CW5631 Digital Media SoC

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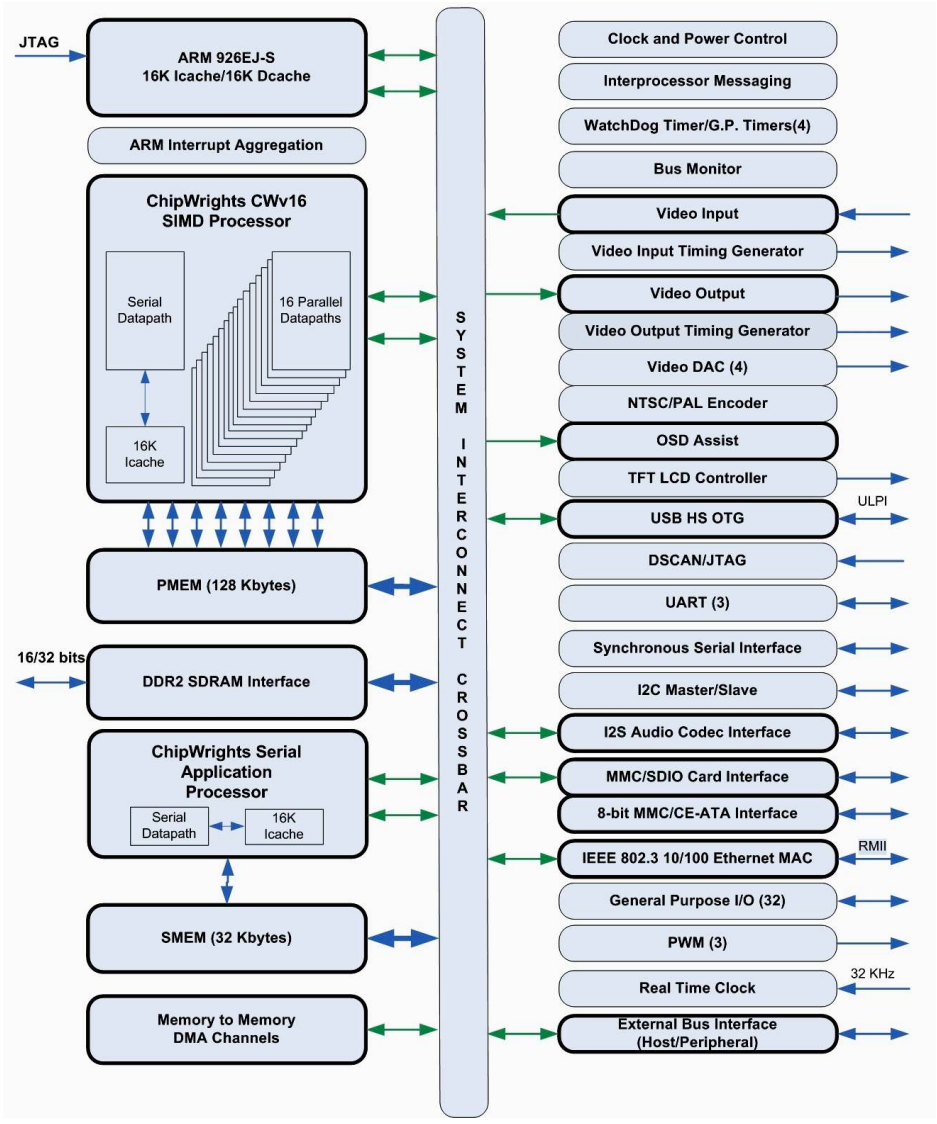
The CW5631 is a DSP-based System-on-Chip (SoC) designed for multi-purpose applications that require high-speed digital imaging processing, small size, and low power consumption. The CW5631 offers an alternative to fixed function devices in imaging applications. It is optimized to handle large volumes of streaming data while providing a scalable and programmable platform.

The chip combines a CWv16 DSP (SIMD processor with sixteen 32-bit datapaths), a RISC serial application processor, and an ARM® 926EJ-S RISC processor for control operations. It also features streaming video input and output ports, a hardware video encoder and On-Screen Display assist, Quad DAC video output, audio codec interface, USB 2.0-OTG, 10/100 Ethernet interface, 2 Secure Digital/MMC card interfaces, and a Compact Flash/IDE interface, in addition to other common SoC features. The CW5631 is an ideal platform for portable or embedded digital media products.



CHIPWRIGHTS
Visual Signal Processors

CW5631 Specifications

ARM®926EJ-S RISC Processor Core

- 32-bit RISC serial processing unit
  - 300MHz @ 1.0V; 400MHz @ 1.2V*
- 16KB I-Cache / 16KB D-Cache

CWv16 SIMD DSP Processor Core

- 32-bit 16-datapath SIMD processing unit
  - 275MHz @ 1.0V; 360MHz @ 1.2V*
  - 18,240 8-bit MMAC/sec (maximum)
- 16KB I-Cache
- 128KB primary memory

Serial Application Processor Core

- 32-bit RISC serial processing unit
  - 275MHz @ 1.0V; 360MHz @ 1.2V*
- 16KB I-Cache / 32KB data RAM

*All operating frequencies are subject to final device characterization.

Memory System

- 128KB high-speed multi-port primary SRAM
- 16/32-bit DDR2-SDRAM interface
  - Independent clock: 220MHz @ 1.0V core voltage; 240MHz @ 1.2V core voltage
- Multi-channel DMA controller
  - Programmable WRR arbitration

Peripherals

- External bus interface
  - ATAPI/ATA/CompactFlash/NAND storage device support
  - Glueless SRAM interface
- Boot support for NOR and NAND flash
- Video ports
  - 16-bit digital video input and output; ITU-R BT.601, ITU-R BT.656
  - 16-bit digital video output; HDMI compatible
  - Hardware OSD assist
  - Programmable video input/output timing generators
  - Programmable data formatting logic
  - Programmable control logic
- Serial Interfaces
  - USB 2.0 high-speed (480 Mb/sec) OTG host & device support (ULPI PHY required)
  - Synchronous serial interface
  - I2C master/slave
  - SPI, MICROWIRE
  - Audio codec interface
  - 3 UARTS (1 with IrDA support)
- NTSC/PAL TV encoder
- Quad 10-bit video DAC
- Secure Digital/SDIO/MMC interface
- 8-bit MMC/CE-ATA interface
- 10/100 Ethernet MAC with RMII interface
- 32 GPIO pins, 6 PWM, 4 Timers, WDT
- Real time clock: Extensive power management capabilities: self power down; auto-refresh; self-refresh

Physical

- Package: 19x19mm, 0.8mm pitch, 416 balls (22x22 grid)
- Core Voltage: 1.0 – 1.2V
- Memory Voltage: 1.8V
- IO Voltage: 3.3V
- Power: 350 mW at D1 MPEG4 decode at 30fps
- Temperature: -40 to +85°C

CODEC Capabilities

Video Decode

- MPEG 1/2/4; H.264 (AVC); MJPEG; WMV 7/8; H263+; FLV (Flash H263 Variant)

Video Performance

- MPEG4 decode @ 720P30; H264 decode @ 480P30

Audio Decode

- MPEG1 Audio Layer 2/3; AC-3; AAC; Vorbis; WMA V1/V2; ADPCM; G.276; aLAW; uLAW

Note: * Simultaneous encode and decode supported to D1 @ 30fps

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