

A6 Broadcast Encoder/Transcoder

Overview

The A6 is an encoder/transcoder chip for H.264 and MPEG-2 broadcast distribution applications, delivering an unmatched combination of picture quality and stream density. A single A6 is capable of 1080p60 encoding with RDO and full HD transcoding using decode and encode for optimum coding efficiency. The platform supports development of fully-featured high-density transcoders and multi-pass headend encoders, while offering functions such as splicing, rateshaping and adaptive streaming for the Adobe/Apple/Microsoft formats.



A wide spectrum of high-performance applications is supported by A6.

Key Features

Single Platform, Many Uses

- HD/SD encode, decode and transcode
- Overlays, splicing, rate shaping, ad insertion

Promotes Differentiation

- Easy-to-use high-level ARM APIs and SDK
- Flexible DSP video engine

High Efficiency and High Density

- Low-power CMOS design
- Compact 32-bit DDR design

High Performance Video Engine

- 3D MCTF noise reduction
- 1080p60 or 4xSD+PIPs H.264 encode

Superior Quality HD Encoding

- Ambarella's industry-leading H.264 codec
- Single-chip, or multi-chip multi-pass systems

High-Quality MPEG-2 ↔ H.264 Transcoding

- Full decode to encode with metadata
- Multi-resolution, multi-rate, multi-profile





A6 Broadcast Encoder/Transcoder

General Specifications

Video Input/Output

- CCIR.601/656 in (up to 148.5MHz)
- Two ITU-R BT.601/656 out (16/24-bit YUV)
- Four MPEG-2 TS (4-wire serial and 8-bit parallel)

Video CODECs

- H.264 BP/MP/HP up to Level 4.1
- MPEG-2 MP@ML/HL
- 1920x1080p60 H.264/MPEG-2 encode/decode
- Full decode-encode transcoding
 - 1920x1080i60 H.264 ↔ MPEG-2 transcode
 - Dual 1080i60 MPEG-2 to SD transcode
 - HD/SD to multi-stream progressive transcode
 - Multi-resolution, multi-rate, multi-profile
 - PTS preservation throughout system
 - Discontinuity and meta data handling
- Wide range of coding modes
 - Low delay and high compression
 - High-precision ME and MD
 - Hierachical B, Rate-Distortion Optimization, Multiple Ref Frames, Adaptive QP, etc.
- Other
 - Scene detection
 - Telecine handling
 - F-code assessment
 - Advanced CBR/VBR rate control

Image Processing

 3D MCTF noise reduction, color space conversion, alpha-blending OSD, picture statistics, scaling

Audio

- AAC/AC-3 decode/encode
- AC-3 5.1 encode, MP3 decode

CPU

- ARM926EJ-S + Ambarella multi-core DSP engine
- AES/DES/3DES cryptographic acceleration

Peripherals

- 32-bit DDR2 or DDR3
- 32-bit Host i/f (Intel/Motorola style)
- 2x I2S ports (6-ch)
- HDMI 1.2
- USB 2.0 Device
- NAND/EEPROM
- ° SSI/SPI, I2C, GPIO, UART, JTAG, SDIO, RTC, WDT

Physical

- Power typical 2.5 Watts incl. DDR3
- ° 596-ball PBGA, 21x21mm

A6 Broadcast Development Platform

The A6 Broadcast Development Platform contains the necessary tools, software, hardware and documentation to evaluate and perform software development.

Hardware Platform

- A6 main board
- · Video input and ASI input/output card
- JTAG adapter

Software Development Kit (SDK)

- eSol RTOS and tool chain
- · Encoder/transcoder demo application with ARM source

Documentation

- · Programmer's guide, application notes
- A6 datasheet, BOM, schematics and layout

Contact

US Office Ambarella Corp. 2975 San Ysidro Way Santa Clara, CA 95051

Website : www.ambarella.com General Inquiries : inquiries@ambarella.com Telephone : 408 734 8888

Copyright Ambarella, Inc. All rights reserved. Ambarella, and the Ambarella logo are trademarks of Ambarella, Inc.. All other brands, product names and company names are trademarks of their respective owners. The information in this document is believed to be reliable, but may project preliminary functionality not yet available. Ambarella, Inc. makes no guarantee or warranty concerning the accuracy and availability of said information and shall not be responsible for any loss or damage whatever nature resulting from the use of, or reliance upon it. Ambarella, Inc. does not guarantee that the use of any information contained herein will not infringe upon patent, trademark, copyright, or other rights of third parties. Ambarella, Inc. reserves the right to make changes in the product and /or its specifications presented in this publication at any time without notice.

