



nanoLOC TRX

High Performance RF Transceiver Enabling Location Awareness

Highly Integrated Solution with Ranging

The nanoLOC TRX Transceiver is a highly integrated mixed signal chip utilizing Nanotron's unique wireless communication technology CSS (Chirp Spread Spectrum).

With its unique ranging capability, nanoLOC can measure the link distance between two nodes. Thus, nanoLOC supports location-aware applications including Location Based Services (LBS), enhanced RFID, as well as asset tracking (2D/3D RTLS). As ranging is performed during regular data communication, additional infrastructure, power, and/or bandwidth is not required.

Improved Coexistence Performance

nanoLOC supports a freely adjustable center frequency with 3 non-overlapping frequency channels. This provides support for multiple physically independent networks and improved coexistence performance with existing 2.4 GHz wireless technologies.

Data rates are selectable from 2 Mbps to 125 kbps. Due to the chip's unique chirp pulse, adjustment of the antenna is not critical. This significantly simplifies the system's installation and maintenance ("pick and place").

A sophisticated MAC controller with CSMA/CA and TDMA support is included, as is Forward Error Correction (FEC) and 128 bit hardware encryption. To minimize software and microcontroller requirements, nanoLOC also provides scrambling, automatic address matching, and packet retransmission.

Key Features

- Single chip 2.4 GHz RF Transceiver operating in the worldwide ISM Band
- Integrated MAC controller with FEC and CRC checking
- Automatic retransmission and acknowledgement, as well as automatic address matching
- Few external components required
- Link distance estimation with built-in ranging capability
 - High precision ranging.. 2 m indoors / 1 m outdoors
- Low current consumption:
 - Current consumption RX starts at33 mA
 - Current consumption TX.....30 mA @ 0dBm
 - Standby current with active RTC1.2 µA
 - Low supply voltage2.3 – 2.7 V
- Modulation Chirp Spread Spectrum (CSS)
- Media Access Techniques
 - FDMA 3 non-overlapping channels
 - CSMA/CA
 - TDMA
- Programmable data rates.....2 Mbps to 125 kbps
- Clock available for external µC 32.768 kHz
- Integrated fast SPI interface 32 Mbps
- Programmable output power..... -33 dBm – 0 dBm
- External power amplifier supported
- Receiver sensitivityup to -97 dBm
- RSSI sensitivity-95 dBm
- In-band C/I 3 dB @ 250 kbps & C = -80 dBm
- Industrial temperature range.....-40 °C to +85 °C

