ADAS
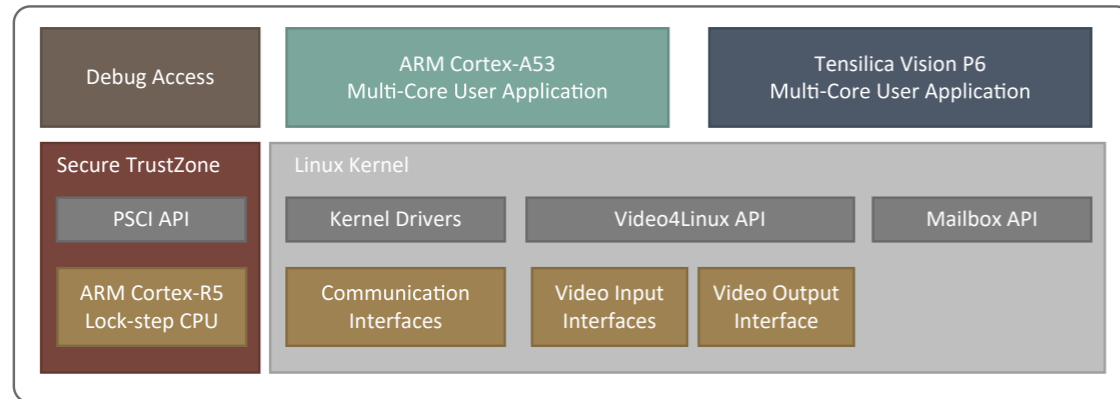## Reference Platform Software Development Kit

Dream CHIP

ADAS
Reference Platform Evaluation Kit

The Dream Chip ADAS Reference Platform Software Development Kit eases development of sophisticated video and signal processing algorithms on the DCT ADAS Reference Platform for Heterogeneous Multi-Core Signal Processing. Based on the LEDE distribution both 32-bit and 64-bit flavors with Linux kernel 4.4.42 are available.

The SDK provides drivers for video buffer passing between input and output interfaces and the ARM Cortex A53 or Cadence Tensilica Vision P6 processing cores. With debugging support and multi-core processing examples the SDK allows to evaluate the processing performance of complex signal processing algorithms on the DCT ADAS Reference Platform chip.

The Dream Chip ADAS Evaluation Kit provides a full development environment for sophisticated video and signal processing algorithms based on the DCT ADAS Reference Platform for Heterogeneous Multi-Core Signal Processing. Comprising the ADAS System-on-Module (SoM), the Quad-HDMI Reference Board, and a Software Development Kit (SDK). Custom signal processing and video processing algorithms can be evaluated easily for performance, throughput, and power consumption.

Also the Evaluation Kit can be extended to support customer-specific applications requiring different video interface standards or even non-video sensors sources.

Overview

- DCT ADAS Software Development Kit
- LEDE distribution with stable Linux 4.4.42
- 32-bit and 64-bit Linux flavors available
- Tensilica Vision P6 development support
- Kernel API drivers

Benefits

- Official Software Development Kit (SDK)
- Kernel drivers available
- Video buffer framework
- Multi-core processing examples

SDK features

- Complete ARM build environment
- LEDE distribution (lede-project.org)
- GNU ARM gcc 5.4.0
- Linux 4.4.42
- u-boot 2017.01
- musl libc 1.1.15
- 32-bit and 64-bit flavors
- all changes against respective mainline versions
- Kernel Drivers for
- QSPI, UART, I2C, Ethernet
- video framework
- Cadence Tensilica Vision P6 support
- Firmware control
- Debug access

Overview

- DCT ADAS Heterogeneous Multi-Core SoC
- DCT ADAS System-on-Module
- DCT ADAS Quad-HDMI Reference Board
- DCT ADAS Software Development Kit

Benefits

- Jump start sophisticated image processing
- Four Full HD HDMI input video channels
- Full HD HDMI output video channel
- BSP with Monitoring and Debug
- ADAS SDK with processing framework
- Multi-core processing examples

Evaluation Kit features

- Quad-Core ARM Cortex-A53
- Cadence Quad-Core Tensilica Vision P6
- Dual-Core ARM Cortex-R5
- Embedded 4GB LP-DDR4 3200 RAM
- Four HDMI video input with 1080p60
- HDMI video output with 1080p60
- Application storage flashes
- Automotive Ethernet and CAN 2.0B
- Power consumption measurement
- 32-bit and 64-bit Linux distribution
- ADAS Software Development Kit (SDK)
- Debug and control interfaces

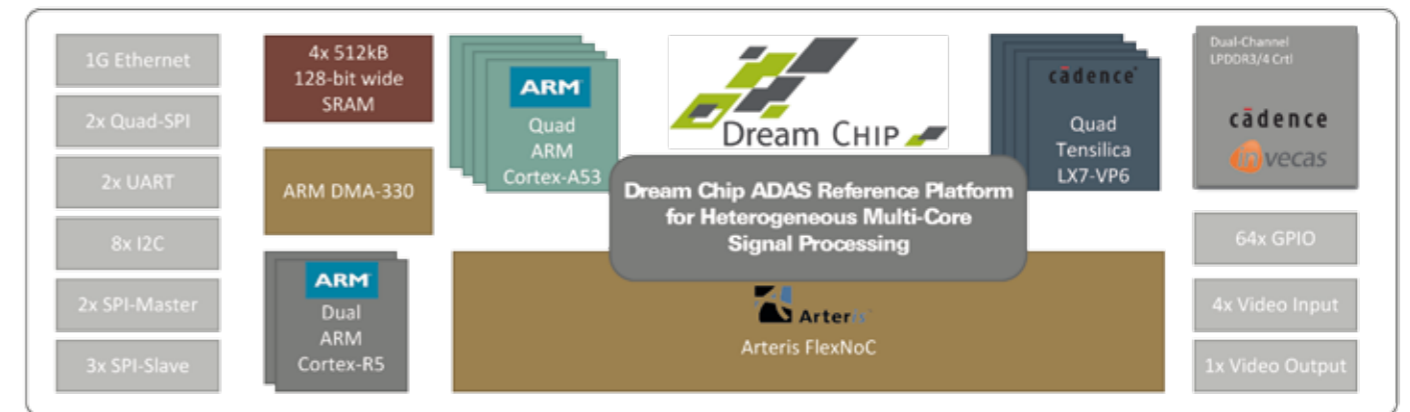## Contact

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ADAS
Reference Platform System-on-Module

ADAS
Reference Platform Quad-HDMI Base Board

Based on the high-performance, low-power DCT System-on-Chip (SoC), the ADAS System-on-Module (SoM) provides all necessary components to power, boot, and debug custom video and signal processing applications for the ADAS Reference Platform SoC.

While being designed for different target application scenarios, the SoM provides video input and output interfaces as well as common communication interfaces on two board-to-board headers with only a single power supply voltage. This allows to use the SoM not only with the ADAS Quad-HDMI Base Board but also with different baseboards tailored to customers application requirements.

The Dream Chip ADAS Quad-HDMI Base Board is an evaluation board for the ADAS System-on-Module comprising four HDMI 1.4a video input channels and one HDMI 1.4 video output channel. Equipped with two FPGAs in the video input path and generic high-speed interface headers custom video and sensor adapters allow to use different signal processing data sources.

Additional board features include Gigabit Ethernet, CAN 2.0B, USB UART, Video Genlock generation, push buttons, and LEDs. The Quad-HDMI Base Board also provides a system controller for remote power control, firmware upload, and periodic power consumption and temperature measurement during development.

Overview

- DCT ADAS Heterogeneous Multi-Core SoC (22nm FD-SOI Global Foundries)
- Board-to-board header with chip interfaces
- Expandable flash storage
- Power management and measurement
- Real Time Clock (RTC)
- Chip power supplies included

Benefits

- Reduced application-specific baseboard complexity
- Interfaces customizable to application requirements
- Expandable application flash storage
- Power consumption measurement
- Only Single 12 VDC power supply required

System-on-Module features

- Embedded 4GB LP-DDR4 3200 RAM
- 128MB ARM Cortex A53 storage
- 32MB ARM Cortex R5 storage
- Gigabit Ethernet PHY
- Power Management IC
- Real Time Clock (RTC)

Interfaces

- Four 300MB/s video input interfaces
- One 300MB/s video output interface
- Automotive Ethernet incl. TSN support
- Dual Quad-SPI for application storage
- UART, I2C, SPI, and GPIO

Dimensions

- 194mm x 100mm

Overview

- DCT ADAS Quad-HDMI Base Board
- Four HDMI 1.4b inputs
- One HDMI 1.4 output
- Custom high-speed headers available
- Remote power management
- Periodic power measurement
- Gigabit Ethernet
- CAN 2.0B
- USB UART
- Video Genlock generation

Benefits

Official reference design
Prepared for custom sensor interfaces
Remote system control

Base board features

- Four ADV7611 HDMI 1.4b receivers
- One ADV7511 HDMI 1.4 transmitter
- Video data rates up to 1080p60
- Two Intel MAX10 10M08DC FPGAs
- Four high-speed interface headers
- MCP2515 CAN 2.0B controller
- Gigabit Ethernet jack for SoM
- Micro-USB UART to SoM
- Micro-USB to System Controller
- Video Genlock generation
- Video input synchronization
- True output genlock possible

Dimensions

- 200mm x 180mm