

BlueCore4-Ext™



DESCRIPTION

CSR's BlueCore4-Ext device implements the Enhanced Data Rate (EDR) Bluetooth® specification, allowing it to deliver data rates that are 3-times faster than v1.2 Bluetooth devices. This transfer rate also means that, for a given amount of data, the radio will be active up to 3 times less than a v1.2 radio, reducing power consumption.

These features make the device ideal for lower-volume applications, general development and prototyping, and any markets that demand the ability to upgrade quickly. A version with integral mask-ROM and HCI (or optionally RFCOMM) Bluetooth stack is also available for volume applications such as mobile phones and PDAs.

KEY FEATURES

- Enhanced Data Rate (EDR) compliant for both 2Mbps and 3Mbps modulation modes
- Single-chip solution integrating radio, baseband, microcontroller
- External Flash memory interface (8Mbits)
- Bluetooth v2.0+EDR system (v2.1 upgradeable)
- Full speed Bluetooth operation with full Piconet support
- Scatternet support
- Extended SCO (eSCO) support
- USB and dual UART ports
- Support for 802.11 coexistence

BENEFITS

- EDR Bluetooth means that a 1Mb image download, which can take about 12 seconds will only take 4 seconds
- Higher speed Bluetooth radio connection from the cordless home or business access point will allow for the simultaneous transfer of more data whilst the telephone call is being placed over the fixed line infrastructure
- Allows PC support of multiple Bluetooth links, such as Bluetooth keyboard and mouse, listening to music using Bluetooth stereo headphones, synchronising contact details with handset or the handset as a modem to connect to an email or internet service
- EDR enables data to be transmitted at speeds suitable for laser printers
- EDR opens up Bluetooth to potentially wider applications in home-entertainment. A Dolby 5.1 surround sound system typically transmits its signal at rate of up to around 1Mbps. Bluetooth EDR could offer a potential cost-effective solution for removing the wires from such systems.
- Other applications include access points, computer accessories (cards, dongles) and digital cameras

Radio

- Common Tx/Rx terminal simplifies external matching; eliminates external antenna switch
- BIST minimises production test time. No external trimming is required in production
- Full RF reference designs available
- Bluetooth® v2.0+EDR specification compliant (v2.1 upgradeable)

Transmitter

- +6dBm RF transmit power with level control from on-chip 6-bit DAC over a dynamic range >30dB
- Class 2 and Class 3 support without the need for an external power amplifier or Tx/Rx switch
- Supports $\pi/4$ DQPSK (2Mbps) and 8DPSK (3Mbps) modulation

Receiver

- Integrated channel filters
- Digital demodulator for improved sensitivity and co-channel rejection
- Real time digitised RSSI available on HCI interface
- Fast AGC for enhanced dynamic range
- Supports $\pi/4$ DQPSK and 8DPSK modulation
- Channel classification

Synthesiser

- Fully integrated synthesiser requires no external VCO, varactor diode, resonator or loop filter
- Compatible with crystals between 8 and 32MHz (in multiples of 250kHz) or an external clock
- Accepts 7.68, 14.44, 15.36, 16.2, 16.8, 19.2, 19.44, 19.68, 19.8 and 38.4MHz TCXO frequencies for GSM and CDMA devices with sinusoidal or logic level signals

Bluetooth stack

- CSR's Bluetooth protocol stack runs on the on-chip microcontroller in a variety of configurations:
 - Standard HCI (UART or USB)
 - Fully embedded RFCOMM
 - Customised builds with embedded application code

Auxiliary features

- Crystal oscillator with built-in digital trimming
- Power management includes digital shut down, wake up commands with an integrated low power oscillator for ultra-low power Park/Sniff/Hold mode
- 'Clock request' output to control an external clock
- On-chip linear regulator; 1.8V output from a 2.2 4.2V input
- Can run in low power mode from external 32kHz clock signal
- Auto baud rate setting for different TCXO frequencies
- Power-on-reset cell detects low supply voltage
- Arbitrary power supply sequencing permitted
- 8-bit ADC available to applications

Baseband and software

- External 8Mbit Flash for complete system solution
- Internal 48kbyte RAM, allows full speed data transfer, mixed voice and data, and full Piconet operation, including all medium rate preset types
- Logic for forward error correction, header error control, access code correlation, CRC, demodulation, encryption bit stream generation, whitening and transmit pulse shaping. Supports all Bluetooth v1.2 features including eSCO and AFH
- Transcoders for A-law, μ -law and linear voice from host and A-law, μ -law and CVSD voice over air

Physical interfaces

- Synchronous serial interface up to 4Mbaud for system debugging
- UART interface with programmable baud rate up to 1.5Mbaud with an optional bypass mode
- Full speed USB v2.0 interface supports OHCI and UHCI host interfaces
- Synchronous bi-directional serial programmable audio interface
- Optional I2C™ compatible interface
- Optional coexistence interfaces

Package options

- 96-ball VFBGA, 8x8mm
- 96-ball VFBGA, 6x6mm