

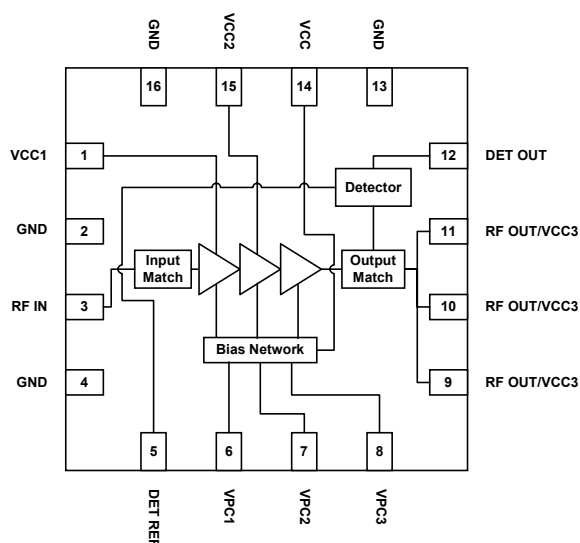


# Advanced RFSP5021

5.15-5.85 GHz U-NII Power Amplifier

## Applications

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



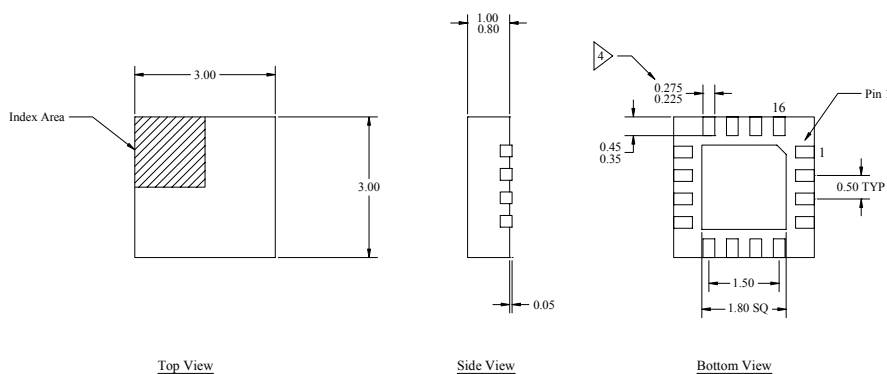
## Functional Block Diagram

## 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.

## 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



1. All dimensions are in millimeters, angles in degrees.

2. The terminal #1 identifier and pad numbering convention shall conform to JESD 95-1 SPP-012

3. Lead coplanarity: 0.05 max.

4. Dimension applies to metalized pad and is measured between 0.25 and 0.30 mm from pad tip.

## 3x3 mm Package Outline

Parameter <sup>1</sup>	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>Overall</b>					
Frequency Range	5150		5850	MHz	
Output P1dB		24		dBm	
Gain		26		dB	P <sub>OUT</sub> = +18 dBm
Error Vector Magnitude (EVM) <sup>2</sup>		2.0		%	P <sub>OUT</sub> = +18 dBm; 54 Mbps OFDM signal
Gain Flatness		±1.0		dB	Across 200 MHz Band
Harmonics					
2 <sup>nd</sup> Harmonic		-30		dBc	@ P1dB
3 <sup>rd</sup> Harmonic		-30		dBc	@ P1dB
Spurious (Stability) <sup>3</sup>		-60		dBc/30 kHz	P <sub>OUT</sub> = -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
<b>Power Supply</b>					
Operating Voltage		3.3		V	
Current Consumption		210		mA	P <sub>OUT</sub> = +18 dBm; 54 Mbps OFDM signal
<b>Detector Characteristics</b>					
Output Voltage		0.5		V	P <sub>OUT</sub> = +25 dBm; RL = 5 kΩ
Output Voltage		0.1		V	P <sub>OUT</sub> = +19 dBm; RL = 5 kΩ
Reference Diode					Available as part of matched pair
<b>Shutdown Control</b>					
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<sub>CC</sub> = 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



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