S3 Development Board Product Brief

ESP32-S3 development board with 2.4GHz Wi-Fi and Bluetooth 5.0

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Introduction

Unit TouchDot S3 is a compact development board powered by the versatile ESP32-S3 chip, engineered for IoT, AI, and machine learning applications. Its design integrates the efficient ESP32-S3 Mini microcontroller—with low power consumption and an optional PSRAM configuration—to support both basic sensor projects and advanced prototypes. Additionally, the 3.3V power rail facilitates seamless connectivity with low-voltage components such as LilyPad and QWIIC sensors.

Functional Description

- Integrated ESP32-S3 module with Wi-Fi and Bluetooth 5.0
- USB-C for power and programming
- 3.3V power rail compatible with low-voltage peripherals
- Built-in QWIIC connector for rapid sensor integration

Electrical Characteristics

- Operating voltage: 3.3V
- Max current draw: 500mA (with Wi-Fi active)
- GPIO logic level: 3.3V
- ADC resolution: 12-bit (0–4095)
- Touchpad sensitivity: configurable

Features

- ESP32-S3 with dual-core Xtensa® processor
- Integrated 2.4GHz Wi-Fi and Bluetooth LE
- 11 capacitive touchpads
- 8 ADC channels
- Optional PSRAM support
- USB device and host support

Applications

- IoT sensor nodes
- Smart home automation
- Environmental monitoring
- Educational prototyping platforms

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
UART	Tx, Rx	Serial terminal or sensor communication
I2C	SDA, SCL	QWIIC modules, OLED displays
SPI	MOSI, MISO, SCK, CS	External flash, TFT display
USB	D+, D-	Native USB device or host

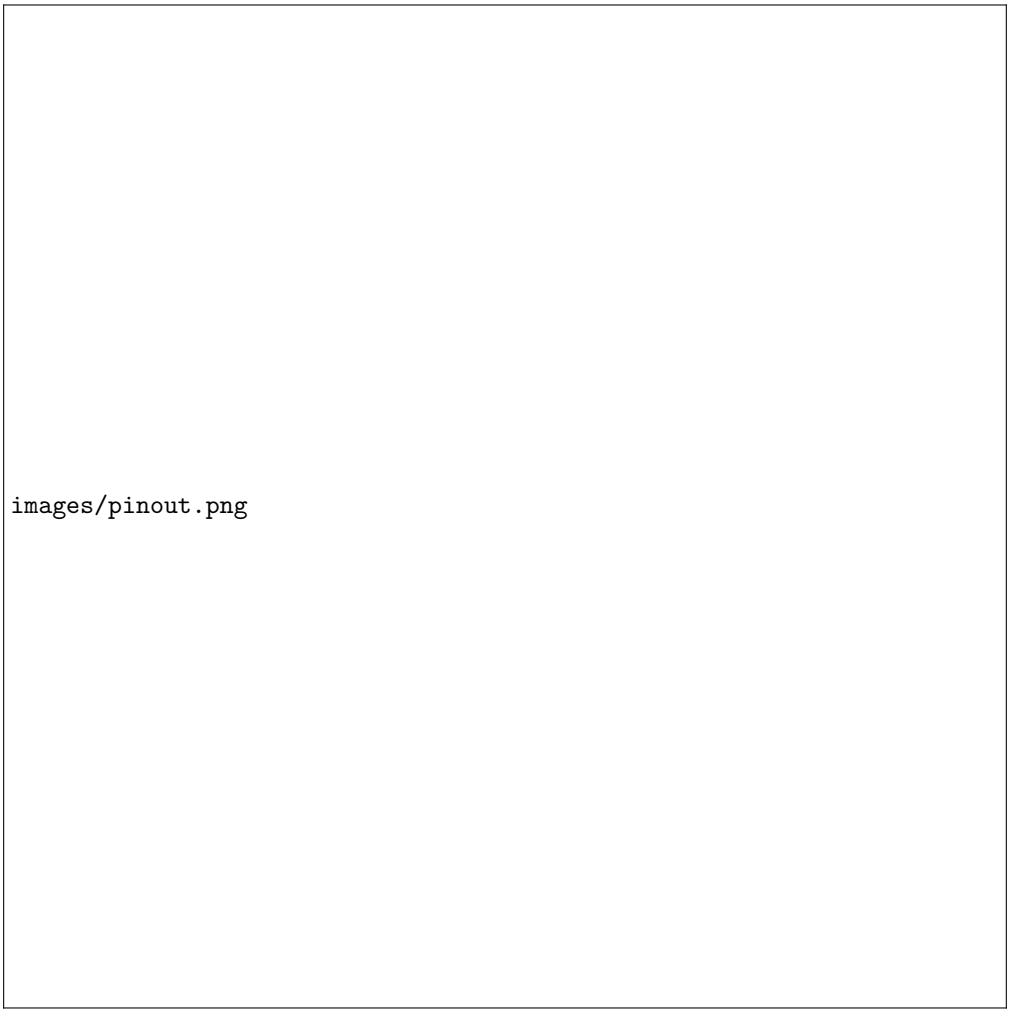
Supported Pins

Symbol	I/O	Description
VCC	Input	Power supply (3.3V or 5V)
GND	GND	Ground connection
IO	Bidirectional	General-purpose I/O pins

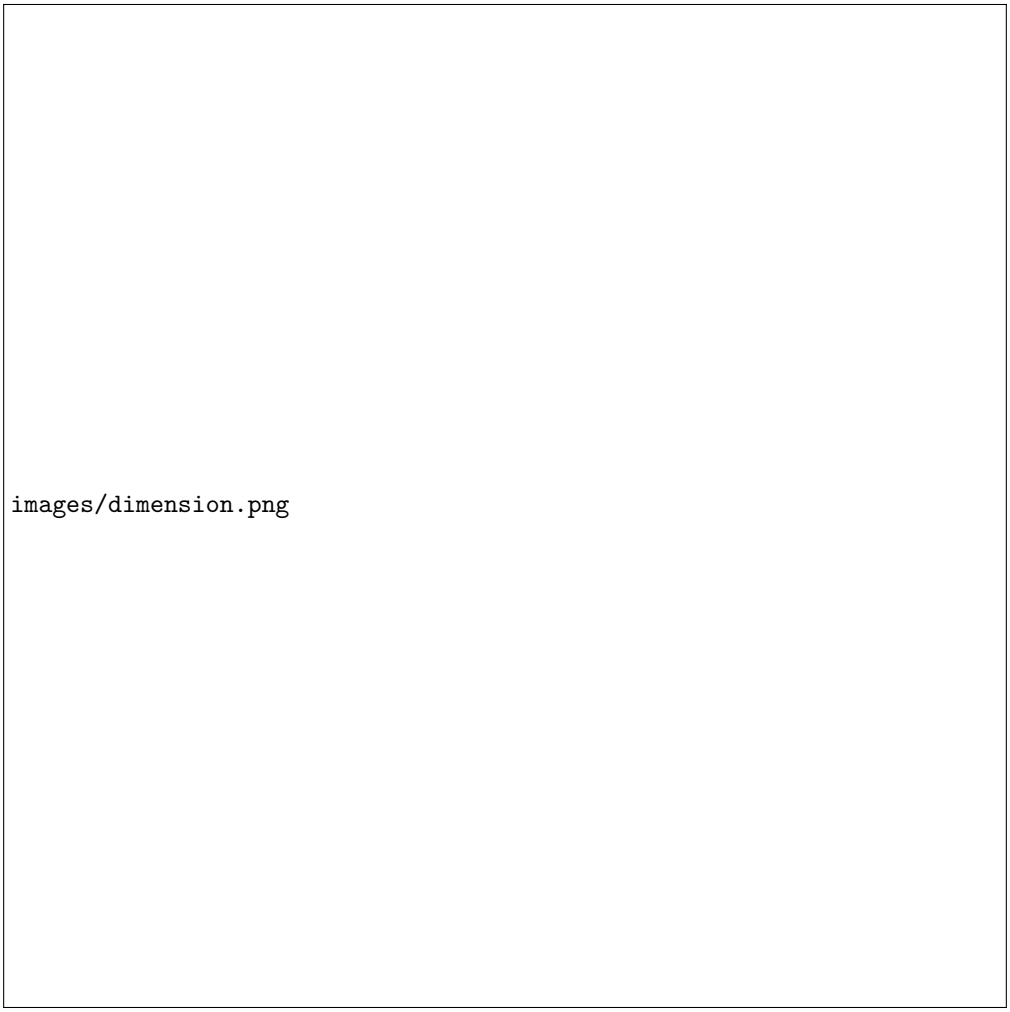
Pin & Connector Layout

Group	Availables pins	Suggested use
GPIO	D2 to D13	Sensors, actuators
UART	Tx and Rx	Serial communication
TouchPad	T1 to T11	Capacitive sensors for touch detection
Analogic	A0 to A8	12-bit (0–4095) resolution
SPI	Optional	Displays, additional memory

Block Diagram



Dimensions



Usage

- Arduino IDE (ESP32 board manager)
- PlatformIO (ESP32-S3 support)
- ESP-IDF toolchain
- MicroPython firmware
- CircuitPython (via UF2 bootloader)

Downloads

- Schematic PDF
- Board Dimensions DXF
- Pinout Diagram PNG

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