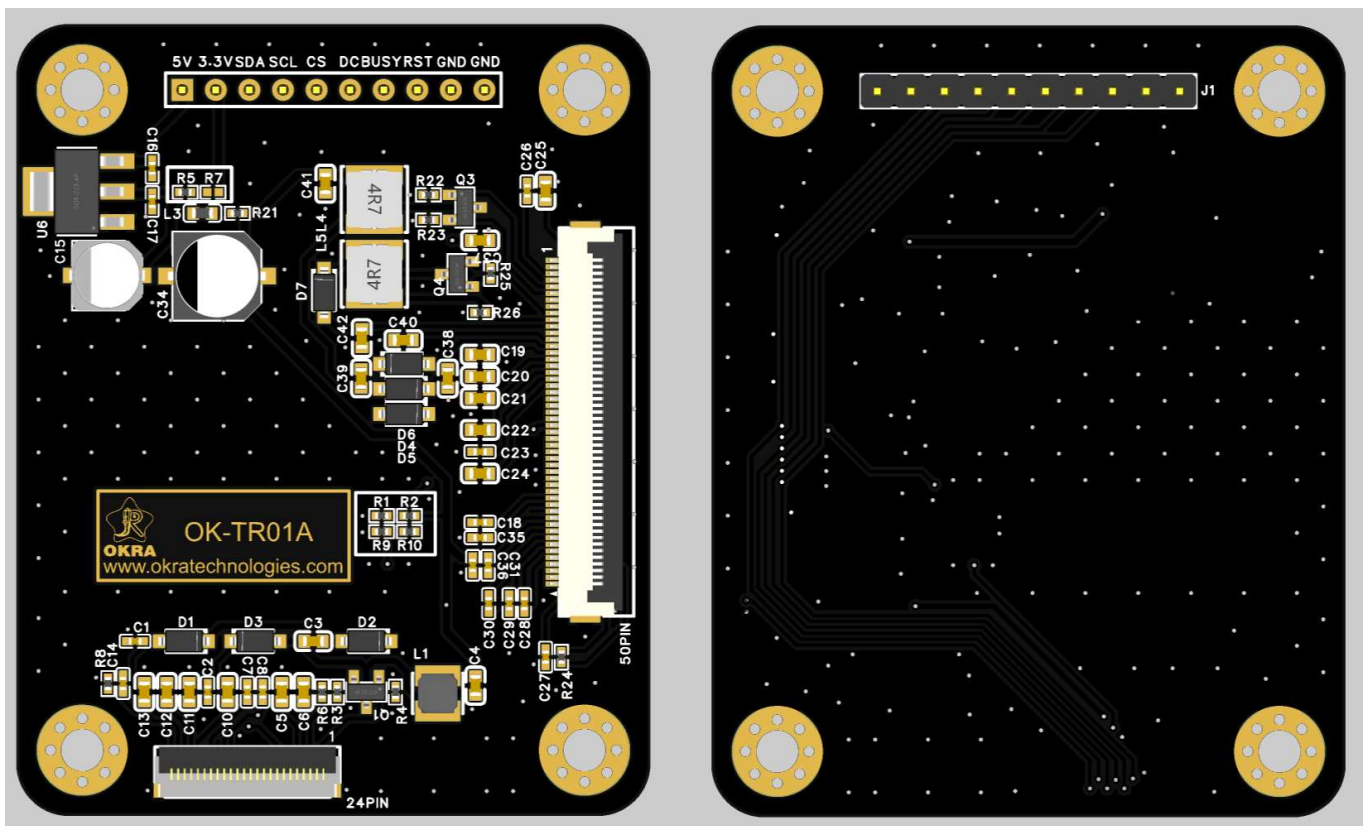


OK-TR01A User's Manual

Foreword

- OK-TR01A is an adapter board specially developed by [Shanghai OKRA Technologies CO.,LTD.] (<https://www.okratechnologies.com/cn/>) for the application of small-sized SPI interface E-paper display(EPD).
- OK-TR01A can be seamlessly adapted to OKRA OK-DEV01A development board, and can also be connected to mainstream development boards and development platforms such as Raspberry Pi, Arduino, ESP32 series, and STM32 through Dupont cables.

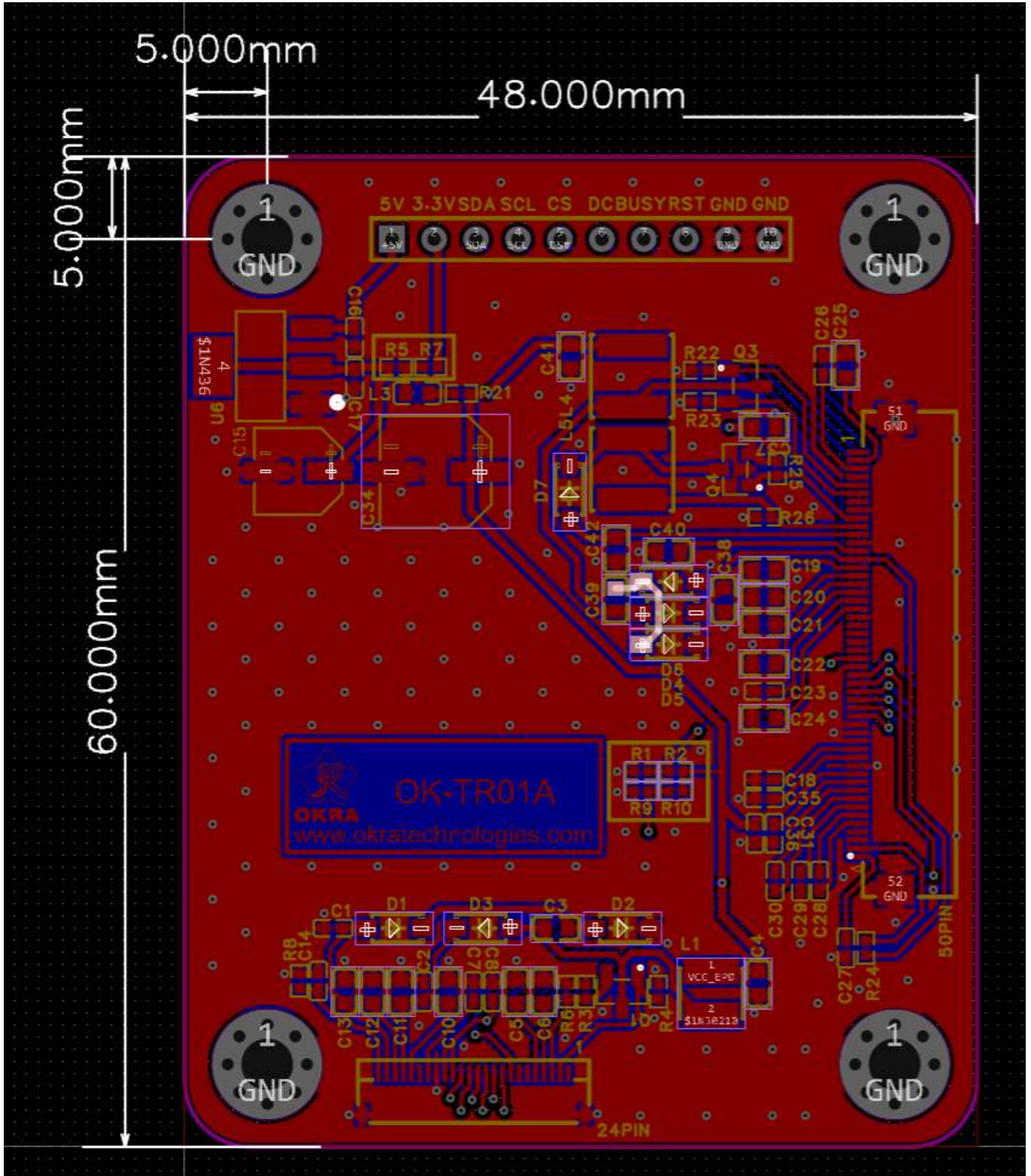


Product Features

- 24pin 0.5mm pitch general SPI interface, compatible with EPD size: 1.54"~7.5" and all 24Pin SPI interface black/white/three-color ink screens, and 4.01", 5.65" seven-color EPD.
- 50Pin 0.5mm pitch general SPI interface, compatible with EPD size: 4.37-inch four-color, 7.3-inch four-color/seven-color EPD.
- 3.3V/5V power supply is optional and can be switched by resistors. The default power supply is 5V, and the IO level is still 3.3V.
- 3-wire/4-wire SPI optional, switchable by resistors. The default is 4-wire SPI.
- The 10Pin 2.54mm pitch Dupont interface is the drive signal and power supply input interface of the ink screen, which can be directly plugged into the OK-DEV01A development board.

Dimension

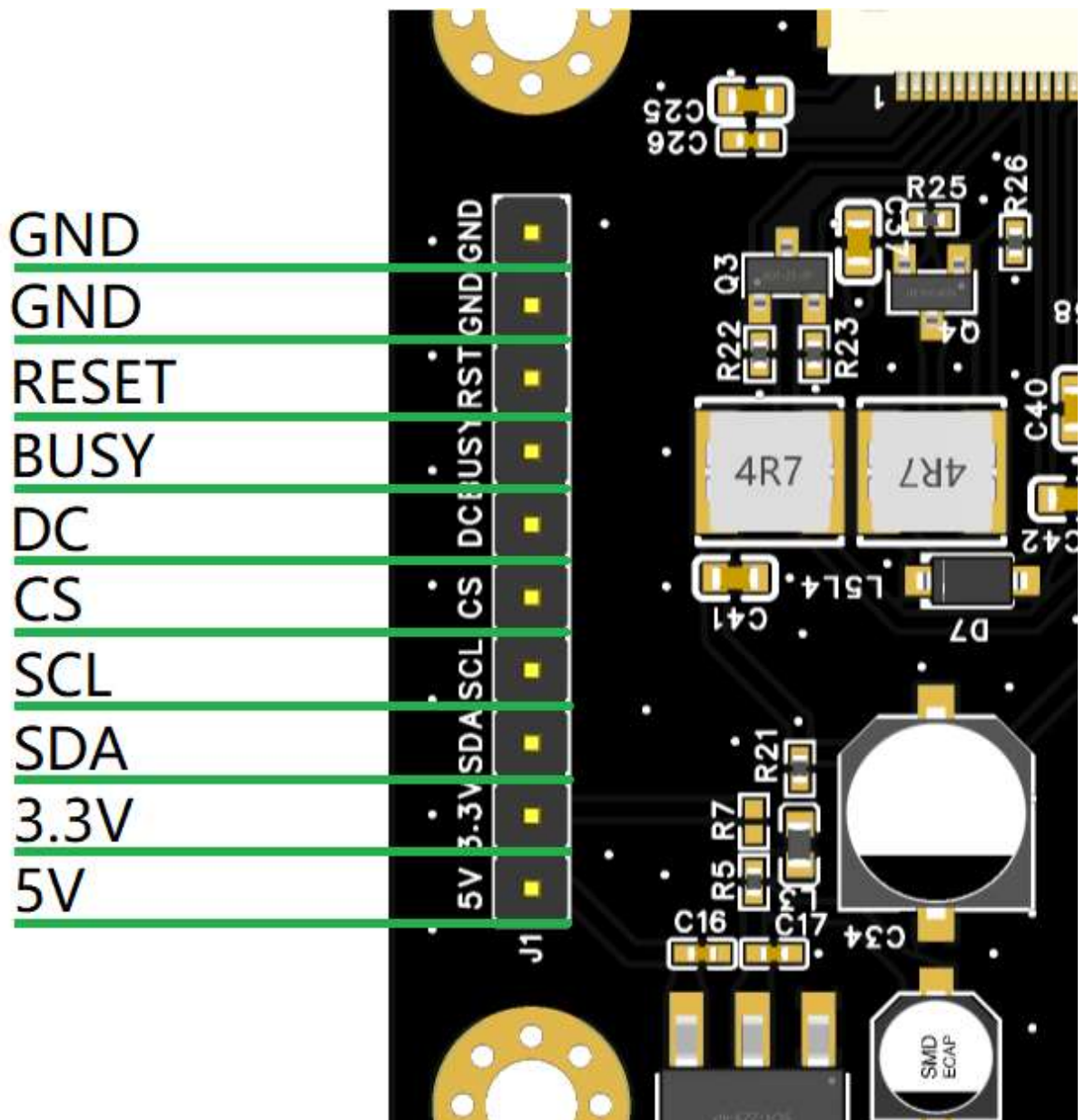
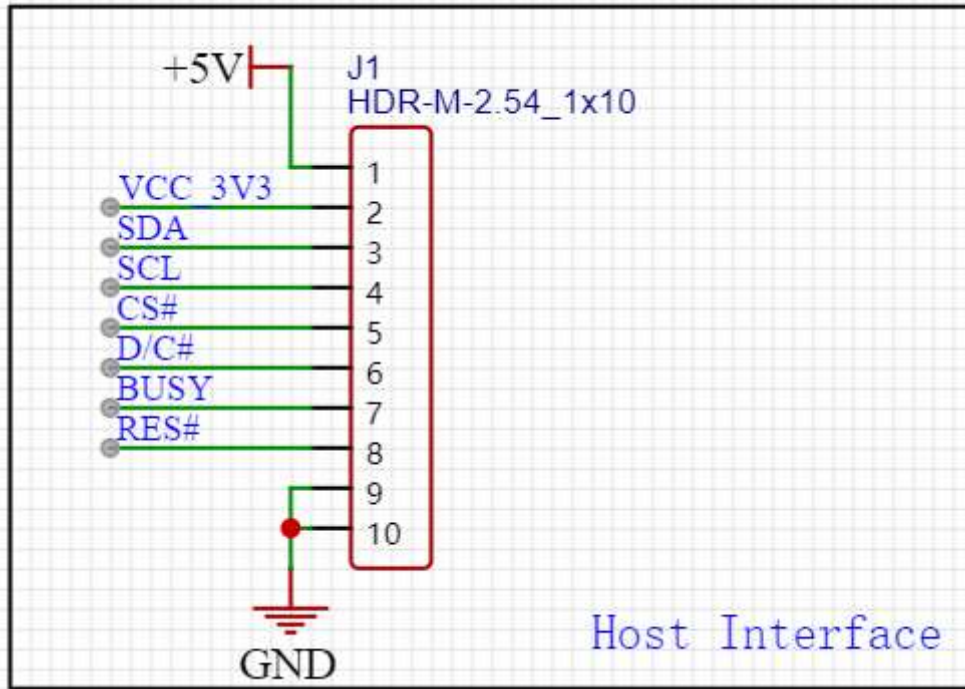
The outline dimension of OK-TR01A is 48x60mm.



Instructions

- Interface definition

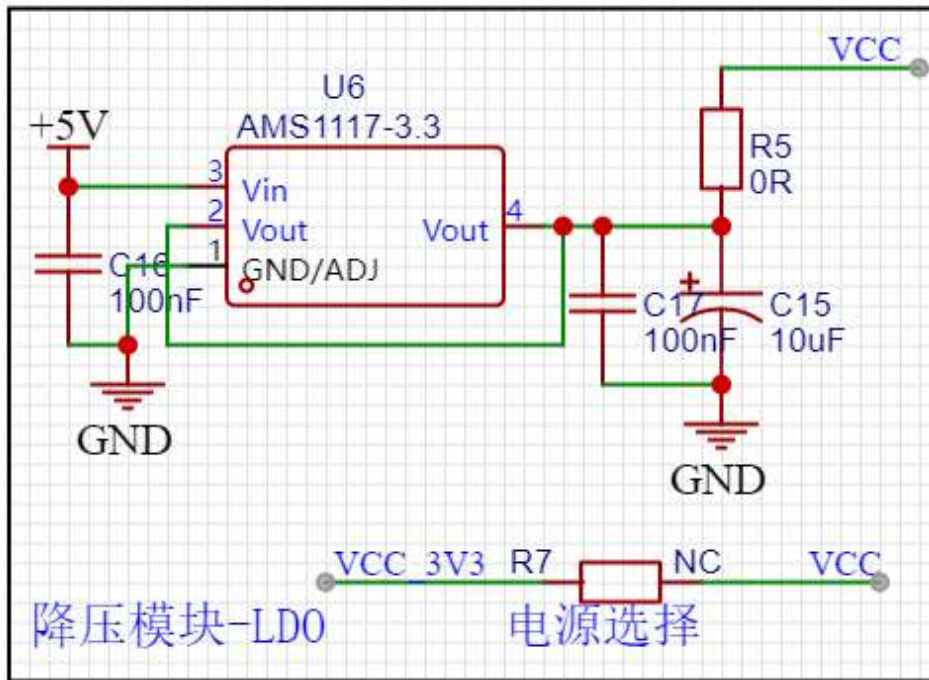
The J1 port of OK-TR01A is the driver interface of the EPD, including data, control signals and power supply pins. Its definition is as follows:



- 5V/3.3V power switching

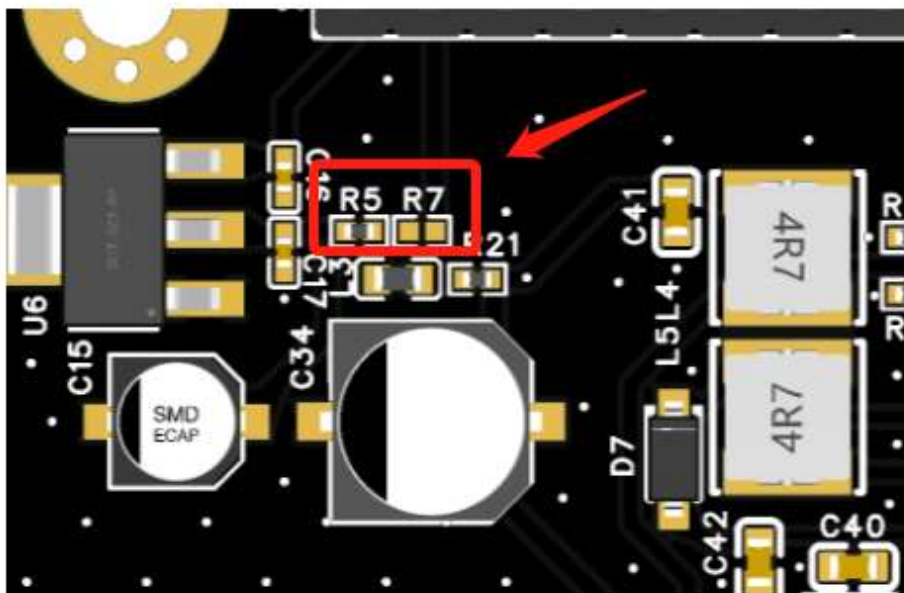
OK-TR01A provides 5V input by default, and then the AMS1117-3.3 on the board is stepped down to 3.3V to supply power to the EPD. The independent 3.3V power supply helps to drive 7.3-inch N-Color (N-Color) screen, four-color (E5) screen, and 7.5-inch three-color (E4) screen. This type of screen has a large instantaneous power consumption, so this method is used for power supply.

If users need to test the power consumption of the whole machine, they can also switch the power supply of the adapter board to 3.3V input. At this time, the 3.3V will be powered by the development board OK-DEV01A connected to the adapter board or the 3.3V power supply of other user motherboards. The switching method is shown in the figure:



5V供电：R5上件0欧电阻，R7NC

3.3V供电：R7上件0欧电阻，R5NC



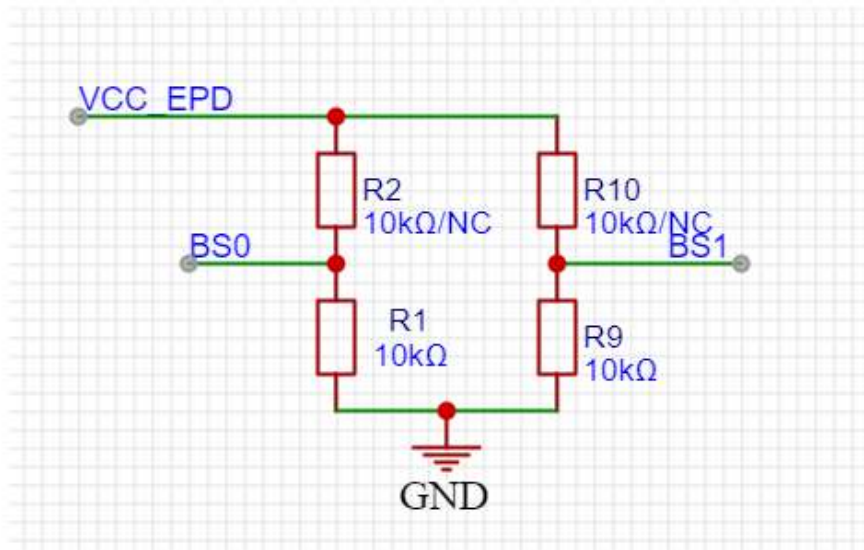
- Three-wire/four-wire SPI interface switching

OK-TR01A adopts four-wire SPI interface by default. In this interface mode, the DC port is used to switch the Command and Data modes in the communication sequence.

This mode is recommended when the main control IO port is sufficient. It can conveniently use the hardware SPI controller that comes with the MCU to transmit data, which can effectively improve the transmission speed.

If the number of main control IO ports is in short supply, etc., a three-wire SPI interface can be used. In this mode, the control of DC is controlled by the 9th bit of SPI, and the data length is 9 bits.

The switching method of three-wire and four-wire SPI is shown in the figure below:



50Pin接口

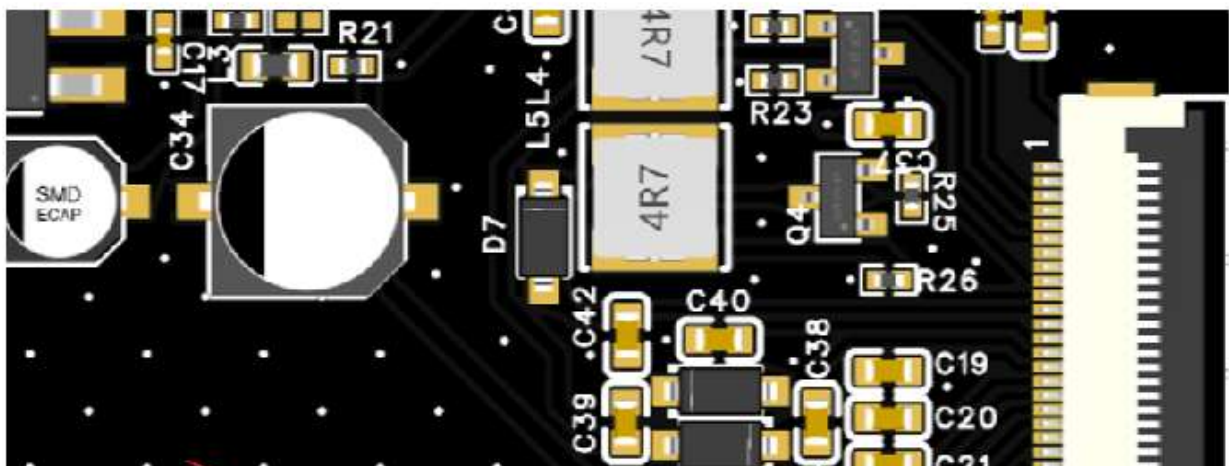
四线模式：R1上件10KΩ电阻，R2 NC

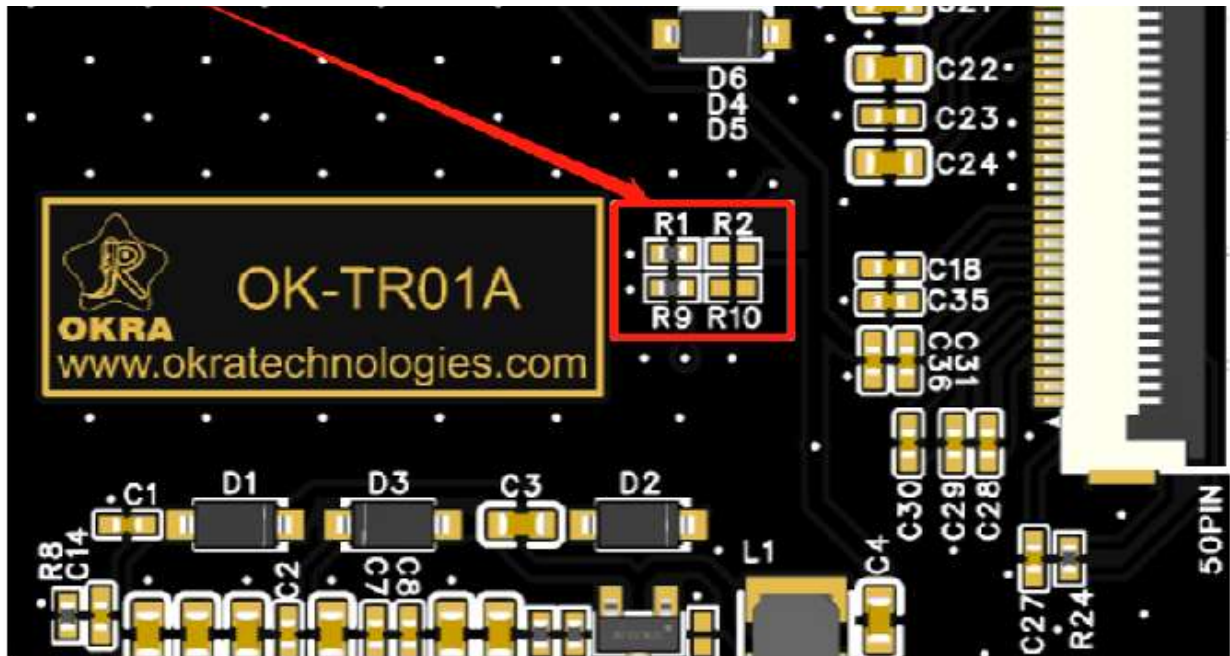
三线模式：R2上件10KΩ电阻，R1 NC

24Pin接口

四线模式：R9上件10KΩ电阻，R10 NC

三线模式：R10上件10KΩ电阻，R9 NC

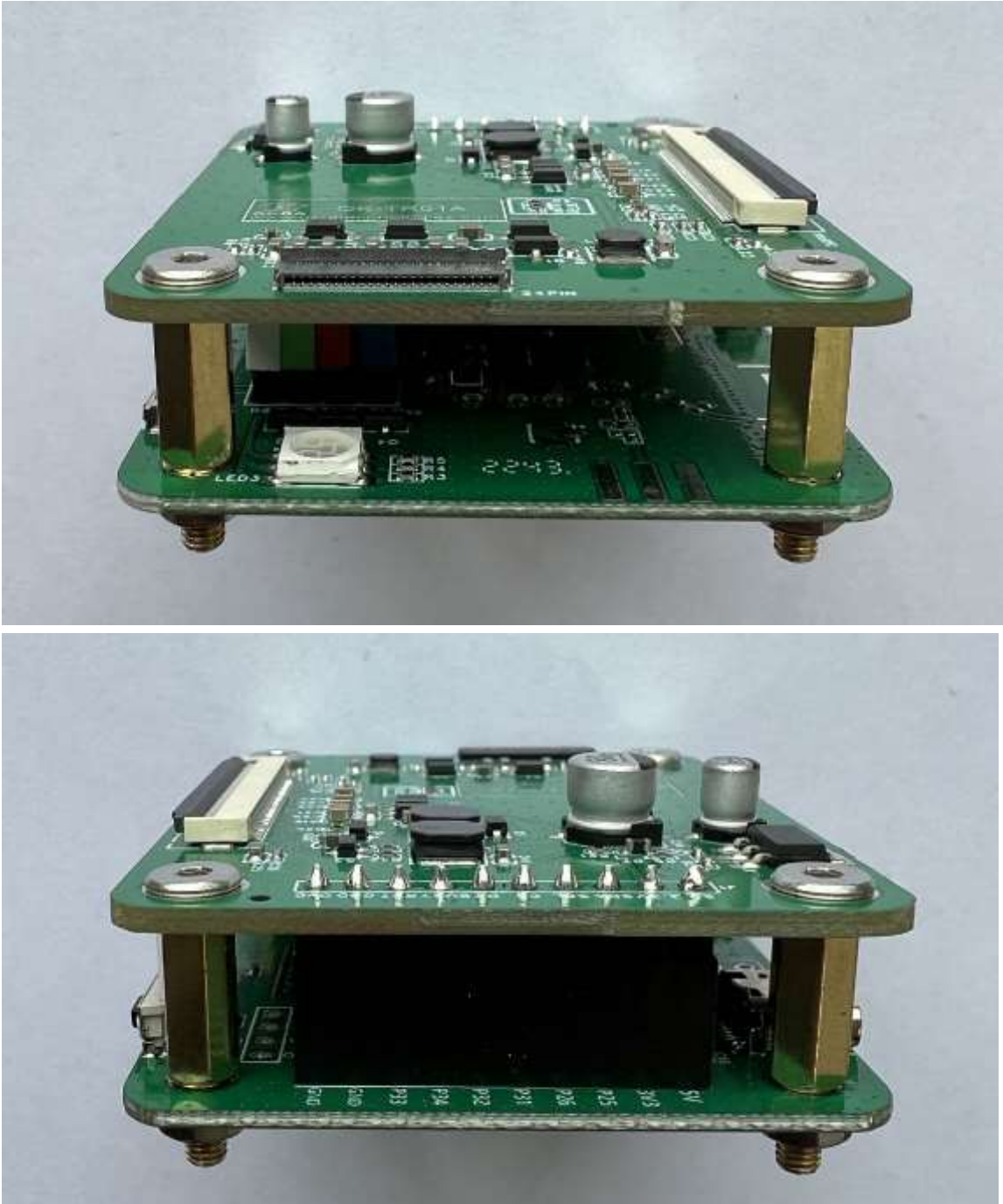




- Connect OK-DEV01A development board
 OK-TR01A can be used in-line with our OK-DEV01A development board. The pin definitions are shown in the following table:

OK-DEV01A J8	OK-TR01A J1
5V	5V
3.3V	3.3V
P25	SDA
P26	SCL
P31	CS#
P32	DC
P34	BUSY
P33	RESET
GND	GND
GND	GND

The effect after connection is shown in the figure below:



Relevant information

- [schematic diagram](#)