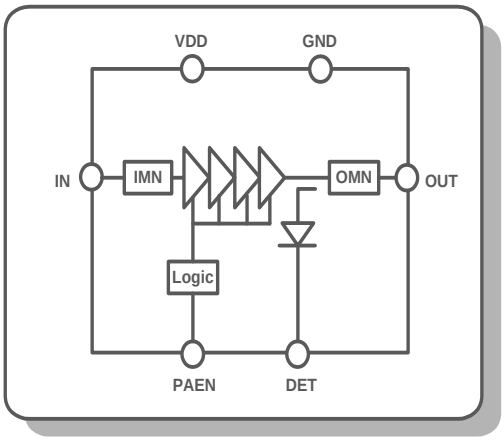
CMOS 5GHZ Linear Power Amplifier for 802.11a/n/ac



Description

The RFX503 is a fully integrated power amplifier featuring high gain, high efficiency and excellent linearity to meet the stringent EVM requirements for wireless LAN (WLAN) systems in the 5GHz U-NII (Unlicensed National Information Infrastructure) band and based on the latest IEEE 802.11ac standard. The RFX503 integrates the PA, the associated matching network, and the harmonic filters, a directional-coupler based logarithmic power detector, RF decoupling, and a 3.8GHz notch filter, all in a CMOS single-chip device. The RFX503 has simple and low-voltage CMOS control logic, and requires minimal external components for system implementation. Ports are available for external capacitor options for improved dynamic EVM.

Combining superior performance, simple PCB design, small form factor, and ultra low cost, RFX503 is the perfect solution for enhancing the operating range and data throughput of a wide range of wireless communication systems, especially for WLAN IEEE 802.11a, 11n and 11ac applications.

Applications

- 802.11a/n/ac Access Point
- 802.11a/n/ac PC/Client Card
- 802.11a/n/ac Multimedia Platforms
- WHDI Platforms
- 802.11p WAVE Products
- Other 5GHz Transceivers

Parameters	Value	Conditions
Operating Frequency	5.15-5.9GHz	
Small-Signal Gain	32dB	In-band, Typical
Linear Output Power 1	+22dBm	802.11ac, MCS9/VHT80, DEVM=1.8%
Linear Output Power 2	+24dBm	802.11a, 64QAM/54Mbps, DEVM=3%
Linear Output Power 3	+26dBm	802.11a, MCS0/6Mbps, Mask Compliance
Current Consumption	400mA	Typical, Pout=+23dBm,VDD=5V, 54Mbps, 64QAM
2^{nd} Harmonic	-45dBm/MHz	Pout=+23dBm, MCS7/HT40
3^{rd} Harmonic	-45dBm/MHz	Pout=+23dBm, MCS7/HT40
Input Return Loss	-10dB	Typical, In-band
Supply VDD	4.5-5.5 VDC	Nominal VDD=5V
Shut-down Current	1μA	
Control Signals	PA Enable	CMOS Logic, <0.5V Low, >1.2V High
Rise and Fall Time	0.4μs	
Package	20-QFN	4.0mm x 4.0mm x 0.9mm