

# 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.

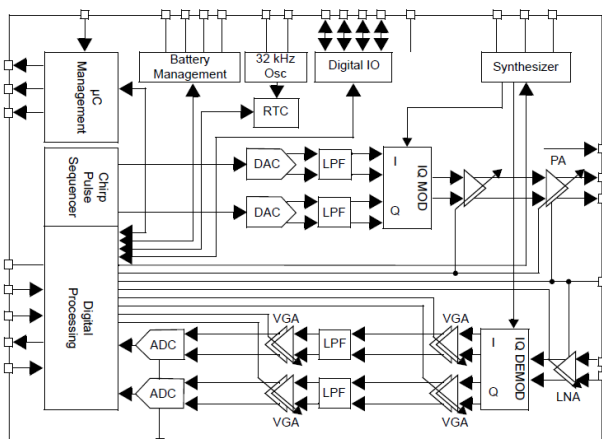
#### Adjustable Center Frequencies Supported

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.

#### Few External Components Required

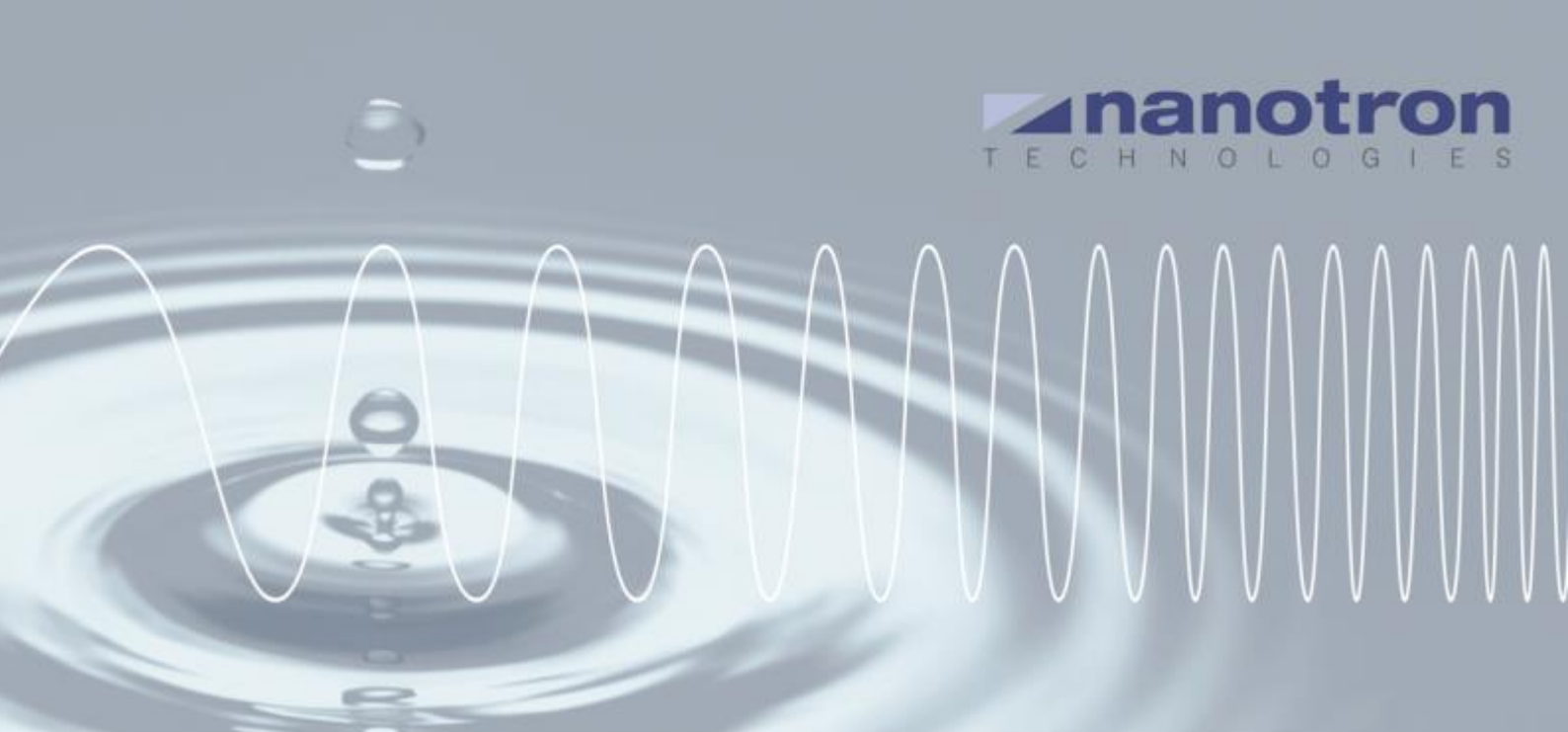
To minimize software and microcontroller requirements, the chip provides scrambling, automatic address matching, packet retransmission, and hardware acknowledgements. A sophisticated MAC controller in the chip supports FDMA, CSMA/CA, TDMA, Forward Error Correction, and 128 bit hardware encryption. Support for an external amplifier is provided.



nanoLOC TRX Transceiver block diagram

#### Key Features

- + Ranging .....2 m indoors / 1 m outdoors
- + Supply voltage .....2.3 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

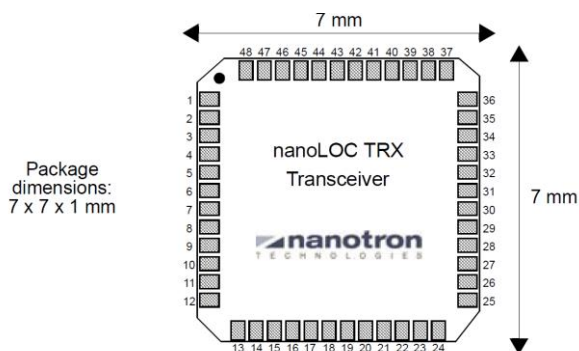


### Applications

The nanoLOC TRX Transceiver is the ideal choice for Loss Protection 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



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

nanoLOC TRX Transceiver pin description

### 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

### About Nanotron Technologies GmbH

Nanotron 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).

### Further Information

For more information about products from nanotron Technologies GmbH, contact a sales representative at the following address:

nanotron Technologies GmbH  
 Alt-Moabit 60  
 10555 Berlin, Germany  
 Phone: +49 30 399 954 – 0  
 Fax: +49 30 399 954 – 188  
 Email: sales@nanotron.com  
 Internet: www.nanotron.com