

nanoLOC TRX

High Performance RF Transceiver

Location Awareness and Robust Wireless Communication

Highly Integrated Solution with Ranging

The nanoLOC TRX Transceiver is a highly integrated mixed signal chip offering robust wireless communication and ranging capabilities. It utilizes Chirp Spread Spectrum (CSS), a unique wireless communication technology standard (IEEE 802.15.4a) developed by nanotron for the 2.4 GHz ISM band.

Ranging and Robust Wireless Communication

With its unique ranging capability, nanoLOC measures the link distance between two wireless nodes. As ranging is done during regular data communication, additional infrastructure, power, and/or bandwidth is not required.

Adjustable Center Frequencies Supported

nanoLOC supports a freely adjustable center frequency with three non-overlapping frequency channels. This enables multiple physically independent networks and coexistence with existing 2.4 GHz wireless technologies.

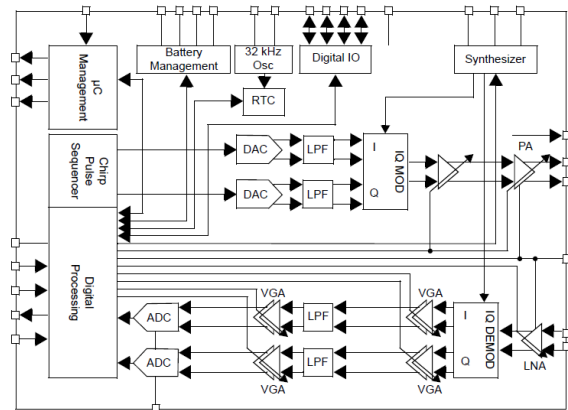


Figure 1 nanoLOC TRX Transceiver block diagram

Few External Components Required

To minimize software and microcontroller requirements, the chip provides scrambling, automatic address matching, packet retransmission, and hardware acknowledgements. A sophisticated MAC controller in the chip supports FDMA, CSMA/CA, TDMA and Forward Error Correction (FEC). Support for an external amplifier is provided.

Key Features

- Typical range in mining tunnel 100 – 300 m*
- Typical location accuracy..... 1-3 m
- Supply voltage2.3 V to 2.7 V
- Output power..... -33 dBm to 0 dBm
- Data rates..... 125 kbps to 2 Mbps
- Receiver sensitivity (FEC on)..... up to -97 dBm
- Current consumption TX 30 mA @ 0 dBm
- Current consumption RX starts at 33 mA
- SPI interface..... 27 Mbps, slave mode only
- RSSI sensitivity -95 dBm

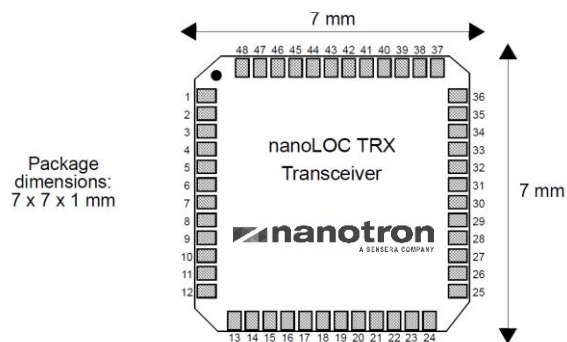
* Depends on topology and antenna

Applications

The nanoLOC TRX Transceiver is the ideal choice for Zoning, Collision Avoidance Solutions and Real Time Location Systems (RTLs):

- ▶ Smart RF devices for proximity detection.
- ▶ Tags for scalable position monitoring solutions leveraging nanotron's Sea of Anchor technology.
- ▶ Location-aware IOT sensor nodes.

Footprint, Package & Pinout



nanoLOC nTRX Driver

The nanoLOC nTRX Driver gives convenient access to chip functions including chip-specific settings and performance criteria and can be adapted to a wide range of microcontrollers.

Ordering Information

Order No.	Description
NLSG0501A	nanoLOC TRX Transceiver

Pin	Name
1,35,36,48	VDDA
12,13,24	VDDD
3,34,39,40,43,46	VSSA
10,11,14,23,25,31	VSSD
33,37,38	nc
4	Xtal32kP
5	Xtal32kN
6	Xtal32MP
7	Xtal32MN
8	Tx/Rx
15	SpiClk
16	/SpiSsn
17	SpiTxd
18	SpiRxd
19	D0
20	D1
21	D2
22	D3
26	µcReset
27	µcIRQ
28	VDD1V2_Cap
29	µcVcc
30	/POnReset
31	VDDA_ADC
41	RxN
42	RxP
44	TxN
45	TxP
47	VBalun

Figure 2 nanoLOC TRX Transceiver pin description

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About nanotron, An Inpixon Company

Nanotron Technologies GmbH, an Inpixon company (Nasdaq: INPX) is a leading provider of electronic location awareness solutions. If knowing what, where and when is mission-critical to your business, rely on nanotron with Location Running.

Nanotron's solutions deliver precise position data augmented by context information in real-time. Location Running means, reliably offering improved safety and increased productivity, 24 hours a day, 7 days per week: Location-Awareness for the Internet of Things (IoT).