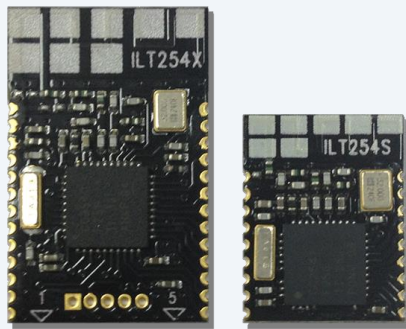


ILT254X/ILT254S Bluetooth4.0 LE Module



General Description

The ILT254x module is a cost-effective, low-power, true system-on-chip (SoC) for Bluetooth low energy applications. It enables robust BLE master or slave nodes to be built with very low total bill-of-material costs. The ILT254x combines an excellent RF transceiver with an industry-standard enhanced 8051 MCU, in-system programmable flash memory, 8-KB RAM, and many other powerful supporting features and peripherals. The ILT254x is suitable for systems where very low power consumption is required. Very low-power sleep modes are available. Short transition times between operating modes further enable low power consumption.

Features and Benefits

- Bluetooth low energy technology Compatible
- Excellent Link Budget (up to 97 dB),
- Enabling Long-Range Applications
- Accurate Digital RSSI
- Compliance With FCC & CE standard
- Battery Monitor and Temperature Sensor
- Sample Applications and Profiles
- Full-Speed USB Interface
- Ultra low power consumption
- AES Security Coprocessor
- Supply voltage 2--3.6
- Two small module size
 - ILT254x-A1 - 15x24mm
 - ILT254x-S1 - 12x16mm

Applications

- 2.4-GHz Bluetooth low energy Systems
- Mobile Phone Accessories
- Sports and Leisure Equipment
- Consumer Electronics
- Human Interface Devices (Keyboard, Mouse Remote Control)
- USB Dongles
- Health Care and Medical



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ILT254X/ILT254S Bluetooth4.0 LE Module

Electrical Characteristic

| ITEM | TEST REQUIREMENT | REMARKS |
|----------------------------------|-------------------|----------------------|
| Voltage supply | 2.0—3.6V | DC |
| Center frequency | 2402—2480MHz | Programmable |
| Frequency error | ±20KHz | |
| Modulation | O-QPSK | |
| Output power | 4.5dBm | Programmable |
| Receiving sensitivity | -93dBm | High gain Mode |
| Receiving current | 24mA | High gain mode |
| Receiving current | 21mA | Standard mode |
| Transmitting current | 35mA | TX Power 4dBm |
| Transmitting current | 26mA | TX Power -6dBm |
| Sleep consumption At power mode3 | 0.4uA | Connection-less stat |
| Transmit distance | >50M | BER<0.1% |
| Antenna | 50ohm | |
| Temperature range | -20—85°C | |
| module size | 15*25mm / 12*16mm | |

Ta = 25°C, VCC = 3.3V



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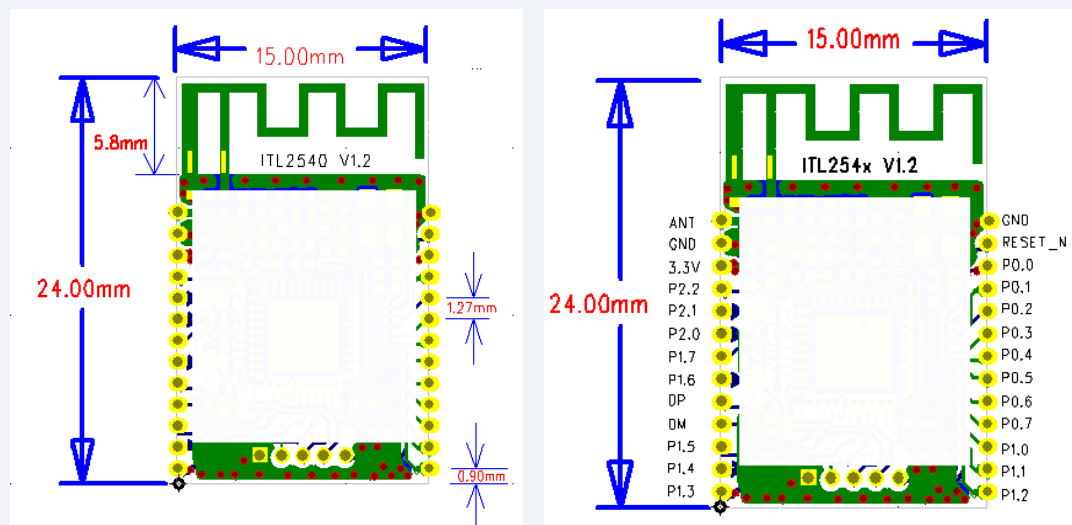
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ILT254X/ILT254S Bluetooth4.0 LE Module

Module Dimension & Pin Assignment

ILT254x-A1



Pin Assignment

| Pin | Pin Name | Description | Pin | Pin Name | Description |
|-----|----------|-------------------------------------|-----|----------|------------------------------|
| 1 | ANT | External Antenna - ILT254X-A0 Model | 26 | GND | Ground |
| 2 | GND | Ground | 25 | RESET_N | Reset |
| 3 | VCC | 2.0V ~ 3.6V | 24 | P0.0 | IO/ADC/OPAMP |
| 4 | P2.2 | IO/JTAG DEBUG | 23 | P0.1 | IO/ADC/OPAMP |
| 5 | P2.1 | IO/JTAG DEBUG | 22 | P0.2 | IO/ADC/SPI/UART/TIMER1/OPAMP |
| 6 | P2.0 | IO/TIMER4 | 21 | P0.3 | IO/ADC/SPI/UART/TIMER1 |
| 7 | P1.7 | IO/SPI/UART | 20 | P0.4 | IO/ADC/SPI/UART/AC/TIMER1 |
| 8 | P1.6 | IO/SPI/UART | 19 | P0.5 | IO/ADC/SPI/UART/AC/TIMER1 |
| 9 | DP | USB/I2C | 18 | P0.6 | IO/TIMER1 |
| 10 | DM | USB/I2C | 17 | P0.7 | IO/TIMER1 |
| 11 | P1.5 | IO/SPI/UART | 16 | P1.0 | IO/SPI/UART/TIMER1/TIMER4 |
| 12 | P1.4 | IO/SPI/UART/TIMER3 | 15 | P1.1 | IO/SPI/UART/TIMER1/TIMER4 |
| 13 | P1.3 | IO/SPI/UART/TIMER3 | 14 | P1.2 | IO/SPI/UART/TIMER3 |

Remark:

USB/OPAMP - Only available for CC2540 model

I2C - Only available CC2541 model

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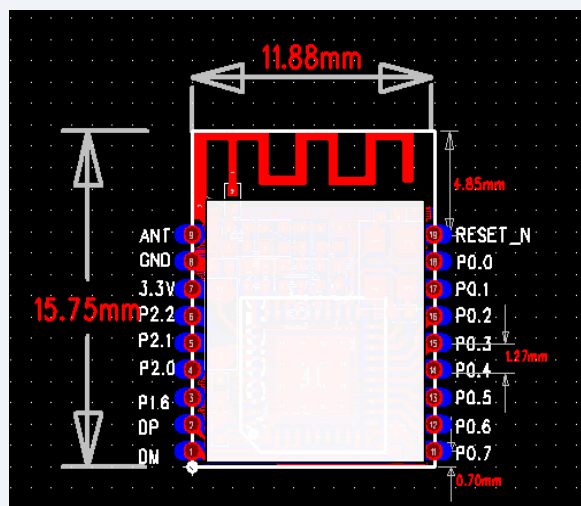
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ILT254X/ILT254S Bluetooth4.0 LE Module

Module Dimension & Pin Assignment

ILT254x-A1



Pin Assignment

| Pin | Pin Name | Description | Pin | Pin Name | Description |
|-----|----------|-------------------------------------|-----|----------|------------------------------|
| 1 | ANT | External Antenna - ILT254X-A0 Model | 18 | RESET_N | Reset |
| 2 | GND | Ground | 17 | P0.0 | IO/ADC/OPAMP |
| 3 | VCC | 2.0V ~ 3.6V | 16 | P0.1 | IO/ADC/OPAMP |
| 4 | P2.2 | IO/JTAG DEBUG | 15 | P0.2 | IO/ADC/SPI/UART/TIMER1/OPAMP |
| 5 | P2.1 | IO/JTAG DEBUG | 14 | P0.3 | IO/ADC/SPI/UART/TIMER1 |
| 6 | P2.0 | IO/TIMER4 | 13 | P0.4 | IO/ADC/SPI/UART/AC/TIMER1 |
| 7 | P1.6 | IO/SPI/UART | 12 | P0.5 | IO/ADC/SPI/UART/AC/TIMER1 |
| 8 | DP | USB/I2C | 11 | P0.6 | IO/TIMER1 |
| 9 | DM | USB/I2C | 10 | P0.7 | IO/TIMER1 |

Remark:

USB/OPAMP - Only available for CC2540 model

I2C - Only available CC2541 model

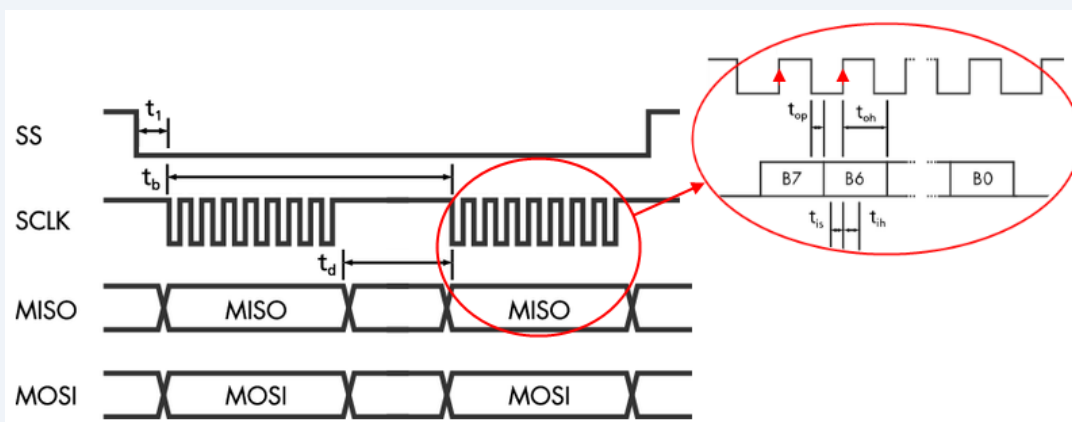
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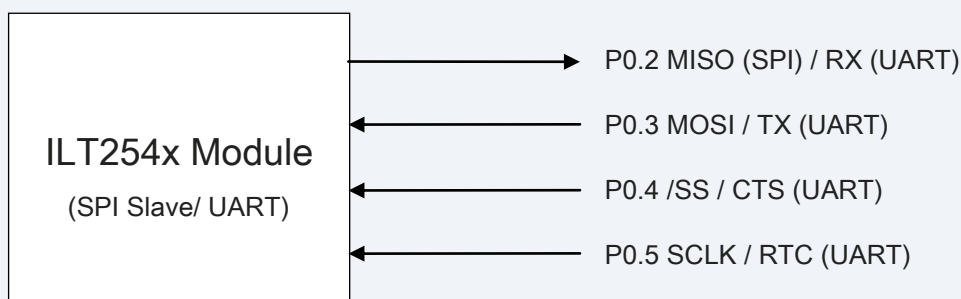


ILT254X/ILT254S Bluetooth4.0 LE Module

SPI & UART Connection & Timing Diagram



** Require at least 500us from SS low to first MSB bit (t_1)



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ILT254X/ILT254S Bluetooth4.0 LE Module

FCC Statement

The device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions.

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: Changes or modification to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating with any other antenna or transmitter.

The ILT254S/ILT254X module is designed to comply with the FCC statement. FCC ID is 2AAXH-ILT254. The host system using ILT254S/ILT254X, should have label indicated FCC ID: 2AAXH-ILT254



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