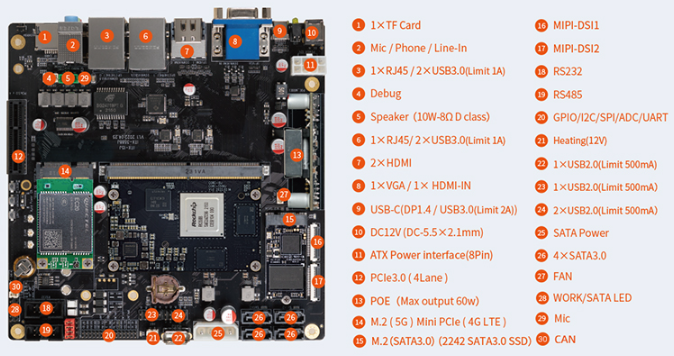
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **AI Boards** | **AIO-3399ProC** | **AIO-3399C(AI)** | **ROC-RK3588S-PC** | **EC-A3399ProC** | **ITX-3588J 8K AI** |
| **SoC** | **Rockchip RK3399Pro** | **Rockchip RK3399** | **RockChip RK3588S** | **Rockchip RK3399Pro** | **RockChip RK3588** |
| **CPU** | Dual-core Cortex-A72+ Quad-core Cortex-A53 big.LlTTLE core CPU architecture,  -Frequency up to 1.8G Hz | -Dual-core Cortex-A72+ Quad-core Cortex-A53  - Frequency up to 2.0 G Hz | 8-core 64-bit (4×Cortex-A76+4×Cortex-A55), 8nm lithography process，frequency up to 2.4GHz | Dual-core Cortex-A72+ Quad-core Cortex-A53 big.LITTLE core CPU architecture, frequency up to 1.8G Hz | 8-core 64-bit (4×Cortex-A76+4×Cortex-A55) , 8nm lithography process, frequency up to 2.4GHz |
| **GPU** | -ARM” Mali-TSGO M P4 Quad-core GPU  -GPU support OpenGL ESl.l/2.0/3.0/3.1, OpenVGl.l, OpenCL, DX11  -SupportAFBC (frame buffer compression) | -Quad-core -ARM” Mali-T860  - GPU support OpenGL ESl.l/2.0/3.0/3.1, OpenVGl.l, OpenCL, DX11 | -ARM Mali-G610 MP4 quad-core GPU  -Support OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS | ARM® Mali-T860 MP4 Quad-core GPU  -Support OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11  -Support AFBC (frame buffer compression) | -ARM Mali-G610 MP4 quad-core GPU  -Supports OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS |
| **NPU** | - Support 8bit/16bit operation, computing performance up to 3.0TOPS  - Power consumption of NPU is merely 1% of traditional GPU.  - Load Caffe/ Mxnet / TensorFlow models directly | -SPR2801S, Adopt MPE and APiM unique AI architecture  -Computing performance up to 2.8 TOPS and 9.3 Tops/W energy efficiency | -NPU computing power up to 6 TOPS  -Support INT4/INT8/INT16 mixed operation，  -Support framework switching of TensorFlow / MXNet / PyTorch / Caffe | - Support 8bit/16bit operation, computing performance up to 3.0TOPS.  - Power consumption of NPU is merely 1% of traditional GPU.  - Load Caffe / Mxnet / TensorFlow models directly.  - Provide AI development tools: Support model fast conversion, support end-to-side API, support TensorFlow / TF Lite / Caffe / ONNX / Darknet models.  - Provide AI application development interface: Support Android NN API, provide RKNN cross-platform API,  -Linux support for TensorFlow development. | -NPU computing power is up to 6 TOPS, Supports INT4/INT8/INT16 mixed operation,  -Supports framework switching of TensorFlow / MXNet / PyTorch / Caffe / etc. |
| **Storage** | High-speed eMMC 5.1 (16GB/32GB/64GB/128GB) | -High-speed eMMC 8GB-128GB | 16GB/32GB/64GB/128GB eMMC | High-speed eMMC 5.1 (16GB/32GB/64GB/128GB) | 16GB/32GB/64GB/128GB eMMC |
| **VPU** | -Support 4K VPQ and 4K 10bits I126S/l-1264 video decoding, up to GDfps  - Video post processor, de-interlacing, de-noising, edge/detail/color optimization | -- supports H.265 HEVC and VP9, H.264 encoding and 4K encoding and 4K HDR, and with a powerful hard decoding capability as high as 4K | **Video decoding:**  -8K@60fps H.265/VP9/AVS2  -8K@30fps H.264 AVC/MVC  -4K@60fps AV1  -1080P@60fps MPEG-2/-1/VC-1/VP8  -**Video encoding:**  -8K@30fps encoding, support H.265 / H.264  \*Achieve up to 32-channel 1080P@30fps decoding and 16-channel 1080P@30fps encoding | -Support 4K VP9 and 4K 10bits H265/H264 video decoding, up to 60fps  -1080P multi-format video decoding (VC-1, MPEG-1/2/4, VP8)  -1080P video coding, support H.264, VP8 format  -Video post processor, de-interlacing, de-noising, edge/detail/color optimization | **Video decoding:**  -8K@60fps H.265/VP9/AVS2  -8K@30fps H.264 AVC/MVC  -4K@60fps AV1  -1080P@60fps MPEG-2/-1/VC-1/VP8  -**Video encoding:**  -8K@30fps encoding, Supports H.265 / H.264  \* Achieves up to 32-channel 1080P@30fps decoding and 16-channel 1080P@30fps encoding |
| **RAM** | -LPDDR3 3GB (NPU 1GB + CPU 2GB) ,LPDDR3 6GB (NPU 2GB + CPU 4GB) | -- DDR: 2GB/4GB dual-channel LP DDR4 | 4GB/8GB/16GB 64bit LPDDR4/LPDDR4x/LPDDR5 (Up to 32GB optional) | LPDDR3 3GB (NPU 1GB + CPU 2GB), LPDDR3 6GB (NPU 2GB + CPU 4GB) | 4GB/8GB/16GB 64bit LPDDR4/LPDDR4x/LPDDR5 (Up to 32GB optional) |
| **Camera** | -2x MIPI-CSI camera interface | -2x MIPI-CSI camera interface | 2 × 2 lane MIPI-CSI input or 1×4 lane MIPI-CSI  -Integrated 48MP ISP with HDR&3DNR |  | The integrated 48MP ISP with HDR&3DNR supports dual MIPI-CSI camera input. |
| **OS** | Android, Linux+QT, Ubuntu | Android, Linux+QT, Ubuntu | -Android：Android 12.0  -Linux：Ubuntu Desktop, Ubuntu Server, Debian11, Buildroot, RTLinux  -Kylin Linux, UOS, etc.  \*Supports UEFI Boot | Android, Linux+QT, Ubuntu | -Android: Android 12.0  -Linux: Ubuntu Desktop, Ubuntu Server, Debian11, Buildroot, RTLinux, Kylin Linux, UOS  \* Supports UEFI Boot |
| **Wireless** |  | -2.4GHz/5GHzdual-bandWiFi, 802.11a/b/g/n/ac protocol  -Support Bluetooth 4.1(Support BLE) | -Support 2.4GHz, 5GHz dual-band WiFi, 802.11 a/b/g/n/ac protocol  -Support Bluetooth 4.2 (BLE) | -Support 2.4GHz / 5GHz dual-band WiFi, 802.11a/b/g/n/ac protocol  -Support Bluetooth 4.1 | -2.4GHz/5GHz dual-band WiFi6,  -Bluetooth 5.0, supports 5G/4G LTE expansion |
| **Power Consumption** | Power consumption of NPU is merely 1% of traditional GPU. | maintaining extremely low power consumption | -Idle: ≈0.42W (12V/35mA)  -Typical: ≈2.25W (12V/190mA)  -Max: ≈12W (12V/1000mA) | Power consumption of NPU is merely 1% of traditional GPU. | Idle: ≈1.35W (12V/110mA)  Typical: ≈4.8W (12V/400mA)  Max: ≈20W (12V/1700mA |
| **Price** | $279 /  -1279 RMB (3GB + 16GB)  - 1679 RMB(6GB + 16GB) | -1189 RMB ( Without NPU 4GB + 32GB)  (Taobao Price) | -4GB+32GB, $219 / 1279 RMB  - 8G+64GB, $299 / 1779 RMB  -16G+128GB $ 409 / 2479 RMB  (Taobao Price) | 245$ (3GB+ 16GB)  1647 RMB | -4GB+32GB: 2779 RMB on taobao  - 6GB + 64GB: 3279 RMB  - 16GB + 128GB: 3979 RMB).  They have 4G & 5G module and antenna |

**Firefly AI Boards with Rockchip Comparison**

**ITX-3588J 8K AI Mini-ITX Mainboard**



**ROC-RK3588S-PC**

