nanoPAN 5375 RF Module

High Performance 2.4 GHz Transceiver
Location Awareness in Combination with Wireless Communication

Complete RF Subsystem

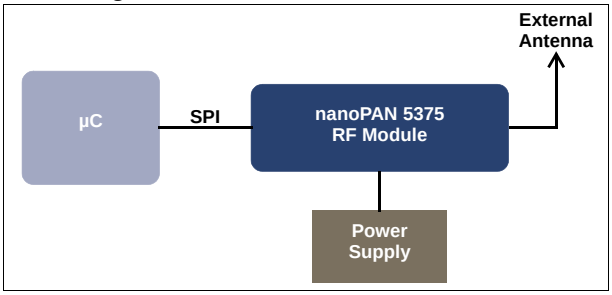
Nanotron provides robust wireless technology for Loss Protection Solutions with two or more radio nodes. The nanoPAN 5375 RF Module is the ideal platform for getting to market quickly.

Small form factor – At only 29 mm by 15 mm and less than 4 mm thick, this RF module includes the nanoLOC TRX Transceiver and required circuitry, a +20 dBm power amplifier, as well as a balun, a band pass filter, and clock crystals. Connect this module to almost any microcontroller using its SPI interface to form a complete subsystem with only very few external components.

Several power and transmission modes – including:

- *HC Ranging* (high-capacity ranging with communication) provides 80 MHz bandwidth and 1 Mbps data rate
- *LD Ranging* (long-distance ranging with communication) provides 80 MHz bandwidth and 250 kbps data rate
- *R Comm* (robust communication-only) provides 22 MHz bandwidth and 250 kbps data rate

Block Diagram



Speed up time to market – Software support for the nanoPAN 5375 RF Module combines the basic ranging and communication functionality with user accessible application elements. Sample code is provided to accelerate the overall software production process.

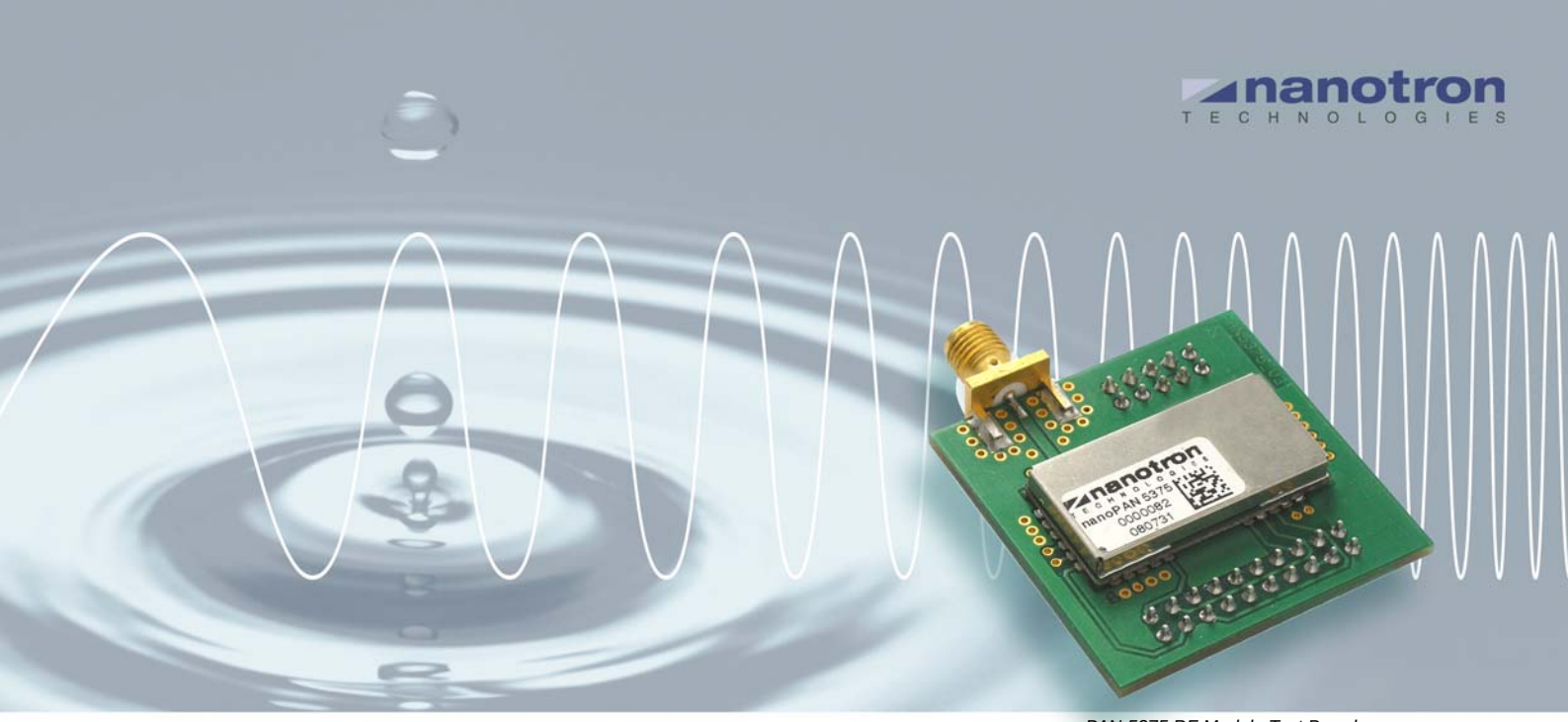
Key Features*

- Data rates ..... 250 kbps, 1 Mbps
- Ambient temperature range ..... -40 to +70 °C
- Supply voltage ..... 2.5 ± 0.2 V
- TX current ..... typ. 210 mA
- HC Ranging (80 MHz, 1 Mbps)
  - RX sensitivity ..... typ. -89 dBm
  - RX current ..... typ. 51 mA
  - TX output power ..... typ. +20 dBm
  - TX power range ..... typ. 35 dB
- LD Ranging (80 MHz, 250 kbps)
  - RX sensitivity ..... typ. -95 dBm
  - RX current ..... typ. 69 mA
  - TX output power ..... typ. +20 dBm
  - TX power range ..... typ. 35 dB
- R Comm (22 MHz, 250 kbps)
  - RX sensitivity ..... typ. -96 dBm
  - RX current ..... typ. 34 mA
  - TX output power ..... typ. +20 dBm
  - TX power range ..... typ. 35 dB
- Antenna load impedance ..... nom. 50 Ω
- SPI clock frequency ..... up to 24 Mbps
- Real Time Clock frequency ..... 32.768 kHz
- Hardware accelerated encryption ..... 128 bit
- Certifications ..... FCC (ETSI in progress)

*Nominal conditions: 2.5 Volt, 25 °C ambient, 50 Ω RF; FEC on

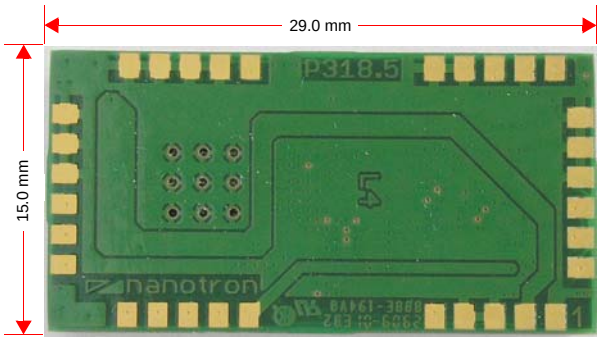
September 2009 • NA09-S-0019-EFOL-2.20

Chirp it.



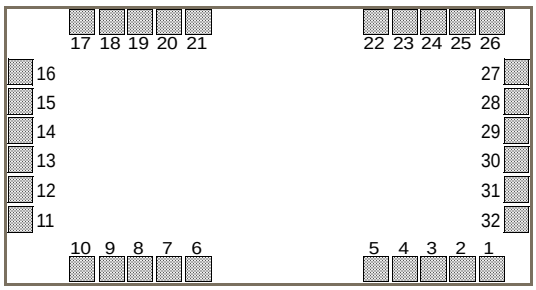
nanoPAN 5375 RF Module Test Board

Dimensions



nanoPAN 5375 RF Module – pad side

Pin Description



Pin Number	Pin Name	Pin Number	Pin name
1,3,4,14-20 22-23,25,27-29	GND	11	DIIO1
		12	DIIO0
2	VCC	13	/PONRESET
5	SPICLK	21	VCC
6	UCVCC	24	ANT
7	SPITXD (MISO)	26	/TX_RX
8	SPIRXD (MOSI)	30	UCIRQ
9	DIIO3	31	UCRESET
10	DIIO2	32	/SPISSN

nanoPAN 5375 RF Module – pin description

Software support – Drivers are available that allow convenient access to module functions such as settings and performance criteria and can be adapted to a wide range of microcontrollers.

Applications – The nanoPAN 5375 RF module is ideal for products requiring ranging and locating capabilities. Real time location systems (RTLS) built with this Chirp Spread Spectrum (CSS) based module are easy to develop and provide exceptional location estimates in both indoor and outdoor environments.

With its robust communication modes the nanoPAN 5375 RF module is well suited for harsh RF environments such as condition monitoring applications.

nanoLOC Development Kit – Quickly develop your own applications using this easy-to-use Development Kit based on Nanotron's 2.4 GHz transceiver. Afterwards, go into full production using the nanoPAN 5375 RF Module on your own custom hardware.

Ordering Information

Number	Description
MN5375V1	nanoPAN 5375 RF Module
SNDLA100	nanoLOC nTRX Driver Software
MV5375V1P	nanoPAN 5375 RF Module Test Board
KNRKII	nanoLOC Ranging Kit II
KN100L	nanoLOC Development Kit

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

September 2009 • NA09-S-0019-EFOL-2.20