Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Features

- Fully qualified Bluetooth® v4.0 system
- Dual-mode Bluetooth/Bluetooth low energy operation
- HCI mode operation with full Bluetooth stack
- HID proxy mode for boot mode support and stackless operation
- High-sensitivity Bluetooth and Bluetooth low energy receiver
- Class 1, Class 2 and Class 3 support without external power amplifier or TX/RX switch
- Basesband processor running Bluetooth HCI firmware stack
- Reference design with worldwide qualification
- Green (RoHS compliant and no antimony or halogenated flame retardants)
- Full-speed USB 2.0 interface
- RFKill functionality for PCs (hardware and software radio enable controls)
- WLAN coexistence interface
- External EEPROM I^{2}C interface
- Integrated balun
- Minimal external components required: 15 passives plus crystal
- 28-ball WLCSP package
- On-chip synthesizer
- Internal power regulation for self-contained operation from USB vbus for dongles
- Selectable I/O voltage
- Real-time signal strength indicator (RSSI)

BlueCore® CSR8510™ A10 WLCSP

Bluetooth® v4.0 Specification

Production Information

CSR8510A10
Issue 2

CSR8510 A10 0.5mm Pitch WLCSP Technical Overview

General Description

The BlueCore® CSR8510™ A10 WLCSP is a product from CSR's Connectivity Centre. It is a single-chip radio and baseband IC for Bluetooth 2.4GHz systems including EDR to 3Mbps.

CSR offers a comprehensive ecosystem of hardware and software components to aid rapid device development, including:
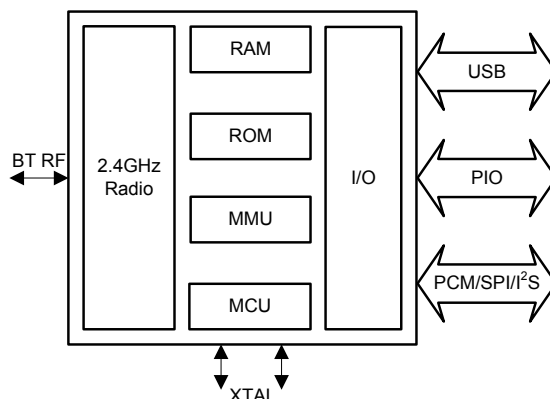
- CSR Synergy™ software for embedded devices
- CSR BlueSlim2 module reference design
- CSR µEnergy™ platform for Bluetooth low energy devices

Applications

Computing devices including:

- PCs
- All-in-Ones
- Laptops
- Netbooks
- Tablets

Embedded home entertainment devices including:

- Digital TVs
- Set-top Boxes

After-market low-power Bluetooth accessories:

- USB dongles

The device incorporates auto-calibration and BIST routines to simplify development, type approval and production test.

Production Information
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Device Details

Bluetooth low energy

- Dual-mode Bluetooth/Bluetooth low energy operation
- Support for Bluetooth basic rate/EDR and low energy connections
- 5 Bluetooth low energy connections at the same time as basic rate A2DP

Bluetooth Radio

- Integrated balun (50Ω impedance in TX and RX modes)
- No external trimming is required in production
- Bluetooth v4.0 specification compliant

Bluetooth Transmitter

- Typical 9.7dBm RF transmit power with level control from on-chip 6-bit DAC over a dynamic range >30dB
- Class 1, Class 2 and Class 3 support without need for external PA or TX/RX switch

Bluetooth Receiver

- Typical receive sensitivity of -91dBm typical for basic rate
- High-sensitivity Bluetooth and Bluetooth low energy 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
- Channel classification for AFH

Synthesiser

- Fully integrated synthesiser requires no external VCO varactor diode, resonator or loop filter
- Compatible with external clock 16MHz to 40MHz and crystal oscillator 16MHz to 32MHz

Baseband and Software

- Internal RAM enables full-speed data transfer, mixed voice and data, and full piconet operation, including all medium rate packet types
- Logic for forward error correction, header error control, access code correlation, CRC, demodulation, encryption bit stream generation, whitening and transmit pulse shaping. Includes support for eSCO and AFH.

Bluetooth Stack

CSR's Bluetooth Protocol Stack runs on the on-chip MCU:

- Support for Bluetooth v4.0 specification features:
  - Master and slave operation
  - Including encryption
- Software stack in firmware includes:
  - GAP
  - L2CAP
  - Security Manager
  - Attribute protocol
  - Attribute profile
  - Bluetooth low energy profile support

Physical Interfaces

- Full-speed (12Mbps) USB 2.0 interface
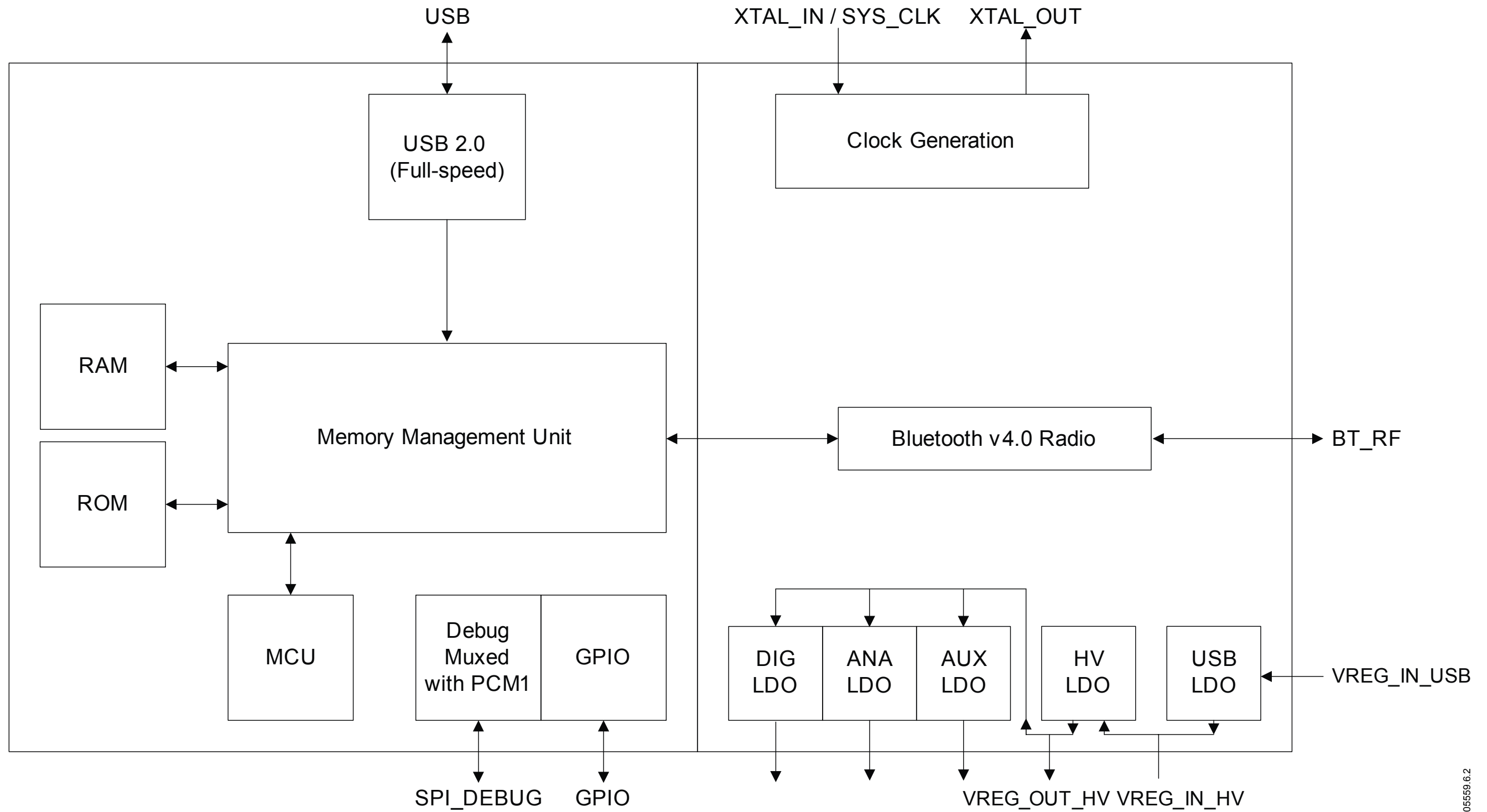- Synchronous serial interface up to 4Mbps for system debugging

Auxiliary Features

- Power management includes digital shutdown and wake up commands with an integrated low power oscillator
- Integrated linear regulators:
  - USB: USB bus supply to 3.3V
  - High-voltage: 2.3V to 4.8V input to 1.85V
  - Low-voltage: VDD_DIG, VDD_RADIO and VDD_AUX regulators
- Power-on-reset cell detects low supply voltage
- Arbitrary sequencing of power supplies is permitted

Package

- 28-ball 2.57 x 3.21 x 0.6mm, 0.5mm pitch WLCSP
- For low-cost PCBs, no need for blind vias in most configurations

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Functional Block Diagram

CSR8510 A10 0.5mm Pitch WLCSP Technical Overview

G-TW-0005559.6.2

1   Ordering Information

Interface Version	Package			Order Number
	Type	Size	Shipment Method	
USB	WLCSP 28-ball Green	2.57 x 3.21 x 0.6mm, 0.5mm pitch	Tape and reel	CSR8510A10-ICXR-R

Note:

CSR8510 WLCSP is a ROM-based device where the product code has the form CSR8510Axx. xx is the specific ROM-variant.

Minimum order quantity is 2kpcs taped and reeled.

Supply chain: CSR's manufacturing policy is to multisource volume products. For further details, contact your local sales account manager or representative.

To contact a CSR representative, send e-mail to sales@csr.com or go to www.csr.com/contacts.htm.

Document History

Revision	Date	Change Reason
1	27 JAN 12	Original publication of this document.
2	17 OCT 12	Updated to Production status. If you have any comments about this document, email Comments@csr.com giving the number, title and section with your feedback.

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