Touchdot S3 Development Board Product Brief

Compact ESP32-S3 mini microcontroller development board inspired by Lilypad. Ideal for IoT, control systems, and creative electronics projects.

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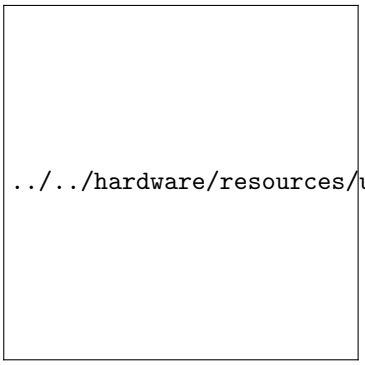
Introduction

The Unit Touchdot S3 is a compact ESP32-S3 Mini board designed for wearable electronics, IoT devices, educational projects, and smart automation. Its Lilypad-inspired, low-profile, sewable design makes it perfect for integrating into textiles and compact enclosures while providing advanced wireless and processing capabilities.

Equipped with 2.4 GHz Wi-Fi, Bluetooth 5.0, and a modern interface featuring a USB-C connector, onboard LiPo charging, and a QWIIC I²C port, the board supports rapid prototyping and creative development. It offers a robust platform bridging wearable design and embedded computing, tailored for students, makers, and engineers.



Functional Description

- Integrated ESP32-S3 module with 2.4 GHz Wi-Fi and Bluetooth 5.0
- USB-C connector for power and programming
- 3.3V power rail compatible with low-voltage peripherals
- Built-in QWIIC connector for easy I²C module integration
- Micro SD card slot using SPI interface
- Onboard NeoPixel (WS2812) RGB LED

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

Applications

- Wearable electronics
- IoT sensor nodes
- Smart home and automation
- Educational tools for STEM (science, technology, engineering, and mathematics)
- Environmental monitoring
- Creative electronics and art-tech installations
- Smart Home
- Health Care

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
UART	TX (GPIO17)	Serial transmit (TX)
UART	RX (GPIO16)	Serial receive (RX)
I2C	SDA (GPIO5)	I²C data line (QWIIC, OLED, sensors)
I2C	SCL (GPIO6)	I²C clock line
SPI	MOSI (GPIO9)	Data to SPI device
SPI	MISO (GPIO8)	Data from SPI device
SPI	SCK (GPIO13)	SPI clock signal
SPI	CS (GPIO21)	Chip select for SPI device
USB	D+ (GPIO20)	USB differential data (+)
USB	D (GPIO19)	USB differential data ()

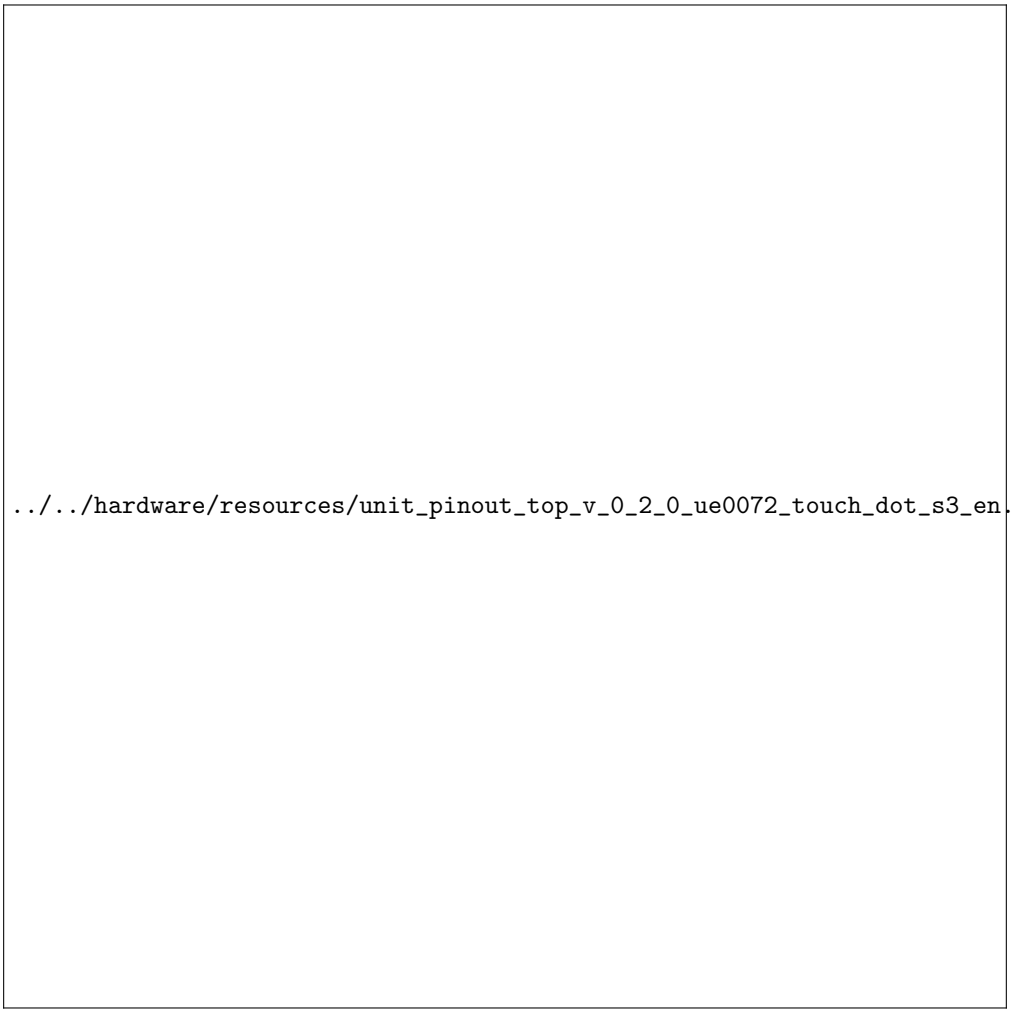
Supported Pins

Symbol	I/O	Description
USB -C	Input	USB-C connector for 5V power and data
Li-ion/LiPo	Input	Connector for LiPo battery power (3.7V - 4.2V)
VCC	Input	Main power supply (3.3V)
GND	Ground	Ground connection
IO	Bidirectional	General-purpose I/O pins
NeoPixel	Output GPIO25	WS2812 RGB LED data output

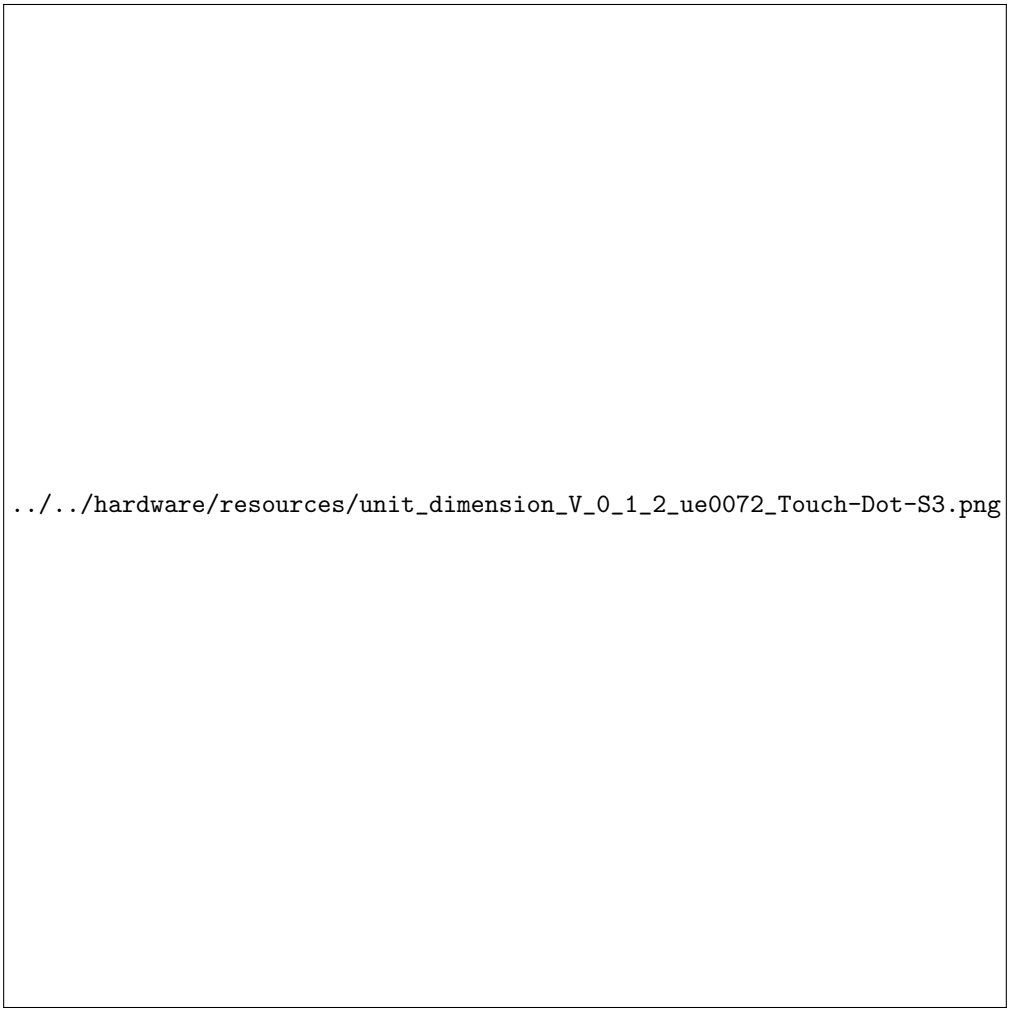
Pin & Connector Layout

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
Analog	A0 to A8	12-bit (0–4095) resolution
SPI	Optional	Displays, additional memory

Block Diagram



Dimensions



Usage

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

Downloads

- Schematic PDF
- Board Dimensions
- Pinout Diagram PNG

Purchase

- Buy from UNIT Electronics
- Open product page