CONEXANT

CX92755 User Interface and Media Processor

Complete Multimedia Solution on a Single Chip

Conexant's CX92755 System-on-Chip (SoC) is an integrated display, media, video, and image processor delivering a new level of performance and system integration. The SoC builds on Conexant's strengths in image and mixed-signal processing, and integrates high performance video codec and graphics processing hardware. To support robust system design and lower Bill of Material (BOM) costs, the CX92755 also integrates a stereo Class-D amplifier, microphone input, touchscreen controller, and power supply controller.

A high-performance ARM Cortex-A8 processor with NEON SIMD Engine supports robust embedded operating system operation and advanced algorithm development. High performance DDR3 memory supports high-bandwidth operations. High-speed USB 2.0 Host and Device ports support PC and peripheral connection. A PCIe root and endpoint controller supports additional peripheral expansion and flexibility, as well as multi-chip communication and control.

The hardware video subsystem supports 1080p decode and video post processing for popular video codecs, including H.264, and off-loads the CPU from video decode tasks. To support full duplex video codec operation, a 720p HD Video Encoder is also supported. Along with video encode and decode, the CX92755 supports a BT.656 compatible video-in port for video capture applications. For advanced GUI operations, the CX92755 supports a hardware graphics processing unit (GPU). This GPU includes a Display List Processor along with Alpha Blend and Clipping Units to support complex, independent UI operations. The CX92755 features a flexible, programmable LCD interface, hardware JPEG codec, and Conexant's advanced Image Processing pipeline. The CX92755 display sub-system further integrates an LVDS transmitter and high-speed triple video DACs to support a wide range of display applications, up to 1080p

Network connectivity including Bluetooth®, 3G, WiFi®, and integrated Ethernet is supported. The integrated camera card controller supports all popular memory cards, and an advanced NAND Flash Controller supports NAND boot and extended MLC-NAND ECC control.

The CX92755 contains several features which lower cost and operating power while providing unsurpassed image processing and flexibility. Conexant's Linux development environment enables manufacturers to quickly design cost-effective interactive display products. The SoC is packaged in an environmentally-friendly, RoHS/Green-compliant 441-pin fine-pitch ball grid array (fpBGA).

Key Features	Benefits
ARM Cortex-A8 CPU with L1/L2 cache and NEON SIMD Engine	Easily handles complex computational, geometry, and system tasks
Hardware 1080p MPEG2 / MPEG4 / H.263 / H.264 Video Decoder, 720p Encoder, and BT.656 Video-in Port	Hardware acceleration which supports full duplex encode / decode and popular video formats
Hardware graphics processor with Display List Processor and Alpha Blend Unit	Supports advanced UI operation and display effects
DDR3 Memory Interface	High-Bandwidth Memory Architecture
PCIe Root and Endpoint Interface	Low cost touchscreen implementation with proven drivers
Advanced power management	Variable power/temperature controls for power savings
Advanced MLC NAND Flash / ECC Controller	Flexible memory storage interface
Integrated Class-D stereo DAC, stereo microphone, and on-chip Power Supply Controller	System BOM savings
Programmable LCD Controller with integrated video DACs, LVDS transmitter, up to 1080p Output Support	Directly interfaces to analog and digital LCD's, LVDS LCD's, analog monitors, and HDMI controllers

Applications

- Connected Digital Frames
- Interactive Kiosks
- Home Automation/Security
- Digital Signage
- Interactive TV Appliance
- Home Web Terminals
- UI Controller

Part Number CX92755

Description User Interface and Media Processor

CX92755 Features

Processor
- ARM Cortex-A8 processor
- NEON SIMD Engine
- L1 / L2 cache

External Memory Support
- DDR3 Memory Subsystem - up to 1GB support
- Serial Flash & MLC NAND Flash Controller / NAND boot / extended ECC
- Embedded Memory Card Controller (CF, xD, MS, MS-Pro, SD/SDHC/SDXC, MMC)

Connectivity/Interfaces
- PCIe 1.1 Root and Endpoint Controller
- Integrated Ethernet MAC
- USB 2.0 high-speed device and USB hosts (2)
- SPI, I^2C, Integrated FIR IrDA and Conexant DAA modem interfaces

Video and Image Processor
- Hardware 1080p MPEG2 / H.263 / MPEG4 / H.264 Decoder, including up to Advanced Profile MPEG4, and Main Profile H.264
- 720p Video Encoder, supporting H.264 / MPEG4 / MPEG2 and full duplex Encode / Decode
- Hardware Video Post Processor with Scaling, Rotation, Color Operations
- Hardware JPEG codec, unlimited JPEG size support
- Programmable, Pipelined Image Processor
  - Color Space/Image Filter/Error Diffusion
  - Adjustable Color Tables, Tonal Response Curve (TRC), filters to enable unique display features

Graphics Processing Unit (GPU)
- Programmable Display List Processor
- Linear to X,Y memory addressing
- Multi-operand BLT, Line engine with Transparency and Blending
- Alpha Blending and Region Clipping
- Two-operand BitBLT, Line, Stipple, Fill Operations with Transparency

Display Support
- TFT LCD (Digital RGB) up to 24bits / pixel
- Advanced Video Overlay Engine with independent overlay buffer
- High-speed triple 8-bit Video DACs and Analog TCON
- Integrated LVDS transmitter
- Integrated Capacitive Touchscreen Controller
- GPIO support for buttons, LED's, sensors, etc.

Audio and Power Supply Controllers
- 1.2W stereo Class-D amplifier with EQ, noise reduction, stereo microphone input, line-out
- On-chip Power Supply Controller, including buck and boost regulators, and LCD VGh / VGl generation
- I^2S interface for audio codec expansion

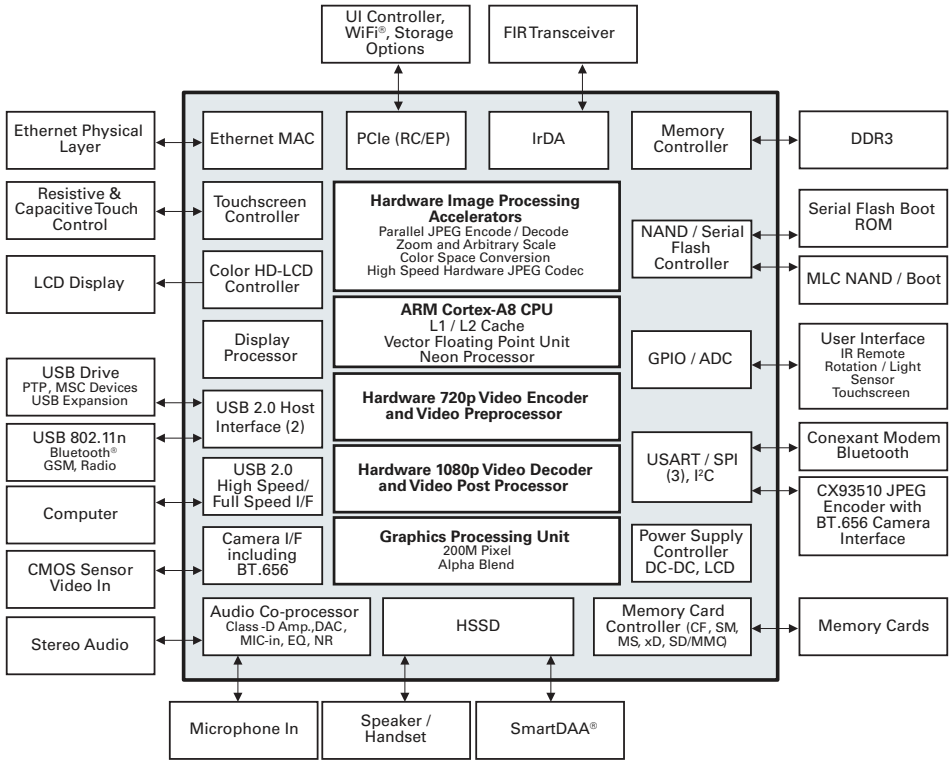
Advanced Power Management
- Programmable power management and voltage scaling

Timers
- Real-time clock with battery backup

A/D and PWM Control
- Multi-channel 10-bit A/D
- Pulse Width Modulators (PWMs) with firmware control

Package
- 441-pin fpBGA package - RoHS/Green compliant

Development Environment
- Linux BSP Development Environment
- JTAG In-Circuit Emulator
- Conexant EVK and Reference Designs



CX92755 Block Diagram

Conexant Product Portfolio

Conexant's comprehensive product portfolio includes solutions for imaging, audio, video surveillance, and embedded modem applications.

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