



# IMX8MP-SOM-xGB-IND

## User Manual

**document revision 3.0**

**[www.olimex.com](http://www.olimex.com)**

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# iMX8MP-SOM-4GB-IND board features

[iMX8MP-SOM-4GB-IND](#) exposes all MIMX8ML8CVNKZAB GPIOs and features in a very compact format. It takes care for power supply and high speed memory signals complexities.

- Main chip: i.MX 8M Plus – MIMX8ML8CVNKZAB – Quad core Cortex-A53@1600Mhz + Arm Cortex-M7@800 Mhz
- 4GB LPDDR4 RAM
- PMIC PCA9450
- 24 Mhz crystal
- 32.768 kHz crystal
- EEPROM memory (for Linux configuration or settings)
- Power LED
- User LED
- 5 x 40 pin + 1 x 20 pin total 220 pin connectors with 1.27 mm/0.05" step
- LVDS, 2 x MIPI CSI, MIPI DSI ribbon connectors on top
- Extended operating temperature – from -20°C to +85°C
- Dimensions: (70 x 43)mm
- 4 holes for mounting
- Open source hardware design, all KiCAD design files available for download

Compatible with [iMX8MP-SOM-EVB-IND](#) – iMX8MP-SOM-4GB-IND can be placed on top of expansion board for easier R&D and prototyping.

# MIMX8ML8CVNKZAB chip features

The main chip has the following features:

- MIMX8ML8CVNKZAB Quad core Cortex-A53 @1600Mhz + Arm Cortex-M7 @800 Mhz
- 512KB Cache
- Vivante GC520L, Vivante GC7000UL
- HDMI HD1080p60 H.264, HD1080p60 H.265, VP8 video codec, VP9 video codec
- MIPI-DSI
- LVDS 4/8 lanes
- NPU 2.3 TOPS
- 2 x Gigabit Ethernet (1 x TSN)
- 2 x MIPI-CSI camera
- 1 x ISP camera
- 2 x USB3 with OTG
- 1 x PCIe 3.0
- 2 x CAN FD
- 3 x SPI
- 5 x I2C
- 3 x SDIO eMMC 5.1
- 4 x UART 5Mbit
- 4 x PWM
- Audio: ASRC, HiFi 4 DSP, SAI/I2S, eARC

# iMX8MP-SOM-EVB-IND board of peripherals features

[iMX8MP-SOM-EVB-IND](#) can be placed on top of expansion board for easier R&D and prototyping. It has the following features:

- iMX8MP-SOM matching connectors
- Two Gigabit Ethernet connectors
- Two CAN transceivers
- HDMI output connector
- Power jack for 5V DC
- Two serial debug UARTs (for A53 and M7)
- Micro SD-card connector
- Flash module connector
- Two USB 3.0 hosts
- PCI Express 3.0 M.2 expansion slot (2280) for nVME
- Headphone 3.5mm connector
- Microphone 3.5 mm connector
- Reset button
- PWR button
- UEXT connector
- Two GPIO connectors at 0.1" step
- Optional ARM JTAG connector
- Boot slide switch
- Open-hardware design, design made with KiCAD
- Industrial grade temperature range: (-45+85)C
- Dimensions: (155 x 102)mm

## Order codes for iMX8MP-SOM and accessories

### [iMX8MP-SOM-EVB](#)

be

Expansion board for easy evaluation of iMX8MP-SOM which can be used as reference design; requires SOM module iMX8MP-SOM-4GB-IND

### [iMX8MP-SOM-4GB-IND](#)

Main module with i.MX8 quad-core MIMX8ML8CVNKZAB, 4GB LPDDR4, EEPROM, PMIC

If you have the EVB board you can attach extra peripherals:

### [MICRO-SD-16GB-CLASS10](#)

Blank 16GB microSD card

### [USB-CARD-READER](#)

USB card reader and writer

### [SY1505E](#)

Power adapter 5V 3A

### [SY2005E](#)

Power adapter 5V 5A

### [USB-SERIAL-F](#)

Serial debug cable for console log

### [Flash-e32Gs16M](#)

Plug-and-play eMMC and SPI memory expansion module

### [CABLE-HDMI-50CM](#)

HDMI cable

### [USB-KEYBOARD-PS2](#)

Mini keyboard

### [PWR-CABLE](#)

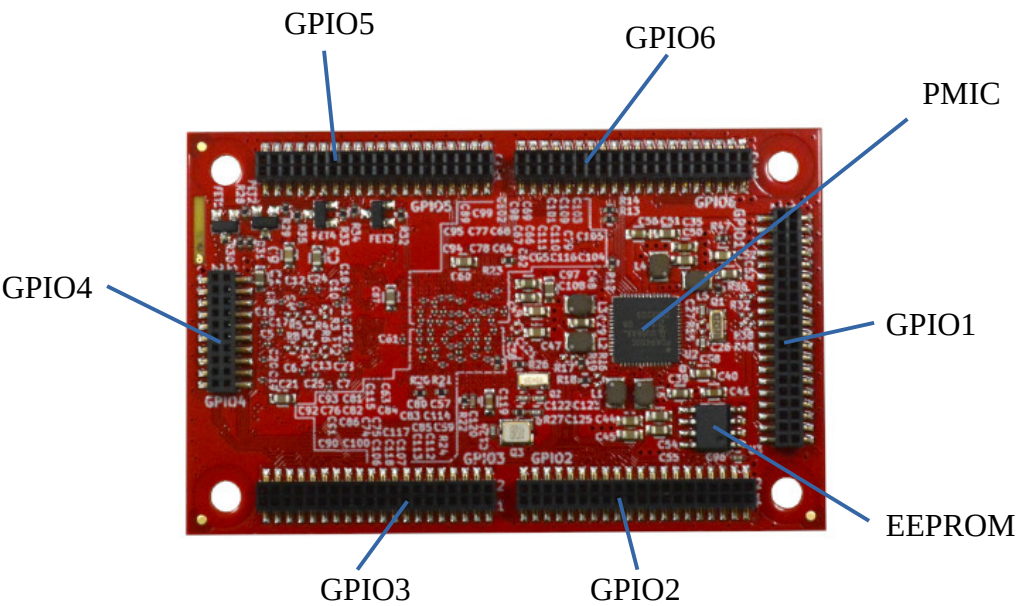
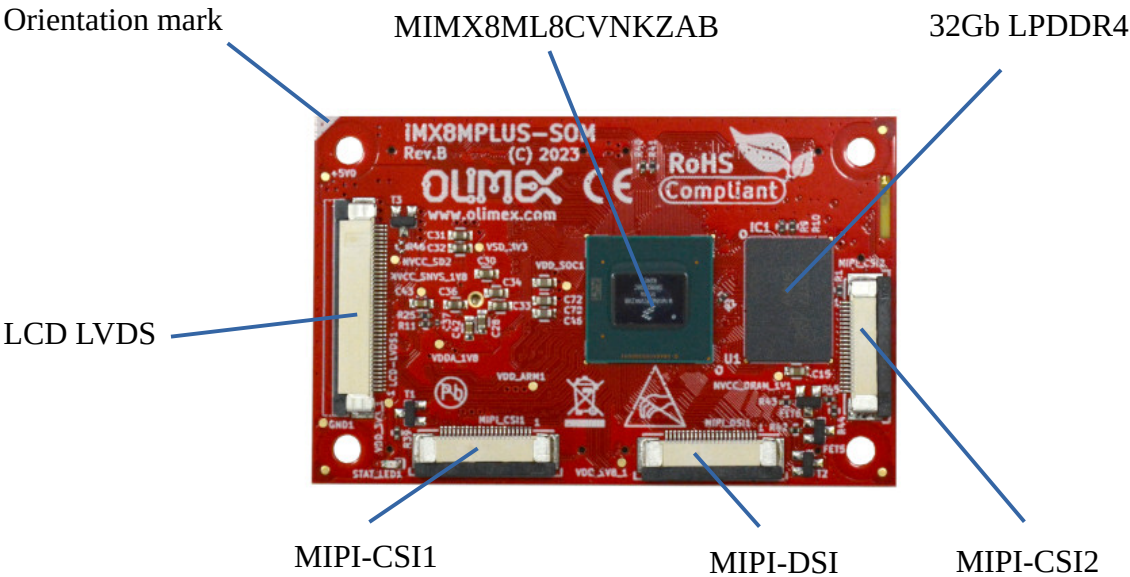
Cable with free leads fitting the Olimex barrel jacks

### [UEXT modules](#)

There are temperature, humidity, pressure, magnetic field, light sensors. Modules with LCDs, LED matrix, Relays, Bluetooth, Zigbee, WiFi, GSM, GPS, RFID, RTC, EKG, sensors and etc.

# HARDWARE

## iMX8MP-SOM layout



## **iMX8MP-SOM schematics**

[iMX8MP-SOM-4GB-IND](#) latest schematic is at our GitHub.

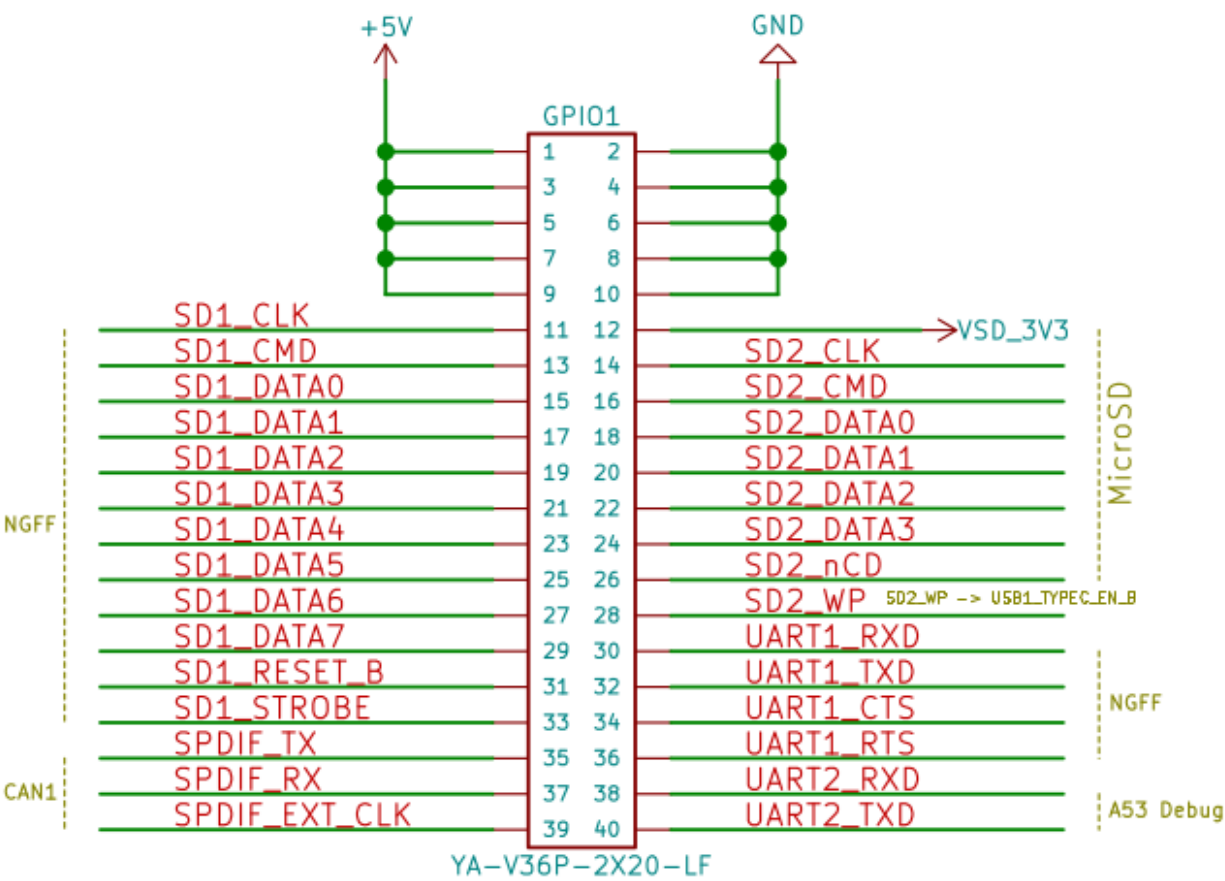
Hardware sources and more can also be found here:

<https://github.com/OLIMEX/iMX8MP-SOM/tree/main/HARDWARE>

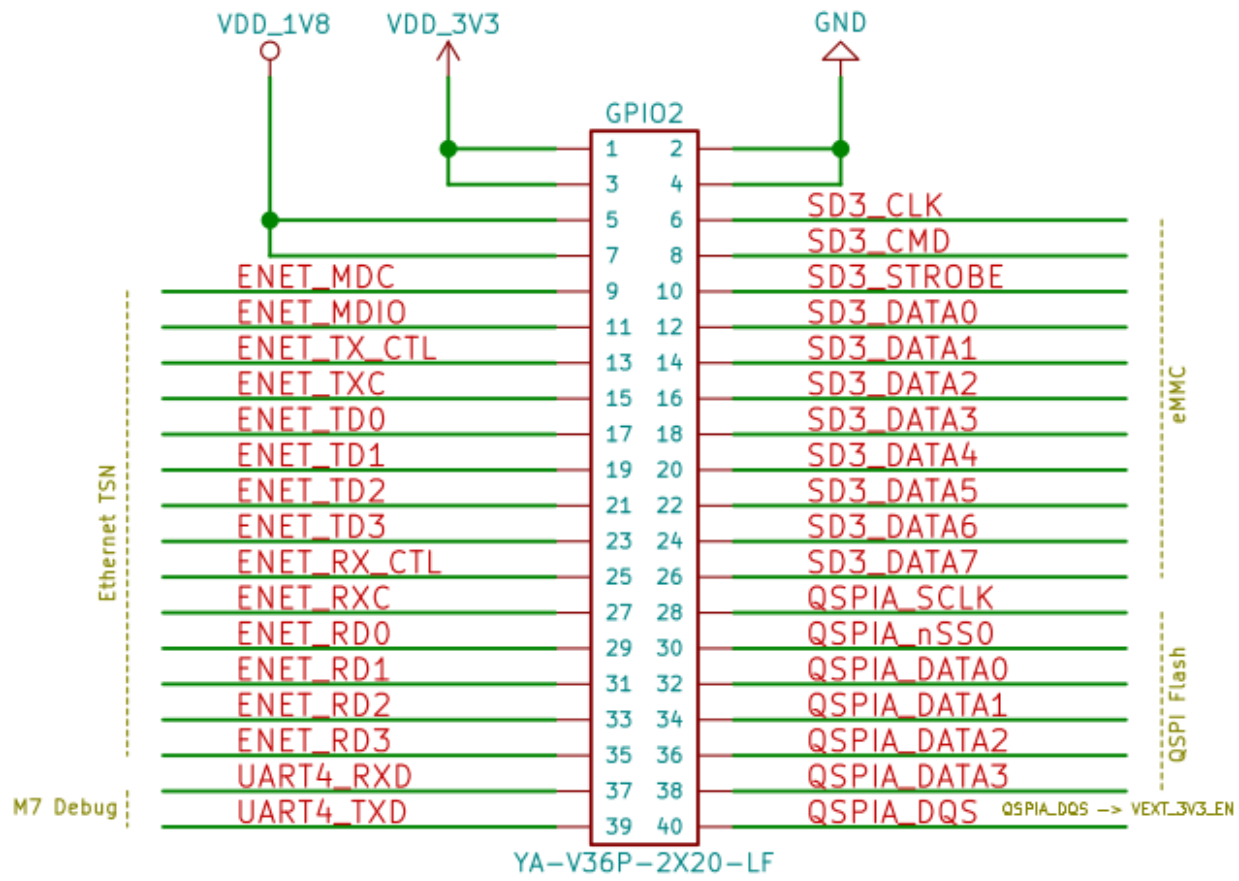


# iMX8MP-SOM connectors

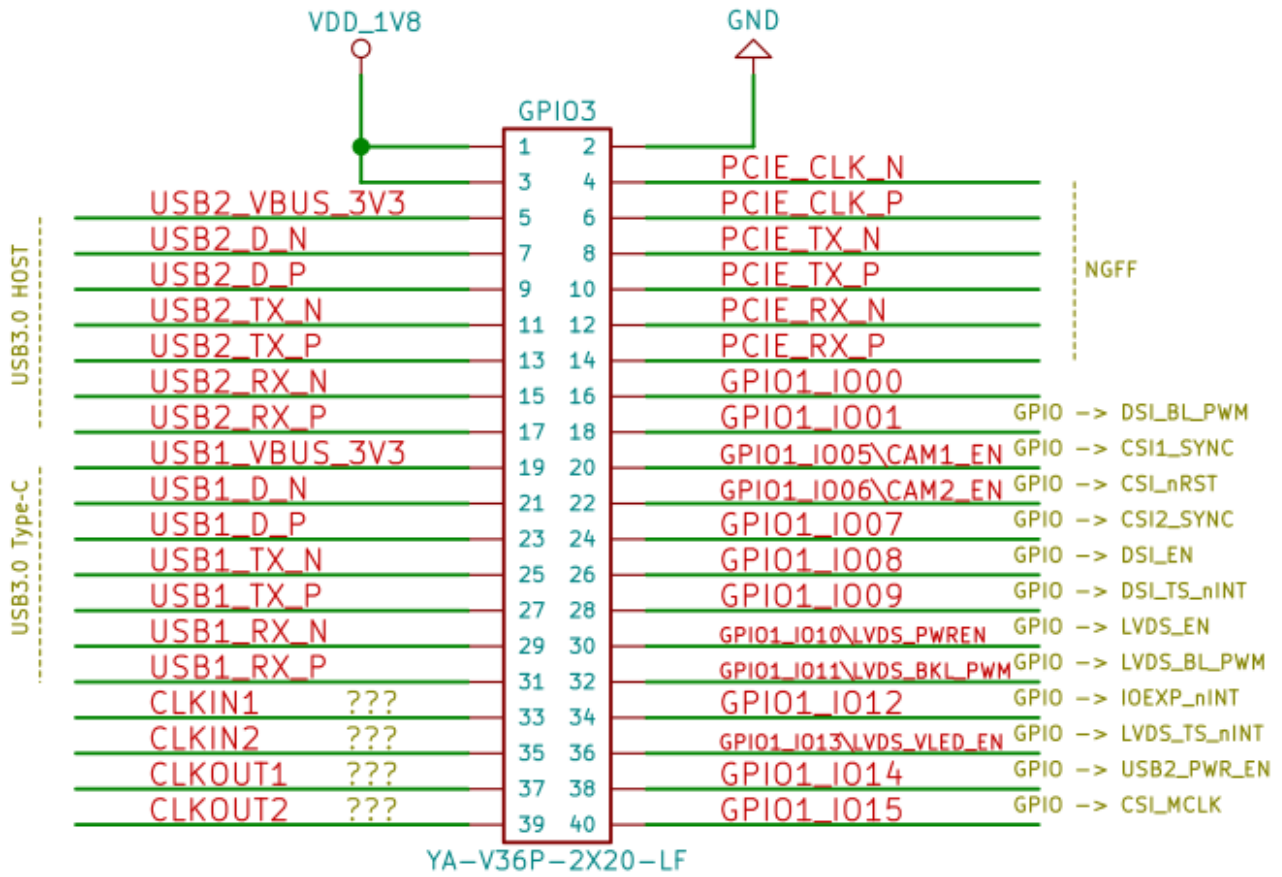
## GPIO1



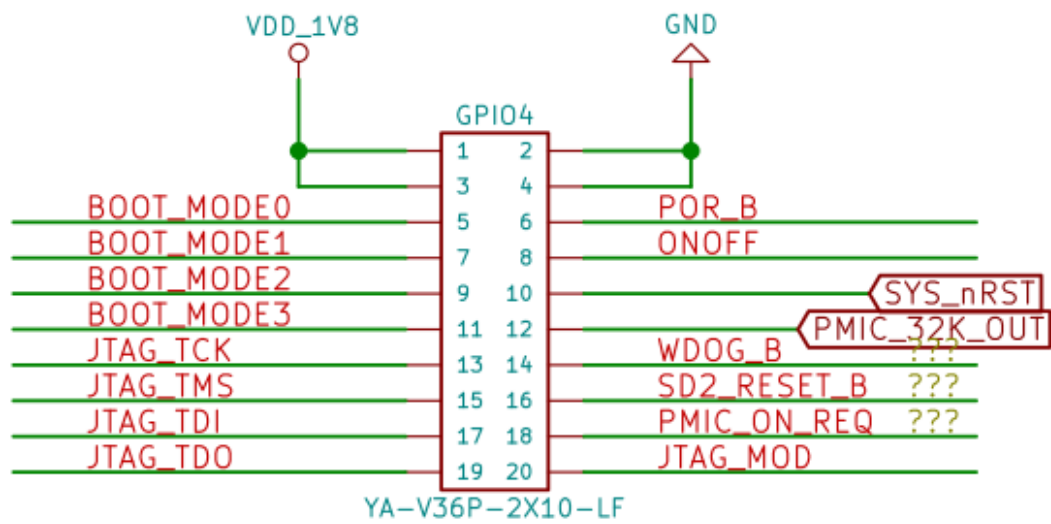
GPIO2



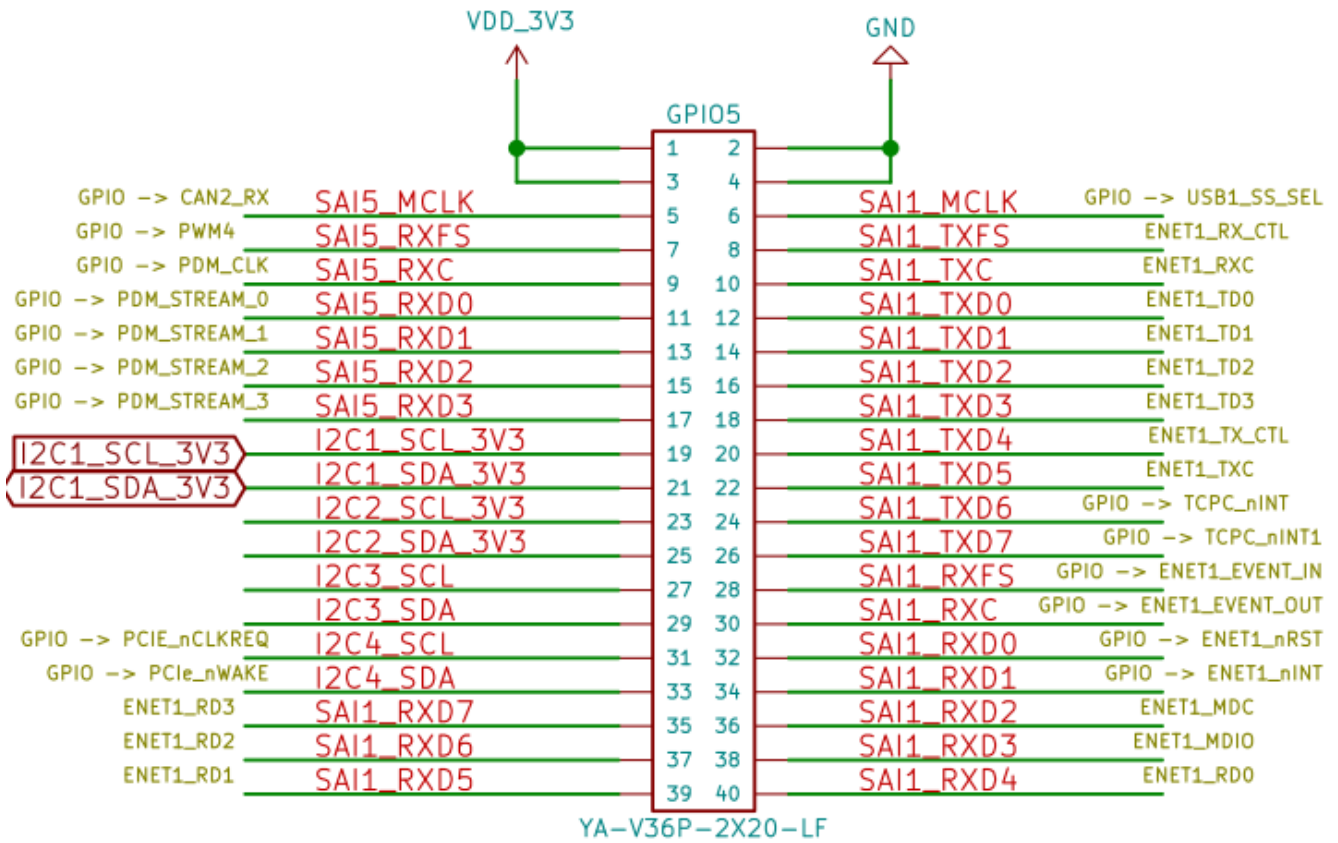
## GPIO3



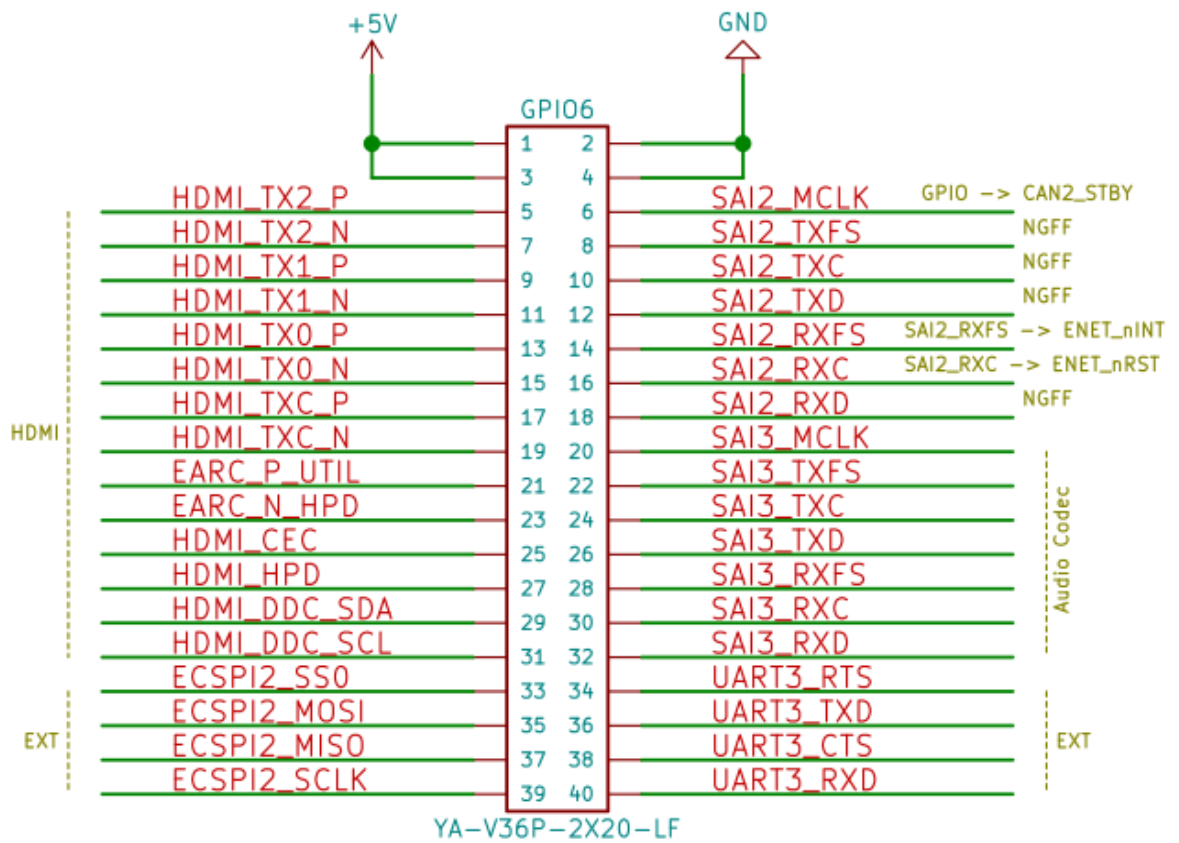
GPIO4



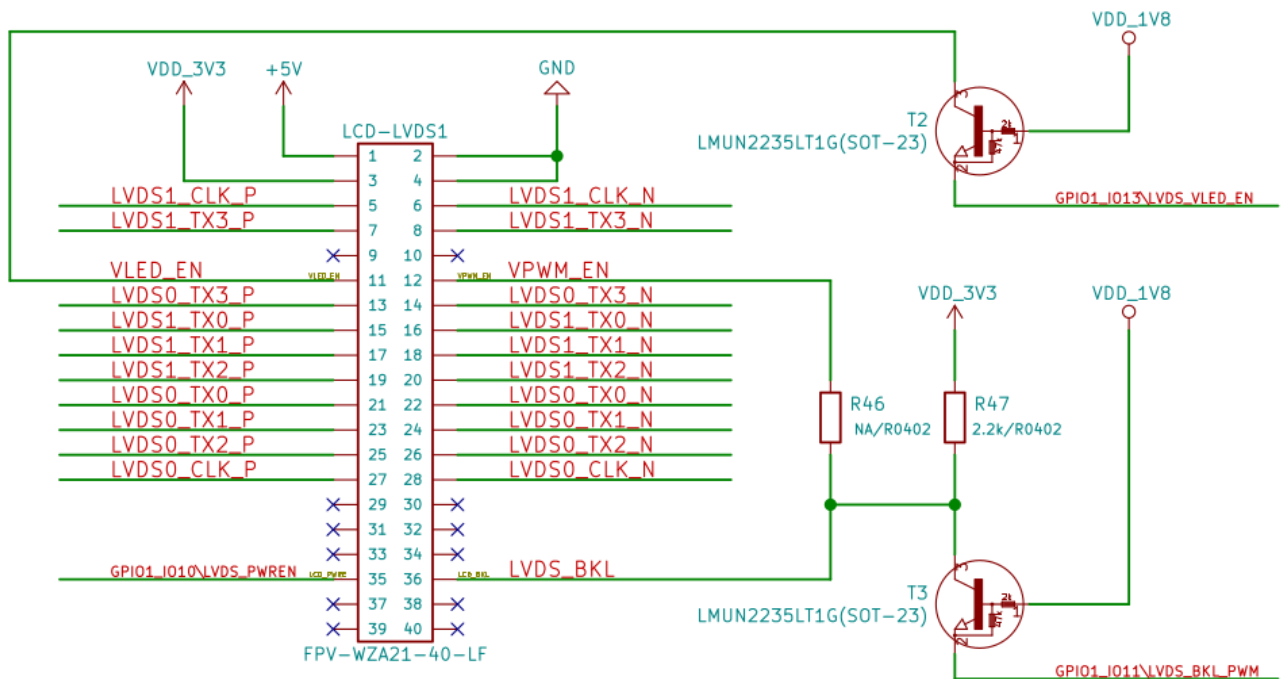
## GPIO5



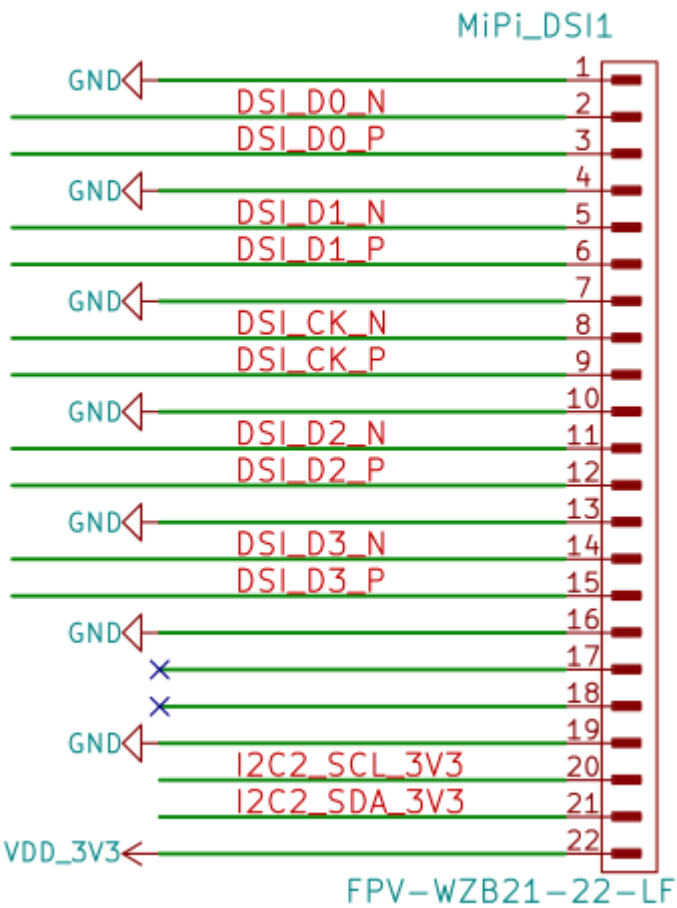
## GPIO6



## LCD

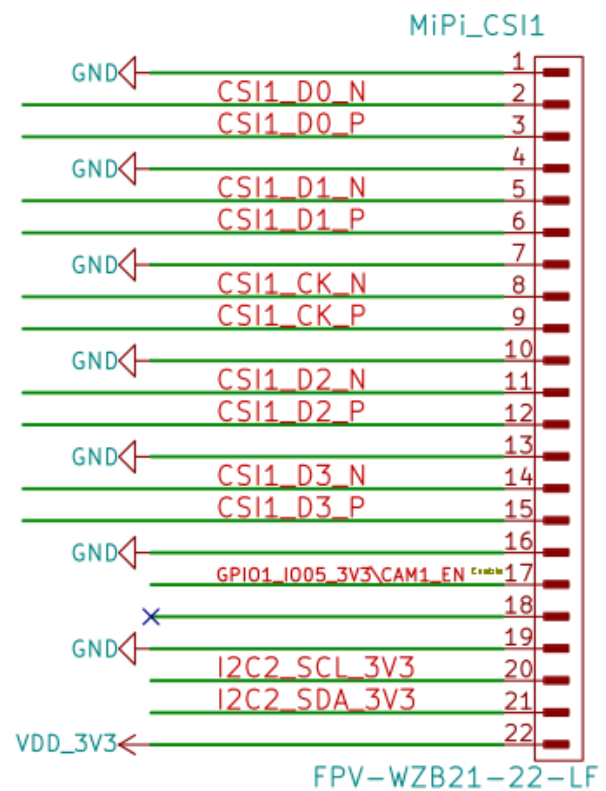
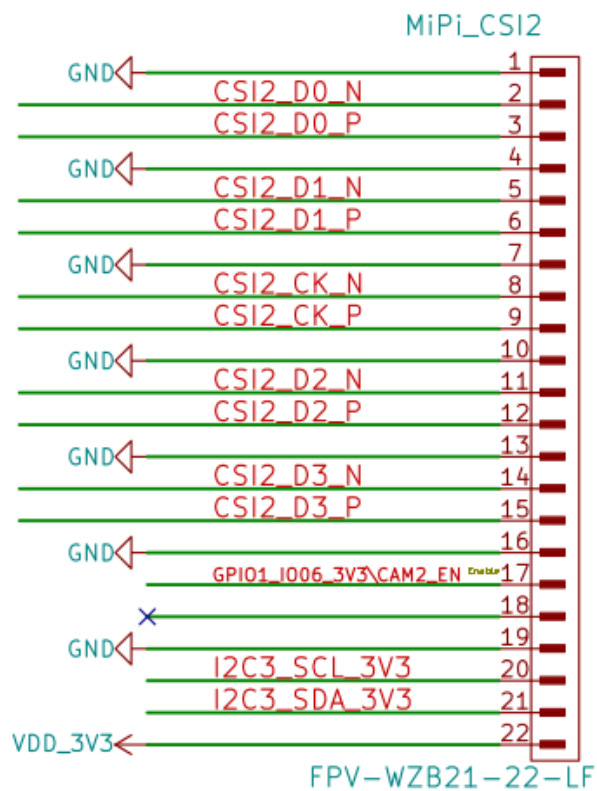


MIPI-DSI



## MIPI-CSI

**Note: MiPi\_CSI1, MiPi\_CSI2 and MiPi\_DSI1 are RPi compatible!**

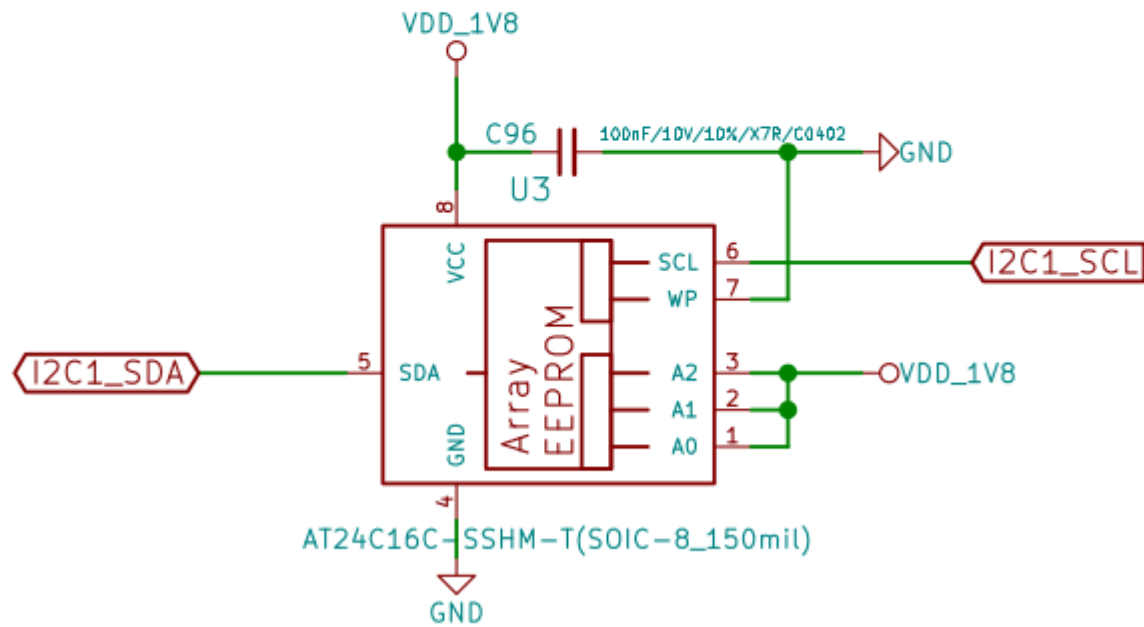




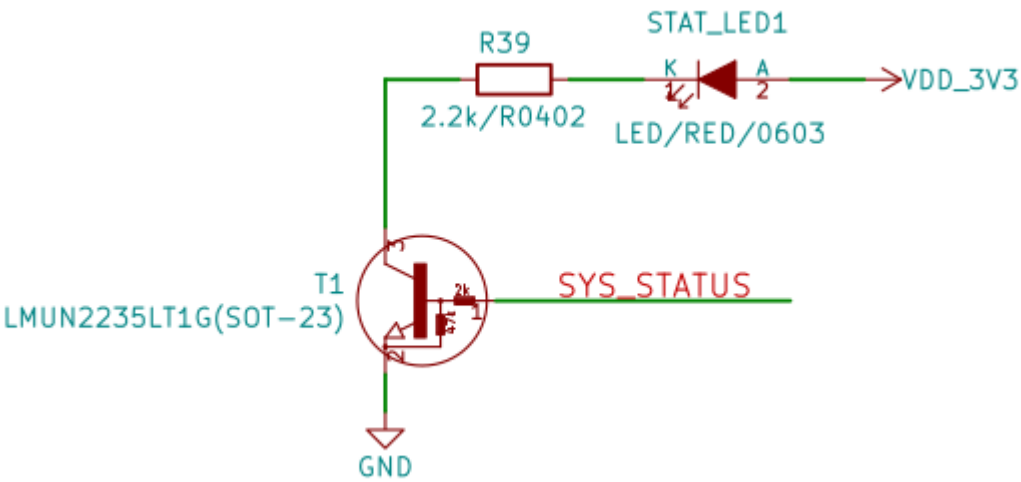
## EEPROM

# EEPROM

I2C Address: 0x50–0x57



User LED



# SOFTWARE

You can find Olimex-maintained recommended images here:

- [Recommended Olimage Linux images](#)

It is recommended to start with the base Armbian image. The minimal Armbian image has no graphical user interface.

The software we provide and maintain for iMX8MP-SOM-EVB is the same as for the main board:

- Armbian-based Debian 12 “bookworm” images (base and minimal) with support for the main chip and most peripherals, like USB 3.0, GbE, NVMe M.2 slot, Flash-header slot, serial debug, HDMI output (+audio over HDMI), CAN, etc. Known software issues: Currently there is no support for the ES8388 audio driver, e.g. HEADPHONES1 and MICROPHONE1 jacks won’t work without additional software work (HDMI audio works ok).
- Buildroot setup

# Document Revision History

Revision 3.0 February 2025

- Removed misleading links
- Added info about new Armbian-based Debian release

Revision 2.0 December 2024

- Improved formatting
- Fixed wrong info about Linux available

Revision 1.0 May 2024

- Initial document