ULTRA LOW-POWER RF TRANSCEIVER **ZL70250**

PRODUCT PREVIEW

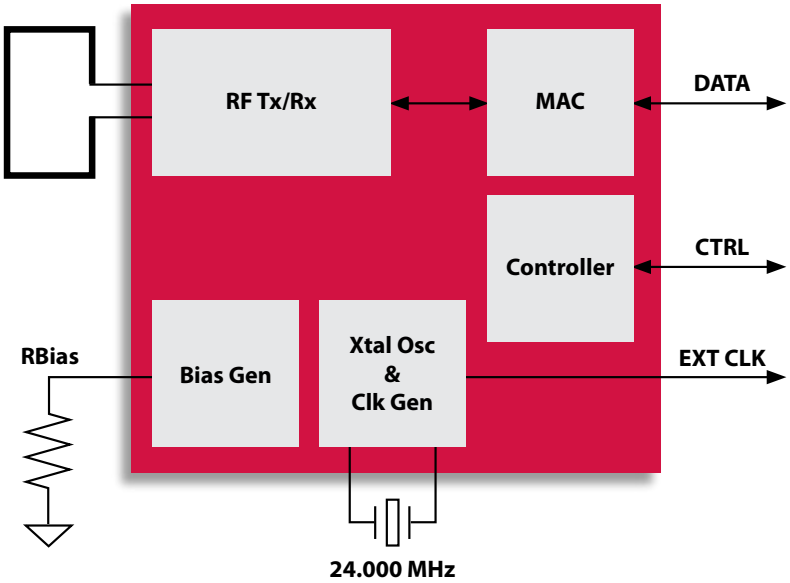
The ZL70250 ultra low-power radio frequency (RF) transceiver provides a wireless link in applications where power consumption is of primary importance. The tranceiver's ultra low-power requirements allows the use of a miniature button cell battery or energy-harvesting methods, enabling devices with extremely small form factor.

The availability of the tranceiver as bumped die combined with the extremely low number of external components also contributes in minimizing the application footprint.

The ultra low-power IC operates in unlicensed frequency bands between 795 – 965 MHz and offers data rates up to 186 kbps to support voice communication. Duty cycling can be employed for applications that require lower average payload to further reduce power consumption.

The device includes the RF transceiver as well as a Media Access Controller (MAC) that performs most link support functions including Received Signal Strength Indication (RSSI), Clear Channel Assessment (CCA), sniff, preamble & sync, packetization and whitening. The device uses standard interfaces, enabling easy integration with a standard microcontroller or Digital Signal Processor (DSP).

ZL70250 Simplified Diagram



Ultra Low-Power Transceiver for Short-Range Wireless Applications

- Ultra-low transmit and receive current of less than 2 mA enables extremely long battery life or very small battery size
- Low supply voltage of 1.2 V to 1.8 V further reduces power consumption
- Operates between 795 and 965 MHz (North American band: 902 – 928 MHz; European bands 863 – 870 MHz)
- High bit rate up to 186 kbits/s (raw) allows short data bursts and supports bi-directional voice communication
- Very few external components (only crystal and bias resistor required) and bumped die form enable end-devices with very small footprint
- Standard interfaces (SPI data port and 2-wire control port) for use with off-the-shelf controllers
- Integrated MAC performs all link layer basic functions, enabling simple and low power controller application

Applications

- Battery-powered Body Area Network
- Applications relying on energy harvesting
- Wireless communication with very long battery life
- Wireless sensors
- Voice communication
- Remote controls

Availability and Support

The ZL70250 ultra low-power RF transceiver is now available. Full product information, including data sheets and user manuals, is available for qualified customers. For more information contact Medical sales. (http://ulp.zarlink.com/ulp_sales_contacts.htm)

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ZL70250 ULTRA LOW-POWER RF TRANSCEIVER

APPLICATION

Short-Range, Battery-Powered Communications

The ultra low-power ZL70250 RF transceiver integrated circuit (IC) supports wireless telemetry in applications where low-power requirements previously made it unfeasible. As illustrated below, end-applications may include wireless sensors, Body Area Networks (principally on-body sensors), or voice communication.

With a typical current consumption below 2mA in both transmit (–10 dBm) and receive, and a data rate up to 186 kbit/s, the ZL70250 IC enables bi-directional RF links with an impressive efficiency of 13 nJ/bit over a range up to a few hundred meters.

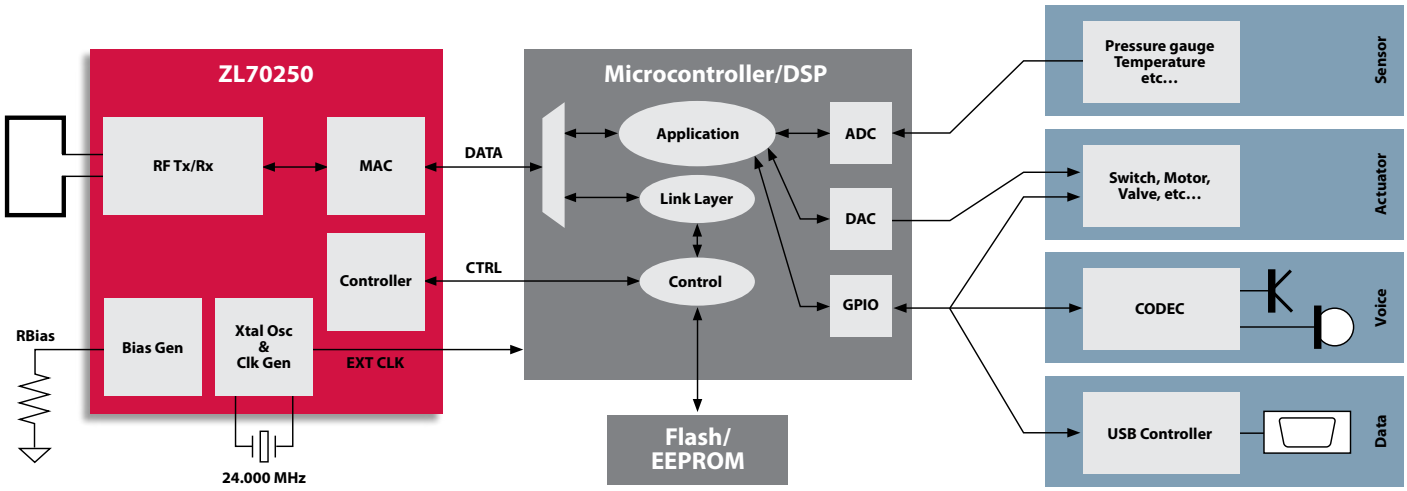
The output power is programmable and can be reduced to –25 dBm to save power in cases where the link budget allows. Output power can also be increased to 0 dBm for more range or to allow for system losses, such as a very small antenna or body tissue absorption.

In order to achieve the minimum possible power consumption, the ZL70250 offers a large number of optimization parameters, all available to the user via the control interface. To streamline the setup and optimization process, most parameters have an on-chip automatic trim capability. The frequency tuning is also highly automated.

While consuming very little power, the ZL70250 also includes a highly flexible MAC that offers all the basic functions needed to implement a link layer with the minimum amount of data transfer between the ZL70250 and its controller. Some of the capabilities include:

- Digital RSSI and Blocker Indicator
- Clear Channel Assessment
- Transmit with automatic Clear to Send
- Sniff with automatic receive or standby
- Receiver AGC (programmable)
- Preamble and Sync
- Whitening
- Packetization with programmable size for both transmit and receive
- Automatic standby after receive
- Automatic turn-around for bi-directional data transfer.

The ZL70250 is also highly integrated. Beside the antenna and in some cases its matching network, only a crystal and a reference resistor are required. Available as a 2 mm x 3 mm bumped die, the IC enables applications with a very small footprint.



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