SX1261/2

Long Range, Low Power, sub-GHz RF Transceiver

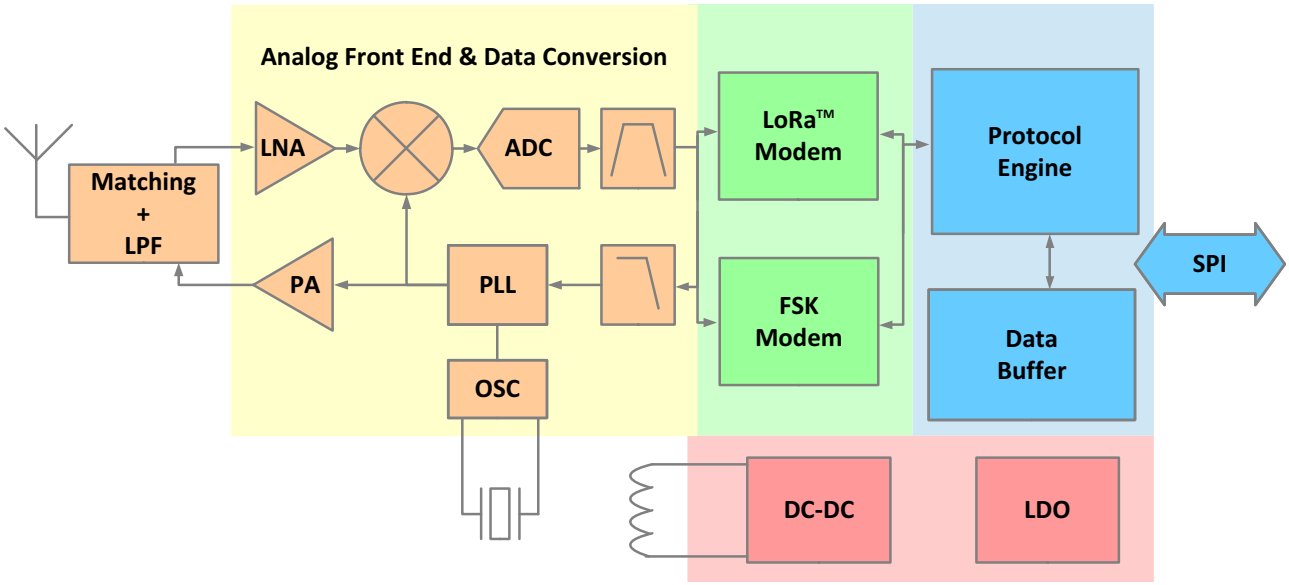

Figure A: SX1261/2 Block Diagram

General Description

SX1261 and SX1262 sub-GHz radio transceivers are ideal for long range wireless applications. Both devices are designed for long battery life with just 4.2 mA of active receive current consumption. The SX1261 can transmit up to +15 dBm and the SX1262 can transmit up to +22 dBm with highly efficient integrated power amplifiers.

These devices support LoRa® modulation for LPWAN use cases and (G)FSK modulation for legacy use cases. The devices are highly configurable to meet different application requirements utilizing the global LoRaWAN™ standard or proprietary protocols.

The devices are designed to comply with the physical layer requirements of the LoRaWAN™ specification released by the LoRa Alliance™.

The radio is suitable for systems targeting compliance with radio regulations including but not limited to ETSI EN 300 220, FCC CFR 47 Part 15, China regulatory requirements and the Japanese ARIB T-108. Continuous frequency coverage from 150 MHz to 960 MHz allows the support of all major sub-GHz ISM bands around the world.

Applications

The level of integration and the low consumption within SX1261/2 enable a new generation of Internet of Things applications.

- Smart meters
- Supply chain and logistics
- Building automation
- Agricultural sensors
- Smart cities
- Retail store sensors
- Asset tracking
- Street lights
- Parking sensors
- Environmental sensors
- Healthcare
- Safety and security sensors
- Remote control applications

Ordering Information

Part Number	Delivery	Minimum Order Quantity
SX1261IMLTRT	Tape & Reel	3'000 pieces
SX1262IMLTRT	Tape & Reel	3'000 pieces

QFN 24 Package, Pb-free, Halogen free, RoHS/WEEE compliant product.

Revision History

Version	ECO	Date	Modifications
1.0	039166	October 2017	First Release
1.1	040046	December 2017	Addition of a note "when using a TCXO" to explain the XTA cap value change with TCXO in chapter 4.1.3 XTAL Control Block New sub-chapter 5.1.5 "Considerations on the DC-DC Inductor Selection" Addition of a note recommending 12 symbols of LoRa preamble for optimal performances in chapter 6.1.1.1 Spreading Factor Addition of a note on SetLoRaSymbNumTimeout in chapter 9.6 Receive Mode Correction of RandomNumber Gen[] values in chapter 12.1 Register Map
1.2	047267	June 2019	Miscellaneous typographical error corrections Addition of a "Known Limitations" section, see details in Section 15. Clarification of the XOSC_START_ERR usage in Section 13.3.6 Rename variable *timeout(23:0)* to *delay(23:0)* for clarification in Section 13.3.6 Description of how to include RxGain register in the retention memory, see Section 9.6 Correction of the ClearDeviceError command Correction made to SetTxParams in Table 13-21 Clarification of the maximum packet length in FSK mode with address filtering configuration Clarification of the SignalRssiPkt calculation Update of the sequence in section 14.2 Circuit Configuration for Basic Tx Operation Clarification of the Rx and Sleep periods in RxDutyCycle mode with TCXO enabled

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1. Architecture

The SX1261 and SX1262 (designated hereafter as "SX1261/2") are half-duplex transceivers capable of low power operation in the 150-960 MHz ISM frequency band. The radio comprises four main blocks:

1. **Analog Front End**: the transmit and receive chains, as well as the data converter interface to ensuing digital blocks. The last stage of the transmit chain is different between the SX1261 and SX1262 chip versions. The SX1261 transceiver is capable of outputting +14/15 dBm maximum output power under DC-DC converter or LDO supply. The SX1262 transceiver is capable of delivering up to +22 dBm under the battery supply.
2. **Digital Modem Bank**: a range of modulation options is available in the SX1261/2:
   - LoRa® Rx/Tx, BW = 7.8 - 500 kHz, SF5 to SF12, BR = 0.018 - 62.5 kb/s
   - (G)FSK Rx/Tx, with BR = 0.6 - 300 kb/s
3. **Digital Interface and Control**: this comprises all payload data and protocol processing as well as access to configuration of the radio via the SPI interface.
4. **Power Distribution**: two forms of voltage regulation, DC-DC or linear regulator LDO, are available depending upon the design priorities of the application.