

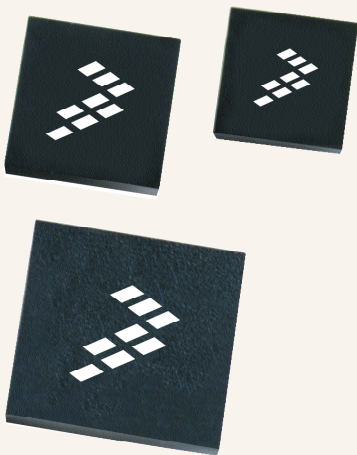
XS110 UWB Solution for Media-Rich Wireless Applications

XS110 Ultra-Wideband Solution

Freescale's XS110 Ultra-Wideband (UWB) solution provides full wireless connectivity implementing direct sequence ultra-wideband (DS-UWB) and the IEEE® 802.15.3 media access control (MAC) protocol. The chipset delivers more than 110 Mbps data transfer rate supporting applications such as streaming video, streaming audio, and high-rate data transfer at very low levels of power consumption.

In addition to high data rates, the XS110 supports peer-to-peer as well as ad hoc networking for truly mobile wireless connectivity. The XS110 is the ultimate wireless solution when high data rate, low power and low cost are mandatory.

The Freescale DS-UWB implementation delivers wireless without compromise—wire-like video quality across a wireless medium is now a reality.



Highlights

- > Three-chip set consists of RF front-end and transceiver, digital baseband and MAC
- > Small chip sizes allow compact Flash implementation
- > UWB physics offers superior multipath performance indoors for wire-like quality
- > Built with low-cost, reliable complementary metal-oxide semiconductor (CMOS) and silicon germanium (SiGe) technologies
- > Compatible with FCC Class-B limits between 3.1–10.6 GHz—< 1 mW overall output power
- > Incorporates low-overhead, high Quality-of-Service (QoS) IEEE 802.15.3 MAC protocol
- > Low-profile UWB antenna is compact for small footprint device integration
- > Selectable data rates: 29, 57, 86 and 114 Mbps
- > Bit Error Rate 10^{-9} delivers wire-like video quality

Applications

- > Multiple wireless MPEG-2 or MPEG-2HD video streams
- > Wireless Fast Ethernet, USB2 and 1394
- > Home residential gateways/set-top boxes supporting secure digital video distribution to multiple displays/televisions
- > Streaming digital video/audio for digital cameras, MP3 players and PDAs
- > Client device location tracking for wireless local area network (LAN) (IEEE 802.11) products

XS110 UWB Solution Key Features

- > Data rates of 29, 57, 86 and 114 Mbps
- > Support for IEEE 802.15.3 streaming media protocol
- > Enables wire-like high definition video applications
- > 750 mW ~ 3.3V power consumption
- > Co-exists with IEEE 802.11b/a/g, Bluetooth™ technology, global positioning system (GPS) and all United States-based wireless systems
- > Built using low-cost 0.18 μ m CMOS and SiGe technology

XS110 UWB Solution Description

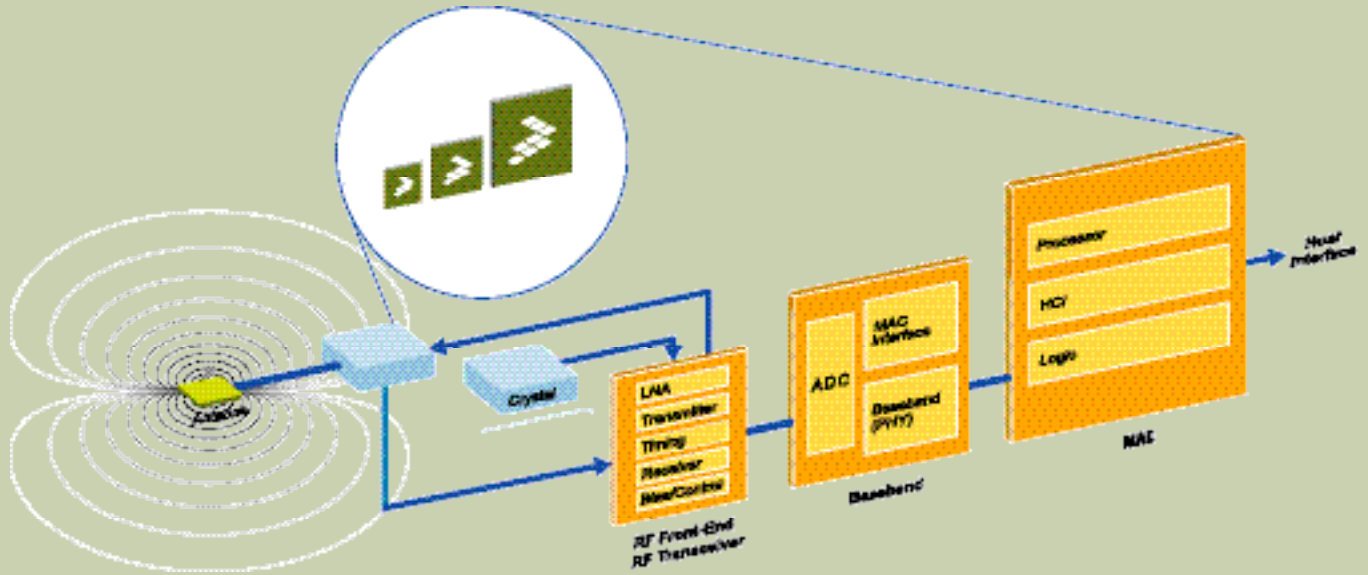
RF front-end and transceiver chip integrates a low noise amplifier (LNA) having both high gain (20 dB) and low gain (0 dB) settings and a high gain noise figure of 5.6 dB, with an RF transceiver that creates our UWB signal through a transistor-based pulse, forming a network operating at baseband speed.

Baseband processor chip integrates UWB baseband and analog to digital converter (ADC) functions with multiple Forward Error Correction (FEC) options, fast acquisition and agile tracking.

Single-chip medium access controller supports streaming media applications based on the emerging TDMA-based IEEE 802.15.3 protocol.

Freescale UWB antenna is a 1" x 1" flat planar design etched on a single metal layer of common FR4 circuit board material.

FREESCALE XS110 ULTRA-WIDEBAND SOLUTION SYSTEM ARCHITECTURE



FREESCALE XS110 ULTRA-WIDEBAND SOLUTION SPECIFICATIONS

Frequency Band	3.1–10.6 GHz
MAC Protocol	IEEE® 802.15.3
Network Architecture	Peer-to-peer, ad hoc, Piconet (8 nodes)
Encoding	Bi-phase mono-cycle
Coding Rates	1, 3/4, 1/2
Selectable Data Rates	29, 57, 86 and 114 Mbps
Power Consumption	750 mW
Bit Error Rate	10 ⁻⁹
Range	10 meters
Operational Temperature Range	0°C to +70°C
Operational Humidity Ranger	0–95 percent non-condensing

Ultra-Wideband Platforms:

To learn more about Freescale's UWB solutions please visit us on the Web at www.freescale.com/uwb.

Learn More: For more information about Freescale products, please visit www.freescale.com.