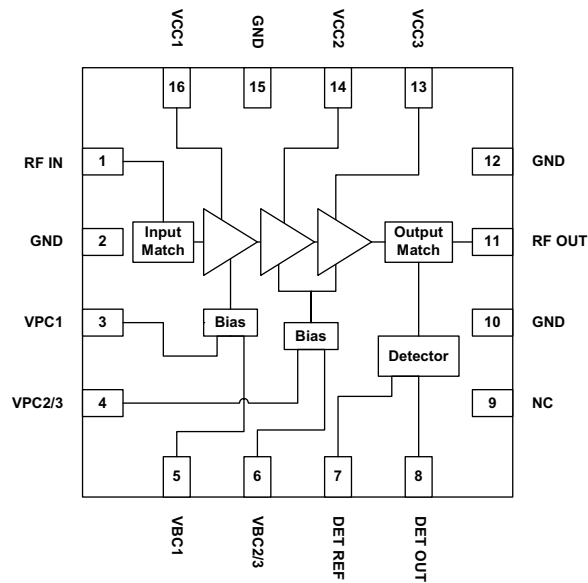


Applications

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



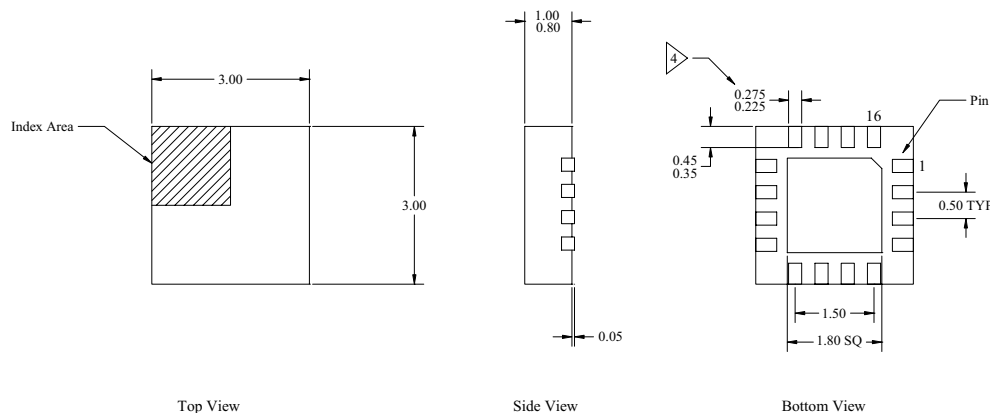
Functional Block Diagram

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.

▷ Dimension applies to metalized 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 dBm |
| Error Vector Magnitude ² | | 1.5 | | % | P _{OUT} = +18 dBm; 54 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 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 dBm; 54 Mbps OFDM signal |
| | | 215 | | mA | P _{OUT} = +23 dBm; 802.11b ACPR compliant |
| Detector Characteristics | | | | | |
| Output Voltage | | 0.5 | | V | P _{OUT} = +25 dBm; RL = 5 k |
| Output Voltage | | 0.1 | | V | P _{OUT} = +19 dBm; RL = 5 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°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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