

# Hi-Fi Audio DSP Integrated with 12-channel HD DDC™

## Features

- ✓ Symphony™ DSP
  - High performance low-power programmable audio DSP
  - Dual-issue, static super scalar VLIW, dual MACs
  - Memory: 128Kbyte+256Kbyte+128Kbyte
- ✓ Hardwired digital audio peripheral for high-speed post processing
  - 12-channel sample rate converter
  - Input sampling rate of 13kHz~192kHz supports
  - Hardwired 183-band full parametric equalizer
  - Auto gain limiter & digital volume
  - Full matrix mixer
- ✓ 12-channel HD DDC™
  - 12-channel HD PWM output for bit-by-bit perfect hi-fi sound
- ✓ Serial audio interface peripheral
  - Supports SPDIF interface
  - Supports I<sup>2</sup>S and serial audio interface
- ✓ Communication interface peripheral
  - Supports I<sup>2</sup>C/SPI master/slave interface
  - Supports UART interface
- ✓ Industry-standard audio CODEC including:
  - Dolby Digital AC3<sup>®</sup> decoder
  - Legacy DTS<sup>®</sup> decoder
  - AAC Plus decoder
  - WMA, MP3 decoder
- ✓ High-resolution audio algorithms including:
  - Dolby Prologic II<sup>®</sup> and IIX
  - QMSS™: Surround synthesis
  - QXpander<sup>®</sup> 3D stereo sound stage expansion
  - QSizzle™: Dynamic high-frequency enhancement
  - QRumble™: Dynamic low-frequency enhancement
  - QSurround™: Multi-channel virtualizer
  - Tuubilizer™: Tube-sound emulation
  - Harmonizer™: Adaptive harmonic generation for dynamic range expansion without clipping
  - Other specific audio algorithms

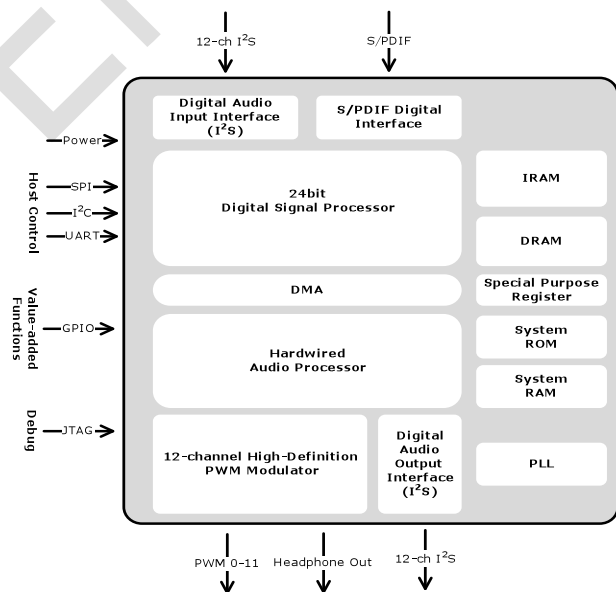
## Applications

- ✓ Soundbar
- ✓ Active speaker
- ✓ Home theater system
- ✓ Other home audio systems

## Advantages

- ✓ State-of-the-art sound processing algorithms
- ✓ Industry-renowned PWM modulator (DDC™) for highly accurate sound
- ✓ Easy-to-use PC-based development environment for audio tuning
- ✓ Extended capability of porting specific audio algorithm
- ✓ Supports industry-standard audio CODEC

## Block Diagram



## Description

The PS5331 is a fully programmable audio DSP integrated with a 12-channel HD PWM modulator. As a true hi-fi audio DSP, the PS5331 provides state-of-the-art audio algorithms for hi-fi sound reproduction and 3D/surround synthesis. Having an audio platform-in-a-chip, the PS5331 successfully performs intensive decoding of mainstream audio formats and value-added audio processing tasks without the expense of external memory. The extensive programmability of the DSP and the internal memory allows users to port additional value-added algorithms from both an OEM or 3<sup>rd</sup> party. With easy-to-use PC-based development environment and automatic tuning features saves system development time and enhancing sound quality without the cost of external components. In addition, the integrated hardwired sound processor allows for robust system tuning without wasting memory resources. Along with this, the integrated 24bit 12-channel PWM modulator eliminates the need for external PWM modulators or DACs. Finally, the HD DDC™ engine ensures bit-perfect natural

sound.

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