

Ultra-low-power 2.4 GHz transceiver for Bluetooth 5.3, 802.15.4 and IoT



icyTRX for the most demanding low-power applications

The *icyTRX* ultra-low-power RF transceiver is designed to meet standards such as Bluetooth Low Energy (BLE), 802.15.4 PHY Layer (e.g. ZigBee), and proprietary standards with data-rates from 62.5 kBit/s up to 4 Mbit/s. *icyTRX* offers 5.3 mW consumption in receive mode from a 1.0 V supply. *icyTRX* is a complete transceiver that is designed for miniaturization, yielding an area of analog RF of less than 1 mm² in 55 nm CMOS, requiring minimal external components thanks to high degree of integration. *icyTRX* is designed for easy integration into ASICs and SoCs.

Applications

- Wearable sensors
- Wireless sensor networks
- Smart watches + fitness bands
- Indoor positioning

Availability

- Available under license as an embedded IP block for integration in CMOS SoCs and ASICs
- Samples and development kits are available
- Silicon proven in various foundries and metal stack

Typical features

- Voltage supply: 1.0 V to 1.2 V
- RX current 5.3 mA (1 MBit/s)
- TX current 8.6 mA (@ 1 dBm)
- Exceeds BLE and IEEE802.15.4 requirements
- Proprietary modes with adjustable bitrate from 62.5 kBit/s up to 4 Mbit/s
- Bluetooth 4.x sensitivity: -97 dBm at 1 Mbit/s
- Bluetooth 5 sensitivity: -95 dBm at 2 Mbit/s, -104 dBm at 125 kbit/s (Long Range S=8) and -101 dBm at 500 kbit/s (Long Range S=2)
- BT 5.1 to 5.3 compatible
- No calibration needed, ultra-fast settling
- Single Rx and Tx port without any RF matching component required
- Fully integrated FSK-based modem, with programmable pulse shape, data rate and modulation index
- Link layer functionalities, including packet handling, CRC, separate Rx and Tx FIFOs, AES-CCM
- APB and SPI interfaces available
- Optimized Power Management Unit available
- Analog RF silicon area < 1.0 mm²

