

nanoLOC TRX

High Performance RF Transceiver with 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 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.

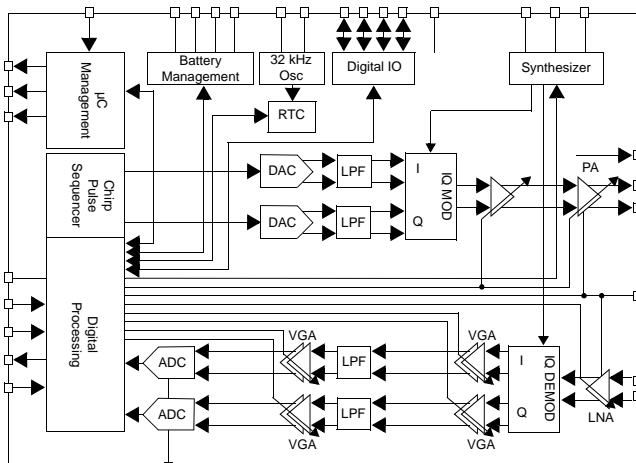
Adjustable Center Frequencies Supported – nanoLOC supports a freely adjustable center frequency with three non-overlapping frequency channels. This enables multi-

ple physically independent networks and coexistence with existing 2.4 GHz wireless technologies.

Ease of Installation – 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").

Few External Components Required – To minimize software and microcontroller requirements, the chip provides scrambling, automatic address matching, packet retransmission, and hardware acknowledgements.

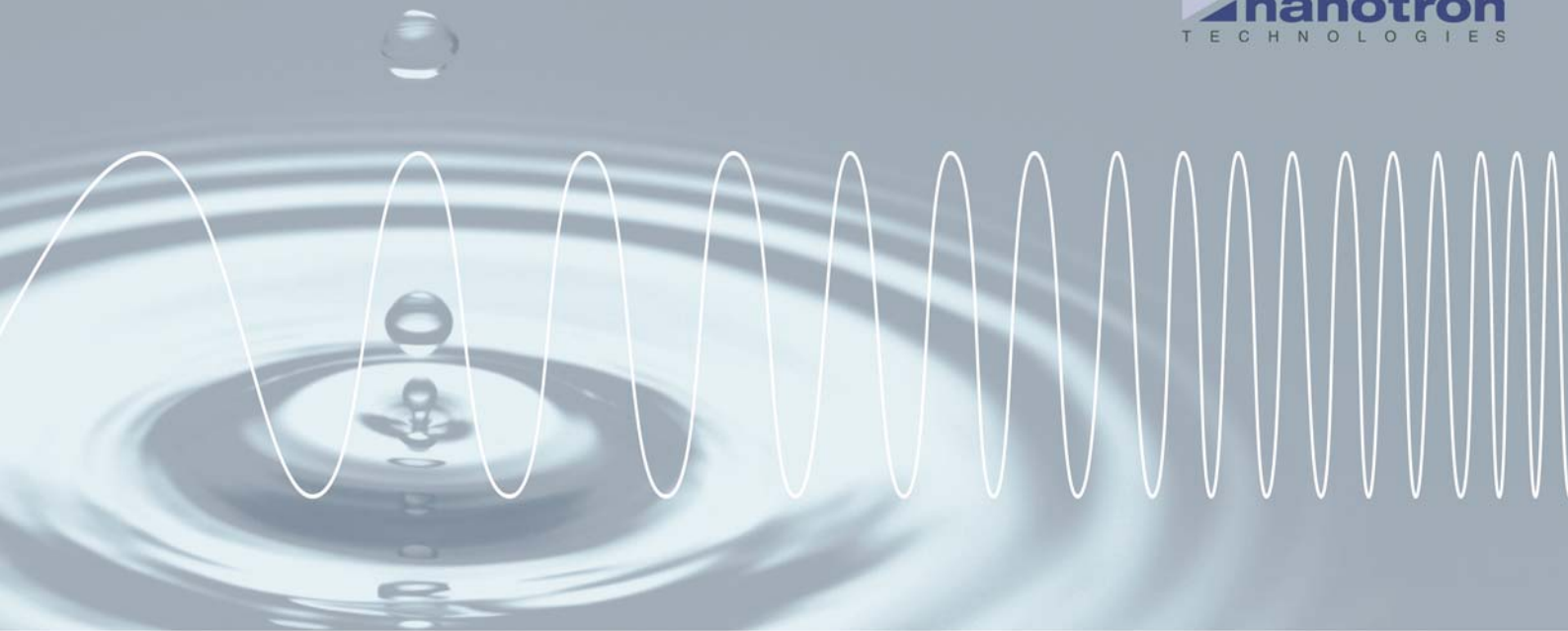
A sophisticated MAC controller in the chip supports FDMA, CSMA/CA, TDMA, Forward Error Correction, and 128 bit hardware encryption. Support for an external amplifier is provided.



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
- Standby current with active RTC 1.2 µA
- SPI interface 27 Mbps, slave mode only
- RSSI sensitivity -95 dBm

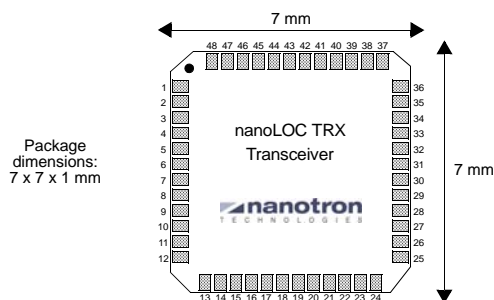


Applications

The nanoLOC TRX Transceiver is the ideal choice for Loss Protection Solutions and Real Time Location Systems (RTL5):

- *Child Loss Protection Solutions (CLOPS)* – Stand alone devices or integrated with other mobile terminals.
- *Pet Safety* – Circular and free form fencing solutions.
- *Farming, Manufacturing and Logistics* – Asset visibility and Status Monitoring through Real Time Location Systems with built-in Server to Asset communication link.

Pin Description



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.

nanoLOC Development Kit and RF Modules

Quickly develop Location-Aware applications with this easy-to-use kit based on the nanoLOC chip. Then go into full production using the nanoLOC AVR Module or the nanoPAN 5375 RF Power Module on your own custom hardware.



nanoLOC Development Kit

Ordering Information

Number	Description
NLSG0501A	nanoLOC TRX Transceiver

For our complete product line and to locate an authorized distributor in your area, visit www.nanotron.com.

Nanotron Technologies GmbH
 Alt-Moabit 60 | 10555 Berlin | Germany
 Phone +49 30 399 954 - 0 | Fax +49 30 399 954 - 188
 E-mail sales@nanotron.com | Web www.nanotron.com