

DesignWare IP Audio Solutions

Portfolio

- ▶ Ultra Compact Audio/VoIP – (+80dB) Audio ADCs, DACs and Codecs.
- ▶ Hi-Fi Audio – Hi-Fi (+96dB) Audio ADCs, DACs and Codecs.
- ▶ Enhanced Hi-Fi Audio – Hi-Fi (+103dB) Audio ADCs, DACs and Codecs.
- ▶ Advanced Audio Drivers – Very highly efficient Class D drivers.

Foundries and Processes

- ▶ Available in major foundries and in the most advanced technology nodes from 180nm to 65nm

Applications

- ▶ Hi-Fi Record and Playback Systems
- ▶ Mobile Communications
- ▶ Home Entertainment/Digital Home
- ▶ Digital Media
- ▶ Automotive
- ▶ Wireless/Wired Communications
- ▶ Personal Computing

Audio processing is essential to delivering the best audio capabilities for cost- and power-sensitive electronic applications such as mobile phones, MP3 players and set-top boxes. For high-end products, such as digital TV and smart phones, integrating high-fidelity (Hi-Fi) audio capabilities is critical to adding value and setting products apart from the competition.

Until recently, high-end audio functions have only been available on standalone chips, or discrete, non-optimized analog IP components, posing integration barriers along with increased risk, cost and time-to-market. Synopsys' offers a robust audio IP solution that delivers performance levels similar to discrete components and significantly eases the integration effort of audio IP into Embedded SoC designs.

As the leading provider of analog audio IP, Synopsys offers a comprehensive silicon-proven portfolio of audio IP solutions ranging from compact, ultra compact to Hi-Fi and enhanced Hi-Fi audio IP products. With more than twelve years of delivering proven analog IP products, designers trust Synopsys to provide high-quality audio IP solutions that have been implemented in over 100 customer products, shipping in volume and available in leading processes and foundries. Synopsys' high-quality DesignWare[®] Audio IP solutions enables designers to quickly incorporate advanced audio functions into their feature-rich SoCs with reduced integration risk, while achieving the necessary performance, power and area requirements.

Technology Highlights

- ▶ #1 Provider of Audio IP (Gartner, 2009)
- ▶ Lowest power (6 mW at 96dB/48 kHz playback through a line driver)
- ▶ Highest performance (104dB SNR playback – backed by silicon results)
- ▶ Unique functions – Class D, linearized digital audio
- ▶ Available in multiple process technologies from 180nm down to 65nm
- ▶ 100 audio IP products with over 100M units shipping in volume

Application	IP Type	Description	Dynamic Range
Set Top Boxes, DVD-R and Blu-ray, HDTV, Car Audio	Basic CODEC	A to D Conversion D to A Conversion Line Input Line Output Volume Control and Signal Mixing Linear Phase Digital Filtering I2S Interface Testability	+80dB +90dB +96dB +103dB
MP3 and WMA Players, Mobile Phones, Handheld GPS, DSC and DMC	Advanced CODEC	All of the above + Loudspeaker and Headset Driving Microphone Boosting and Bias Phantom Ground Clock Generation (Audio PLL) Automatic Level Control Flexible Power up/down Sequences And more ...	+80dB +90dB +96dB +103dB
Portable Media Players, Handheld Gaming, Smartphones	Complete CODEC	All of the above + Sound FX (3D Enhancement, etc.) Parametric Equalization (up to 10 Bands) Enhanced Signal Mixing True Ground Jack Insertion Sensing SC Detection And more...	+80dB +90dB +96dB +103dB

About DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven interface and analog IP solutions for system-on-chip designs. Synopsys' broad IP portfolio delivers complete connectivity IP solutions consisting of controllers, PHY and verification IP for widely used protocols such as USB, PCI Express, DDR, SATA, HDMI, MIPI and Ethernet. The analog IP family includes Analog-to-Digital Converters, Digital-to-Analog Converters, Audio Codecs, Video Analog Front Ends, Touch Screen Controllers and more. In addition,

Synopsys offers SystemC transaction-level models to build virtual platforms for rapid, pre-silicon development of software. With a robust IP development methodology, extensive investment in quality and comprehensive technical support, Synopsys enables designers to accelerate time-to-market and reduce integration risk.

For more information on DesignWare IP, visit:

<http://www.synopsys.com/designware>.

Follow us on Twitter at

http://twitter.com/designware_ip.



Predictable Success Synopsys, Inc. • 700 East Middlefield Road • Mountain View, CA 94043 • www.synopsys.com

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