V37A
AI-powered Image Processing SoC

The iCatch V37A is a highly integrated system-on-chip solution that can enable various high-end 4K imaging applications with edge computing capability. V37A can capture stunning 4Kp30 video with iCatch's 7th generation image signal processor (ISP) and H.264 high-performance encoder. In addition, V37A has incorporated a state-of-the-art neural processing unit (NPU) to empower the edge computing capability right on the camera. With the embedded NPU, V37A not only can record high-quality video, but also perform advanced image analytics to bring intelligence to the camera devices.

V37A supports a variety of sensor interfaces and can connect up to two sensors simultaneously with a maximal raw image data rate at 960M pixels/s. It can support RGB-IR sensors for security applications. The embedded NPU can support many different object detection functions, such as face, pedestrian, vehicle, and more. Its H.264 video encoder can generate multiple bit streams at the same time for on-device storage and over-the-air transmission. V37A also embeds many interfaces to support digital microphone input, MIPI DSI output, and HDMI output to minimize system BOM cost and to maximize design flexibility. For connectivity, V37A is equipped with GMAC with RGMII for Ethernet, USB host interface for 4G/LTE modem and stand-alone SDIO interface for WiFi.

FEATURES

Image Sensor Interface

- 10-lane SubLVDS, HiSPI and MIPI-CSI2 serial interfaces
- Dual sensor inputs
- CMOS sensors up to 42M pixels resolution

Advanced Image Processing

- Raw data capture speed up to 960M pixels/sec
- Pixel processing speed up to 280M pixels/sec
- Motion compensated temporal noise filtering for video
- Real-time multi-frame HDR video
- Real-time multi-axis electronic image stabilization (EIS)
- Real-time multi-segment rolling shutter correction (RSC)
- Advanced raw noise and high-ISO noise reduction technology
- Lens distortion correction (LDC) and dewarping engine
- Edge enhancement over-shoot control
- Motion-based object tracking engine
- Face detection and tracking engine

Processor Cores

- Arm Cortex-A7 CPU, frequency up to 720MHz
- iCatch image processing pipeline and acceleration engines
- NPU core with computation power up to 0.3TOPS (INT8)
- 3D depth engine up to VGA30fps

Audio

- Digital PDM microphone input
- I2S interface to external audio codec
- Digital adaptive equalizers
- Support band-pass filter and notch filter
- Support audio sampling rate up-scaling for playback

Video

- H.264 BP/MP/HP up to level 5
- Real-time performance up to 4K2Kp30+720p30
- Up to 3 simultaneous encoding streams
- Advanced bitrate control

Display Capability

- Alpha blending OSD for user interface
- Support MIPI-DSI for panel display
- On-chip HDMI controller and PHY
- BT.601/656/1120 digital interface
- Dual display capacity (LCD and HDMI)
- Support MIPI CSI output for camera module application

Memory

- 16-bits SDRAM controller with programmable SDRAM frequencies up to 800MHz
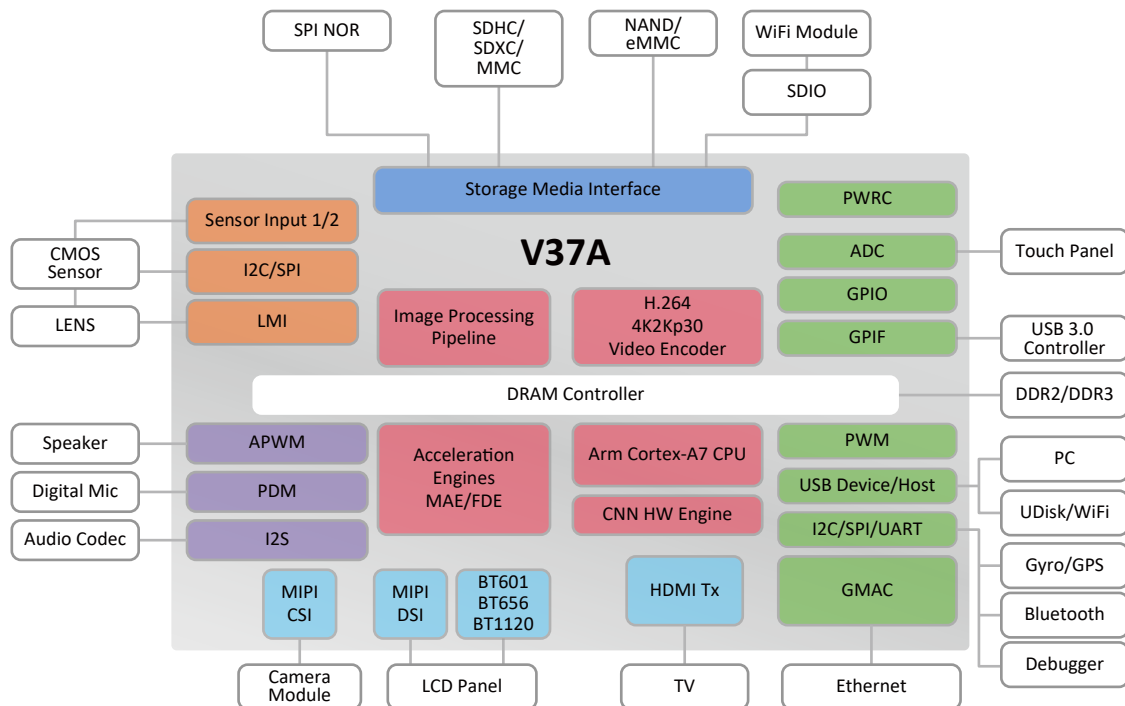- DDR2/DDR3/DDR3U/DDR3L

Peripherals

- Support NAND and SPI-XIP flash memory
- SD/SDHC/SDXC, MMC, and eMMC4.5/5.0 interfaces
- USB 2.0 device and host interfaces
- Many GPIO, PWM, UART, SPI, and I2C ports
- Real-time clock and watchdog timer
- Multiple channels of 12-bits SAR ADC
- GMAC with RGMII interface
- Stand-alone SDIO controller for WiFi and UART for BT
- Support external USB 3.0 controller through GPIF

Package

- LFBGA 353, 14 mm x 14 mm x 1.4 mm

BLOCK DIAGRAM

DEVELOPMENT PLATFORM

The V37A 4K Camera Development Platform includes SBC (Single Board Camera) board, software development kits and documentation. The users can develop their advanced imaging and video solutions with various networking capabilities.

Hardware

- V37A SBC board
- Sensor board with OmniVision, Sony, or On Semi CMOS sensor
- LCD display board

Software Development Kit

- libraries for ISP, 3A, NDK, RTOS
- WiFi connected camera application source code of reference design
- PC tool chain of programmer, and font and string generator
- Android/iOS APP SDK for mobile phone connection

Documentation

- User's manual for SBC board, application notes, and API documents
- Data sheet, schematics and layout files

iCatch Technology, Inc. wasintek

For more information,please contact our at T: +86-0755-86955686 or E-mail to service@aikusmart.com

Strategic partners: Shenzhen Wasintek Co.,LTD   Http://www.wasintek.com