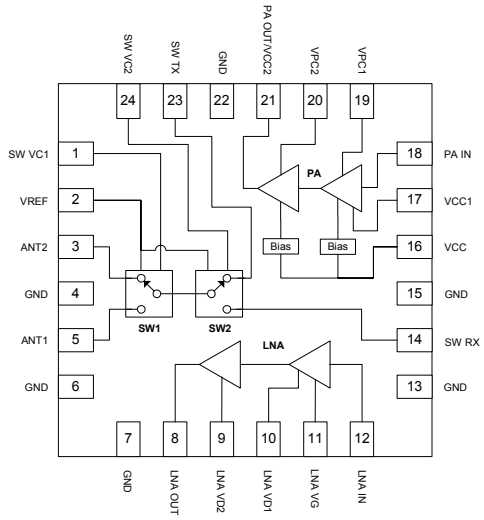
Advanced RFSF5150

5.15-5.85 GHz U-NII PA/LNA/Switch

Applications

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



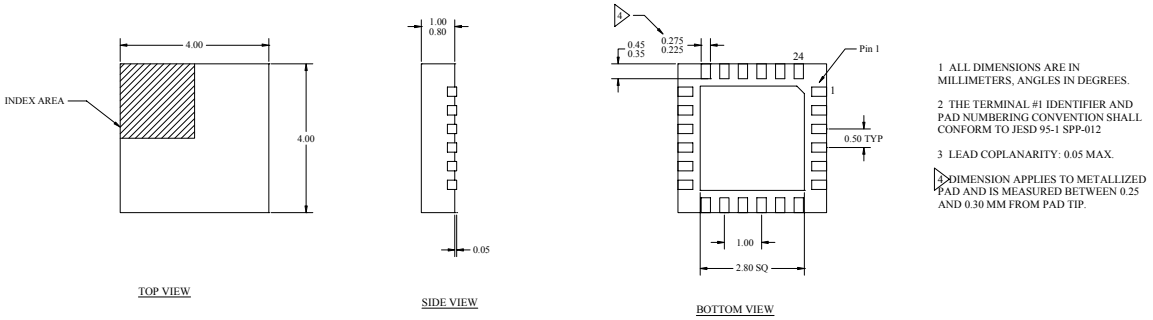
Functional Block Diagram

Product Description

The RFSF5150 PA/LNA/Switch is a high-performance GaAs IC designed for use in transmit/receive applications in the 5.15-5.85 GHz frequency band. With a P1dB of 23 dBm in the PA, the part is ideal as a final stage for wireless LAN applications requiring high transmit linearity. The LNA has both high gain and high input IP3 for systems requiring high front-end linearity. The switch optimizes performance of the LNA and PA with very low insertion loss and a high P1dB. The PA input, LNA input and output, and switches are all matched to 50 ohms. The part operates off a single positive supply.

Product Features

- 18 dBm cascaded TX P1dB@3.3V
- 15 dB cascaded TX gain
- 11 dBm cascaded RX P1dB@3.0V
- 9 dB cascaded RX gain
- Low switch loss of 1.5 dB
- 20 dB isolation per switch
- Single positive supply
- PA power on/off logic



4x4 mm Package Outline

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Advanced RFSF5150

5.15-5.85 GHz U-NII PA/LNA/Switch

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Frequency Range	5150		5850		
Transmit Path					
Cascaded Gain		15		dB	
Cascaded Output P1dB		18		dBm	
Receive Path					
Cascaded Gain		9		dB	
Cascaded Output P1dB		11		dBm	
Cascaded Noise Figure		4.8		dB	
PA[1]					
Output P1dB		23		dBm	
Gain		18		dB	
Gain Flatness		±1.0		dB	Across 200 MHz Band
Harmonics					
2nd Harmonic		-30		dBc	@ P1dB
3rd Harmonic		-30		dBc	@ P1dB
Spurious (Stability)[2]		-60		dBc/30 kHz	P_{IN} = -20 dBm to P1dB
Reverse Isolation		35		dB	
Noise Figure		6		dB	
Input Return Loss		14		dB	With matching capacitor
Output Return Loss		10		dB	With matching capacitor
Current Consumption		100		mA	P_{OUT} = 18 dBm
LNA[3]					
Noise Figure		1.8		dB	
Gain		12		dBm	
Input IP3		9		dBm	
Gain Flatness		±0.5		dB	Across 200 MHz Band
Reverse Isolation		25		dB	
Input Return Loss		10		dB	
Output Return Loss		10		dB	
Current Consumption		10		mA	
Switch[4]					
Insertion Loss		1.5		dB	per switch
Input P1dB		27		dBm	
Isolation		20		dB	per switch
Return Loss (all SW ports)		14		dB	
Switch Control					
High State		3		V	
Low State		0		V	
SW VC1 setting		3 0		V V	ANT2 selection ANT1 selection
SW VC2 setting		0 3		V V	SW_Rx selection SW_Tx selection
Current Consumption		50		uA	
Power Supply					
Operating Voltage		3.3 3.0		V V	PA LNA & Switches

Note 1: PA Test Conditions: V_{CC} = 3.3V, P_{OUT} = +18 dBm, Freq. = 5250 MHz, T =25°C.
Note 2: Load VSWR is set to 7:1 and the angle is varied 360 degrees.
Note 3: LNA Test Condtions: V_{CC} = 3.0V, P_{IN} = -20 dBm, Freq. = 5250 MHz, T =25°C.
Note 4: Switch Test Conditions: V_{CC} = 3.0V, P_{IN} = -20 dBm, Freq. = 5250 MHz, T =25°C.

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Absolute Maximum Ratings

Parameter	Rating	Unit
DC Power Supply	6.0	V
DC Supply Current	600	mA
Maximum PA RF input level	+9	dBm
Maximum LNA RF input level	+2	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-55 to +150	°C