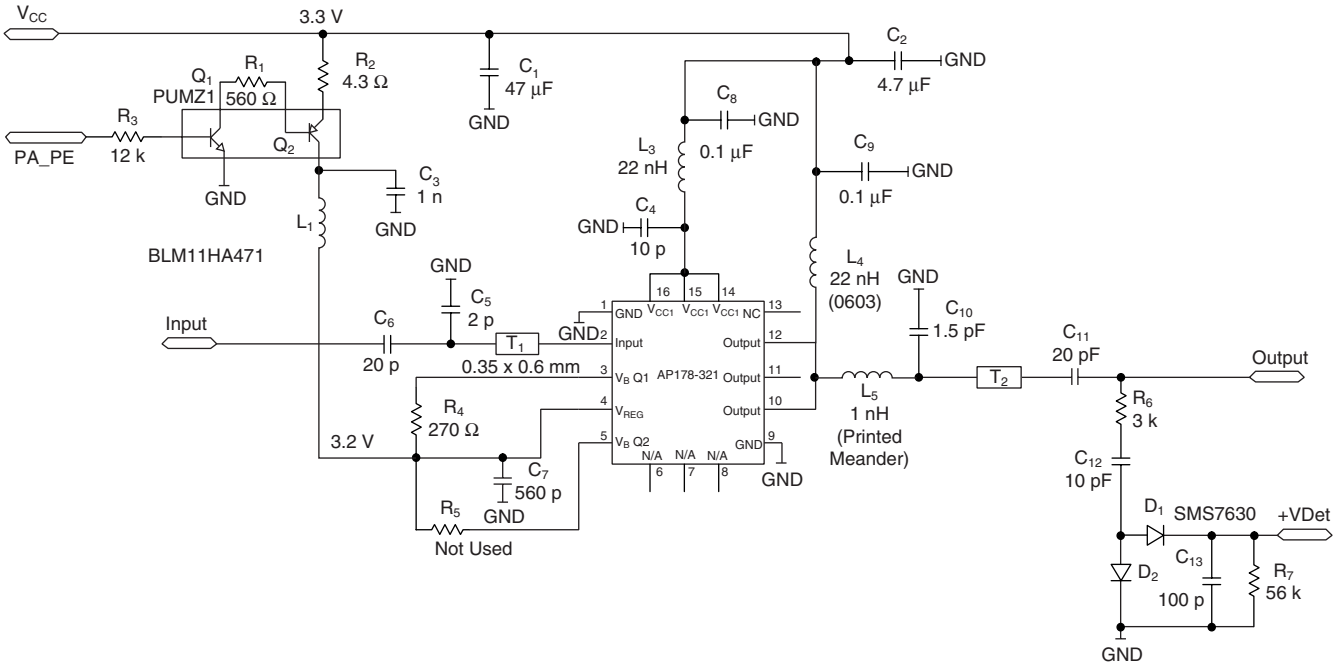


I_{CC} vs. Output Power

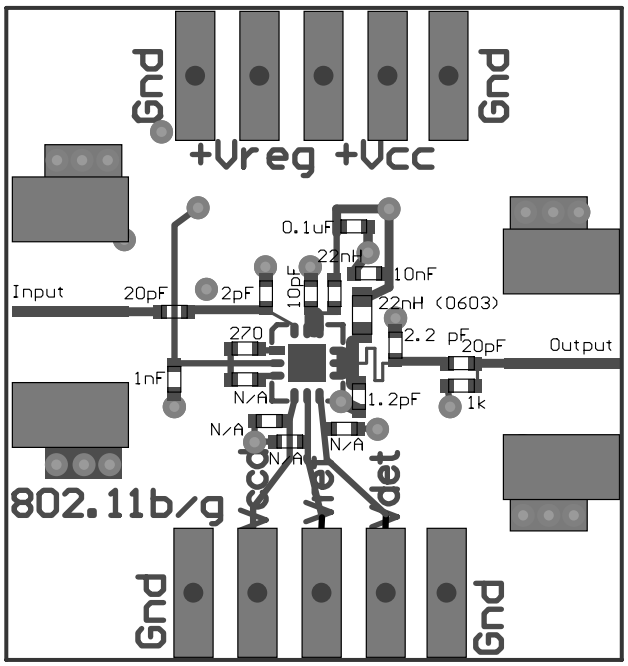


EVM vs. Output Power

Evaluation Board Schematic



Evaluation Board Layout (Top View)



Evaluation Board Layout (Bottom View)