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SPRT431—AUGUST 2007

AC-3 Decoder

CAPABILITY SUPPORTED (V1.00) FEATURES

- **Supports 32, 44.1 and 48 kHz Output Sampling Rates and 32-600 kbps Input Bit Rates**
- **Supports All Specified Audio Coding Modes Namely Dual Mono (1+1), 1/0, 2/0, 3/0, 2/1, 3/1, 2/2, 3/2**
- **Dialog Norm., Dynamic Range Control, Peak Level Control**
- **Dual-Mono Modes: Stereo, Ch1 Mono, Ch2 Mono, Mix Mono**
- **Compliant With Dolby Digital Development Kit Version 3.0 (7.1.0)**
- **Karaoke Aware and Karaoke Capable**
- **Supports the Dolby Digital Extended Bit Stream Syntax**
- **Supports Output 24-Bit PCM Samples**
- **Supports Only Block Format Data Output and Does Not Support Sample-Interleaved Data Format**
- **Does Not Support DRM**

BACKGROUND

AC-3, also known as Dolby Digital, is an audio codec designed to compress multichannel audio data for the sake of transferring from one location to another. The data layout of AC-3 is described by simplified "C" like language in official specifications, and is most commonly configured in 2 channel or 5.1 channel modes. An AC-3 stream is made up of a series of synchronization frames, which are composed of six audio blocks. Each audio block contains 256 audio samples per channel. AC-3 audio is used on DVD-Video and other purely digital media, like home cinema. In this format, the AC-3 bitstream is interleaved with the video and control bitstreams. AC-3 is also used in many bandwidth-limited applications other than DVD-Video, such as digital TV.

DESCRIPTION

The AC-3 decoder is a proven module. The ready-to-implement AC-3 decoder reduces time-to-market because it can be treated as a tested module and integrated into a software system. TIs AC-3 is a multi-channel audio decoder that is xDM compliant, and it has been certified by Dolby Labs to meet the specifications of the standard. It is available in system tested codec combinations with Codec Engine, DSP/BIOS, DSPLink and Framework components. Combinations include MPEG-2 main profile decoder together with the AC-3 decoder in an audio/video application.

PRODUCT PREVIEW

Software Architecture

The overall software architecture for the DaVinci Technology-based TMS320DM644x processors are shown in Figure 1. TI digital media encoders and decoders seamlessly plug into the signal processing layer architecture; the right side of the above diagram. The codec engine framework includes code for different classes of TI digital media software. It connects to the application layer and exposes user control through the VISA API; a high level interface that allows developers to control and operate the software from a high level Operating System (OS) environment. TI digital media encoders, such as the AAC encoder, allow developers to focus design efforts on differentiating features at the application layer, while DaVinci's open software environment allows developers to include differentiating IP on any of the DSP, application, or IO layers shown above.

NOTE:

Dolby requires a development license with the OEM prior to TI fulfilling the evaluation request. Please provide proof of license with request.
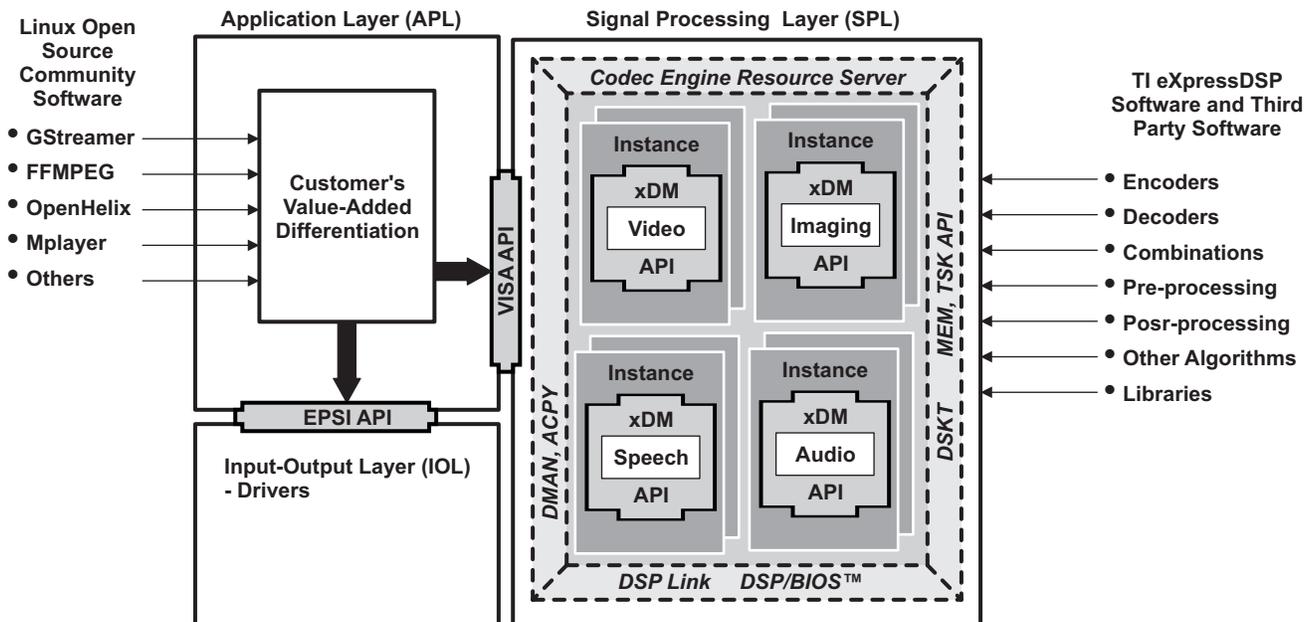

Figure 1. Software Architecture

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Commonly Used Terms:

API – Application Programming Interface

DMAN – Direct Memory Access Manager
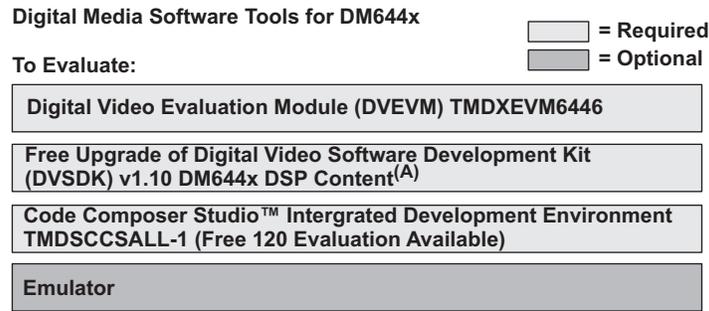
EPSI – Easy Peripheral Software Interface

MEM - Memory

TSK – Task

VISA – Video Imaging Speech Audio

xDM – eXpressDSP Algorithm Interoperability Standard for Digital Media

Digital Media Software Tools for DM644x

☐ = Required
☐ = Optional

To Evaluate:

| Digital Video Evaluation Module (DVEVM) TMDXEVM6446 |

| Free Upgrade of Digital Video Software Development Kit (DVSDK) v1.10 DM644x DSP Content[A] |

| Code Composer Studio™ Intergrated Development Environment TMDSCCSALL-1 (Free 120 Evaluation Available) |

| Emulator |

A.   Available via a secure website to whitch registered DVEVM users are granted access

For Protection:

| Digital Video Software Development Kit (DVSDK) TMDSSDK6446 with Production MontaVista Linux Release for DaVinci |

| Code Composer Studio™ Intergrated Development Environment TMDSCCSALL-1 |

| Emulator |

Figure 2. Required Tools

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Performance Summary

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Table 1. Performance Summary

Criteria	PERFORMANCE
MIPS at Typical Configuration	• 32 MHz Typical • 57 MHz Peak
Memory	• 232 kB External • 0 kB Internal Data • 46 kB Program

Availability and Pricing

- Available stand alone or in combinations
- Available now, v1.00
- Price: AC-3 Up front fee $15,000 + $.30 per unit royalty @ 10 KU, for further pricing information, contact your TI representative or visitwww.ti.com/digitalmediasoftware

Future Features

- Error Resiliency changes
- MISRAC compliant
- Support for building big endian library

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GET STARTED TODAY

Request an evaluation from your TI representative or a TI Authorized Software Provider www.ti.com/asp. Dolby requires a development license with the OEM prior to TI fulfilling the evaluation request.Please provide proof of license with request. To receive future updates or more information, complete the contact me information form at www.ti.com/digitalmediasoftware .

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