

DesignWare IP Audio Solutions

Portfolio

- ▶ Stereo DACs: Compact/VoIP, Hi-Fi, Enhanced Hi-Fi
- ▶ Stereo ADCs: Compact/VoIP, Hi-Fi, Enhanced Hi-Fi
- ▶ Stereo Audio Codecs: Compact/VoIP, Hi-Fi, Enhanced Hi-Fi
- ▶ Digital Audio
- ▶ Class-D Amps

Foundries and Processes

- ▶ Available in major foundries and in the most advanced technology nodes
- ▶ Easily ported to any CMOS foundry and process

Applications

- ▶ Set-top Box
- ▶ Car Audio
- ▶ Mobile Phones, Handhelds
- ▶ Portable Media Players

Demand continues to increase for small consumer systems with higher quality audio capabilities. In addition to increasing audio performance, system developers must constantly innovate to decrease power dissipation and development costs and get their products to market faster than ever before. Synopsys offers the most comprehensive portfolio of high-performance, compact, low-power and easy-to-integrate audio IP on the market.

Technology Highlights

Expertise in audio

- ▶ High-performance (e.g. 97 dB @ < 6mW power consumption)
- ▶ Leading provider of Audio IP

Comprehensive portfolio

- ▶ Ultra compact/enhanced voice/VoIP: +80 dB
- ▶ Compact Hi-Fi: +90 dB
- ▶ Hi-Fi: +96 dB; enhanced Hi-Fi: +/-103 dB
- ▶ Drivers: AB, Class-D and Class-G
- ▶ Digital Audio: high linearity PWM digital output

Application expertise

- ▶ From low-power/compact area for digital microphones to complete
- ▶ Hi-Fi Audio systems

Application	IP type	Description	Dynamic range
Set top boxes, DVD-R and Blu-ray Disc™, HDTV, car audio	Light 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	+80 dB +90 dB +96 dB +103 dB
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 ...	+80 dB +90 dB +96 dB +103 dB
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...	+80 dB +90 dB +96 dB +103 dB

About DesignWare® IP

Synopsys is the 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 and Ethernet. The analog IP family includes Analog-to-Digital Converters, Digital-to-Analog Converters, Audio Codecs, Video Analog Front Ends, RF, Power Management solutions 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>



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