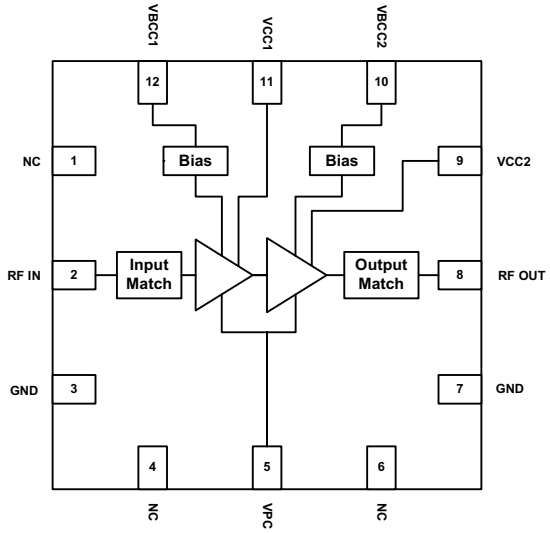
Preliminary

RFSP2010

2.4–2.5 GHz Power Amplifier

Applications

- 802.11b/g WLAN
- 2.4 GHz ISM band wireless equipment



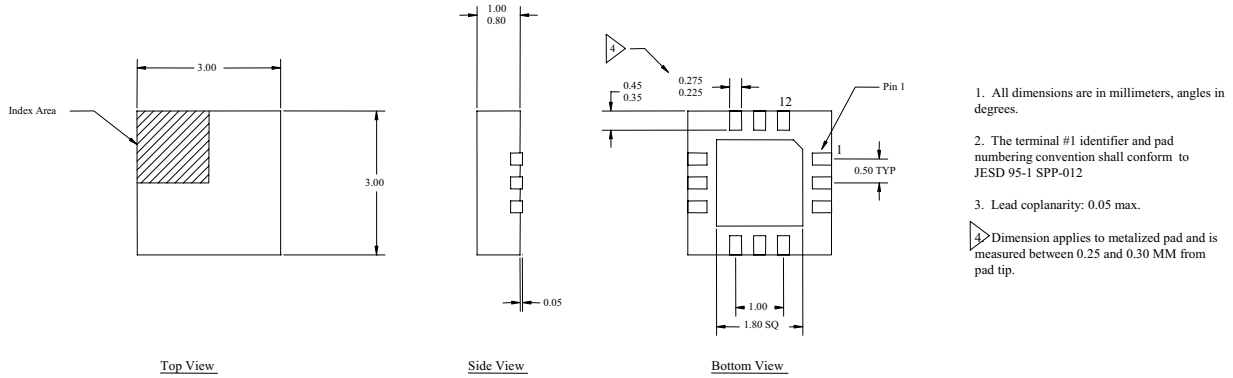
Functional Block Diagram

Product Description

The RFSP2010 power amplifier is a high-performance GaAs HBT IC designed for use in transmit applications in the 2.4-2.5 GHz frequency band. With a P1dB of 25 dBm, the device is ideal as a final stage for wireless LAN applications requiring high transmit linearity. Designed with propriety linearizing techniques, the part is operable closer to P-1dB, which enables the device to achieve a specific error vector magnitude (EVM) with less backoff. The PA exhibits unparalleled linearity and efficiency for both 802.11b- and 802.11g-based WLAN systems. The part operates off a single +3.3V supply.

Product Features

- 25 dBm P1dB@3.3V
- 21.5 dB gain
- 1.5 % EVM @ P_{OUT} = +18 dBm with 54 Mbps OFDM signal
- 95 mA @ P_{OUT} = +18 dBm with 54 Mbps OFDM signal
- Single +3.3V supply voltage
- PA power on/off logic
- Input and output matched to 50 ohms



3x3 mm Package Outline

Parameter [1]	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					
Frequency Range	2400		2500	MHz	
Output P1dB		25		dBm	
Gain		21.5		dB	P_{OUT} = +18 dBm
Error Vector Magnitude[2]		1.5		%	P_{OUT} = +18 dBm; 54 Mbps OFDM signal
Gain Flatness		±0.5		dB	Across 100 MHz Band
Harmonics					
2nd Harmonic		-27		dBc	@ P1dB
3rd Harmonic		-45		dBc	@ P1dB
Spurious (Stability)[3]		-60		dBc/30 kHz	P_{OUT} = -20 dBm to P1dB
Reverse Isolation	35			dB	
Input Return Loss	10			dB	
Output Return Loss	10			dB	With matching capacitor
Power Supply					
Operating Voltage		3.3		V	
Current Consumption		95 180		mA mA	P_{OUT} = +18 dBm; 54 Mbps OFDM signal P_{OUT} = +24 dBm; meets 802.11b ACPR spec
Shutdown Control					
Device On Logic High		3.3		V	
Device Off Logic Low			0.7	V	
Device Off Current			1	uA	
Turn-On Time			500	ns	With 50Ω source
Turn-Off Time			500	ns	With 50Ω source

Note 1: Test Conditions: V_{CC} = 3.3V, Freq. = 2450 MHz, T =25 °C, Small Signal Conditions unless otherwise stated.
Note 2: Increase in EVM over system EVM floor.
Note 3: Load VSWR is set to 7:1 and the angle is varied 360 degrees.

Absolute Maximum Ratings

Parameter	Rating	Unit
DC Power Supply	6.0	V
DC Supply Current	400	mA
Maximum RF input level	+7	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-55 to +150	°C

Ordering Information

Part Number	Temp. Range (°C)	Package Description	Quantity
PRFS-P2010-EVL	-40 to +85	Evaluation Board	1
PRFS-P2010-005	-40 to +85	13" Reverse Tape/Reel	2500 pcs.
PRFS-P2010-006	-40 to +85	13" Tape/Reel	2500 pcs.
PRFS-P2010-007	-40 to +85	7" Reverse Tape/Reel	1000 pcs.
PRFS-P2010-008	-40 to +85	7" Tape/Reel	1000 pcs.
PRFS-P2010-009	-40 to +85	Bulk – 4x4 mm 24-pin LPCC	1-999 pcs.

NOTES

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