

VZ.VideoRE

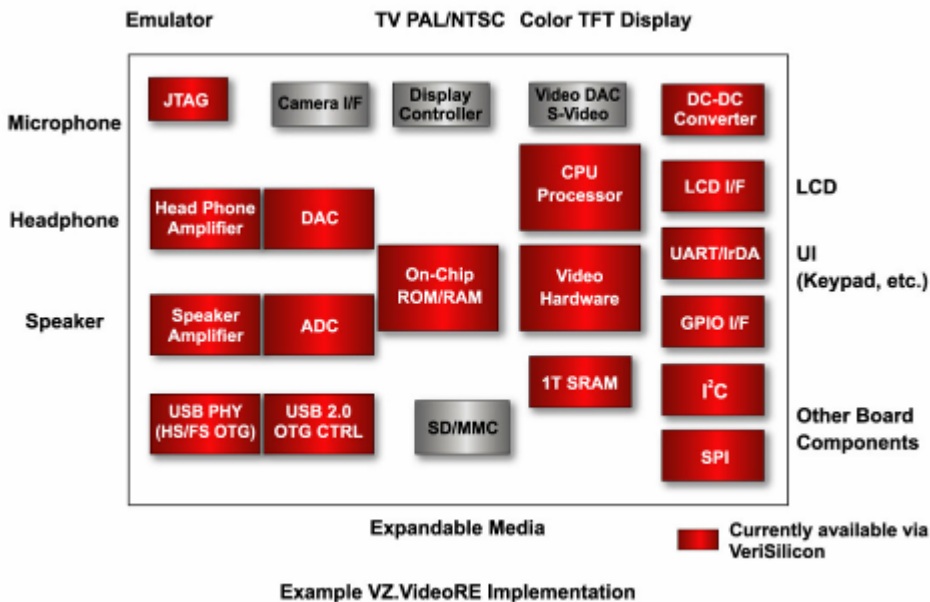
A Complete Video Codec Application Platform

Portable Video Market Trends

Portable multimedia devices and mobile handsets are quickly moving towards supporting higher and higher levels of multimedia capabilities. This includes not only imaging capabilities, such as JPEG, but multi-standard video capabilities including new standards such as H.264 and VC-1. According to iSuppli, with Mobile Handset Display Shipments in 2006 amounting to 1.2 Billion Units, one can easily see the large opportunity that portable video devices can represent.

While video and audio end-product requirements have certain similarities, targeting lowest power and small silicon footprint, flexibility and processing requirements often dictates the most suitable form of solution. For video, most portable devices need to support a few number of standards with resolutions up to D1 for potentially both decode and encode functions. For these applications, hardware centric solutions often offer a better solution in terms of power and silicon area than a programmable processor.

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VZ.VideoRE

The VZ.VideoRE (Record) incorporates additional video hardware to VZ.VideoDE to support simultaneous encode and decode. Different hardware video bundles are available ranging from H.264 baseline profile only to H.264, VC-1, MPEG-2, MPEG-4. In addition to supporting multi-standards, each bundle is also able to support simultaneous multi-standard playback. While implemented in hardware, each video bundle retains flexibility at a features and a systems level. At the features level, bundles are controlled by an internal programmable processor for those items that require high flexibility and low performance, such as error resilience and flexible macroblock ordering. At the systems level, each video bundle is controlled by the CPU processor where the processor performs other systems tasks as well audio encode and decode.



Target Applications

- Portable Media Players
- Mobile handsets
- Auto Infotainment
- DVB-H, DMB
- DSC, Camcorder

Platform Features

- Multi-standard video hardware for resolutions up to D1
- Encode & Decode
- Full range of commonly required video technologies: H.264, VC-1, MP4, MPEG-2, etc.
- Full-duplex, half-duplex multi-standard modes
- State-of-the art, programmable error resiliency and bit processing

Platform Benefits

- Ultra low-power, silicon efficient design
- Software programmability for after-market production
- One-stop-shop minimizing design time and system risk



VZ.VideoRE

A Complete Video Codec Application Platform

VZ.VideoRE Semiconductor IP

- Video Hardware
- Resolution support up to D1, 30 fps
- CPU Processor
 - ZSPneo, ZSP210, ZSP410 (See VZ.Audio)
 - ARM7, ARM926, ARM922T
- V.B lox Library IP
 - Digital: I2C, SPI, USB 2.0, 1.1 controller, LCD I/F, etc.
 - Analog: Audio ADC/CODEC, DC-DC converter, USB 1.1, 2.0 PHY, etc.

VZ.VideoRE Currently Supported Standards

Video

- H.263
- MPEG-4 Simple Profile
- MPEG-4 Advanced Simple Profile
- H.264 Baseline and Main Profile
- VC-1 Simple and Main Profile
- MJPEG
- MPEG-2

Example Configurations

- CodaDx7: H.263, VC-1 Decode; MPEG-4, H.264 Codec

Audio

- MPEG L1, L2, L3 (MP3)
- MPEG-4 AAC LC
- MPEG-4 Bit Sliced Arithmetic Coding
- High Efficiency (aacPlus)
- SBC
- GSM AMR-NB
- GSM AMR-WB
- WMA9
- Ogg Vorbis
- FLAC
- ATRAC

VZ.VideoRE System Performance Example

Standards Compliance

- ISO/IEC 14496-10 AVC BP@L3
- ISO/IEC 14496-4 MPEG-4 SP@L5
- ITU-T H.263 P3
- SMPTE VC-1 SP/MP @ML

Performance

Half-duplex mode

- CIF 30fps @ 20MHz
- VGA 30fps @ 60MHz
- D1 @ 66MHz

Full-duplex mode

- CIF 30 fps simultaneous encode& decode @ 40 MHz
- D1 30 fps simultaneous encode& decode @ 133 MHz
- Required host processor resource to run: less than 1 MIPS

VZ.VideoRE System Power

Case 1. AAC LC Stereo MPEG-4 SP QVGA 15 fps Transport System Demux & Synch	5.1 mW
Case 2. aacPlus H.264 BP D1 30 fps Transport System Demux & Synch	23.5 mW
Case 3. GSM AMR-WB H.264 CIF encode 30 fps & decode 30 fps Transport System & Synch	19.4 mW

Note: Power includes video logic and internal memory for a 90 nm process & ZSP as host

About VeriSilicon

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