8-bit UART integrates RS-232 transceiver

Ismini Scouras
eeProductCenter
(04/18/2006 9:58 AM ET)

The manufacturer says...

Exar Unveils Industry's First Integrated 8-bit UART and RS-232 Transceiver Product Family

Fifth Industry-First UART - Reinforces Company's Focus on Technology Innovation

Fremont, Calif.—Exar Corp., a leading provider of high-performance, mixed-signal silicon solutions for the worldwide communications infrastructure, today announced the industry's first 8-bit Universal Asynchronous Receiver Transmitter (UART) and RS-232 transceiver combination device family. Integrating functions from two ICs into a space saving package, the XR19L2xx series targets the growing market demand of consumer and battery powered applications including laptops and portable devices; desktop PCs; and industrial peripheral interfaces such as handheld terminals and Point-of-Sale (POS) systems, amongst others.

"The XR19L2xx series simplifies the design process because it eliminates acquiring two devices from different vendors," said Levent Ozcolak, division vice president and general manager, Interface Products Division. "This coupled with small packaging options and support for three different modem interfaces gives customers confidence in the XR19L2xx series for today's design projects as well as next generation solutions."

eeProductCenter's Ismini Scouras says...

Exar has introduced five "industry-firsts" in the last 12 months, so what makes this one so special? For starters, it puts the Fremont, Calif-based chip maker in a new market—RS-232 transceivers. Secondly, the company has taken its 8-bit UART and integrated the RS-232 transceiver function into one space-saving package. Manufacturers not only in the consumer and battery-powered product sectors can take advantage of the XR19L2xx series, but also those building desktops, industrial peripheral interfaces such as handheld terminals and Point-of-Sale systems.

"The entire world is hungry for integrating functions, whether it's an ASSP or ASIC or another device. Two of the things that have not been integrated are RS-232 and UARTs. And since they are immediately next to each other in the data flow, we felt that it was a good thing to do for the industry and for Exar to expand its business," said Eric Nguyen, senior strategic marketing manager, Interface Products Division.

There are three different modem interfaces in the single-channel XR19L2xx series. The XR19L200 is a "quarter-modem" device intended for applications that only need TX (transmit) and RX (receiver) signals. The 210 is a half-modem device that can be used in any applications in which legacy modem I/Os are not needed or used. And the 220 is suitable for full-modem interfaces, which can be used as a standard PC serial port.

"If you look at the way a UART works, there is a legacy system that works with computers that have eight lines coming in and out. We call it three transmit and five receive. The eight-signal is a full-modem interface. And the device that supports that is the L220," Nguyen said.

For designers who don't need to support legacy systems, the 200 and 210 are available. The 210 is different than the 200 since it supports hardware flow control through a couple of lines called RTS and TTS. If designers want a transmit and receive line, the 200 is the device they would want to go with.

"The flexibility for designers is there. They can choose any system that they have to support, whether it's legacy, hardware flow control or simple TX and RX," he said.

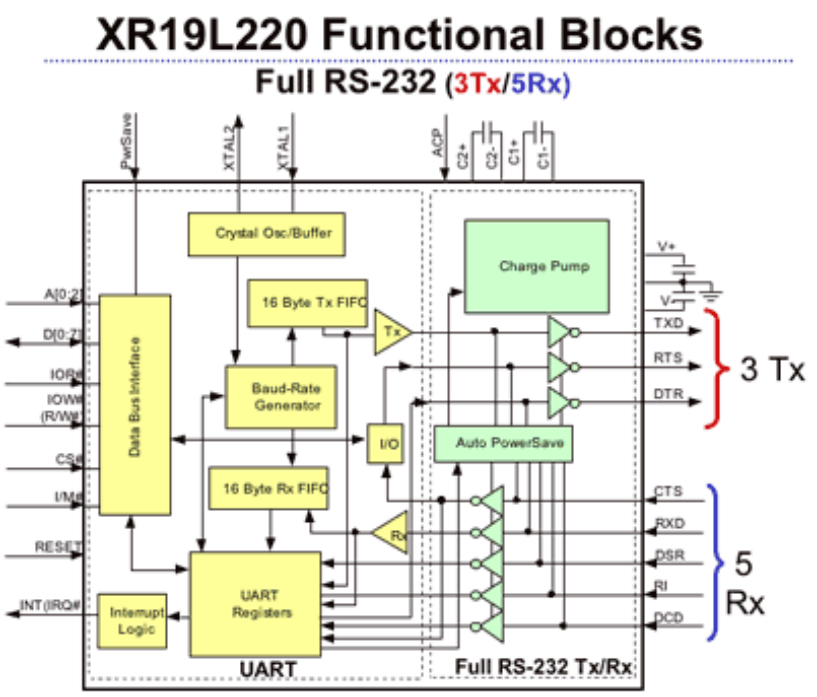
Five Industry Firsts

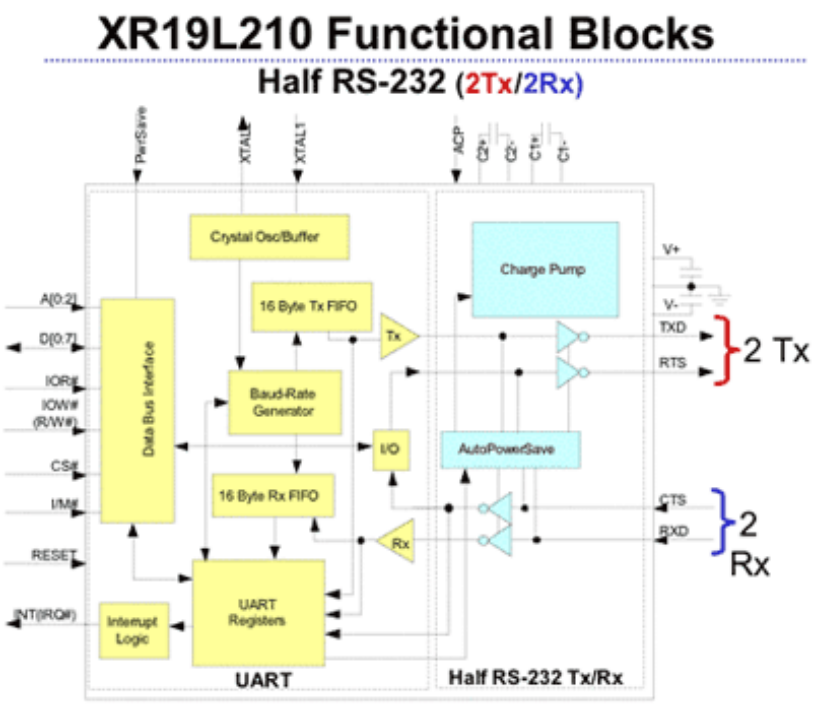
The XR19L2xx series marks Exar's fifth industry-first UART offering in the last 12 months. Announced in February 2006, was the XR17V252 a dual-channel 66MHz PCI 3.0 compliant UART; in December 2005, the Company introduced the industry's first 1.8 Volt single-channel UART (XR16L570) in 24 and 32-pin QFN packages; in June 2005, Exar added the industry's smallest UART (XR16L580). Lastly, in March 2005, Exar introduced the industry's first multi-channel 66MHz PCI 3.0 compliant UART family; the first in this series was an eight-channel (XR17V258) solution.

"Anticipating customer requirements for more serial communications capabilities in a smaller silicon foot print, the XR19L2xx series is an industry breakthrough combining two formerly separate functions into a highly-integrated solution," said Eric Nguyen, senior strategic marketing manager, Interface Products Division. "This new offering reconfirms our continuing focus on technology innovation and puts more distance between Exar's UART products and the competition."

Product Series Details

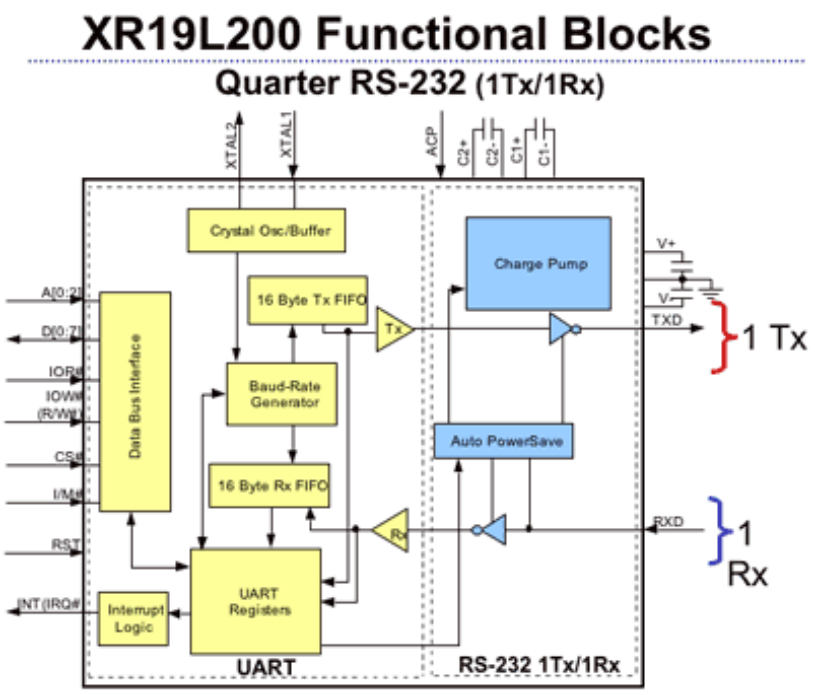
The single-channel XR19L2xx series, composed of the XR19L200/210/220, offers different packaging and modem interface options thus addressing designers' specific needs. The XR19L220 is ideal for full modem interfaces, which can be used as a standard PC serial port. The XR19L210 supports a half modem interface, and can be used in any application where the legacy modem I/Os are not needed or used. In addition to the TX and RX signals, the RTS and CTS signals are provided to support automatic hardware or software flow control to prevent RX FIFO overrun errors. The XR19L200 targets quarter modem requirements, and is used in any application only needing the TX and RX signals. This saves the designer time from having to terminate all of the other unused inputs. The XR19L200/210/220 products are fully compliant with EIA/TIA-232-F standards from +3V to +5.5V power supply. Both RS-232 driver outputs and receiver inputs can operate in harsh electrical environments of +/-15V without damage and can survive +/-15kV ESD on the RS-232 lines while maintaining RS-232 output levels. The XR19L200/210/220 series operates in four different modes: active, partial sleep, full sleep and powersave. Each mode can be





invoked via hardware or software. In the active mode, all functions are active. In the partial sleep mode, the internal crystal oscillator or the charge pump is turned off. In full sleep mode, both the internal crystal oscillator and the charge pump are turned off. In the powersave mode, the core logic is isolated from the control signals. The RS-232 receivers remain active in all four modes.

Tools and Support The XR19L200/210/220 series supports standard serial port drivers as well as Windows CE drivers. With the availability of software drivers and Exar's application support line, customers can accelerate their time to market by minimizing driver development, testing and diagnostic procedures.



More features

The transmission rate is 250-Kbits/s, which has been carried over from one of Exar's UART applications, he said. When UART and RS-232 devices are designed into a system separately, there is external circuitry that's needed to work with the discrete device. Exar integrated the power-saving circuitry into the combined UART and RS-232.

The XR19L2xx series has the following power management and power save modes: partial sleep Mode; UART on, charge pump off; charge pump on, UART off; full sleep mode; and power-save mode.

In full sleep mode, both the UART and charge pump are turned off. The full sleep mode current can be as low as 15 µA. And in power-save mode, the core logic is isolated from the CPU interface. Current consumption in the power-save mode can be as low as 15 µA.

The XR19L2xx series is fully compliant with EIA/TIA-232-F standard, and supports an operating voltage range of 2.7-V to 5.5-V. The series is also software driver compatible with existing Exar UARTs.

The XR19L200 is offered in a 32-pin QFN, and is priced at $2.60 in 1,000 piece quantities. Additional information on this product can be found at www.exar.com/product.php?ProdNumber=XR19L200

The XR19L210 is offered in a 40-pin QFN, and is priced at $2.75 in 1,000 piece quantities. Additional information on this product can be found at .

The XR19L220 is offered in a 40-pin QFN, and is priced at $2.80 in 1,000 piece quantities. Additional information on this product can be found at All the devices are available for sampling now.

Exar Corp., 1-510-668-7000, www.exar.com

Electronic Marketplace