

## Smart Control and Display Processor

### Overview

The F101 is a high-performance and smart control SoC, integrating a domestic RISC-V CPU instruction set processor. It features a built-in PSRAM controller and is equipped with a powerful G2D image acceleration module, JPEG/PNG hardware decoding module, and a variety of peripheral interfaces.

The F101 supports multiple display interfaces, including RGB, MIPI-DSI, LVDS and QSPI. This series is suitable for industrial HMI screens, serial port displays, smart home appliances, and other applications.

### Highlights

- Integrated RISC CPU processor provides powerful computing performance.
- SiP 16-bit PSRAM, up to 16MB.
- Supports JPEG/PNG image decoding.
- Rich peripheral interfaces, such as USB, SDIO, UART, SPI, PWM, GPADC, TPADC, IR, TWI, and so on.
- Rich video interfaces, RGB888, MIPI-DSI, LVDS for Display.

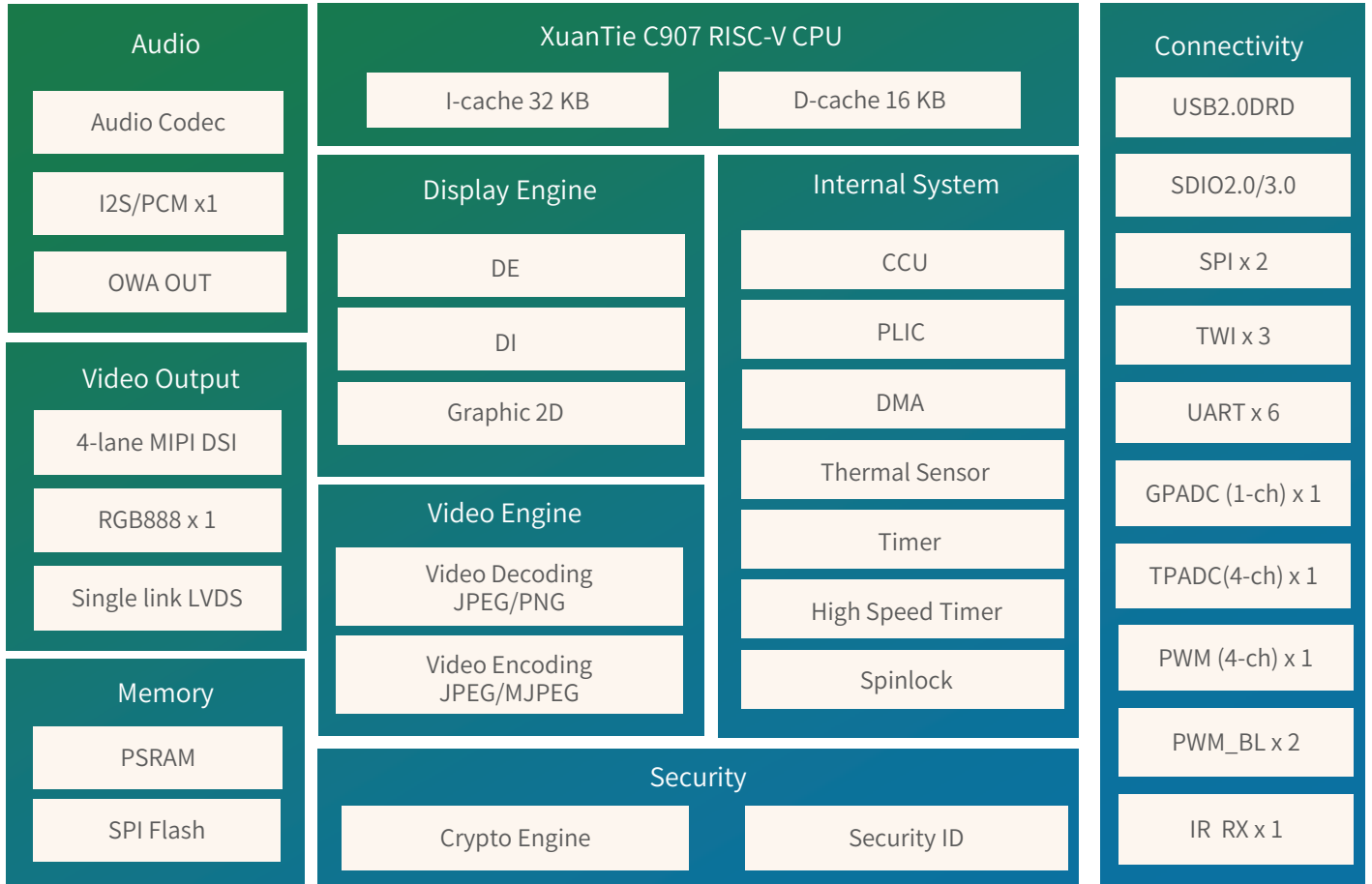
### Ordering Information

Features	F101S2-XXX	F101S3-XXX
Memory	SiP 16-bit 8MB PSRAM	SiP 16-bit 16MB PSRAM

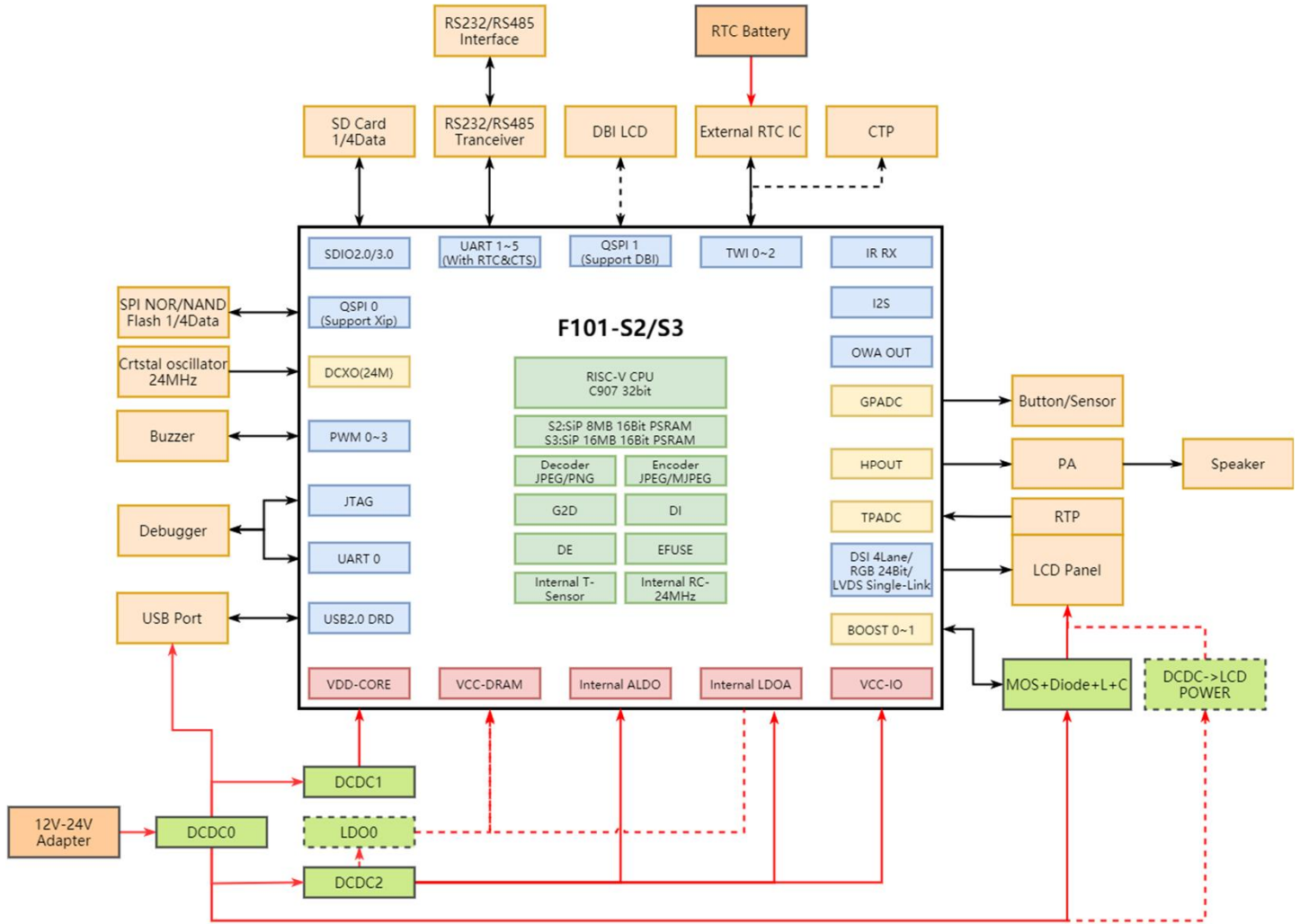
# Features

CPU	<ul style="list-style-type: none"><li>• XuanTie C907 RISC-V CPU</li><li>• 32 KB I-cache + 16 KB D-cache</li></ul>
Memory	<ul style="list-style-type: none"><li>• SiP 16-bit PSRAM, up to 16MB</li><li>• SPI Flash</li></ul>
Video Engine	<ul style="list-style-type: none"><li>• Image decoding<ul style="list-style-type: none"><li>- JPEG, Maximum resolution: 16384x16384</li><li>- PNG, Maximum resolution: 2048x2048</li></ul></li><li>• Video encoding<ul style="list-style-type: none"><li>- JPEG/MJPEG up to 720p@30fps</li><li>- Maximum resolution: 8192x8192</li></ul></li></ul>
Display Engine	<ul style="list-style-type: none"><li>• Allwinner Awonder1.1 Lite post processing for an excellent display experience</li><li>• Supports de-interlace (DI) up to 720p@60fps</li><li>• Supports G2D hardware accelerator including rotate and mixer functions</li></ul>
Video Output	<ul style="list-style-type: none"><li>• 1 x RGB888 output interface up to 1280x720@60fps</li><li>• Single link LVDS interface up to 1366x768@60fps</li><li>• 4-lane MIPI DSI interface up to 1280x800@60fps</li></ul>
Audio	<ul style="list-style-type: none"><li>• 1x DAC</li><li>• Analog audio interfaces: HPOUT</li><li>• Digital audio interfaces: I2S/PCM, OWA OUT</li></ul>
Security	<ul style="list-style-type: none"><li>• Integrated 512 bits eFuse storage space</li></ul>
Connectivity	<ul style="list-style-type: none"><li>• USB2.0 DRD x 1, SDIO2.0/3.0</li><li>• SPI x 2, UART x 6, TWI x 3</li><li>• 4-ch PWM x 1, PWM_BL x 2, IR_RX x 1</li><li>• 1-ch GPADC x 1, 4-ch TPADC x 1</li></ul>
Package	<ul style="list-style-type: none"><li>• QFN68, 7mm x 7mm</li></ul>

# Block Diagram



# Application Diagram



## ABOUT ALLWINNER

Allwinner Technology, founded in 2007, is a outstanding designer dedicated to intelligent application SoC, high performance analog component and wireless connectivity IC. It is headquartered in Zhuhai China, with other R&D centers and offices in Shenzhen, HongKong, Xi'an, Beijing and Shanghai. Listed on the GEM of the Shenzhen Stock Exchange in 2015, with the stock code 300458.

Motivated by customer-oriented strategy, Allwinner aligns remarkable R&D teams with long-term core-technology investment in UHD video processing, high-performance multi-core CPU/GPU integration with AI and advanced manufacturing process in terms of high integration, ultra-low power consumption and full-stack integration platform, providing competitive turnkey solutions with considerate services. The products powered by Allwinner spread across from smart hardware, smart home, consumer electronics, HD media, smart video, connected car, industry control, wireless communication to analog products.

## CONTACT US

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