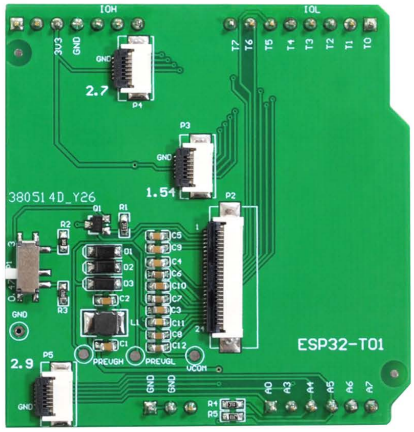
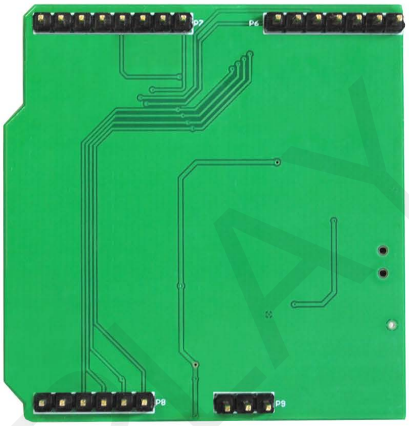
E-paper Display Adapter
ESP32-T01

GooDisplay®

Dalian Good Display Co., Ltd.

Product Specifications





Customer	**Standard**
Description	**E-paper Display Adapter**
Model Name	**ESP32-T01**
Date	**2023/03/02**
Revision	**1.0**

	Design Engineering		
	Approval	**Check**	**Design**
	刘宝玉	修燕凤	吴之良

No.18, Zhonghua West ST,Ganjingzi DST,Dalian,CHINA
Tel: +86-411-84619565
Email: info@good-display.com
Website: www.good-display.com

Contents

1.Overview

This ESP32-T01 adapter board is designed for SPI E-paper displays of 0.97-inch, 1.54-inch, 2.13-inch, 2.6-inch, 2.7-inch, 2.9-inch, 3.71-inch, 4.2-inch, 5.83-inch and 7.5-inch E-paper display in black/white and also three-color. It also supports 1.54-inch, 2.7-inch, and 2.9-inch E-paper display with touch screen and supports E-paper and touch working simultaneously so to provide with convenience for users in the early stage of development.

2. Structure Specification

Parameter	Specification
Model	ESP32-T01
Platform	Arduino
Dimension	53mm x 51mm
Power Supply	3.3V
Example Code	Available
Operating Temp.	-20 ℃ ~ 70 ℃
Main Function	Provide driving voltage for the E-paper display; Provide the E-paper display communication interface for the main control board;Provide convenience for users to learn and to use E-paper displays;
Additional Function	Driving Touch screen, E-paper display power consumption measurement, working status detection

3. Functions

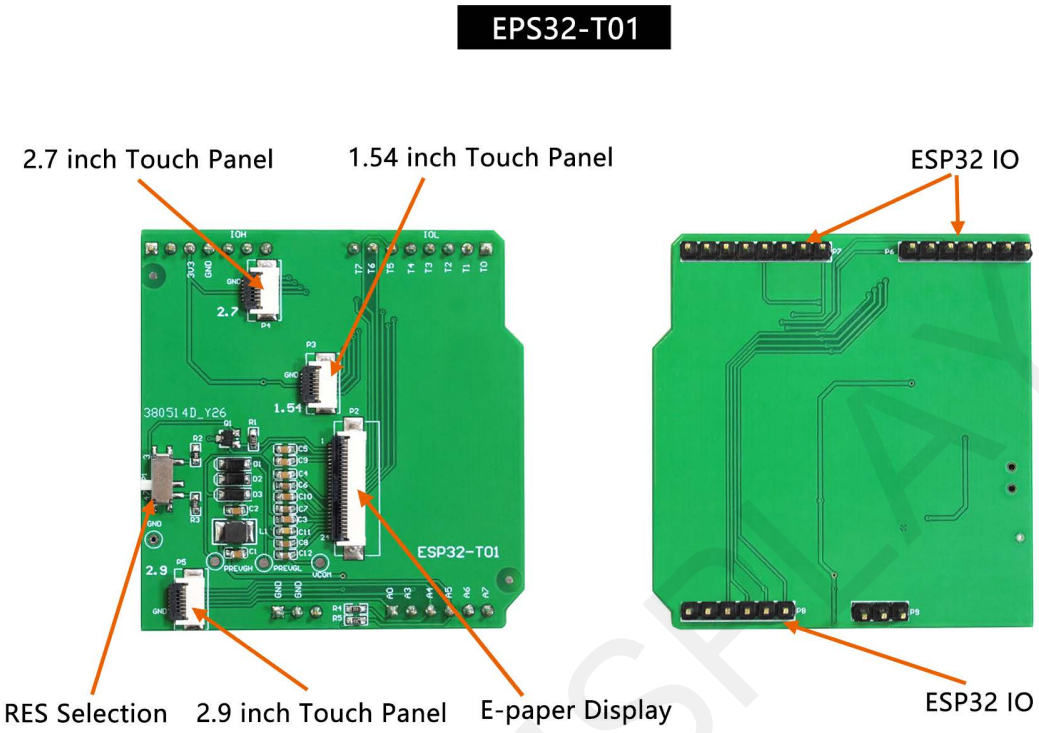


Figure 1 Adapter ESP32-T01

3.1. RESE Switch P1

The switch P1 is a selection switch for the matching resistance (RESE resistance) of the current feedback part of the peripheral boost circuit of the E-paper. Different types of E-paper need to be matched with different RESE resistors. Choosing the wrong RESE resistor will cause the E-paper to fail to refresh.

1）When RESE is set to 0.47 ： Applicable to ULTRACHIP series driver ICs (starting with UC), fiti power series driver ICs (starting with JD)

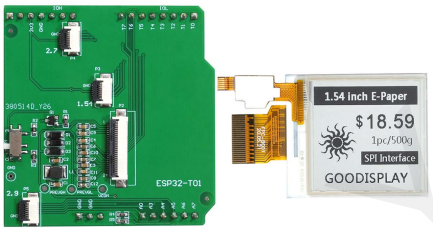
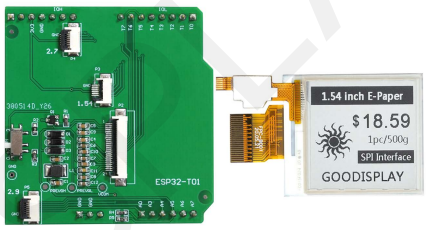
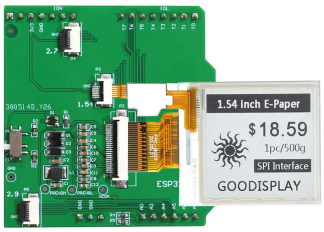
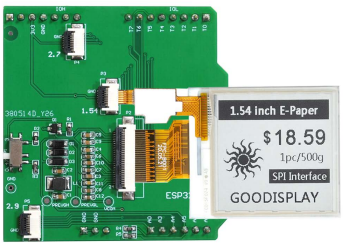
1.54inchGDEW0154T8D、GDEW0154I9FD、GDEW0154M09、GDEW0154M10
2.13inch：GDEW0213T5D、GDEW0213I5FD、GDEW0213M21
2.6inch：GDEW026M01
2.7inch：GDEW027W3
2.9inch：GDEW029M06、GDEW029Z13
3.71inch：GDEW0371W7、GDEY037T03、GDEY037Z03
4.2inch：GDEW042T2、GDEQ042Z21
5.83inch：GDEW0583T8、GDEW0583Z83
7.5inch：GDEY075T7、GDEY075Z08

2）When RESE is set to3：Applicable to Solomon series driver ICs (starting with SSD)

1.54inch：GDEY0154D67、GDEY0154D90LT、GDEY0154Z90、GDEY0154T94
2.13inch：GDEY213B74、GDEY213B75、GDEY0213D32LT
2.66inch：GDEY0266T90、GDEY0266Z90
2.7inch：GDEY027T91
2.9inch：GDEY029T94
4.2inch：GDEY042T91

3.2. How to connect E-Paper Display

The E-paper is connected to the adapter through this port. Put the gold finger of the E-paper FPC upwards and insert it into the P2 connector as shown in Figure 2.

1.Getting ready the adapter and the display. EPD facing up as shown in the right.	
2.Open FPC Connectors	
3.Insert the gold fingers of EPD and touch screen to the connectors	
4.Close connectors	

3.3. How to connect Touch Screen

This adapter board can connect to a touch screen, as shown in Figure 4, the 1.54-inch touch screen to P3, the 2.7-inch to P4, and the 2.9-inch to P5.

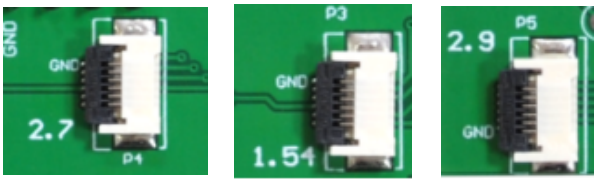


Figure 3 : Touch Screen Interfaces

3.4. Voltage Test Points

This adapter board has test points for measurement.

The test points include PREVGH, PREVGL, VCOM, and GND.

The functions of each test point are as follows:

1) PREVGH: Boost circuit positive high voltage test point.

2) PREVGL: Negative high voltage test point of the boost circuit.

3) VCOM: E-paper common terminal voltage test point.

4) GND: Negative pole of power supply (common terminal of test point voltage).

4. FAQs of E-paper Driver Circuit Design

4.1. Self-made Driver Board Cannot Drive E-paper

First measure the voltage of PREVGH and PREVGL to see if the boost is successful. If the voltage boost is not successful, please check whether the voltage boost part of the driving schematic diagram is correct, whether the components meet the requirements (ensure that the voltage resistance of the boost capacitor is sufficient, if the voltage resistance is not enough, the capacitor will burn out during the voltage boost), and whether the welding is normal , the most prone to problems is the MOS tube. If the boost voltage is normal, please check whether there is any solder joint in the FPC socket, etc., and finally check the software part.

4.2. E-paper Drive Circuit Inductor Selection

It is recommended to choose a winding inductance of 10uH 1A.

4.3. E-paper Drive Circuit MOS Tube selection

It is recommended to use Si1304BDL or Si1308EDL.

If these two are really hard to buy, AO3400 is a good substitute.

4.4 . Diode Selection For E-paper Drive Circuit

It is necessary to select a Schottky diode with parameters equivalent to MBR0530, and the switching frequency must meet the actual requirements.

4.5. E-paper FPC Connector Selection

Choose the 24PIN FPC connector with upper contact or upper and lower contacts, and the pin spacing is 0.5mm.

4.6. High Current in E-paper Deep Sleep Mode

The high current in deep sleep mode may be caused by the large capacitor in the boost part.

Note: The capacitance parameters in the ESP32-T01 adapter board may differ from those in the e-paper specification, so when designing according to this circuit principle, users need to strictly refer to the component parameters in the specification.