Advanced RFSP5021

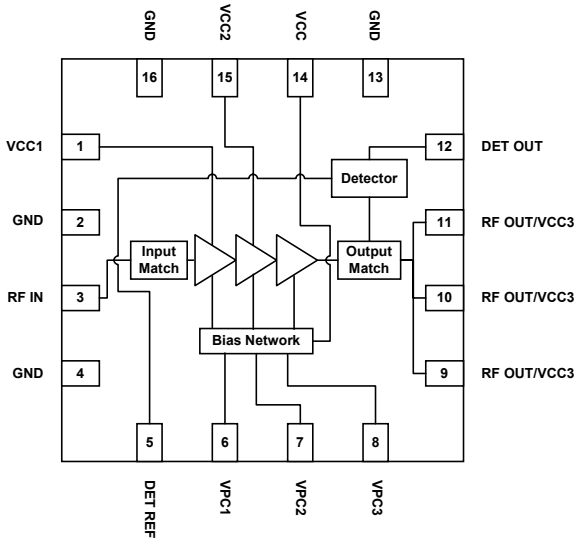
5.15-5.85 GHz U-NII Power Amplifier

Applications

- 802.11a WLAN
- HiperLAN/2 WLAN
- U-NII fixed wireless equipment

Product Description

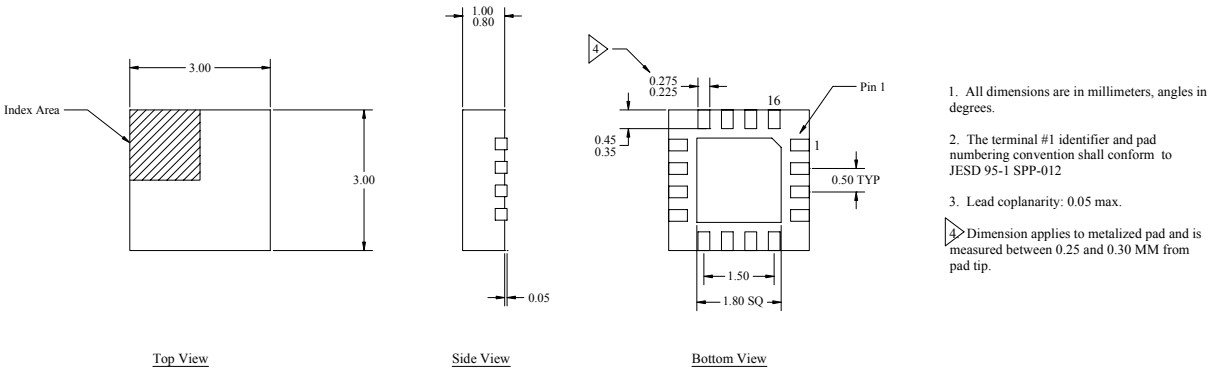
The RFSP5021 power amplifier is a high-performance GaAs HBT IC designed for use in transmit applications in the 5.15-5.85 GHz frequency band. With a P1dB of 25 dBm, the device is ideal as a final stage for wireless LAN applications requiring high transmit linearity. The part demonstrates very low error vector magnitude (EVM) at the full 54 Mbps data rate for 802.11a. The PA can be easily matched for optimum linearity and power performance at the desired frequency of operation between 5.15 and 5.85 GHz. The part operates off a single +3.3V supply.



Functional Block Diagram

Product Features

- 24 dBm P1dB@3.3V
- 26 dB gain
- 2.0 % EVM @ P_{OUT} = +18 dBm with 54 Mbps OFDM signal
- 210 mA @ P_{OUT} = +18 dBm with 54 Mbps OFDM signal
- Single +3.3V supply voltage
- PA power on/off logic



3x3 mm Package Outline

RF Solutions, Inc.
3145 Avalon Ridge Place, Suite200, Norcross, Georgia 30071
www.rf-solutions.com 770-263-2600p 770-248-1654f

Parameter [1]	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					
Frequency Range	5150		5850	MHz	
Output P1dB		24		dBm	
Gain		26		dB	P_{OUT} = +18 dBm
Error Vector Magnitude (EVM)[2]		2.0		%	P_{OUT} = +18 dBm; 54 Mbps OFDM signal
Gain Flatness		±1.0		dB	Across 200 MHz Band
Harmonics					
2nd Harmonic		-30		dBc	@ P1dB
3rd Harmonic		-30		dBc	@ P1dB
Spurious (Stability)[3]		-60		dBc/30 kHz	P_{OUT} = -20 dBm to P1dB
Reverse Isolation		35		dB	
Noise Figure		6		dB	
Input Return Loss	10			dB	
Output Return Loss	10			dB	With matching capacitor
Power Supply					
Operating Voltage		3.3		V	
Current Consumption		210		mA	P_{OUT} = +18 dBm; 54 Mbps OFDM signal
Detector Characteristics					
Output Voltage		0.5		V	P_{OUT} = +25 dBm; RL = 5 kΩ
Output Voltage		0.1		V	P_{OUT} = +19 dBm; RL = 5 kΩ
Reference Diode					Available as part of matched pair
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. = 5250 MHz, T =25°C, Small Signal Conditions unless otherwise stated.
Note 2: Increase in EVM over 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	500	mA
Maximum RF input level	2	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-55 to +150	°C