1.28-inch ESP32S3 Round TFT-I80 Screen Development Board

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1. Product Introduction

The development board uses a 1.28-inch round TFT screen with a GC9A01 driver chip, 240x240 resolution, and 65K color display for clearer visuals. The screen connects to the onboard ESP32S3 via the I80/MCU interface and includes capacitive touch functionality. Driver examples are provided for easier use.

The development board provides a USB port for program download, serial communication, and battery charging. It also has a 3.7V lithium battery interface and charging circuit. The battery voltage is sampled through a voltage divider connected to an ESP32 IO pin, allowing ADC acquisition to estimate battery level.

The board includes three side buttons and a TF card slot for direct use. One button doubles as a power switch. After startup, all three buttons can be used as user-defined inputs through code.

It also contains an RTC clock chip, an IMU with 3-axis accelerometer and 3-axis gyroscope, 3W IIS audio output, IIS microphone, WS2812 LEDs, TF card interface, and more peripherals. A TCA6408 expansion chip is included to save IO pins.

2. Specifications

Product type: ESP32S3-128I80T TFT Development Board Series Input voltage: USB 5V / 3.7V battery (default supports 3.7V lithium battery) Working current: Depends on code execution, generally less than 150mA

ESP32S3 Minimum System: - Frequency: 240MHz - Cores: 2 - Flash size: 16MB - PSRAM: 8MB / 16MB - Antenna: Onboard + IPEX (default onboard) - Wireless: Bluetooth 5 + Wi-Fi 2.4GHz

Screen type: TFT IPS (with touch) Peripherals: - TFT Display: 1.28 GC9A01 240x240 I80 - Capacitive touch: CST816 - TF Card slot: SPI - RTC: PCF85063 - IMU: QMI8658 - Speaker: MAX98357 - Microphone: ICS43434 - WS2812 x2 - SW x3 - Battery measurement interface x1

Mounting: M2 Copper pillars Size: 41.5mm (H) x 37mm (W) (without card) 41.5mm (H) x 44mm (W) (with card) Note: Hand-measured, may have deviation

3. Product Reference

Most board functions can be identified by the silkscreen labels. This document only provides an overview. Refer to the development reference documentation for detailed guidance.

4. Dimensions

The provided dimensions are PCB-only and for reference. External components outside the PCB outline are not included. Refer to the 3D model provided in the documentation for precise measurements.

5. Functional Block Diagram

Detailed schematics are not open-sourced. A block diagram of functional connections is provided. Refer to reference schematics and development documentation for secondary development.

6. Notes

1. Small size and high integration result in noticeable heat, which is normal and does not affect usage. 2. The M2 copper pillar height is 4.5mm, so screws must not exceed this length. 3. The external PFC interface shares the same 3.3V supply as the ESP32. Do not connect high-power devices (e.g., motors, large LEDs) as they may affect or damage the ESP32. 4. The provided examples allow basic testing of main functions. More features will be added progressively. Suggestions are welcome to improve the product. Thank you for your support.