nanoPAN 5360, 5361

High Speed, Low Power RF Modules for the 2.45 GHz ISM Band

Overview

nanoNET is a high-performance and low-power network for the 2.4 GHz ISM band. It is based on Nanotron's patented Chirp Spread Spectrum (CSS) transmission technology and offers a long range of up to 900 meters in free space and typically 60 meters indoors (@ 1 Mbps and 8 dBm output power). The network is extremely robust against disturbances such as noise and multipath fading. Due to its primarily analog signal processing and the robustness of the Chirp signal, nanoNET has an extremely low power consumption per successfully transmitted bit.

For easy product development and fast market entry, Nanotron Technologies offers the RF modules nanoPAN 5360 and nanoPAN 5361. They contain the complete RF part of a nanoNET network node and provide an asymmetrical 50 Ω antenna port. The data rate is selectable between 500 kbps, 1 Mbps and 2 Mbps.

The nanoNET RF modules are offered in two versions: The nanoPAN 5360 contains an additional ISM band pass filter for an even improved robustness. The nanoPAN 5361 contains no band pass filter, but offers a higher output power and a better receiver sensitivity. Driver software, a Portable Protocol Stack (PPS) and an Evaluation Kit for nanoNET are also available.

Main Features

Both Modules

- Operating worldwide in the 2.45 GHz ISM band
- Data rates: 2 Mbps, 1 Mbps, 500 kbps
- Modulation technique: Chirp Spread Spectrum (CSS)
- Chirp bandwidth: 64 MHz effective
- SPI interface to external µC (up to 16 MHz SPI clock)
- Asymmetric 50 Ω antenna port
- Supply voltage: 2.4 V to 3.6 V
- Current consumption: 35 mA (RX), 78 mA (TX, maximum output power)
- TX power adjustment in 19 steps
- Operating temperature range: -40 °C to +85 °C
- 4 channel digital I/O
- Small metal housing (20 x 30 x 3.5 millimeters)
- Two assembly options: pads for soldering and reflow

nanoPAN 5360

- Maximum output power: 6 dBm
- Receiver sensitivity: -90 dBm (@ BER=10^{-3} and 1 Mbps)
- ISM band pass filter for maximum robustness

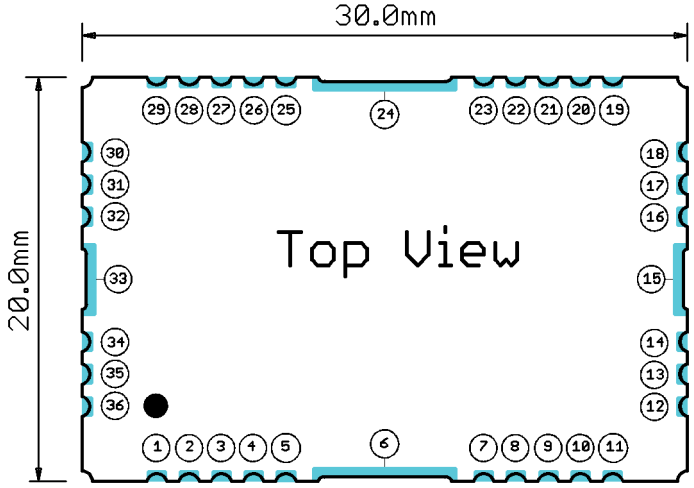
nanoPAN 5361

- Maximum output power: 8 dBm
- Receiver sensitivity: -92 dBm (@ BER=10^{-3} and 1 Mbps)
- High range: maximum 900 meters in free space, typically 60 meters indoors

Applications

- Industrial monitoring and control
- Lighting and building control
- Active RFID
- Smart home networks
- Alarm systems
- Meter and sensor reading
- Multimedia

Pin Assignment



Pin no.	Pin name	Pin no.	Pin name
1,3,4, 6,15-22, 24-26,28,30-33	GND	12	DIIO2
		13	DIIO1
2	VCC	14	PWRUPRESET
5	SPICLK	23	VCC_OUT
7	UCVCC	27	ANT
8	SPITXD	29	TX_RX
9	SPIRXD	34	UCIRQ
10	DIIO4	35	UCRESET
11	DIIO3	36	SPISSN

Software

Nanotron Technologies offers two software products to speed up your product development: a transceiver driver and a Portable Protocol Stack (PPS). The driver provides all functionality required to access the nanoNET TRX transceiver, such as initializing the chip and the sending and receiving of data. For larger networks, our PPS is the ideal solution – it offers advanced services such as broadcasting, frame forwarding, fragmentation, and software acknowledgements between end stations. Both software products can run even on 8 bit microcontrollers.

Evaluation Kit

For an easy start into the world of Chirp transmission technology, Nanotron Technologies offers an Evaluation Kit. Just plug the RF Test Modules on the Coldfire microcontroller boards, connect the boards via RS 232 to your PC or laptop and start the software – that's all you have to do to set up a wireless nanoNET connection. Our graphical software interface allows you to set the RF parameters conveniently, and it demonstrates the performance of the air link in real time on your computer screen.

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Chirp it.