High-speed, low voltage, 128-byte FIFO 16C UARTs for portable applications

Operating at up to 5 Mbps with supply voltages of 1.8 V, these UARTs reduce CPU overhead, minimize power consumption, support wireless data links, and save board space.

Key features
- Single- and dual-channel UARTs
- Multiple processor interfaces: Intel/Motorola and Marvell PXA32x VLIO
- 128-byte Tx/Rx FIFOs with programmable trigger levels
- Independent Tx and Rx enable/disable
- Low-voltage 1.8-V supplies
- Up to 5 Mbps baud rates
- Enhanced sleep mode and low-power feature
- Supports IrDA version 1.0 (up to 115.2 Kbps)
- Standard modem-control functions (-CTS, -RTS, -DSR, -DTR, -RI, -CD)
- UART software reset
- Dual UART channels concurrent write (SC16C852x only)
- High-resolution fractional clock prescaler for use with non-standard UART clock
- Automatic RS-485 address detection and driver turn-around
- Industrial temperature range at commercial pricing (-40 to +85 °C)
- Ultra-small, Pb-free, RoHS-compliant packaging (HVQFN, TFBGA, LQFP)

Benefits
- Lower CPU overhead and fewer interrupts
- Glueless interface to a variety of processors
- Longer battery life with enhanced sleep mode and low power feature
- Reduced software overhead via automatic RS-485 features
- Fewer external components (no external crystal needed)
- Greater system optimization with large on-chip FIFOs
- Very high data rate and throughput

Applications
- Smartphones and other mobile phones
- PDAs and MP3 players
- Bluetooth® 1.2 and 2.0+EDR interfaces
- Computing and point-of-sale (POS)
- Automotive and navigation systems
- Medical equipment, networking and telecommunications
- Gaming systems, HDTV, and LCD TV
- Wireless infrared data links, RS-232 and RS-485 (multi-drop)

The SC16C85x family is a series of high-performance, single- and dual-channel UARTs for handheld, battery-operated, and other applications. The family is especially well suited to smartphone and Bluetooth (1.2 and 2.0+EDR) applications.

Each UART in the family has a large, 128-byte FIFO, offers a baud rate of up to 5 Mbps, and very low power consumption. Each is available in a small-footprint package.
The SC16C85x architecture includes a UART software reset and a high-resolution clock prescaler (from 0 to 15, with a granularity of 1/16), that works with a non-standard UART system clock.

There are 128 programmable interrupt trigger levels and 128 FIFO reporting levels for receive and transmit. The enable/disable functions for transmit and receive operate independently. To support battery-operated applications, a low-power mode reduces power-down current.

The automatic RS-485 function operates in 9-bit or multi-drop mode, offers address detection with programmable addresses, and supports driver turn-around with programmable time delay. The software (XON/XOFF) and hardware (RTS/CTS or DTR/DSR) flow controls are also automatic.

The architecture supports dual-channel concurrent write that allows the host to write simultaneously to the same register of all UART channels. The IrDA coder/encoder is compatible with infrared IrDA version 1.0 (up to 115.2 Kbps).

For more information, please visit www.nxp.com/interface. Please send technical questions to interface.support@nxp.com.

### Selection guide

<table>
<thead>
<tr>
<th>Part number</th>
<th>Part description</th>
<th>Package type</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC16C85OLIET</td>
<td>1.8-V, 5-Mbps, low-power, single-channel UART with Intel interface</td>
<td>TFBGA36</td>
<td>3.5 x 3.5 x 0.8</td>
</tr>
<tr>
<td>SC16C85OLIBS</td>
<td>1.8-V, 5-Mbps, low-power, single-channel UART with Intel/Motorola interface</td>
<td>HVQFN32</td>
<td>5.0 x 5.0 x 0.85</td>
</tr>
<tr>
<td>SC16C852LIBS</td>
<td>1.8-V, 5-Mbps, low-power, dual-channel UART with Intel/Motorola interface</td>
<td>HVQFN32</td>
<td>5.0 x 5.0 x 0.85</td>
</tr>
<tr>
<td>SC16C852LIB48</td>
<td>1.8-V, 5-Mbps, low-power, dual-channel UART with Intel/Motorola interface</td>
<td>LQFP48</td>
<td>7.0 x 7.0 x 1.4</td>
</tr>
<tr>
<td>SC16C852VIET</td>
<td>1.8-V, 5-Mbps, low-power, dual-channel UART with Intel VLO interface</td>
<td>TFBGA36</td>
<td>3.5 x 3.5 x 0.8</td>
</tr>
<tr>
<td>SC16C852VIBS</td>
<td>1.8-V, 5-Mbps, low-power, dual-channel UART with Intel VLO interface</td>
<td>HVQFN48</td>
<td>6.0 x 6.0 x 0.85</td>
</tr>
<tr>
<td>SC16C850VIBS</td>
<td>1.8-V, 5-Mbps, low-power, single-channel UART with Intel VLO interface</td>
<td>HVQFN32</td>
<td>5.0 x 5.0 x 0.85</td>
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