

D2-45x57 DAE-4P Intelligent Digital Amplifier and PWM Audio Processor

D2-45057, D2-45157 DAE-4P IC Devices

The D2-45057 and D2-45157 (D2-45x57) devices are complete System-on-Chip (SoC) Class-D digital audio amplifiers. Combining Integrated Power Stages along with a powerful Audio Processor and PWM Controller, these devices offer a complete, powerful, and very cost effective audio solution for high volume consumer products, including Digital TV systems, PC Multimedia Speakers, and Portable Device Docking Stations. This 4th generation Digital Audio Engine (DAE-4P) device combines extensive integrated DSP processing and configurable audio processing algorithms, for complete audio system control.

The D2-45x57 devices include 4 configurable power stages, providing flexible speaker drive configurations. PWM outputs also allow for additional combinations of driving line, subwoofer, or headphone outputs. These integrated power stages provide an optimized feature set for high volume and cost-critical products all within one single package. The D2-45x57 devices offer the highest feature capability, highest amplifier efficiency, and lowest system material cost, all within one single chip, especially in a SoC system architectures with I²S audio output. All audio processing and amplifier control is handled by the D2-45x57, and its ease of integration to the existing system processor handles all system control functions.

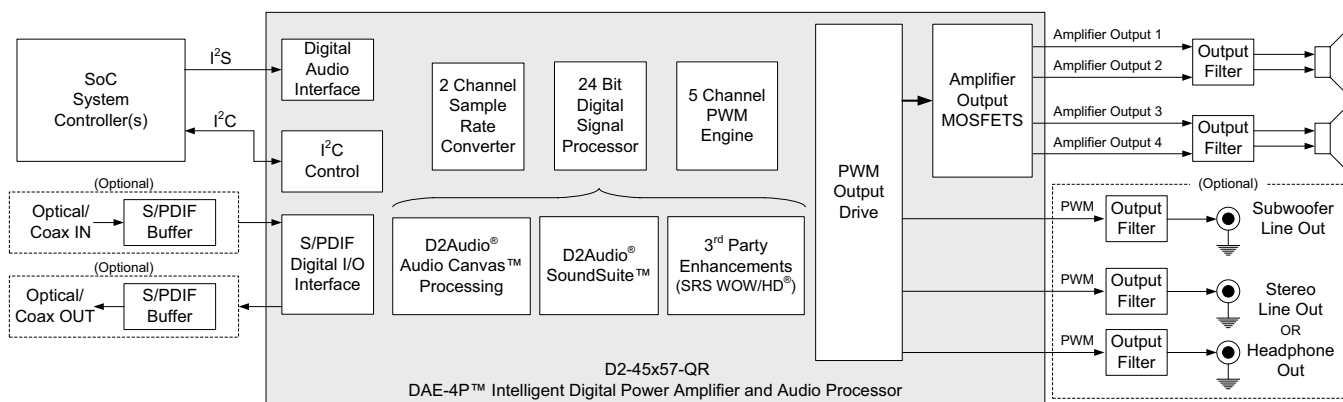
Features

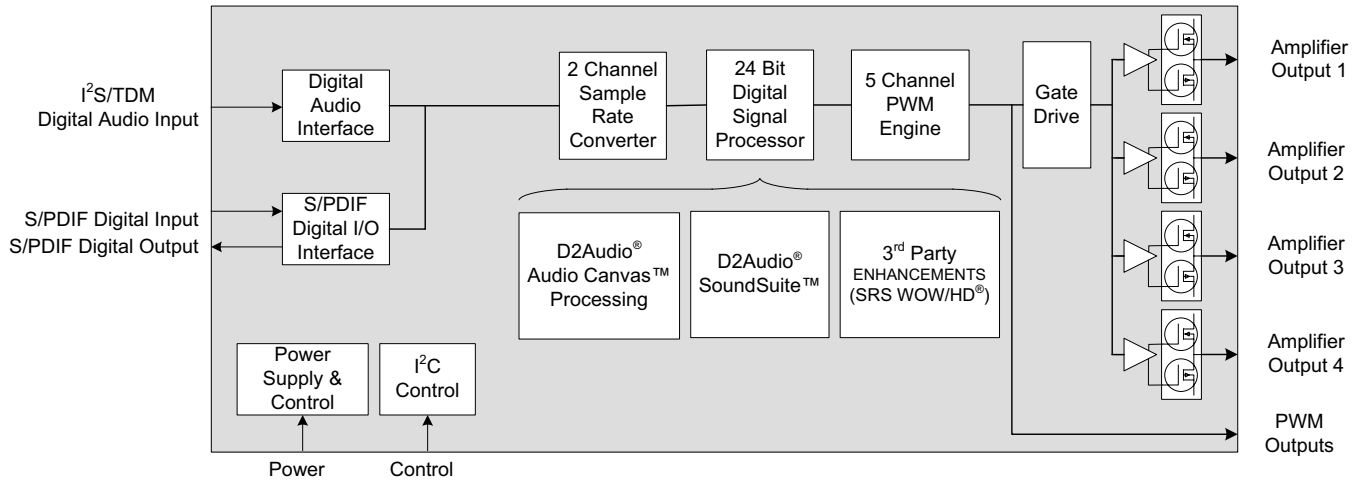
- DAE-4P Controller IC
- All Digital Class-D Amplifier And Controller with Integrated Digital Signal Processing (DSP)
- Includes Integrated Power Stages Supporting 2.0, 2.1 or Bi-Amp Amplifier Outputs
- 30W x 2 Channels Peak Power Output (Full-Bridge, 8Ω, 10% THD)
- Up to 5 Channels of Digital Signal Processing (DSP)
- Includes Equalizers, Filters, Mixers and Other Common Audio Processing Blocks
- Digital Loudspeaker Correction and Optimization
- Asynchronous Sample Rate Converters, Sample Rates from 32kHz up to 192kHz
- SoundSuite™ Immersive Processing Software
- 3rd Party Support: SRS WOW/HD™
- I²C Host Control Port
- 68-Lead QFN Package

Applications

- iPod Docking Stations
- Stereo Multimedia Speakers With Separate Powered Subwoofer
- Installed-Home Wall Amplifiers
- High-End DTV

Typical Application





Functional Overview

The D2-45x57 devices are integrated System-on-Chip (SoC) audio processor and Class D amplifier PWM controllers. They include complete digital audio input selection, signal routing, complete audio processing. The 5-channel PWM engine is mapped to the 4 integrated power stages as well as to the PWM output drive pins, and provides output options for driving multiple output configurations.

Stereo I²S and stereo S/PDIF digital input support, plus I²C and 2-wire SPI control interfaces enable integration compatibility with existing system architectures and solutions. The audio path includes a stereo Sample Rate Converter (SRC) plus device-specific audio enhancement processing algorithms.

An I²C Host Control Port, and Stereo I²S Digital inputs allows seamless integration to existing controllers and systems. The Digital Audio inputs are processed by a stereo Sample Rate Converter (SRC) that feeds a 5-channel PWM engine, which is mapped to the 4 integrated power stages as well as to the PWM output drive pins. The PWM output pins also support additional channel combinations of line or headphone outputs.

Fully configurable and routable audio signal parameters and signal flow are supported by D2Audio Canvas II™ software. Audio flow and processing options are easily modified within production, allowing multiple product models to be built utilizing one single audio system architecture. In addition to the 5-band, independent-per-channel equalizers, tone controls, Dynamic Range Compression (DRC), and volume controls, the D2-45x57-QR supports the D2Audio SoundSuite™ (WideSound™, DeepBass™, DigitalEQ™, AudioAlign™, ClearVoice™) enhancements, plus 3rd-Party enhancements including SRS WOW/HD™.

Audio Enhancement Feature Processing

Additional enhancement audio processing algorithms are included within specific part number options of the D2-45x57 devices. These specific enhancements are:

- D2Audio™ SoundSuite™ (WideSound™, DeepBass™, Audio Align™, and ClearVoice™) Audio Processing (with the D2-45057 device)
- SRS WOW/HD™ (with the D2-45157 device)



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