

开发板说明书

Development Board Instructions

☒初定规格 Preliminary specification

☐正式规格 Official specifications

项目编号 Project No.	ESP32-P4-DEMO-A01_V0
产品描述 Product Description	Development Board
客 户 确 认 签 章: Signature by customer:	
☐小批量试产 Trial Production ☐大批量生产 Mass Production 请返回一份带有您的签名和评论的确认副本 Please return one copy confirmation with signature and your comments	

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一、产品介绍 Product Introduction

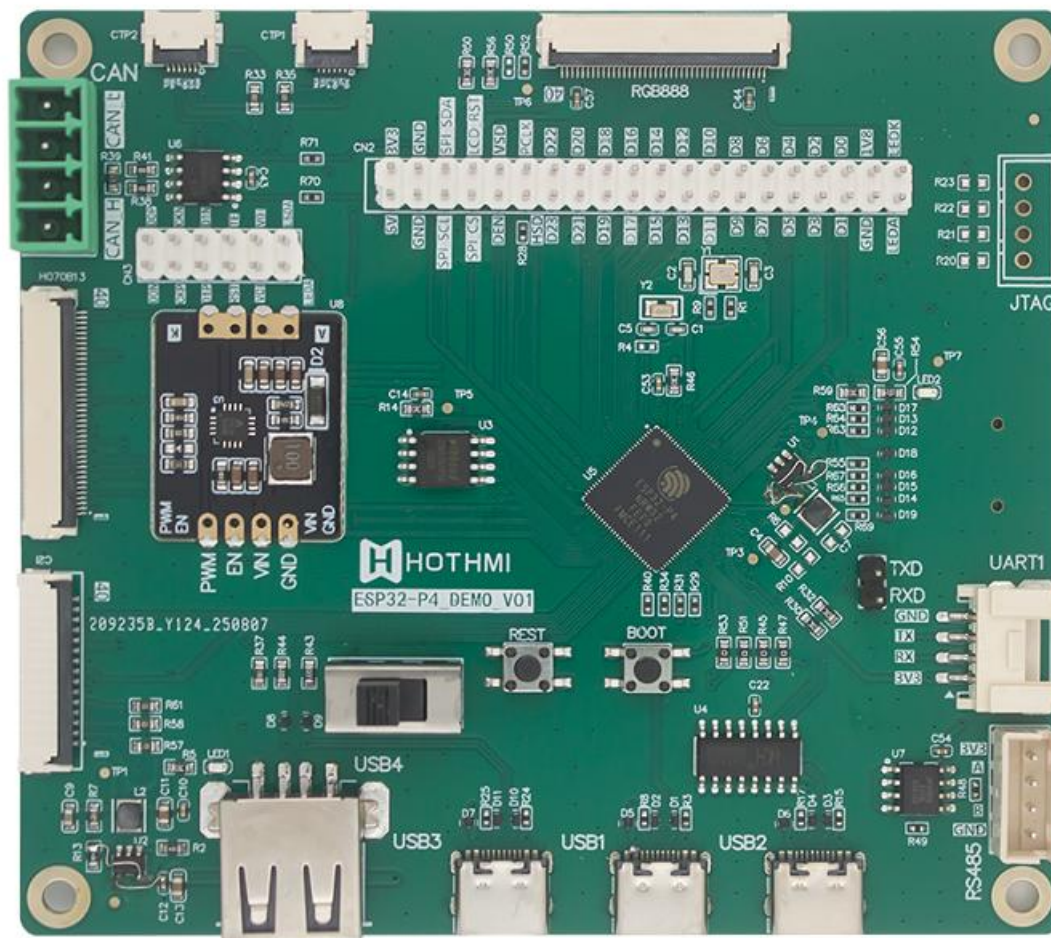
ESP32-P4-DEMO-A01 是一款基于 ESP32-P4 的双核加单核 RISC-V 高性能开发板，支持丰富的人机交互接口，板上包含 MIPI-DSI、RGB24Bit 等显示接口，此外支持 SPI、I2C、PWM、CAN、UART、RS485/232 等外设，支持各种通讯协议，可以满足各类交互设计场景和多媒体互动体验。芯片集成了数字签名外设和专用密钥管理单元，确保数据和操作的安全性。ESP32-P4-DEMO-A01 专为高性能和高安全应用设计，满足嵌入式系统在人机交互、边缘计算、IO 扩展等方面的需求，可广泛面向于工业领域应用。

- 搭载 RISC-V 32 位双核与单核处理器的高性能 MCU，主频可达 400MHz
- 可用存储 128KB HP ROM、16KB LP ROM、768KB HP L2MEM、32KB LP SRAM、8KB TCM
- 芯片封装内叠封 32MB PSRAM，外部集成 16MB Nor Flash
- 支持 SDIO2.0 存储接口，可挂载大容量 SD Card
- 强大的图像与语音处理能力，图像与语音处理接口包括 JPEG 编解码器、像素处理加速器（PPA）图像信号处理器（ISP）和 H.264 视频编码器
- 板上集成 RGB、MIPI 等显示屏接口和电容触摸功能，最高性能 1080P@60fps
- 板上集成背光驱动模块，最大输出 25V/200mA，可驱动高亮显示屏背光
- 板上引出 SPI、I2C、USB 2.0 OTG、UART、RS485/232、CAN 等外设接口，可实现多种通讯协议
- 可搭载 MIPI-CSI 摄像头设备，最高可达 1280x720@60fps

The ESP32-P4-DEMO-A01 is a high-performance development board based on the ESP32-P4, featuring a dual-core and single-core RISC-V architecture. It supports a variety of human-machine interaction interfaces, including MIPI-DSI and RGB24Bit display interfaces. Additionally, it supports peripherals such as SPI, I2C, PWM, CAN, UART, and RS485/232, and is compatible with various communication protocols. This board can meet the requirements of various interactive design scenarios and multimedia interaction experiences. The chip integrates a digital signature peripheral and a dedicated key management unit to ensure the security of data and operations. The ESP32-P4-DEMO-A01 is specifically designed for high-performance and high-security applications, meeting the needs of embedded systems in human-machine interaction, edge computing, IO expansion, and other aspects. It can be widely applied in industrial fields.

- A high-performance MCU equipped with RISC-V 32-bit dual-core and single-core processors, with a main frequency up to 400MHz
- Available storage: 128KB HP ROM, 16KB LP ROM, 768KB HP L2MEM, 32KB LP SRAM, 8KB TCM
- The chip package encapsulates 32MB PSRAM internally and integrates 16MB Nor Flash externally
- Supports SDIO2.0 storage interface and can mount large-capacity SD cards
- It features powerful image and voice processing capabilities. The image and voice processing interfaces include JPEG codecs, pixel processing accelerators (PPA), image signal processors (ISP), and H.264 video encoders

- The board integrates RGB, MIPI and other display interfaces and capacitive touch function, with the highest performance 1080P@60fps
- The board integrates a backlight driver module with a maximum output of 25V/200mA, which can drive the backlight of high-brightness display screens
- The board leads out peripheral interfaces such as SPI, I2C, USB 2.0 OTG, UART, RS485/232, CAN, etc., which can realize multiple communication protocols
- Can be equipped with MIPI-CSI camera equipment, up to 1280x720@60fps

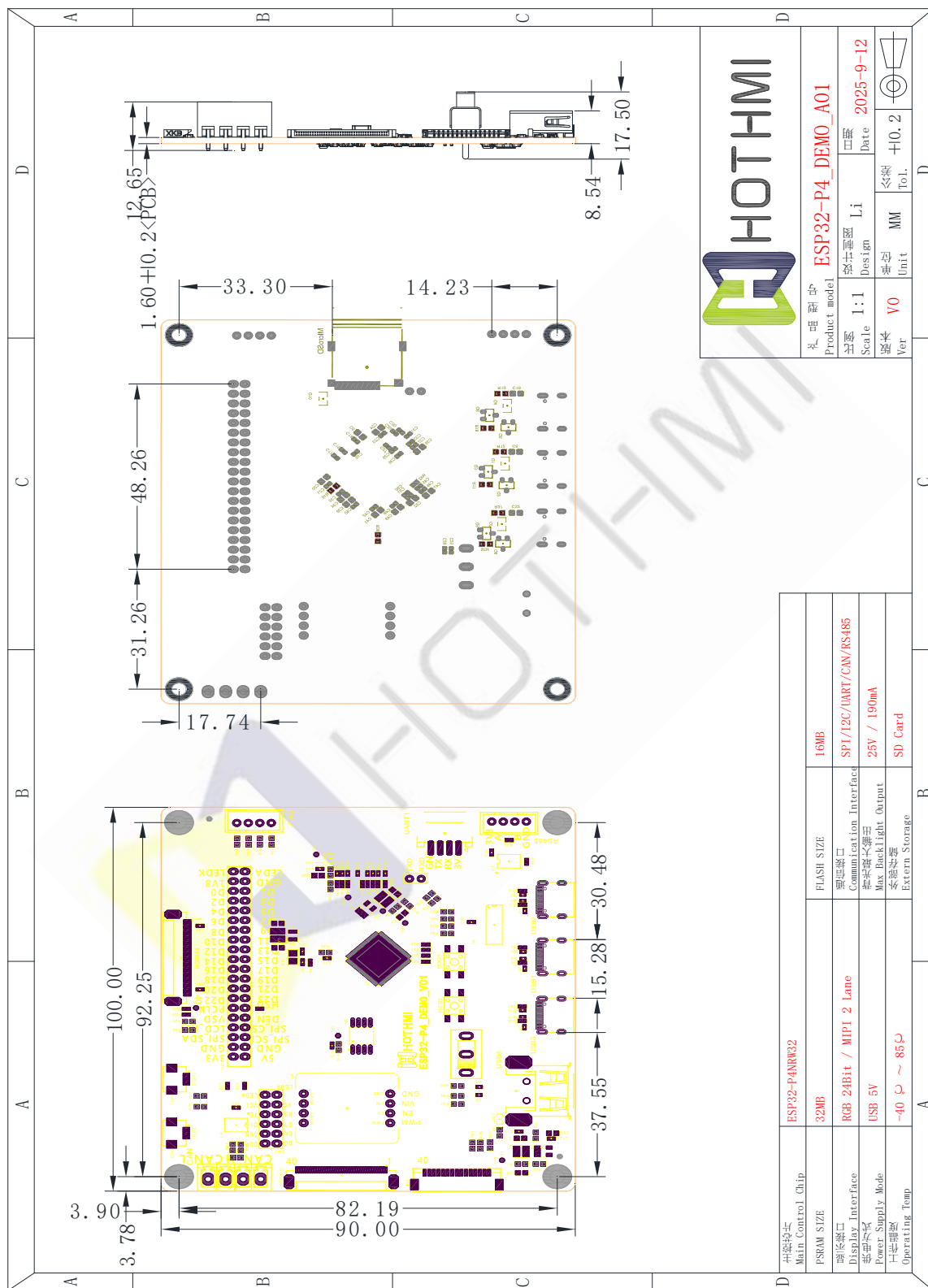


二、主要参数 Main Parameters:

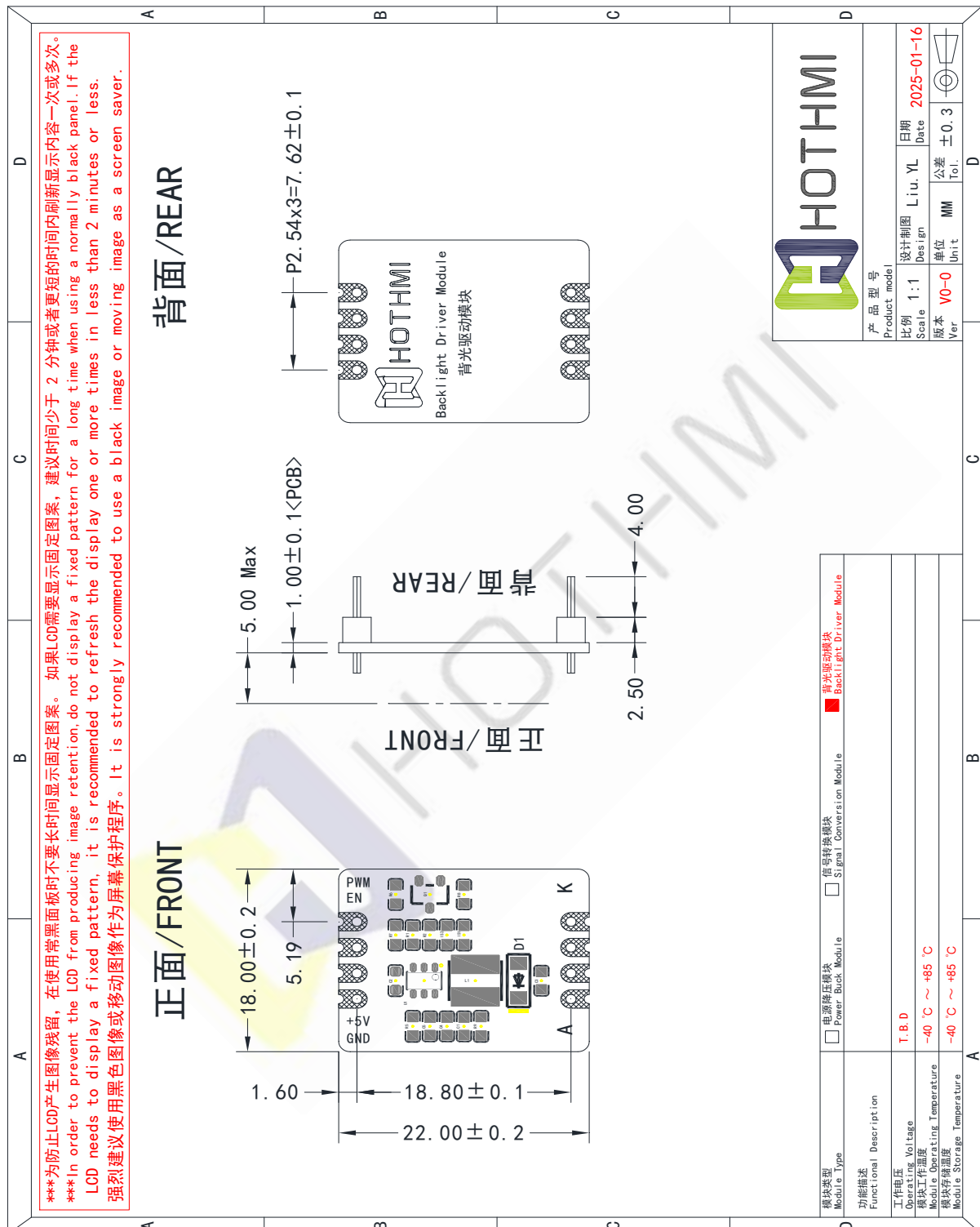
项目 Item	标准值 Standard Value			单位 Unit
主控芯片 Main Control Chip	ESP32-P4			-
编程平台 Programming Platform	ESP-IDF Arduino			-
固件下载方式 Firmware Download Method	USB-OTG UART JTAG			-
存储器类型/大小 Flash type/size	Nor-Flash/16Mbit			-
外形尺寸 Outside Dimensions	100.0 x 90.0 x 17.5			毫米 mm
供电方式 Power Supply	USB-5V			伏特 V
支持显示屏接口 Support Display Interface	RGB 24Bit Interface MIPI Display Serial Interface (2 LANE)			-
工作温度 Operating Temperature	-20.0 ~ 85.0			摄氏度 ℃
最小工作电流 Minimum operating current	100			毫安 mA
支持存储设备 Support Storage Device	☐ 不支持 Not Supported	☒ SD 卡 SD Card	☒ U 盘 U Disk	-

说明 Description:

三、外形尺寸 Outline Dimensions



四、外部模块 Extern Module



背光模块尺寸 Backlight Module Dimensions

说明 1: 我司所有背光模块长, 宽尺寸相同, 引脚定义相同。使用的模块以实物为准。

Note 1: All of our backlight modules have the same length and width dimensions and the same pin definition. Modules used are subject to physical.

文档修订记录 Document revision history :

版本 Version	日期 DATE	修改说明 Modify description	编著 Editorial
0-0	2025-09-16	初次编制 First compilation.	Li

— — 结束 — —
— — END — —