

Description

The 8TR8220 is a compact, multi-function front-end RFIC (radio frequency integrated circuit) intended for range extension in LP-WAN, IoT, 802.15.4 ZigBee™/ Thread, 802.15.4g Wi-SUN, and proprietary ISM wireless systems in the 2.4GHz band.

The 8TR8220 combines a power amplifier (PA), bypass, low noise amplifier (LNA), and a double pole, double throw (DPDT) antenna diversity switch (Figure 1) in a 3.0 x 3.0 x 0.55mm 16-pin QFN package. It also comes integrated with input/output matching circuitry.

Block Diagram

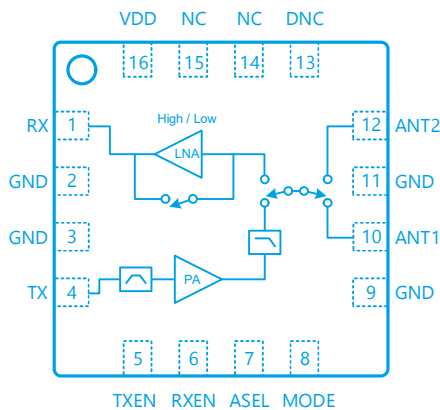


Figure 1: 8TR8220 Block Diagram

Applications

- IoT (Internet of Things) / M2M Connectivity
- Low Power Wide Area Networking (LP-WAN)
- RPMA Networks
- Smart City, Smart Metering, Smart Lighting
- 802.15.4 ZigBee™/ Thread Networks
- 802.15.4g Wireless Smart Utility Network
- Smart Home Gateways, Sensor Nodes
- Industrial, Factory Automation
- Wireless Sensor Networks

Features

- 2.4 – 2.5 GHz Frequency Range
- High Efficiency Optimized for Battery Operation
- Up to +23 dBm Output Power
- 150mA at +23dBm, 3.3V VDD
- 95mA at +20dBm, 3.3V VDD
- 2.7 dB LNA Noise Figure @ 3.3V VDD
- LNA Bypass Mode
- LNA Low Current and Low Noise Figure Modes
- Integrated PA, LNA, Antenna Diversity Switch
- -40°C to 125°C Extended Temperature Range
- 3.0 x 3.0 x 0.55mm 16-Pin QFN Package

Key Specifications

At VDD=3.3V, Zo=50Ω, unless noted otherwise.

TX		RX		GENERAL	
Parameter	Typical	Parameter	Typical	Parameter	Typical
Large-Signal Gain @ 22dBm Pout	30dB	Noise Figure	2.7dB	Frequency Range	2.4 - 2.5 GHz
Saturated Output Power @ 3.3V	+23dBm	Small-Signal Gain	11dB	Supply Voltage	1.8 – 3.6V
Supply Current @ 23dBm, 3.3V	150mA	Input P1dB / IIP3	-5dBm/+5dBm	Control Voltage	1.2V
In/Out Return Loss	-10 / -6 dB	Bypass IL	2.5dB	ESD (HBM)	1250V
2 nd /3 rd Harmonics up to +23dBm	-48 dBm/MHz*	Bypass Current	0.5uA	Temperature Range	-40 to 125°C

*Using external harmonic filter.