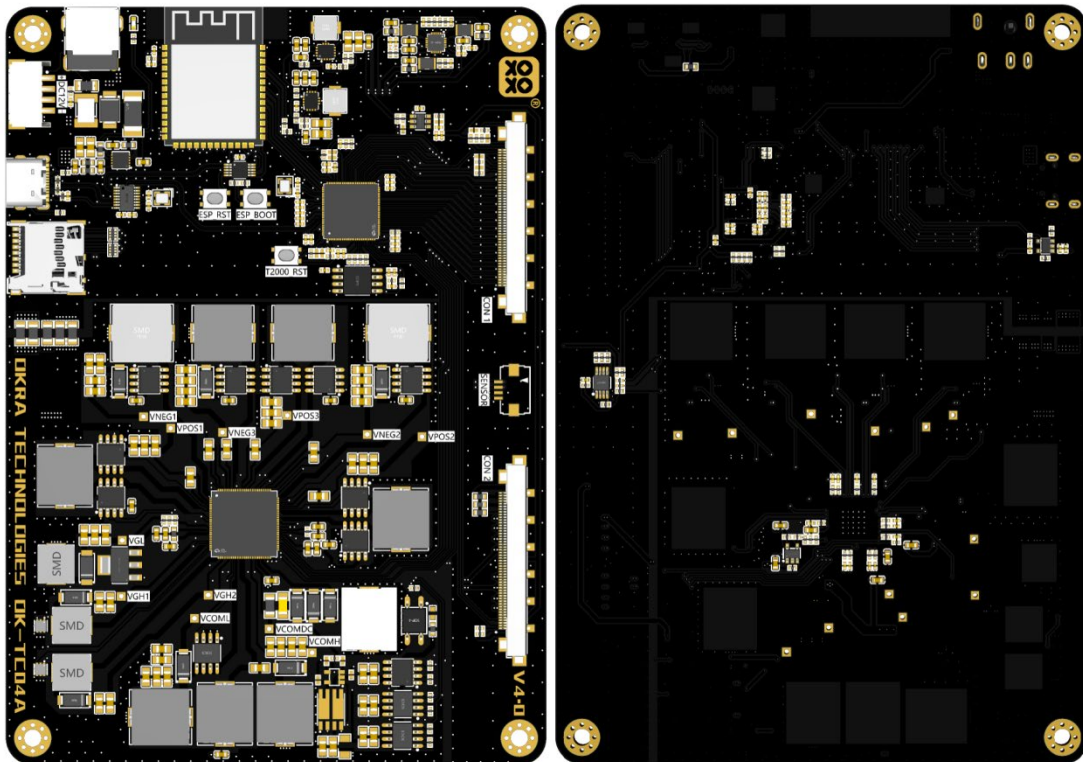


# OK-TC04A V4.0 Specifications

## Foreword

- OK-TC04A-T2000 is an evaluation board designed and developed by [Shanghai OKRA Technologies CO., LTD.] (<https://www.okratechnologies.com>) specifically for large-size mini-LVDS interface E-paper displays. It can also be used as a finished motherboard or T-con board.



## Product Features

- Based on E Ink T2000 ink screen timing control chip.
- Onboard complete E-paper display power supply module, supporting six source drive voltages, three gate drive voltages, and three VCOM voltages. Fully supports black and white, Kaleido, Gallery, Spectra6 E-paper display types, as well as DCVCOM and ACVCOM scenario.
- Onboard OCP and OVP protection circuits protect the power supply system and the driver board itself from surges.
- Onboard USB, SPI, MIPI and other host computer interfaces, capable of adapting to various usage scenarios.
- High-quality four-layer PCB immersion gold process, can easily cope with harsh use environment and ensure high reliability.
- New features in versions V3.1 and V4.0: Onboard temperature sensor, eliminating the need for an external sensor board.
- New features in version V4.0:
  - Onboard ESP32S3-WROOM-1-N16R8 high-capacity module, usable as a motherboard.
  - Onboard USB hub chip, allowing a host computer to simultaneously connect to the T2000 and ESP32S3's native USB port and debug serial port via USB interface.
  - Onboard TF card interface for storing data or images on the ESP32S3.

## E Ink T2000 Specifications

Functions	T2000
Support Maximum Panel Resolution	3200x2400@120Hz, 3840x2160@120Hz
Package Size	10x10mm QFN104
Memory Size	256/512 M b with SiP
Sleep Power	2.2mW
Gallery/Kaleido Rendering	yes
mini-LVDS	12 pairs
TTL Data Bus	8/16/24
Real-Time image copy	yes
USB	USB 3.0 / 2.0
SPI	Standard SPI / Dual / Quad SPI. 1 host & 1 device
I2C	up to 1Mbps. 1 host & 1 device
MIPI-DSI	4 lanes. up to 1Gbps/lanes, RGB format supported.
GPIO	Used for Power Control and Status reading.

## Supported EPD model

- 25.3inch: BW, Kaleido, Gallery(EOL), Spectra 6
- 28inch: BW, Kaleido, Gallery(EOL), Spectra 6
- 31.2 BW
- 42 BW
- Other EPDs with mini-LVDS interface

## IO and buttons

- OK-TC04A V4.0 motherboard features the T2000's Reset button and the ESP32S3's Reset and Boot buttons for easy debugging and firmware flashing.

## Power Supply

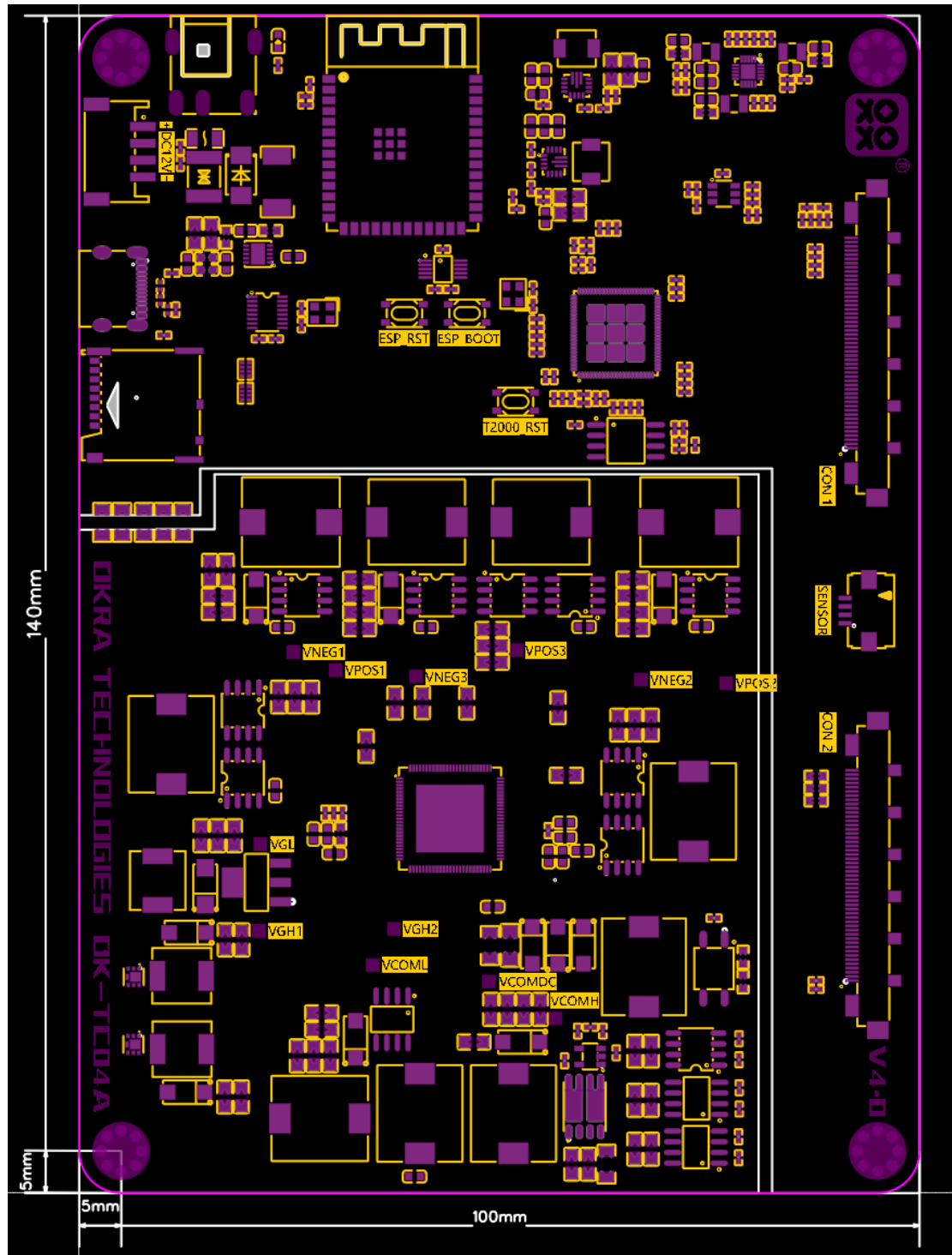
- OK-TC04A V4.0 is powered by a 12V DC interface (5.5x2.1 specification), and the peak current during screen refresh is  $<2A@12V$ .
- The 5V power supply of the USB C port is not connected to the system.

## Host computer adaptation

Platform	OS	Contents Provided	Supported Interface	Remark
X86	Windows 10 +	Demo AP executable.	USB	for demo only
X86/ARM	Linux	Source Code & Libraries	USB	
SOC	RTOS	Source Code & Libraries	SPI	Slide Show Firmware

## Outline Dimensions

OK-TC04A V4.0 has dimensions of 140x100mm, a board thickness of 1.6mm, and M3 mounting holes. Its dimensions and mounting holes are compatible with all older versions of OK-TC04A and OK-DEV03B V3.1 and later versions.



## **Design and quality**

- Onboard OCP and OVP circuits fully protect the electrical safety of core components and display.
- Four-layer board design
- Plug hole, immersion gold process
- All black PCB
- TG155 sheet

## **Shipping list**

- OK-TC04A-T2000 Driver board (the firmware of the corresponding EPD model can be burned as needed)
- 12V 2A power supply
- FFC cable x2