

Features

- 2.4 – 2.5 GHz Frequency Range
- Intended for BLE v5.1 Specification
- Angle-of-Arrival (AOA) / Angle-of-Departure (AOD) Location Detection Through a 4-Antenna Array
- High Integration of PA, LNA, Bypass, SP4T Antenna Switch, Power Detector, Matching Network
- High Efficiency Optimized for Battery Operation
- Up to +13 dBm Output Power at 3.0V
- Transmit Power Stable over Antenna Mismatch
- Throttle-down mode for fast switching and save current
- EDR Output Power +9 dBm
- 1.8 to 3.6V Operating Voltage
- Ultra Compact 3.0 x 3.0 x 0.55 mm QFN-20 Package
- -40°C to 125 °C Extended Temperature Range

Description

The 8TR8241 combines a Power Amplifier, Low Noise Amplifier, Bypass, Transmit / Receive Switch, a 4-Port Antenna Switch, Power Detector, Antenna Mismatch Detector and Matching Network. It is intended for Bluetooth® Smart, as well as ANT+, and Proprietary ISM Wireless Systems in the 2.4GHz Band. The device comes packaged in a 3.0 x 3.0 x 0.55mm 20-pin QFN.

Key Specifications

| TX | | RX | | CHIP | |
|---|---------------|------------------------|---------|--------------------------|----------------------------|
| Parameter | Typical | Parameter | Typical | Parameter | Typical |
| Large-Signal Gain | 11 dB | Gain | 13 dB | Frequency Range | 2.4 - 2.5 GHz |
| Saturated Output Power | +14 dBm | Noise Figure | 4 dB | Supply Voltage | 1.8 - 3.6 V |
| Saturated Output Power @ 2.7 V | +12 dBm | Input P1dB / Input IP3 | -9 dBm | Control Voltage | >1.2 V High < 0.3 V Low |
| Supply Current @ 3.3 V, +10 dBm | 17 mA | LNA Current | 9.5 mA | Shutdown (Sleep) Current | 1 µA max |
| In/Out Return Loss | -10 dB | Bypass Insertion Loss | 5 dB | ANT Switch Isolation | 35 dB |
| 2 nd /3 rd Harmonics* @ +12dBm at ANT | -45 dBm / MHz | Bypass Current | 1 µA | Vdet Range | 0.4 – 0.9 V |

At 3.3V Vdd unless otherwise specified. * In the Application Circuit.

Applications

- Bluetooth® Low Energy (BLE) v5.1 Devices
- IoT (Internet of Things) Wireless Connectivity
- Smart Home Appliances & Devices
- Wireless Remote Control
- Beacons
- Proximity Sensors and Detection
- Virtual Reality (VR) Gaming
- Wireless Sensor Nodes
- Asset Tracking and Finder
- Smart Appliances

Functional Block Diagram

