

## T33 Professional & Cost-effective Video Processor

### Highlights:

- ❖ Upgrading the ISP and encoding performance based on T32, it supports a 5MP real-time frame rate and 6MP upscaling capability.
- ❖ Supports multi-camera, low-power, and Atlas (AOV) products.
- ❖ Achieve extreme optimization of bitrate, memory, and bandwidth consumption.
- ❖ Implement extreme multi-level power consumption control to enhance user experience for low-power products such as batteries and Atlas (AOV).
- ❖ Full hardware and software compatibility with T32, significantly shortening product development cycles.

### Main Features:

#### CPU

- XBurst1 1GHz
- 128bit SIMD ISA, 128KB L2 Cache

#### MCU

- 500MHz RISC-V Coprocessor

#### NPU

- Support 0.5Tops@int8 computing power
- Support multiple low-bit and mixed quantization of int4/int8/int12/int16
- Support preprocessing and postprocessing hardware acceleration
- Support the Magik algorithm development platform
- Standard-equipped with human-vehicle-pet detection and Mert

#### Video Encoder(Hera-v1.6)

- Support H.264/H.265/JPEG encode
- Support 6MP@25fps
- Support maximum resolution 3200x2048
- Support CBR/VBR/CVBR/AVBR bitrate control
- Support ROI function
- Support multiple reference frame encode
- Support maximum resolution 16Kx16K for JPEG

#### ISP(Tiziano-v4.1)

- Support 2880\*1620, 2592\*1944 resolution
- Support built-in 3A and third-party 3A interfaces
- Support Raw Domain Denoising
- Support DPC, BLC, LSC, RGB-GAMMA, Purple fringing correction and Defog
- Support Demosaic
- Support local contrast enhancement and local tone mapping
- Support Multi-Level NR(2DNR, 3DNR) and Sharpen
- Support Lens Distortion Correction

- Support Scaler, Clip, Flip/Mirror, and rotation

#### Video Input Interface

- Support 4-lane MIPI-CSI@1.5Gbps
- Support 2-lane+2-lane mode

#### Video Output Interface

- Support Smart LCD interface
- Support RGB888/565/555 and NV12/21 input format
- Support maximum performance 800x600@60Hz, 24BPP

#### Audio System

- Support built-in audio Codec and I2S interface
- Support audio 3A function(AEC/ANR/AGC) and Mert

#### Security Engine

- Support AES, DES, RSA, and HASH
- Support Digital True Random Number Generator

#### Memory Interface

- Support DDR2/DDR2L/DDR3/DDR3L
- SIP 512Mb/1Gb
- Support SPI Nor Flash/Nand Flash, support DTR
- Support SDIO3.0, eMMC4.5 and SD3.0

#### Peripherals

- Support I2C, SSI/SSI-SLV, UART, GPIO and PWM
- Support USB2.0
- Support ethernet MAC RMII interface
- Support high-Precision RTC
- Support built-in temperature sensor

#### Boot

- Support SPI/MSC/USB/Ethernet boot
- Support security boot

#### Physical Specifications

- QFN package: 10x10mm, QFN96
- Pin-to-Pin with T32