

Eight-channels, 192kHz, 24-bits Digital Audio Processor for Full Digital Amplifier

Introduc- tion

The **PS9850** is a highly integrated system-on-chip audio solution for multi-channel AV systems such as upper 5.1 channels, 6.1 channels or 7.1 channels. This device is a high performance PWM modulator and a high resolution digital audio processor.

This device uses AD modulation operating at a 384kHz switching rate, supports AM interference rejection function, and has PWM sequences for pop-less.

This device has an asynchronous sample rate converter for a variety of input sample rates with an embedded jitter correction function. For high performances and high resolutions, audio processors operate 30bit data paths and a 192kHz sample rate.

This processor consists of equalizers, volume controls, a bass management and automatic gain limiting functions. Equalizers are fully programmable that have 69 band bi-quad filters with either a static or graphic mode and have usable preset graphic equalizer.

This device is operated with a single power source, as it has regulators for its core. This device has a built-in PLL without external loop filter. Therefore the external components are minimized.

Applications

- ✓ DVD receiver
- ✓ Hi-Fi AV Receiver
- ✓ Set-top box
- ✓ Car AV Systems
- ✓ Digital audio workstations

Features

General

- ✓ 3.3V single power supply
- ✓ Embedded regulator for 1.2V Power
- ✓ 64pin TQFP package
- ✓ Built-in PLL without external loop filter
- ✓ Internal clock generation with X-tal
- ✓ I²C or SPI serial control slave interface

Fea- tures

Audio Interface

- ✓ 8-Channel serial audio interface.
- ✓ Supports 16/18/20/24-bit input
- ✓ Supports 13kHz ~ 192kHz input Fs.
- ✓ Supports up to 192kHz Fs for 8 Channels.
- ✓ Data formats
- ✓ (I²S, left-justified or right-justified)
- ✓ Microphone serial audio interface.
- ✓ Sony Philips Digital Interface (SPDIF)

Audio Processor

- ✓ 192kHz sampling rate of audio processing
- ✓ 30x24 multipliers and 54-bit accumulator architecture
- ✓ 8-Channel sample rate converter
- ✓ Fully programmable 69-band equalizers
- ✓ Preset Graphic Equalizers
- ✓ (+12 to -12, 0.5dB/step)
- ✓ Pop Noise Reduction when equalizer coefficient Downloads
- ✓ Bass management
- ✓ Four subsonic filter and LPF for subwoofer channel
- ✓ Digital de-emphasis filter
- ✓ Pre/post full matrix channel mixing.
- ✓ Pre/post mapping.
- ✓ Main volume control
- ✓ (+18dB to -70dB, 0.5dB/step)
- ✓ Soft/trim volume control
- ✓ (+12dB to -12dB, 0.5dB/step)
- ✓ Four independent automatic gain limiter
- ✓ Supports night mode
- ✓ Clipping Free Processing
- ✓ (30-bit data processing)

PCM to PWM modulator

- ✓ Pop noise reduction
- ✓ AM interference rejection
- ✓ 2-Channel PWM headphone output
- ✓ 8-Channel PWM speaker output
- ✓ PWM on/off control per channel
- ✓ AD modulation operation
- ✓ 384kHz carrier frequency

Block Diagram

