1.62V to 3.63V High Performance UART with 16/32/64-Byte FIFO XR16M580/680/780

Industry-First Smallest and Fastest Single-Channel Universal Asynchronous Receiver Transmitter (UART) Series

The XR16M580[1] (M580), XR16M680[1] (M680) and XR16M780[1] (M780) are part of the enhanced Universal Asynchronous Receiver and Transmitter (UART) family with 16, 32 and 64 bytes of transmit and receive FIFOs. These devices have selectable (M580 and M680) or programmable (M780) transmit and receive FIFO trigger levels, and automatic hardware and software flow control. With data rates of up to 16 Mbps at 3.3V, 12.5 Mbps at 2.5V and 7.5 Mbps at 1.8V with 4X data sampling rate, the M580, M680 and M780 are the industry's fastest single-channel UARTs.

The Auto RS-485 Half-Duplex Direction control feature simplifies both the hardware and software for half-duplex RS-485 applications. In addition, the Multidrop mode with Auto Address detection increases the performance by simplifying the software routines.

The Independent TX/RX Baud Rate Generator feature allows the transmitter and receiver to operate at different baud rates. Power consumption of the M580, M680 and M780 can be minimized by enabling the sleep mode and PowerSave mode.

The M580, M680 and M780 have a 16550 compatible register set that provide users with operating status and control, receiver error indications, and modem serial interface controls. An internal loopback capability allows onboard diagnostics. The M580, M680 and M780 are available in 32-pin QFN, 48-pin TQFP and 25-pin BGA packages. The 25-pin BGA (3x3x0.8mm) is the industry's smallest single-channel UART. All three packages offer both the 16 mode (Intel bus) interface and the 68 mode (Motorola bus) interface which allows easy integration with Motorola processors.

NOTE: [1]Covered by U.S. Patent #5,649,122.

Major Features

- 25-pin BGA (3x3x0.8mm)
- Intel or Motorola Bus Interface select
- 16 Mbps Maximum Data Rate
- Independent TX/RX Baud Rate Generator
- Fractional Baud Rate Generator
- Auto RS-485 Half-Duplex Direction Control
- Multidrop Mode w/Auto Address Detect

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XR16M580/680/780

Features

- Pin-to-pin compatible with XR16L580 in 32-QFN and 48-TQFP packages
- Selectable TX/RX trigger levels (M580 & M680)
- Programmable TX/RX trigger levels (M780)
- TX/RX FIFO Level Counters
- Auto RTS/CTS Hardware Flow Control
- Auto XON/XOFF Software Flow Control
- Sleep Mode with Automatic Wake-up
- PowerSave mode
- Infrared (IrDA 1.0 and 1.1) mode
- 1.62V to 3.63V supply operation
- Crystal oscillator or external clock input

Applications

- Personal Digital Assistants (PDA)
- Cellular Phones/Data Devices
- Battery-Operated Devices
- Global Positioning System (GPS)
- Bluetooth

Ordering Information

Product No.	Package	Operating Temp. Range
XR16M580IL32	32-PinQFN	-40°C to +85°C
XR16M580IM48	48-Lead TQFP	-40°C to +85°C
XR16M580IB25	25-Pin BGA	-40°C to +85°C
XR16M680IL32	32-pin QFN	-40°C to +85°C
XR16M680IM48	48-Lead TQFP	-40°C to +85°C
XR16M680IB25	25-Pin BGA	-40°C to +85°C
XR16M780IL32	32-Pin QFN	-40°C to +85°C
XR16M780IM48	48-Lead TQFP	-40°C to +85°C
XR16M780IB25	25-Pin BGA	-40°C to +85°C

XR16M780 Block Diagram