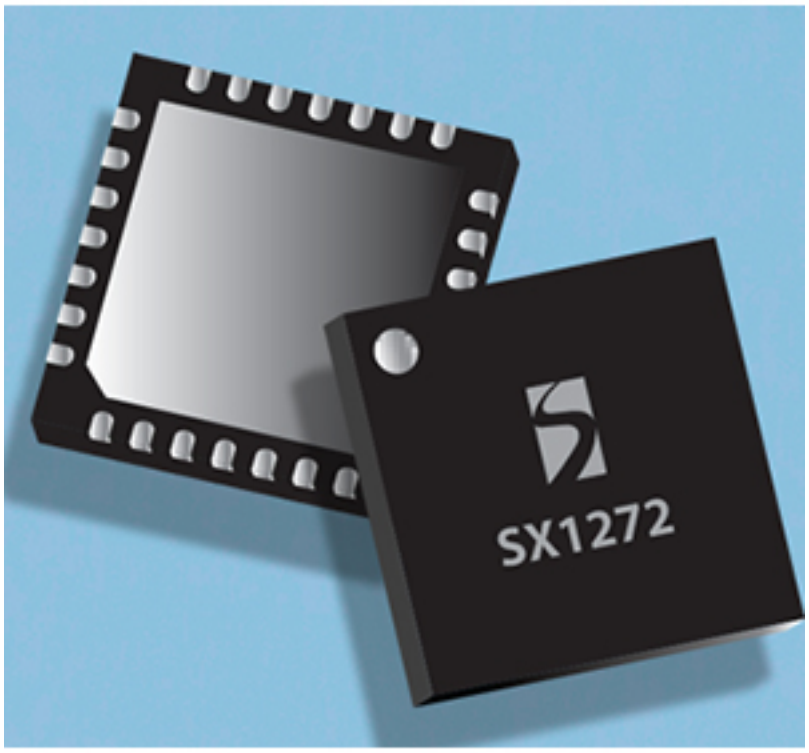
RFIC platform boosts the transmission range of devices to up to 15 kilometers



Semtech Corporation introduced the SX1272, [1] the first product in a new long-range RFIC platform that boosts the transmission range of the devices to up to 15 kilometers (km).

This device integrates Semtech's new LoRa (long range) modulation technology to enable drastic range improvements over alternative modulation methods. The maximum distance today of a smart meter transceiver [2] in Europe utilizing FSK modulation is between one and two kilometers. The SX1272, utilizing LoRa operating under the same conditions and regulatory limits, can transmit more than 15 km.

The SX1272 is designed for industrial control, agriculture/irrigation, smart metering and sensor network applications. The additional range provided by LoRa will eliminate the need for repeaters in these applications, significantly simplifying the system design and lowering the total cost of deployment. The range extension provided by LoRa also makes the device ideal for emerging smart city, Internet of things (IOT) and machine-to-machine (M2M) applications.

The SX1272 achieves receiver sensitivity up to -137 dBm utilizing a low-cost crystal. This compares to today's state-of-the-art FSK devices that can achieve sensitivity of -115 dBm with a comparable crystal or -125 using an expensive temperature controlled crystal oscillator (TCXO).

Additionally, the SX1272 has a 25 dB improvement over FSK devices for rejecting in-band interfering signals. This makes the device especially effective in industrial, scientific and medical (ISM)-band applications such as security and metering because it provides immunity from sub-GHz frequency 4G/LTE signals. This immunity, combined with the SX1272's highly linear RF front-end, makes it the most reliable and robust solution for operating in the presence of strong interfering signals.

The fast growth of the IOT/M2M market – predicted by industry analysts to total 50 billion nodes by 2020 – provides another great opportunity for the SX1272 with LoRa technology. There is a dramatic need for an improved physical layer in this market for long range, low power for battery operation, and low cost for volume deployment. LoRa is the ideal solution to meet these needs and a great complement to 2G/3G GSM in this rapidly growing market.

The SX1272 supports GFSK, FSK, GMSK, and OOK modulation in addition to LoRa and is designed to support WMBus, IEEE 802.15.4g (SUN), FCC 15.247, ARIB T96/108, EN 300-220 as well as other worldwide standards and regulations.

Key Features of the SX1272

- +20 dBm maximum output power
- -137 dBm sensitivity
- Low current consumption

o 9.7 or 10.8 mA RX current

o 100 nA sleep current

- 28 mA TX current at +13 dBm
- Bit rates up to 300 kbps
- -12.5 dBm IIP3
- 72 dB adjacent channel selectivity
- 66 dB image attenuation
- 1.8 to 3.7 V supply range
- Ultra-fast frequency hoping
- WMBus, 802.15.4g(SUN), ARIB T96/108, and LoRa compatible
- ETSI, FCC, and ARIB compliant

Pricing and availability

The SX1272 (order code: SX1272IMLTRT) is available immediately in production quantities. Semtech offers comprehensive design assistance, including field- and factory-based support. Data sheets, volume pricing, and delivery quotes, as well as evaluation kits and samples, are available at www.semtech.com/info [3].

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Links:
[1] http://www.semtech.com/wireless-rf/rf-transceivers/sx1272/
[2] http://www.semtech.com/wireless-rf/rf-transceivers/
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