Overview

Allwinner’s T7 ARM Cortex-A7 Hexa-core processor is aimed at the automotive infotainment market and is AEC-Q100 compliant. The system has integrated dual image processing, multiple interfaces and a dedicated ADAS acceleration engine for processing various driver assist features. The T7 can be used as a multimedia/entertainment panel, electronic instrument panel, car navigation display or customized by the user depending on their preference.

Highlights

- AEC-Q100 Certified
- CPU: 6-core ARM Cortex-A7 CPU
- GPU: Mali 400 MP4 - Excellent processing performance and display
- Supports a wide range of 32-bit DRAM types and dynamic frequency scaling, considering the application bandwidth and power consumption requirements in multi-scenes.
- Multiple camera interfaces that support up to 8 high-definition cameras.
- Integrated ADAS acceleration engine improves the efficiency of processing ADAS algorithms whilst reducing the load on the CPU.
- Integrated dual image processor is suitable for more vehicle scenes such as DVR, 360° AVM.
# Feature List

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Hexa-core ARM Cortex™-A7 Processor</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>Mali 400 MP4</td>
</tr>
</tbody>
</table>
| **Memory**         | - Supports DDR3/DDR3L/LPDDR2/LPDDR3 up to 3GB  
- Supports eMMC, SD card, NAND Flash, SPI Nor Flash and SPI Nand flash                                                                          |
| **Video**          | - Supports video decoding up to 1080p@60fps with MPEG1/MPEG2/MPEG4/H.263/H.264/H.265/VP8/AVS/AVS+ multi-formats  
- Supports H.265 MP video encoding up to 1080p@60fps  
- Supports H.264 MP video encoding up to 1080p@60fps  
- Supports input titled(128x32)/YU12/YV12/NU12/NV12/ARGB/YUYV multi-formats  
- Supports Alpha blending  
- Supports Thumb generation  
- Supports 4x2 scaling ratio from 1/16 to 64 arbitrary non-integer ratio                                                                               |
| **Audio**          | - Two audio digital-to-analog(DAC) channels  
- Three audio analog-to-digital(ADC) channels  
- Four audio inputs  
- Two audio analog outputs                                                                                                                         |
| **Display**        | - Supports 4 lanes MIPI DSI up to 1920 x 1200@60fps  
- Supports LVDS interface up to 1920 x 1200@60fps  
- Supports 18-bit RGB interface up to 1920 x 1080@60fps  
- Supports 1-ch TV CVBS output                                                                                                                     |
| **Camera**         | - Supports 4 channel CVBS input or 1 channel YPbPr and 1channel CVBS  
- Supports 2 individual MIPI CSI camera control interface  
- Supports 2 individual CSI interface, with 16bit data wide each other  
- Builtin 2 image processors with HDR, 3D de-noise, Sharpening algorithm                                                                             |
| **EVE(ADAS)**      | - Detection Speed: 30fps(VGA)  
- Supports 4 channel integral Image, processes 130 million features per second  
- Supports up to 3 channel feature calculation                                                                                                           |
| **External peripheral** | - USB x 4 with USB OTG*1 and USB host*3  
- UART*10/SPI* 3/TS*1/TWI*10/EMAC*1/CIR*1                                                                                                              |
| **Package**        | PBGA 547 balls, 21 x 21 mm, 0.8 mm ball pitch                                                                                                                                                    |
**Video Engine**
- Decode
  - H.264/H.265
  - 4096 x 2048@15fps
  - 1080p@60fps
  - 720p@120fps
- Encode
  - H.264/H.265
  - 1080p@60fps
  - 720p@120fps

**CPU**
- Cortex-A7 x 6

**GPU**
- Mail-400 MP4

**MCU**
- AR100

**Memory**
- DDR3
- LPDDR3
- LPDDR2

**Video in**
- Parallel CSI x 2
  - 16-bit
- MIPI CSI x 2
  - 4 lanes
- TVIN x 4
- ISP5.1 x 2

**Video out**
- DE2.0
- LCD RGB 18-bit
  - 1920 x 1080@60fps
- LVDS x 2
  - 1920 x 1200@60fps
- DSI 4 lanes
  - 1920 x 1200@60fps
- TV OUT
- De-interface

**System**
- CCU
- RTC
- DMA
- SRAM
- Timer
- PWM
- EFUSE
- BROM
- Thermal Sensor
- CE

**ADAS Acceleration Engine (EVE)**
- Connectivity
  - USB OTG × 1
  - SPI × 3
  - USB HOST × 3
  - CIR × 1
  - USB HSIC × 1
  - TS × 1
  - TWI × 10
  - SIM × 1
  - LRADC
  - Giga MAC
  - GPADC
  - UART × 10

**Audio**
- Audio Codec
- I2S/PCM x 3
- DMIC
- SPDIF IN/OUT

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**Application Diagram**

- ARM Cortex-A7 X6
- GPU
- Video Engine
- Display Engine
- EVE
- Security System
- MIPI-CSIA
- MIPI-CSIB
- S-CIR-RX
- S-SPI
- S-TWI1
- S-TWI2
- SDIO3.0
- DMIC
- MIPI-DSD
- DDR3/LPDDR3
- eMMC/NAND
- USB2.0
- TF CARD0
- TF CARD1
- S-TW10
- Audio Codec
- I2S
- UART
- Power
- DVR-Video
- USB
- 4G
- TF CARD1
- Phone_Audio
- AUX_Audio
- TV_Audio
- Lineout
- Phoneout
- Mic
- BT
- Car Battery
- XAP858
- Audio DSP
- FM1288
- PA
- Mic
- Wi-Fi 802.11 b/g/n/ac
- Light Perception
- Barometer
- Accelerometer
- Dash-Board
- Central Control Panel
- RGB2MHL
- TV_Audio
- Phone_Audio
- AUX_Audio
- Lineout
- Phoneout
- Mic
- BT
- Car Battery
- XAP858
- Audio DSP
- FM1288
- PA
- Mic
- Wi-Fi 802.11 b/g/n/ac
- Light Perception
- Barometer
- Accelerometer
- Dash-Board
- Central Control Panel
- RGB2MHL

**Product Diagram**

1. HD 360º Navigation Display
Allwinner Technology is a leading fabless design company dedicated to smart application processor SoCs and smart analog ICs. Its product line includes multi-core application processors for smart devices and smart power management ICs used by brands worldwide.

With its focus on cutting edge UHD video processing, high performance multi-core CPU/GPU integration, and ultra-low power consumption, Allwinner Technology is a mainstream solution provider for the global tablet, internet TV, smart home device, automotive in-dash device, smart power management, and mobile connected device markets. Allwinner Technology is headquartered in Zhuhai, China.

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CONTACT US
For more product info, please contact service@allwinnertech.com, or scan the QR code to follow us on Wechat.

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