MEDICAL IMPLANTABLE RF TRANSCEIVER **ZL70100**

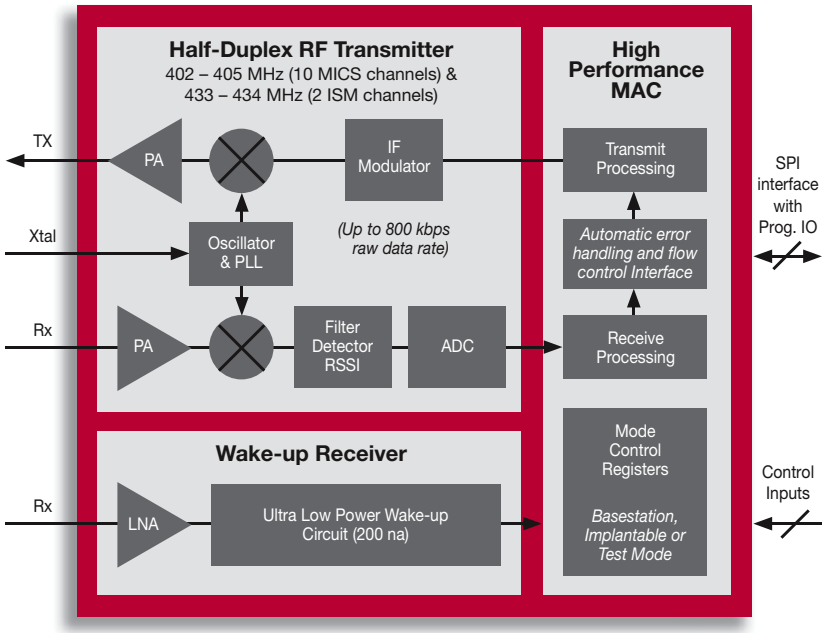
PRODUCT PREVIEW

Zarlink's ZL70100 medical implantable RF (Radio Frequency) commercial-grade transceiver chip is the first device designed exclusively for wireless communication systems that link implanted medical devices and base stations.

Merging RF and ultra low-power expertise, the ZL70100 base station chip operates in the MICS (Medical Implant Communication Service) 402 – 405 MHz service band and the 433 – 434 MHz ISM band. Supporting leading data transmission rates while consuming less than 5 mA (milliamps) of current, the ZL70100 chip allows implanted devices to quickly transmit patient health and device performance data without impacting the useful battery life of the implanted device. An integrated ultra-low power wake-up RF receiver further extends battery life.

A highly integrated device, the ZL70100 requires just two external components (excluding antenna matching), allowing manufacturers to use board space savings to increase battery size and support advanced functionality while lowering BoM (Bill of Material) cost.

ZL70100 Simplified Block Diagram



Applications

- Implantable medical devices, including pacemakers, ICDs (implantable cardioverter defibrillators), neurostimulators, implantable insulin pumps, bladder control devices, implantable physiological monitors
- Short-range Body Area Network applications using 433 MHz ISM band

MICS Transceiver Chip for In-Body Communication System

- Commercial-grade base station transceiver chip meeting performance, power and size requirements for implanted communication systems
- Operates in the 402 – 405 MHz (10 MICS channels) and 433 – 434 MHz (2 ISM channels) frequency bands
- High data rate (800/400/200 kbps raw data rate) allows fast, bi-directional transmission of patient and device data
- Ultra low-power consumption of less than 5 mA extends implanted device battery operating life
- System-on-Chip design with integrated MAC (Media Access Controller) provides device control, forward-error correction and error detection
- Requires just two external components (plus antenna matching), saving board space and lowering BoM cost
- Innovative RF wake-up receiver allows low-current (200 nA) "sleep" mode

Full solution capability

- Transceiver design for both base station and implanted medical devices (implantable-grade device available in 2005)
- Implantable RF modules and antennas

Standards

- Meets MICS, FCC, ETSI and IEC requirements

Customer Support

The commercial-grade ZL70100 RF transceiver chip is fully supported by an evaluation board, reference designs and design tools.

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ZL70100 MEDICAL IMPLANTABLE RF TRANSCEIVER

APPLICATION

Implantable Communications Systems

Zarlink's commercial-grade ZL70100 RF transceiver chip allows implanted medical device manufacturers to more easily design systems supporting advanced home-based patient monitoring and wireless performance programming.

As illustrated below, physicians can use MICS technology to remotely monitor patient health without requiring regular hospital visits. An ultra low-power RF transceiver in a pacemaker can wirelessly send patient health and device performance data to a bedside base station in the home. Data is then forwarded over the telephone or Internet to a physician's office, and if a problem is detected the patient goes to the hospital where the high-speed two-way RF link is used to monitor and adjust device performance.

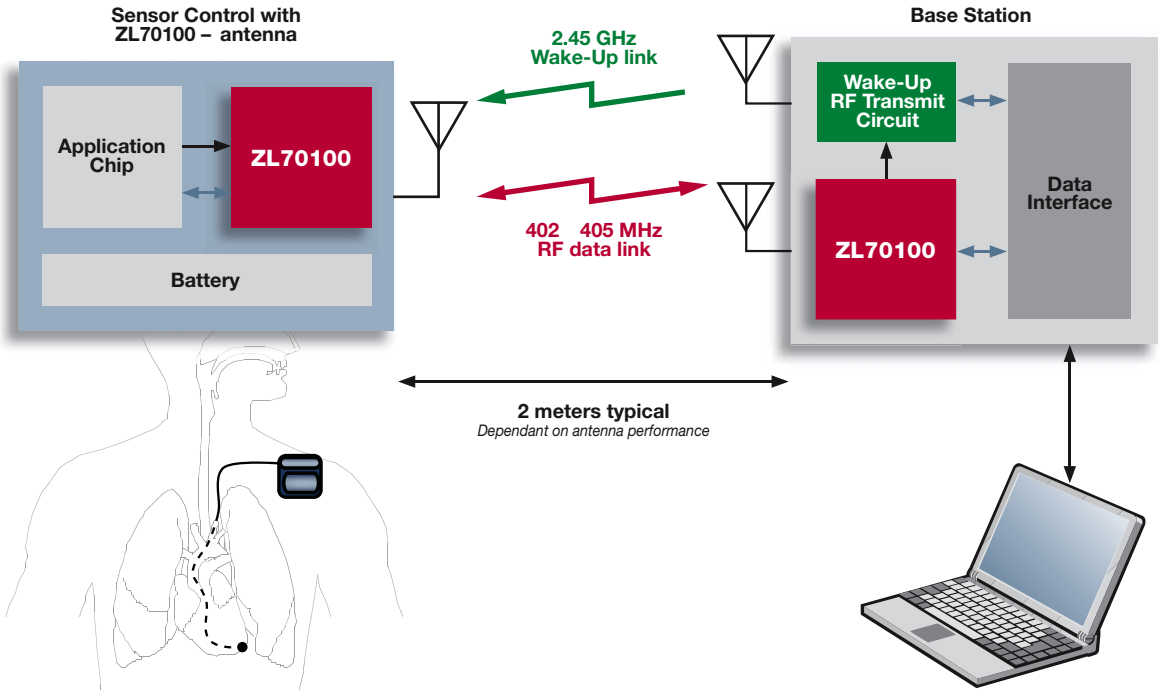
During surgery, a physician can use the higher data rates and longer communication range afforded by MICS technology to program the performance of an implanted device outside of the sterile surgical environment.

In comparison, implanted communication systems were previously limited by a shorter operating range and very low data transmission rates.

The ZL70100 transceiver chip is a half-duplex RF communication link specifically designed for MICS communication systems. Supporting data rates up to 800 kbps for raw data and 500 kbps for usable data, the chip quickly transmits large amounts of patient and performance data. The ZL70100 includes an integrated MAC, providing complete device control along with forward-error correction and error detection.

Battery life is a critical performance parameter for implanted devices. The ZL70100 transceiver's innovative RF "wake-up" receiver allows the chip to operate in a low-current (200 nA) "sleep" mode. Communication between implanted and base station transceivers is then initiated using a specially coded "wake-up" signal from the 2.45 GHz base transmitter. Alternative wake-up mechanisms using 400 MHz or direct wake-up by an IMD processor are also supported.

The ZL70100 can be used in implantable device communication systems, as well as in- and on-body devices used in Body Area Network applications.



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