

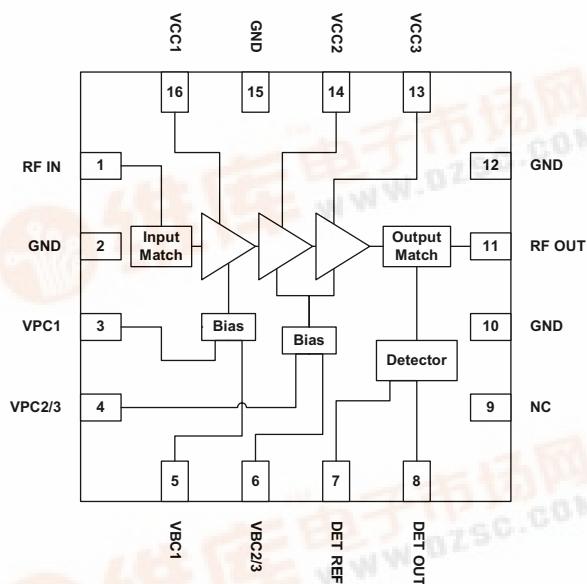


Preliminary RFSP2020

2.4–2.5 GHz Power Amplifier

Applications

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



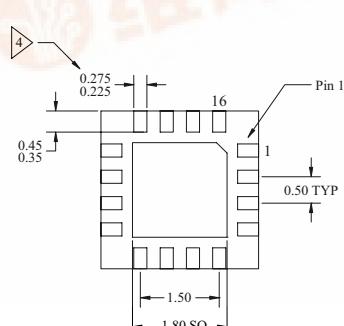
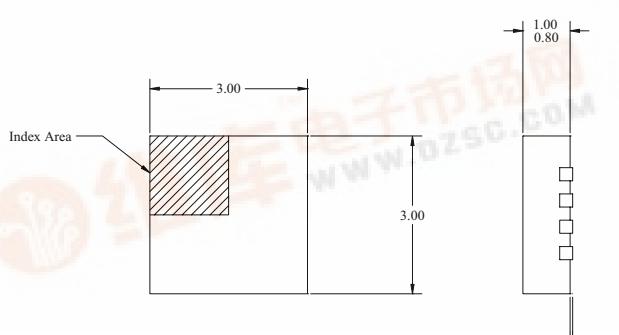
Functional Block Diagram

Product Description

The RFSP2020 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 advanced linearizing techniques, the device achieves a specific error vector magnitude (EVM) with lesser backoff than conventional PA designs. The PA exhibits unparalleled linearity and efficiency for both 802.11b- and 802.11g-based WLAN systems. The on-chip detector is perfect for systems where power sensing is necessary. The part operates off a single +3.3V supply.

Product Features

- 25 dBm P1dB@3.3V
- 30 dB gain
- 1.5 % EVM @ P_{OUT} = +18 dBm with 54 Mbps OFDM signal
- 110 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



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 metallized pad and is measured between 0.25 and 0.30 MM from pad tip.

3x3 mm Package Outline

RFSP2020

2.4–2.5 GHz Power Amplifier

Parameter ¹	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					
Frequency Range	2400		2500	MHz	
Output P1dB		25		dBm	
Gain		30		dB	$P_{OUT} = +18 \text{ dBm}$
Error Vector Magnitude ²		1.5		%	$P_{OUT} = +18 \text{ dBm}; 54 \text{ Mbps OFDM signal}$
Gain Flatness		± 0.75		dB	Across 100 MHz Band
Harmonics					
2 nd Harmonic		-27		dBc	@ P1dB
3 rd Harmonic		-50		dBc	@ P1dB
Spurious (Stability) ³		-60		dBc/30 kHz	$P_{OUT} = -20 \text{ dBm to P1dB}$
Reverse Isolation	40			dB	
Input Return Loss	10			dB	
Output Return Loss	10			dB	
Power Supply					
Operating Voltage		3.3		V	
Current Consumption		110		mA	$P_{OUT} = +18 \text{ dBm}; 54 \text{ Mbps OFDM signal}$
		215		mA	$P_{OUT} = +23 \text{ dBm}; 802.11b \text{ ACPR compliant}$
Detector Characteristics					
Output Voltage		0.5		V	$P_{OUT} = +25 \text{ dBm}; RL = 5 \text{ k}$
Output Voltage		0.1		V	$P_{OUT} = +19 \text{ dBm}; RL = 5 \text{ k}$
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	µA	
Turn-On Time			0.8	µs	With 50Ω source
Turn-Off Time			1.0	µs	With 50Ω source

Note 1: Test Conditions: $V_{CC} = 3.3V$, Freq. = 2450 MHz, $T = 25^\circ\text{C}$, 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	-1	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-P2020-EVL	-40 to +85	Evaluation Board	1
PRFS-P2020-005	-40 to +85	13" Reverse Tape/Reel	2500 pcs.
PRFS-P2020-006	-40 to +85	13" Tape/Reel	2500 pcs.
PRFS-P2020-007	-40 to +85	7" Reverse Tape/Reel	1000 pcs.
PRFS-P2020-008	-40 to +85	7" Tape/Reel	1000 pcs.
PRFS-P2020-009	-40 to +85	Bulk – 4x4 mm 24-pin LPCC	1-999 pcs.

NOTES



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