

IGSMP3001A MPEG-1/2 Audio Layer 3 (MP3) Decoder on ARM9E

Features

- ◆ Compliant to ISO/IEC 11172-3 MPEG-1 Audio Layer 3 Decoder, ISO/IEC 13818-3 MPEG-2 LSF Audio Layer 3 Decoder, and MPEG-2.5 Extensions Audio Layer 3 Decoder:
 - MPEG-1 Layer 3 sampling frequency: 32 / 44.1 / 48 kHz
 - MPEG-2 LSF Layer 3 sampling frequency: 16 / 22.05 / 24 kHz
 - MPEG-2.5 Ext. Layer 3 sampling frequency: 8 / 11.025 / 12 kHz
 - Bit rates: 8kbps – 448kbps
 - Bit rate modes: CBR/ABR/VBR
 - Channel modes: Mono, Dual-Mono, Stereo, and Joint-Stereo
 - Synchronous and CRC error check
- ◆ Optimized for ARMv5E processor family
- ◆ Requires low CPU power:
 - 12.8MIPS / 19.6MHz (peak) @ Stereo, 44.1kHz, 128kbps
 - 13.7MIPS / 20.8MHz (peak) @ Stereo, 48kHz, 320kbps
- ◆ Requires small memory space:
 - Program memory: 21.6kB
 - Constant memory: 12.5kB
 - Data memory: 23.3kB
- ◆ Provides compact software API:

- Supports a simple C callable with flexible memory allocation scheme
- Supports reentrant capability

Overview

MPEG-1/2 Audio Layer 3 and MPEG-2.5 Ext. Audio Layer 3 coding technology are well known as the most popular audio coding technology and capable to of compressing CD-quality stereo audio by a factor of 11:1.

GUC IGSMP3001A MPEG-1/2 Audio Layer 3 (MP3) or GUC MP3 Decoder is a firmware library compliant to MP3 Decoder specification on ARMv5E processor. This firmware library owns good capabilities as low CPU power, small memory space, high sound quality, and compact software API to facilitate application development.

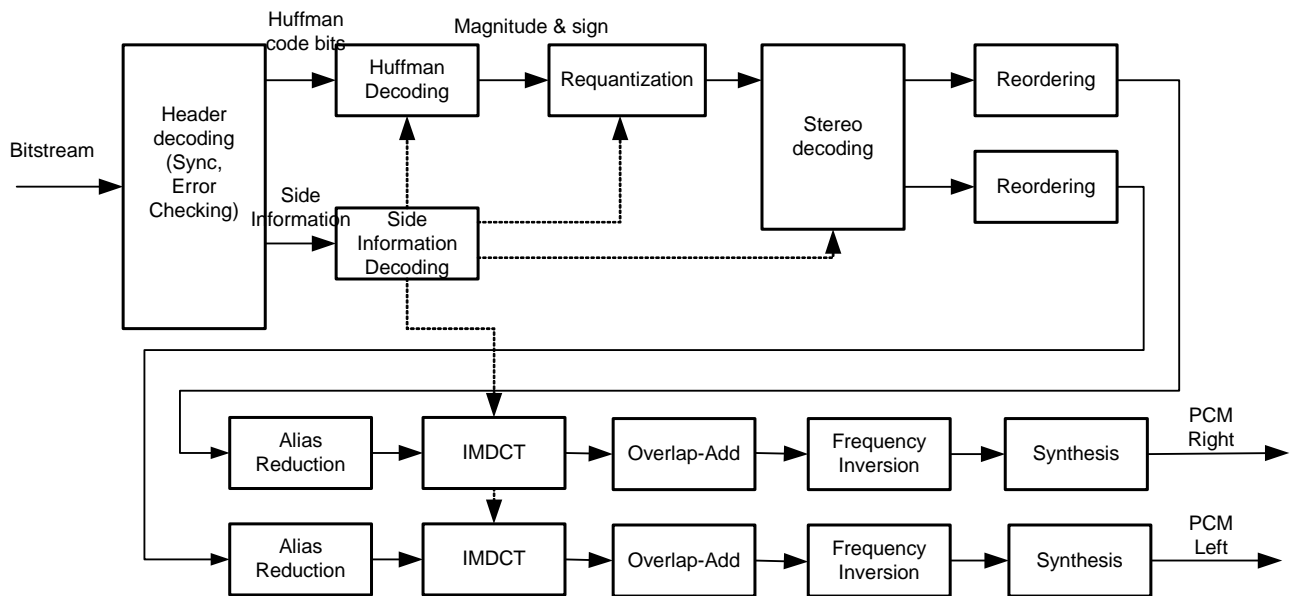
Applications

- ◆ Portable Media Player
- ◆ Mobile Facility
- ◆ Set-Top Box
- ◆ Digital TV
- ◆ Internet Streaming
- ◆ Home Entertainment System

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Block Diagram



GUC MP3 Decoder block diagram

Description

The MP3 Decoder on ARM9E actively parses the bitstream to decode and reconstruct the audio PCM samples. Firstly, the decoder searches the sync-word to get the frame header. Then the compressed data, includes scale factors, Huffman spectral frequency coefficients, are decoded and forwarded into the Requantizer, IMDCT, and Filter Bank Synthesis to reconstruct the audio PCM samples for playback.

Deliverables

- ◆ The RVDS (v2.2) library package of MP3 Decoder on ARM9E
- ◆ The Linux GNU-ARM tool chain (v4.1.1) library package of MP3 Decoder on ARM9E
- ◆ The evaluation program (Win32 console on WinXP/2000) of MP3 Decoder on ARM9E
- ◆ Document Set including One Page Summary and Technical Manual

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