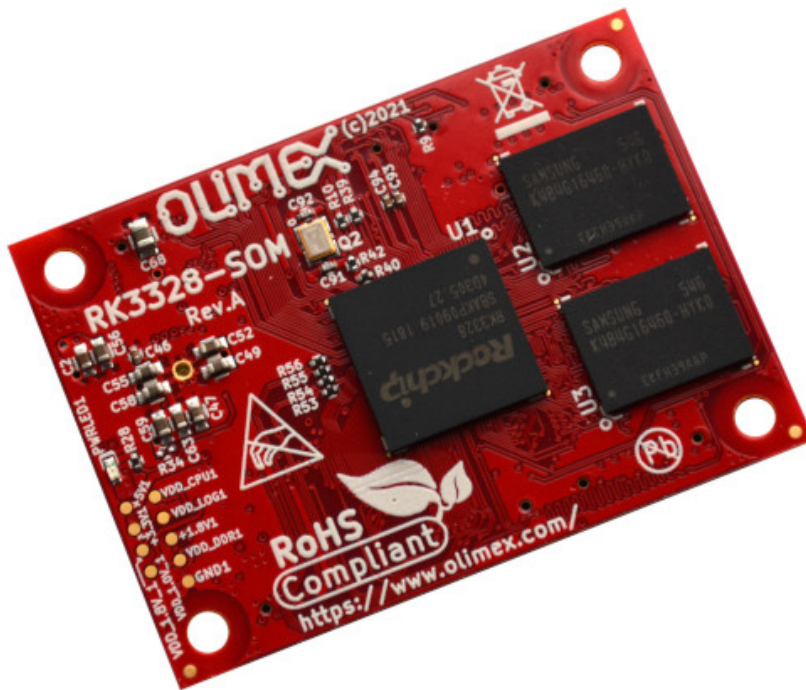




RK3328-SOM

User Manual

Document revision 2.0 November 2024

www.olimex.com

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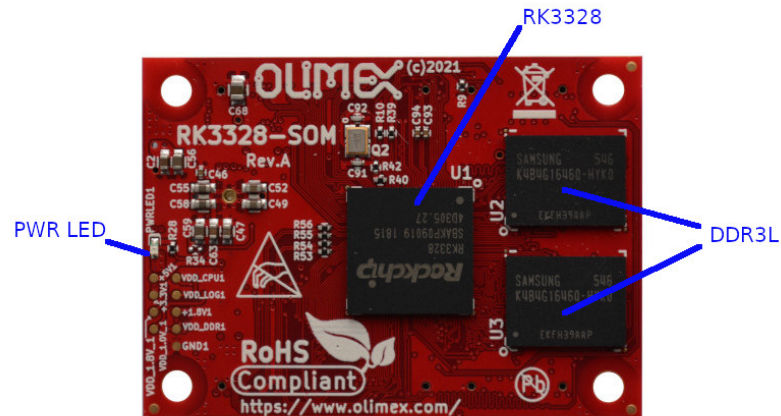
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Overview

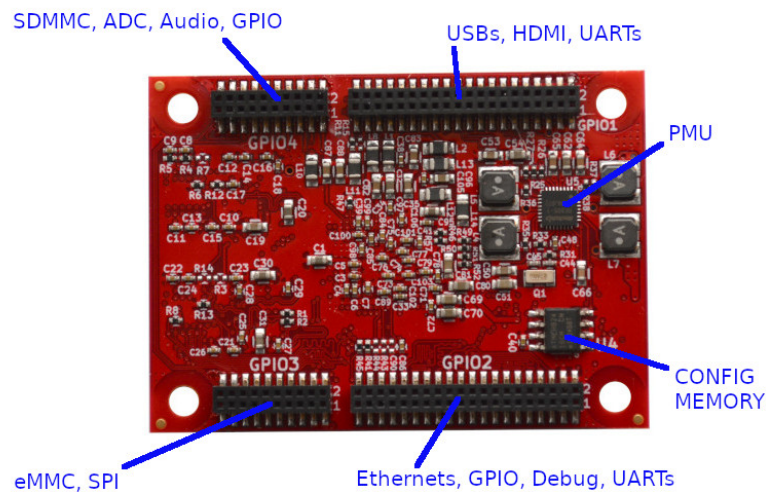
RK3328-SOM is System On Module with Quad core Cortex-A53 64-bit ARM SOC.

The SOM contains the high speed signal design: DDR memory and power management, while it exposes all processor interfaces via 0.05 inch (1.27 mm) step connectors.

Top view:

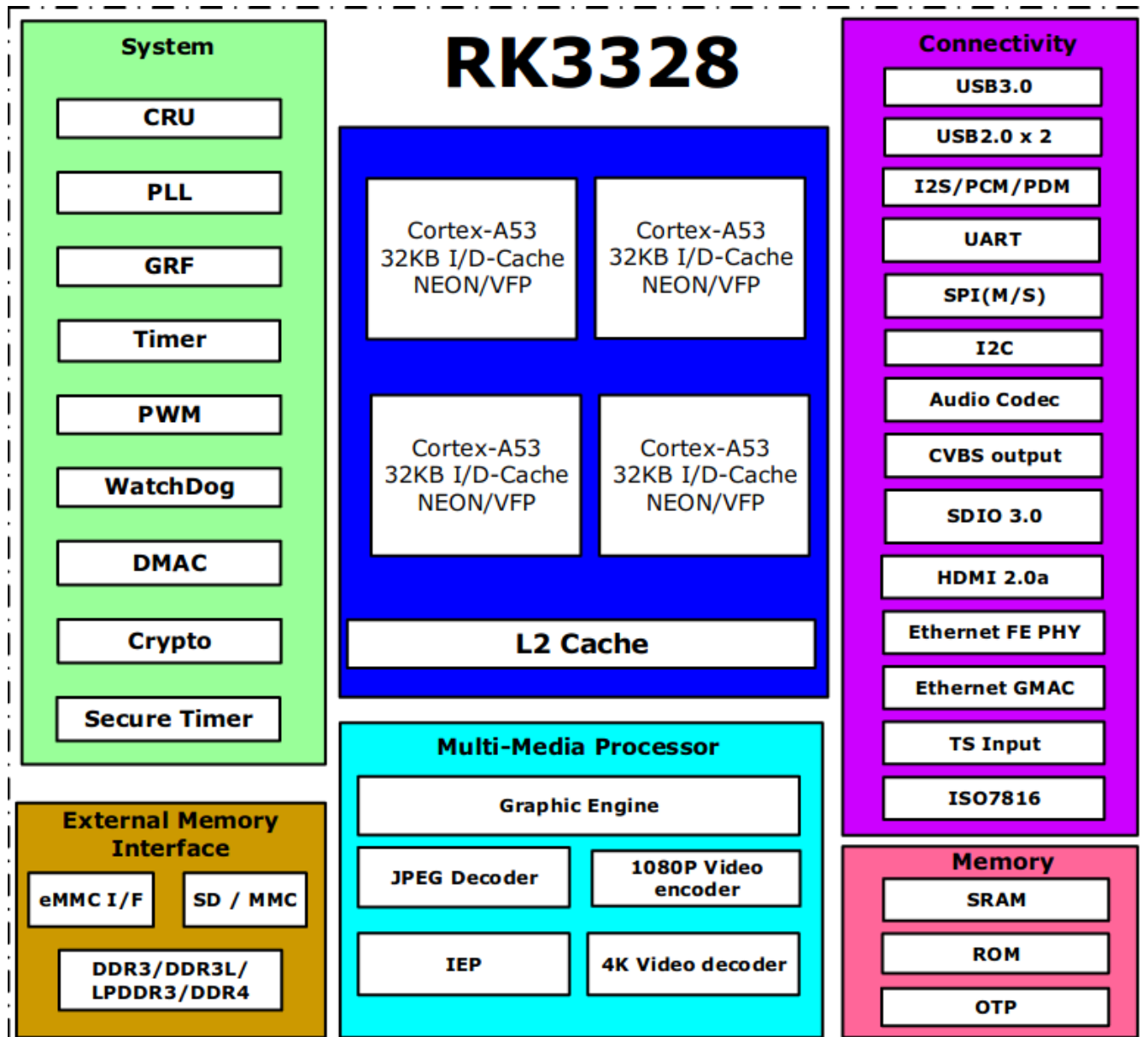


Bottom view:



General information

[RK3328](#) SOC is Quad core Cortex-A53 running up to 1.5 Ghz, and has USB 3.0, 2xUSB 2.0, I2S, UART, SPI, I2C, Audio Codec, LPDDR3 memory, HDMI.



The system on modules are manufactured for extended temperature range operation from -25 to +70°C temperature.

Order codes

[RK3328-SOM-1G](#)

Extended temperature grade (-25+85)C SOM board with Rockchip RK3328 @1.5Ghz and 1GB of LPDDR3 RAM;

[RK3328-SOM-2G](#)

Extended temperature grade (-25+85)C SOM board with Rockchip RK3328 @1.5Ghz and 2GB of LPDDR3 RAM;

[RK3328-SOM-4G](#)

Extended temperature grade (-25+85)C SOM board with Rockchip RK3328 @1.5Ghz and 4GB of LPDDR3 RAM;

[RK3328-SOM-EVB](#)

Board of peripherals compatible with all variants of RK3328-SOM, it is rated in commercial temperature range (0+70)C. Adds HDMI, GbE, MbE, USB 3.0, USB 2.0, USB OTG, MicroSD card, UEXT, serial debug pins, etc.

RK3328-SOM Features

- RK3328 Quad Core Cortex-A53 64 bit ARM @1.5Ghz
- RK805 Power Management Unit (PMU)
- LPDDR3 RAM memory 1GB, or 2GB, or 4GB (depending on variant)
- Power LED
- GPIO-1 40 pin connector with USB0 OTG,USB1 Host, USB3.0, HDMI, UART1
- GPIO-2 40 pin connector with Gigabit Ethernet, Megabit Ethernet, I2C1, SPDIF, Debug UART, PWM2, 3xGPIO, CLK32K, AP_reset, Power_on
- GPIO-3 20 pin connector with eMMC, SPI2
- GPIO-4 20 pin connector with 8xGPIO, SDMMC, SARADC 1-2, Codec, VDAC
- Operating temperature -25+85C

Software

Rockchip provides Android 7.1 and Android 8.1 SDK with sources; we provide custom Armbian-based Linux distributions with all peripherals supported.

Pre-built images are hosted at:

<https://images.olimex.com/release/RK3328-SOM/>

We recommend the images to be written to SD card with minimum 16GB Class10 speed like:

<https://www.olimex.com/Products/Components/Storage/MICRO-SD-CLASS10/>

To write the images we recommend balenaEtcher software:

<https://etcher.balena.io/>

Power supply

[RK3328-SOM](#) requires +5V, 1A to operate.

Do not apply more than 5V as this would damage the RK3328-SOM.

The power supply is provided on pin.1 of the LCD connector.

Power consumption is:

- around 0.4A during boot and idle
- around 0.6A when working at full speed
- up to 0.8A at stress

Hardware components

SOC

RK3328 is Quad core Cortex-A53 ARM running @1.5Ghz

Memory

RK3328-SOM can have 1GB, or 2GB, or 4GB LPDDR3 RAM memory. The memories are powered by 1.8V and 1.2V, with 16 bit data bus width and running at 666Mhz (333Mhz clock).

PMU

RK3328-SOM have Power Management Unit based on RK805. It allow the power voltage to SOC core, peripherals, DDR3 memory and etc. The PMU can be programmed via I2C. Special driver in Linux takes care for the different power modes.

USB

One USB 3.0 and two High Speed USB 2.0 Host and OTG

Display

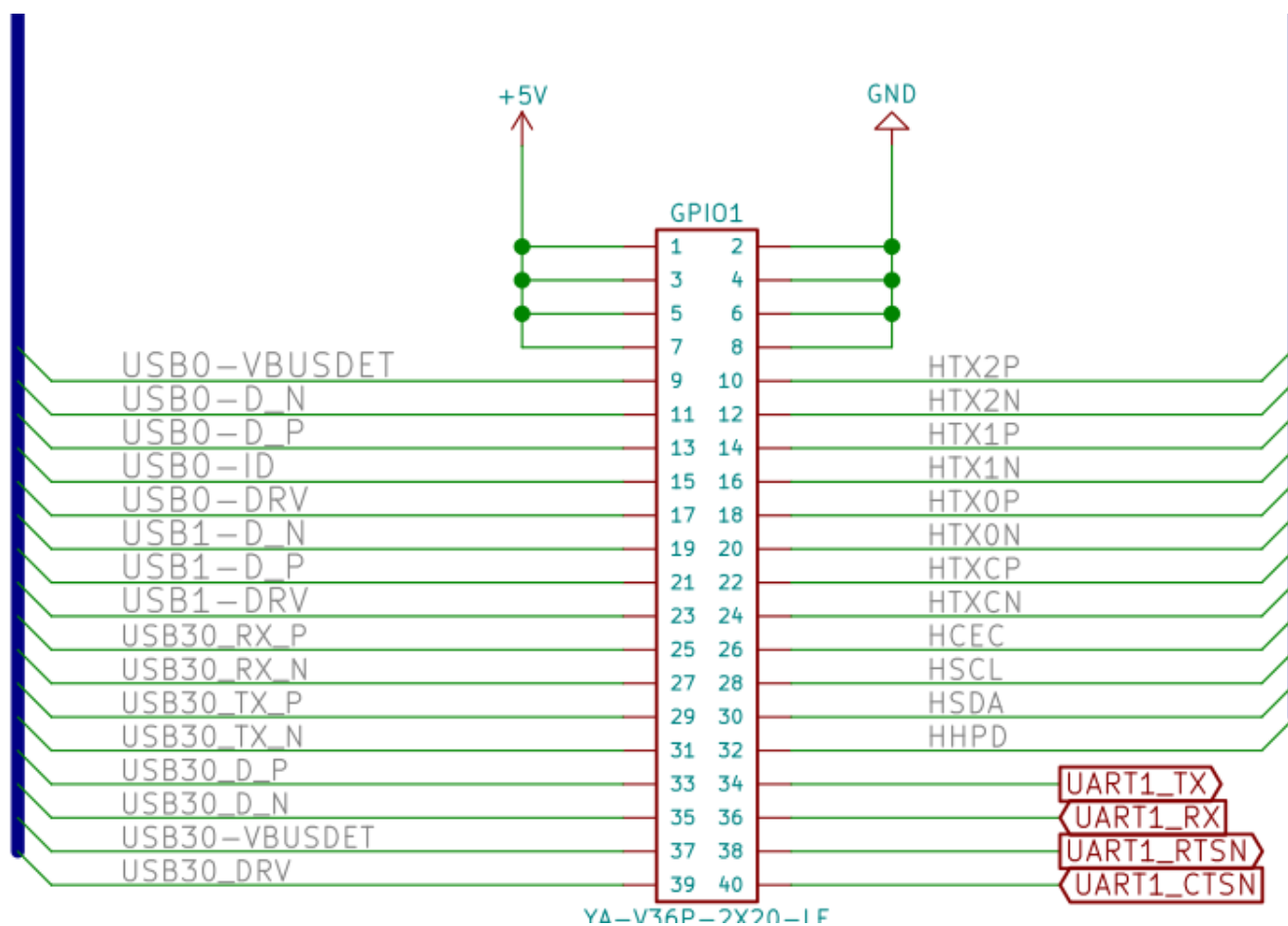
HDMI output 1080p Full HD resolution.

Audio

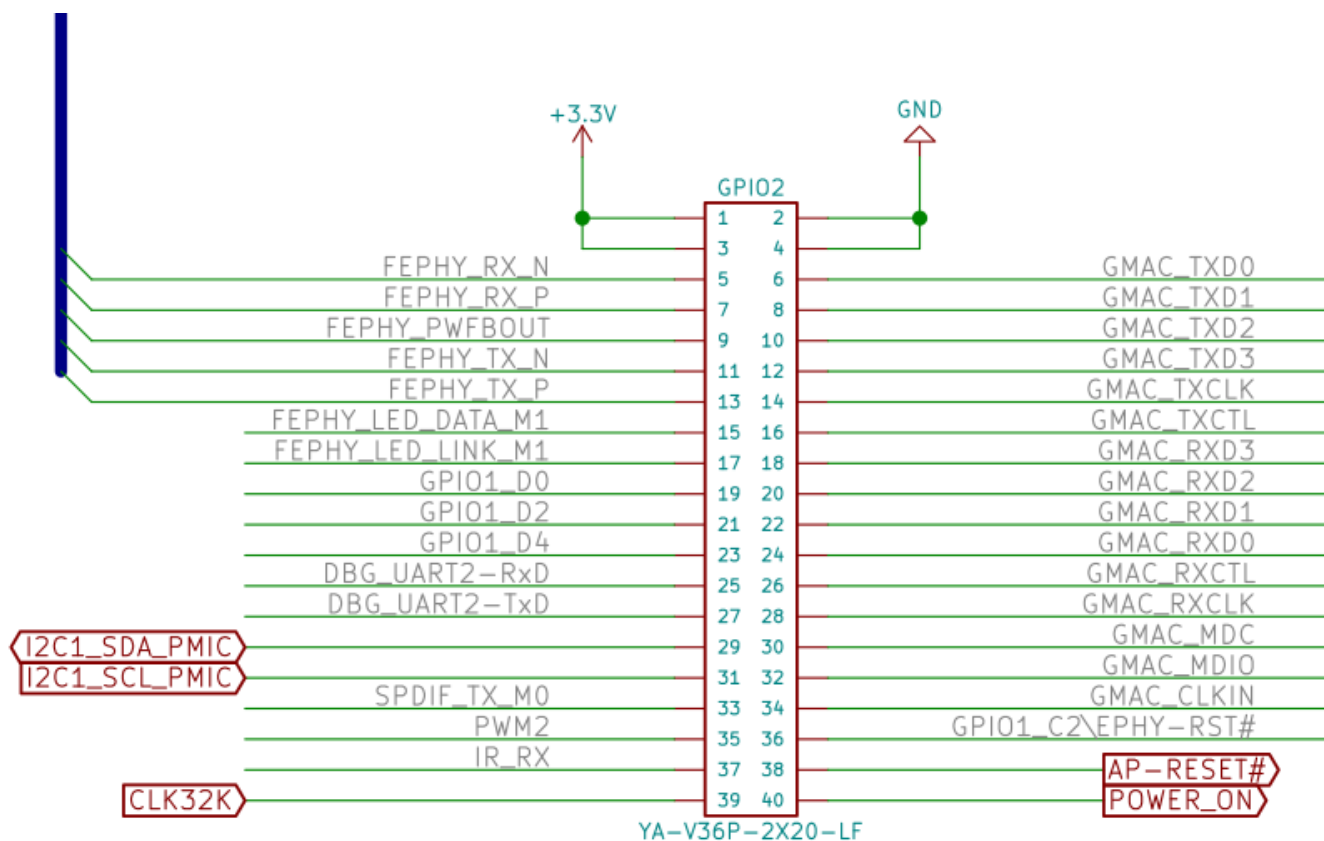
Build in Stereo Audio codec.

Connectors

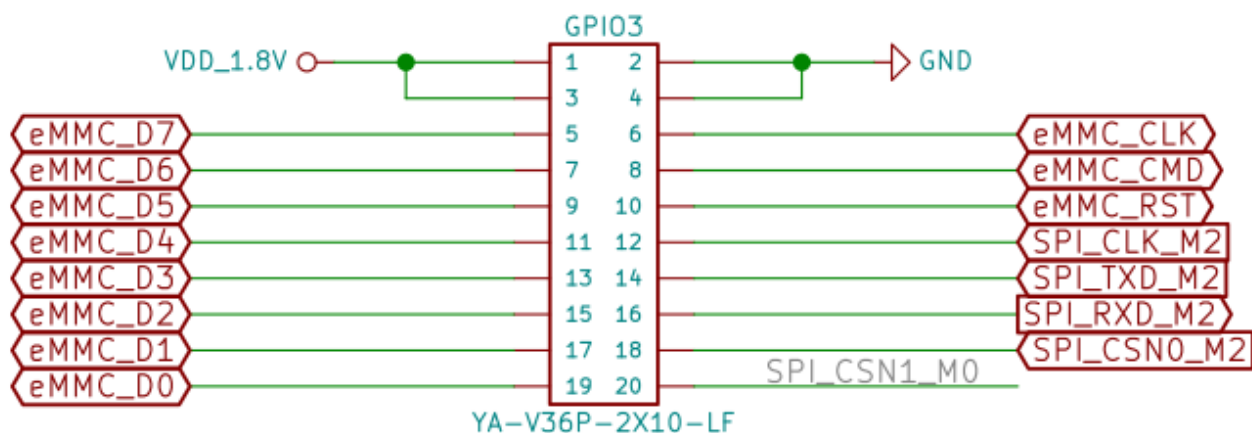
GPIO1



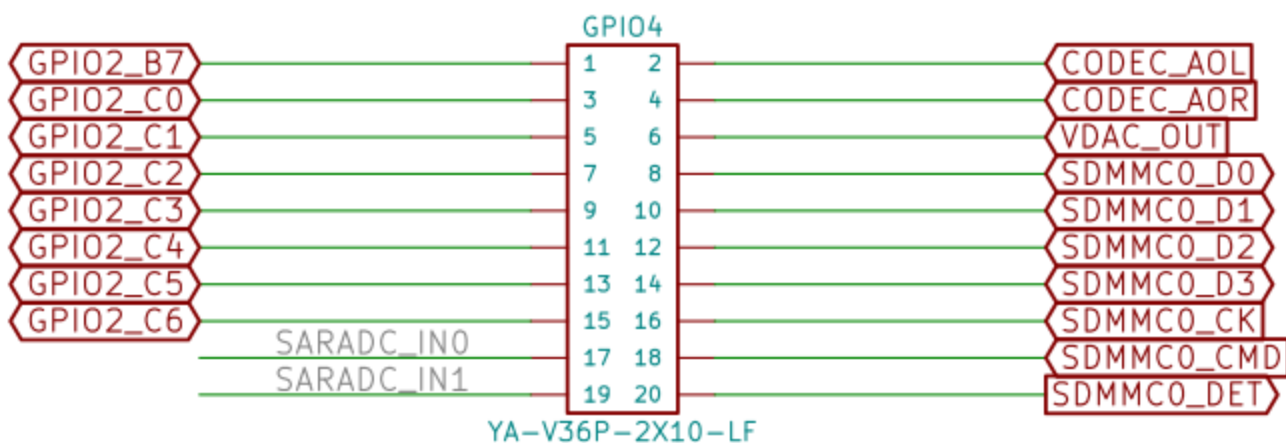
GPIO2



GPIO3

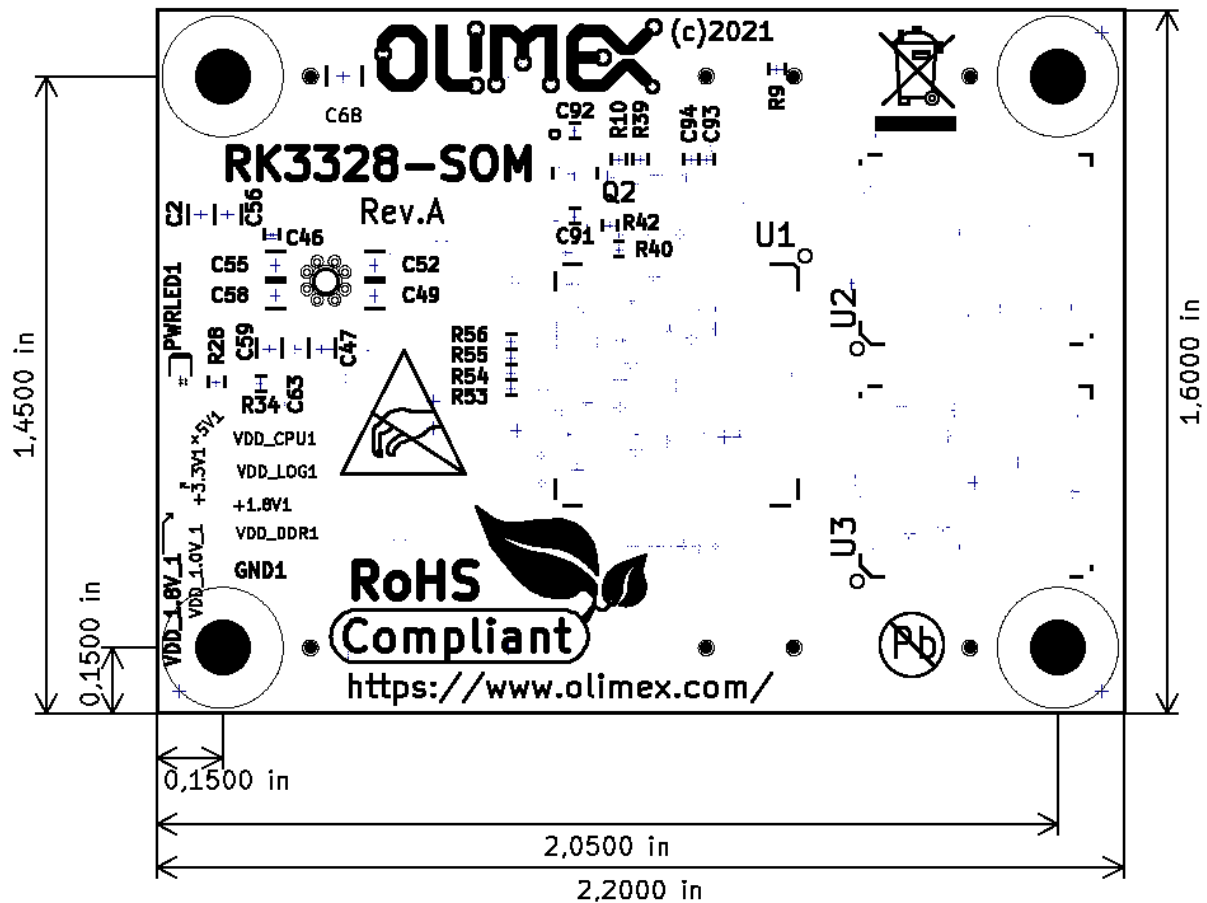


GPIO4



Mechanical drawings

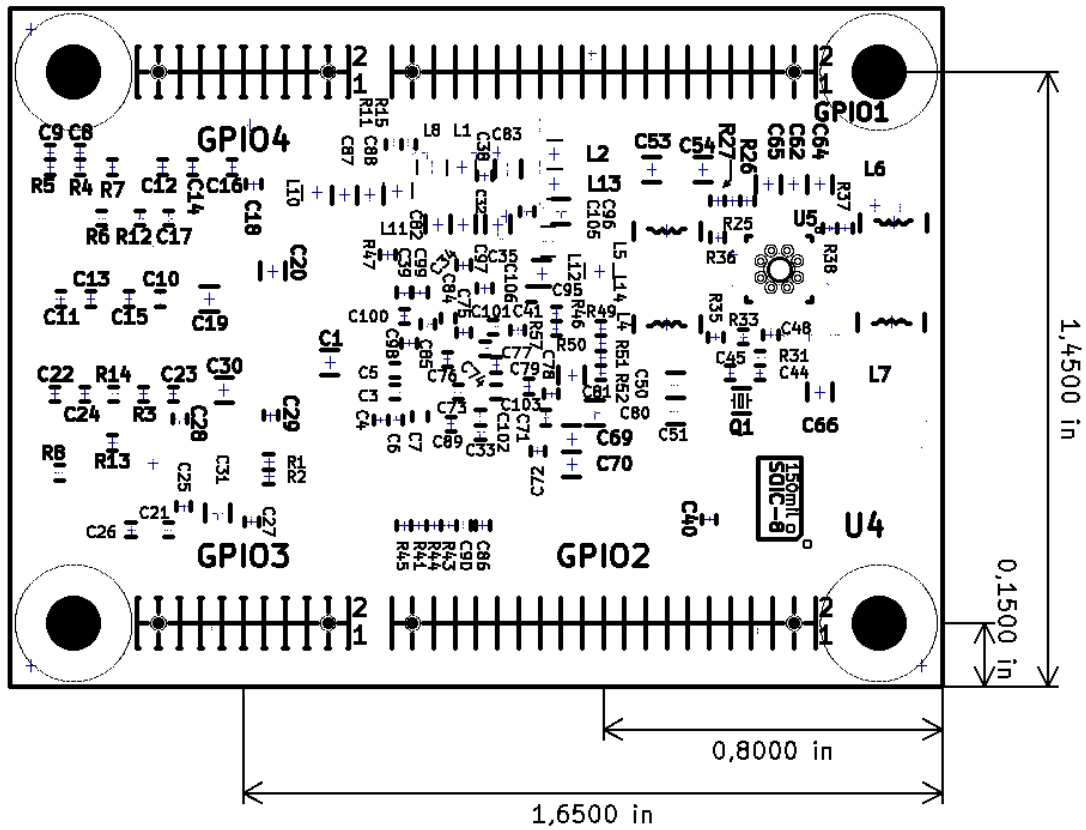
Top view (SOC and RAM side):



Board dimensions are: 2.2 inch (55.88 mm) x 1.45 inch (36.83 mm).

Mounting holes are at 1.9 inch (48.26 mm) x 1.3 inch (33.02 mm).

Bottom view (connector side):



The distance between the connectors is 1.3 inch (33.02 mm).

Connectors used for carrier board are 0.05 inch (1.27mm) step connectors:

[MALE-PAV16X-2x10-HIGH](#)

and

[MALE-PAV16X-2x20-HIGH](#)

Revision History

Revision 1.0 May 2021

Revision 2.0 November 2024

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