Allwinner Technology

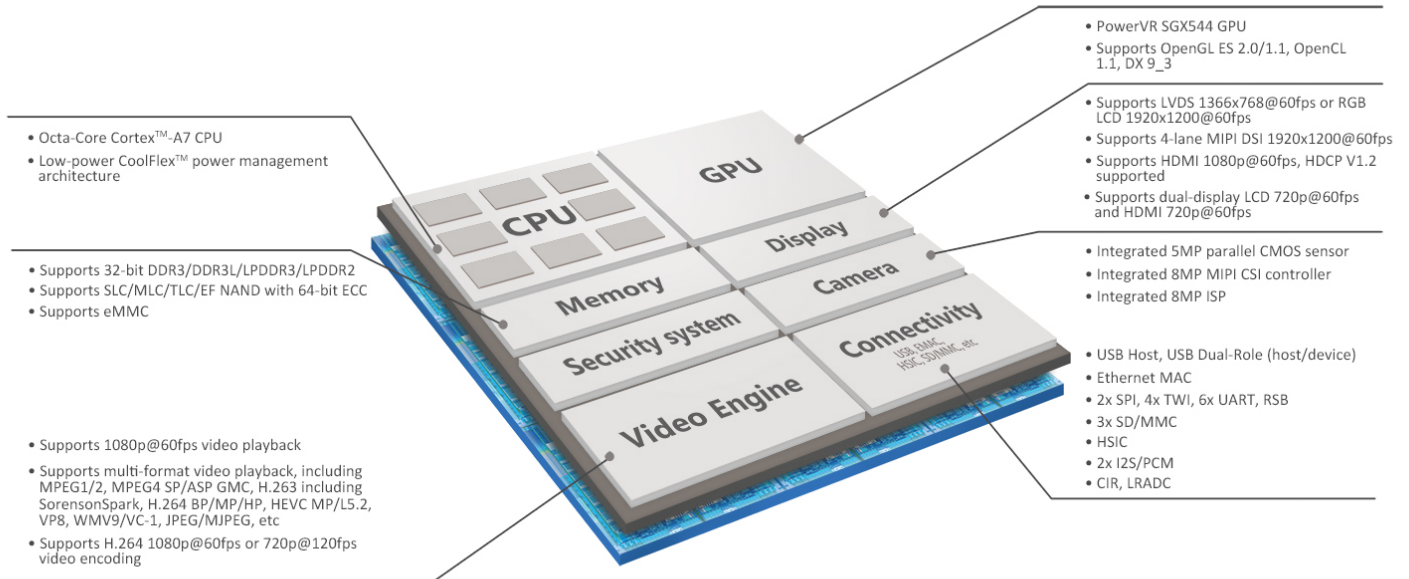## A83T Octa

The Best Octa-Core Processor for Full HD Tablets

Allwinner A83T is a high-performance octa-core mobile application processor based on eight energy-efficient ARM Cortex™-A7 cores to deliver excellent performance with power consumption that even lower than quad-core competitors. A83T uses the cutting-edge 28nm fabrication process, and supports HMP (heterogeneous multi-processing) technology that enables eight cores to work simultaneously.

To deliver the best performance per watt, A83T packs PowerVR SGX544 GPU architecture from Imagination to achieve the best graphics performance and power consumption balance, and integrates a wide range of interfaces and modules such as LPDDR3/LPDDR2 interface, MIPI DSI, RSB, and HawkView ISP to reduce the system power consumption. H.264 1080p@60fps video processing is also supported in hardware to make the power consumption even lower.

Thanks to its optimized display subsystem and Allwinner's next-gen SmartColor display technology, A83T processor brings the visual effects for still images and videos to an unprecedented level with less power drain.

Security system is another outstanding feature that differentiate Allwinner A83T from other competitors in market. It implements a rich-featured security system to address the increasing need for more reliable system in applications such as mobile payment, copyright protection, etc.

Block Diagram

- Octa-Core Cortex™-A7 CPU
- Low-power CoolFlex™ power management architecture

- Supports 32-bit DDR3/DDR3L/LPDDR3/LPDDR2
- Supports SLC/MLC/TLC/EF NAND with 64-bit ECC
- Supports eMMC

- Supports 1080p@60fps video playback
- Supports multi-format video playback, including MPEG1/2, MPEG4 SP/ASP GMC, H.263 including SorensonSpark, H.264 BP/MP/HP, HEVC MP/L5.2, VP8, WMV9/VC-1, JPEG/MJPEG, etc
- Supports H.264 1080p@60fps or 720p@120fps video encoding

- PowerVR SGX544 GPU
- Supports OpenGL ES 2.0/1.1, OpenCL 1.1, DX 9_3

- Supports LVDS 1366x768@60fps or RGB LCD 1920x1200@60fps
- Supports 4-lane MIPI DSI 1920x1200@60fps
- Supports HDMI 1080p@60fps, HDCP V1.2 supported
- Supports dual-display LCD 720p@60fps and HDMI 720p@60fps

- Integrated 5MP parallel CMOS sensor
- Integrated 8MP MIPI CSI controller
- Integrated 8MP ISP

- USB Host, USB Dual-Role (host/device)
- Ethernet MAC
- 2x SPI, 4x TWI, 6x UART, RSB
- 3x SD/MMC
- HSIC
- 2x I2S/PCM
- CIR, LRADC

Features

CPU	• Octa-Core Cortex™-A7 CPU • Low-power CoolFlex™ power management architecture
GPU	• PowerVR SGX544 GPU • Supports OpenGL ES 2.0/1.1, OpenCL 1.1, DX 9_3
Memory	• Supports 32-bit DDR3/DDR3L/LPDDR3/LPDDR2 • Supports SLC/MLC/TLC/EF NAND with 64-bit ECC • Supports eMMC
Video	• Supports 1080p@60fps video playback • Supports multi-format video playback, including H.264 BP/MP/HP, H.265/HEVC MP/L5.2, VP8/VP9, MPEG1/2, MPEG4 SP/ASP GMC, H.263 including Sorenson Spark, WMV9/VC-1, JPEG/MJPEG, etc • Supports H.264 1080p@60fps or 720p@120fps video encoding
Display	• Supports 4-lane MIPI DSI 1920x1200@60fps • Supports RGB LCD 1920x1200@60fps or LVDS 1366x768@60fps • Supports HDMI 1080p@60fps, HDCP V1.2 supported • Supports dual-display LCD 720p@60fps and HDMI 720p@60fps
Camera	• Integrated 5MP parallel CMOS sensor • Integrated 8MP MIPI CSI controller • Integrated 8MP ISP

Connectivity	• USB Host, USB Dual-Role (host/device) • Ethernet MAC • 2x SPI, 4x TWI, 6x UART, RSB • 3x SD/MMC • HSIC • 2x I2S/PCM • CIR, LRADC	
Package	• FCBGA 345 • 14mm x 14mm size	

Selection Guide

	A83T	A80T	A33	A31s
CPU	Octa-Core Cortex™-A7	Octa-Core big.LITTLE Cortex™-A15/7	Quad-Core Cortex™-A7	Quad-Core Cortex™-A7
GPU	PowerVR SGX544	PowerVR G6230	Mali400MP2	PowerVR SGX544MP2
Video playback	1080p	4K	1080p	1080p
Video encoding	1080p@60fps	4K@30fps	1080p@60fps	1080p@60fps
LCD	1920x1200	2048x1536	1280x800	1280x800
Package	FCBGA345 14mmx14mm 0.65mm Pitch	FCBGA636 18mmx18mm 0.65mm Pitch	BGA282 14mmx14mm 0.80mm Pitch	BGA460 18mmx18mm 0.80mm Pitch
Applications	Tablet	Tablet	Tablet	Tablet