

# VZ.Audio-410

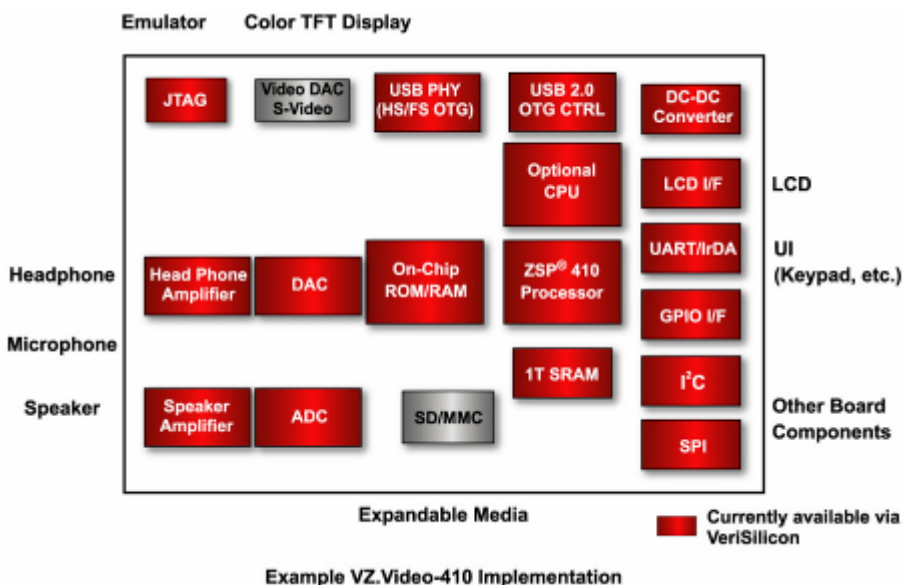
## A Complete Audio SoC Application Platform

### Portable Audio Market Trends

The number and types of portable devices supporting digital multimedia content has exploded over the last few years. The MP3 and portable audio player market alone is expected to be worth an estimated \$5.7 billion in 2006 in manufacturer sales, almost three times growth since 2001. Initially lead by devices like MP3 players, which have gone from niche to mainstream products, digital audio capabilities are rapidly becoming standard features on other devices like mobile phones, PDAs, and interactive toys.

Most of these devices have common requirements, such as low power, multi-standard support, and low cost, however the audio compute requirements can vary greatly between devices. For example, at one end, a portable device such as MP3 player may only need to support stereo decode, while at the other end, a portable device such as mobile handset may need higher capabilities to support concurrent audio processing and audio effects.

The push for more features at lower cost has increased the need for higher levels of integration at the silicon level, with the majority of the digital and analog capabilities being incorporated into a single chip. This trend alone has greatly increased the complexity of system design. It is further complicated when newer product requirements are introduced, such as DRM, which potentially require a wide mix of system blocks to collectively meet a certification specification. This often results in greater development cost and/or slower time to market.



### VZ.Audio-410

VZ.Audio-410 is an end-to-end portable audio SoC platform from VeriSilicon. Powered by the advanced quad-issue, dual-MAC ZSP 410 processor architecture, designers can tackle a range of challenging portable audio use cases efficiently and in low power. As part of the ZSP G1 Architecture, the ZSP 410 is binary compatible with other processor members, and as such no software changes are required to run from one processor to another. This is an extremely important design benefit, as it allows designers to upgrade or trim their product requirements as required in future and to move to different ZSP processors and reuse their software, untouched.



### Target Applications

- Portable audio players
- Entry-level portable media players
- Bluetooth headsets
- Audio application processor for mobile phones
- Interactive Toys

### Platform Features

- Available for licensing or as a part of VeriSilicon's ASIC Turnkey Services
- Industry-standard ZSP architecture
- Other industry standard digital and analog system IP blocks
- Comprehensive suite of application software
- Easy-to-use and robust software development tools and hardware development kits
- Large community of experienced ZSP software development partners

### Platform Benefits

- Best-in-class power and silicon performance for target applications
- ZSP G1 Architecture provides flexibility of future design changes with minimal effort
- Wide range of market proven technologies for time-to-market needs
- Most comprehensive DSP IP software suite in the industry



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VZ.Audio-410 portable audio platform goes one step further than most audio IP solutions. In addition to the ZSP processor and application software, VZ.Audio also includes a complete set of IP blocks to develop an end-to-end solution. At the silicon level, this involves offering other digital blocks – such as I2C, USB, and AHB/APB bridge components – as well as analog blocks – such as ADC, DAC, and USB 2.0 PHY. At the software level, VeriSilicon also offers a one-stop-shop where customers can select from the most comprehensive DSP IP software suite in the industry.

### VZ.Audio-410 Semiconductor IP

- ZSP410 cache based DSP systems
- Optional CPU: ARM7, ARM926, ARM922T
- V.Blox 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.Audio-410 Currently Supported Standards

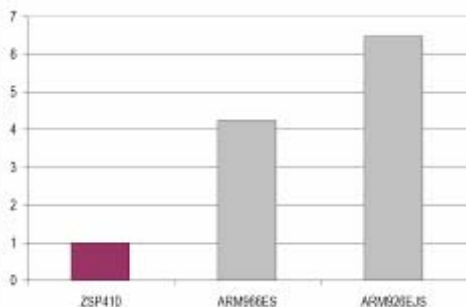
MPEG L1, L2, L3 (MP3) MPEG-4 AAC LC MPEG-4 Bit Sliced Arithmetic Coding High Efficiency (aacPlus) SBC GSM AMR-NB	GSM AMR-WB WMA9 Ogg Vorbis FLAC Video/Imaging: MPEG-4 Simple Profile, JPEG
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For a complete list of ZSP software, please go to: <http://www.verisilicon.com/ZSPsoftware>

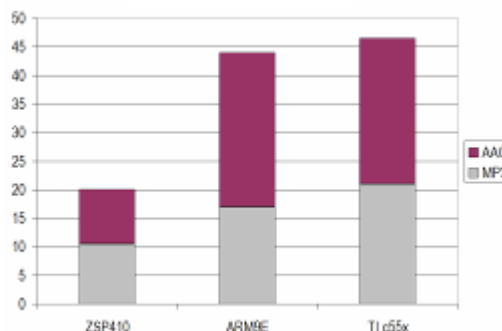
Algorithm	ZSP410 MHz	Program ROM	Table ROM
MP3 decode	10.5 MHz	13.6 KW	10.9 KW
AAC decode	9.6 MHz	14.2 KW	9.7 KW
GSM AMR-NB	16.9 MHz	30.8 KW	31.6 KW

MHz is based on the worst case frame of the worst case test vector for that configuration.

**MP3 Processor Power Consumption**  
(For a .13 um G process)



**MHz Requirement**



### About VeriSilicon

VeriSilicon Holdings Co., Ltd ("VeriSilicon") is a fast growing silicon solutions company providing products and services that enable customers to meet their chip design objectives, accelerate development programs and deliver market proven silicon products - on time and at lower cost. VeriSilicon specializes in providing expert design services, market leading ZSP® licensable cores and platforms, industry standard semiconductor IP and scalable ASIC turnkey services across a broad range of application markets, including multimedia, voice and wireless communications. VeriSilicon has design, operation and sales and support offices in Santa Clara, California, Dallas, Texas, Shanghai and Beijing, China, Taipei, Taiwan, Tokyo, Japan, Nice, France and Seoul, Korea. For more information, visit [www.verisilicon.com](http://www.verisilicon.com).

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