

### Features

- 2.4 – 2.5 GHz Frequency Range
- High Functionality Front-End RF Integrated Circuit
- PA, LNA, Bypass, Ant Switch, T/R Switch
- Low Power Consumption
- Optimized for Battery Operated IoT
- 85mA, +20dBm Saturated Output Power at 3V
- 2.5 dB LNA Noise Figure
- Low Noise Figure / Low Current LNA Modes
- Ultra-Low Shutdown, Bypass Currents
- High Directivity Power Detector for Power Control
- Ideal For ZigBee®, Bluetooth® Power Class 1, 1.5
- -40°C to 125 °C Extended Temperature Range
- 3.0 x 3.0 x 0.55 mm 16-Pin QFN Package

### Description

The 8TR8210 is a highly integrated RF Front-End intended for 802.15.4 ZigBee®/ Thread, Bluetooth® Smart and proprietary ISM wireless systems in the 2.4GHz band. It is optimized for battery-operated applications with enhanced efficiency. The 8TR8210 combines a power amplifier (PA), low noise amplifier (LNA), a bypass function, transmit / receive (T/R) switch and an antenna switch in a 3.0 x 3.0 x 0.55mm 16-pin QFN package. It also comes integrated with filter networks, input/output matching circuitry, and high directivity power detector.

### Key Specifications

TX		RX / BYPASS		RFIC	
Parameter	Typical	Parameter	Typical	Parameter	Typical
Large-Signal Gain	23 dB	Gain (Low NF/ Low Current)	12 / 11 dB	Frequency Range	2.4 - 2.5 GHz
Saturated Output Power	+20 dBm	Noise Figure (Low NF/ Low Current)	2.5 / 3 dB	Supply Voltage	1.8 - 3.6 V
Supply Current at +20 dBm	85 mA	Supply Current (Low NF/ Low Current)	8 / 5.5 mA	Shutdown Current	0.3 µA
Input Return Loss	-10 dB	Bypass Insertion Loss	2.1 dB	ESD (HBM)	1000 V
2 <sup>nd</sup> /3 <sup>rd</sup> Harmonics @ +21 dBm at ANT	-45 dBm / MHz*	Bypass Current	0.7 µA	Temperature Range	-40 to 125°C

At 3.0V VDD unless otherwise specified. \*With the use of one external pi filter.

### Applications

- IoT (Internet of Things) / M2M Connectivity
- 802.15.4 Zigbee®/Thread, Proprietary ISM
- Bluetooth® Low Energy (BLE) Mesh Networks
- Smart Home Hubs and Gateways
- Smart Lighting
- Smart Metering, Smart Energy
- Consumer Electronics, Smart Appliances
- Home, Industrial, Building Automation
- Wireless Sensor Nodes & Networks
- Wireless Audio & Video
- Remote Control Toys, Drones

### Functional Block Diagram

