AXera 爱芯元智

AX620U is a professional AI IP camera SoC with a SiPed SDRAM. It integrates four ARM Cortex-A7 processors, a highly efficient NPU that offers 4TOPS@INT4 or 1TOPS@INT8, an AI enabled ISP pipeline that delivers up to 5M@30fps, and a VPU with 5M@30fps H.264/H.265 encoding capabilities. All these functionalities are provided in a low power chip design.

With a high-performance AI-ISP and a power-efficient NPU, AX620U enables various AI innovations and brings an extraordinary AI enabled video and image processing experience to worldwide customers.

Features

CPU
- Quad Cortex A7@1.0GHz
- 32KB I-Cache
- 32KB D-Cache
- 256KB L2 Cache
- Neon acceleration
- Integrated FPU

NPU
- Neutron™ v2.0
- Up to 4.0 TOPs @ INT4 or 1.0 TOPs@INT8
- Supports mixed-precision operations

ISP
- Proton™ V2.0
- Up to 5Mp@30fps
- 3A (AF, AWB, AE)
- AI-HDR
- AI-3DNR, 2DNR
- FPN removal and DPC
- BPC
- Lens shading
- Color enhancement
- Dehaze
- Fisheye
- AI-stitching
- DIS, EIS

Video Encoder
- H.264 HP/MP/BP Level V5.1
- H.265 MP Level v5.0
- I-/P-frames
- Up to 5Mp@30fps encoding
- Real-time multi-stream H.264/H.265 encoding: 5Mp@30fps + 720p@30fps + D1@30fps
- CBR/VBR/AVBR/CVBR/FIXQP/QPMAP control mode
- Up to 8-ROI encoding
- JPEG encoding: 3840×2160@30fps
- Up to 200Mbps output bit rate

Video Decoder
- H.264 HP/MP/BP: Level 4.2
- Up to 1080p@60fps decoding
- I-/P-/B-frames
- JPEG decoding: 1080p@60fps
- Up to 100Mbps output bit rate

Video and Graphics Processing
- Video and graphics scaling
- Up to 8-region OSD overlay before encoding
- 90^0, 180^0, 270^0 image rotation

Peripherals

Video Interface
VI
- 2-channel VI
- 4 + 2 Lane MZIPI CSI
- Up to 2.5 Gbps

VO
- 1-channel MIPI DSI

Memory Interface
SDRAM Interface
- SiP 16bit LPDDR4x
- Up to 3200 Mbps

SPI Flash Interface
- Supports SPI Nor Flash
- Supports SPI Nand Flash

eMMC v4.41 Interface
- Max. capacity of 2 TB

Ethernet
- One Gigabit Ethernet port
- RGMII and RMII modes
- TSO network acceleration

USB
- One USB 2.0
- Supports Host or Device

Other Interfaces
- I2S codec interface
- I2C, SPIs, and UART

WeChat Subscription Number

AXera Official Website

Security
- Secure boot
- Hardware-based encryption and decryption algorithms (including AES, DES, and 3DES)
- Hardware-based HASH algorithms (SHA-1, SHA-224, and SHA-256)

Startup
- Boot from eMMC, SPI Nor Flash, and SPI Nand Flash

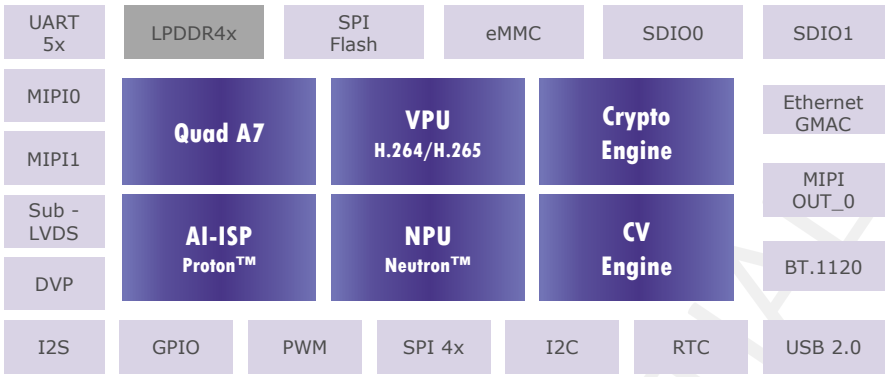
Physical Spec.

Operating Voltage
- 0.8V core voltage
- 1.1V/0.6V LPDDR4(x) interface voltage
- 1.8V/3.3V I/O voltage

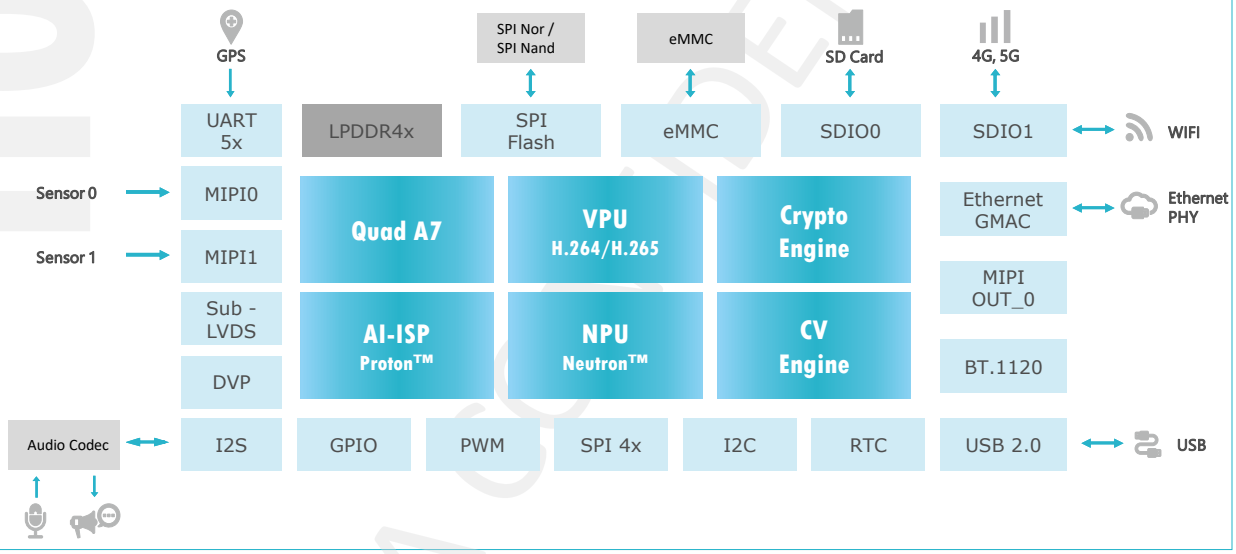
Package
- 8.6 mm × 9.0 mm FC-CSP

• An IMPORTANT NOTICE at the end of this data sheet addresses availability, warranty, changes, use in safety-critical applications, intellectual property matters and other important disclaimers. PRODUCTION DATA.

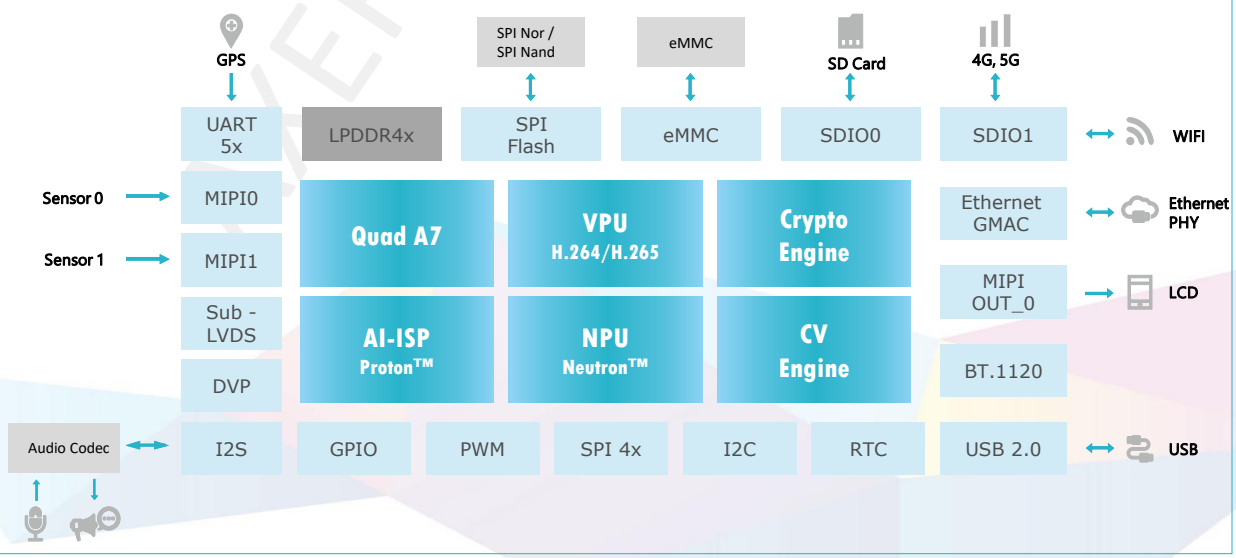
AX620U Block Diagram



AI IP Camera / Action Camera Solution



Face Recognition Terminal Solution



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