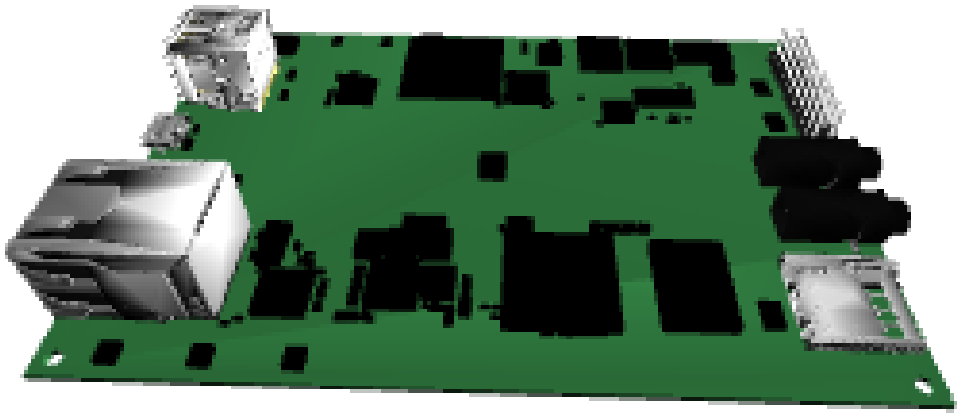
Pepper 43R



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Board Description

This 4.3” PCAP design has 3 USB Jacks and a 802.11 b/g/n with Bluetooth 3.0

Board Dimensions

11.0cm x 7.5cm

Contents

1 Modules on Board **1**

1.1 LCD Display . . . 1

1.1.1 4.3” LCD Flipside Resistive (v3) (1) . . . 1

1.2 Mechanical . . . 1

1.2.1 Mounting Hole . . . 1

1.2.2 Mounting Hole . . . 1

1.2.3 Mounting Hole . . . 2

1.2.4 Mounting Hole . . . 2

1.3 USB . . . 2

1.3.1 Micro-B Jack (v8) (2) . . . 2

1.3.2 Micro-B Jack (v8) (3) . . . 2

1.3.3 3-Port Hub (v9) (14) . . . 2

1.3.4 Dual Stacking USB (v4) (15) . . . 2

1.4 Memory . . . 2

1.4.1 AM3354 Boot microSD (v8) (4) . . . 2

1.5 Power . . . 3

1.5.1 1.8V/0.6A Regulator (v5) (5) . . . 3

1.5.2 Battery 2S Balance Connector (v6) (6) . . . 3

1.5.3 Real Time Clock (v7) (9) . . . 3

1.5.4 5V/5A Regulator (v3) (13) . . . 3

1.5.5 3.3V/1.5A Regulator (v8) (18) . . . 3

1.6 Network . . . 4

1.6.1 Gigabit Ethernet (v7) (16) . . . 4

1.6.2 Wi-link 8 (v12) (7) . . . 4

1.7 Sensors . . . 4

1.7.1 IMU (v9) (8) . . . 4

1.8 Audio . . . 4

1.8.1 Audio Codec (v11) (10) . . . 4

1.8.2 Dual Audio (v9) (17) . . . 4

1.9 Headers . . . 5

1.9.1 20 pin header (v6) (11) . . . 5

1.10 Connectivity . . . 5

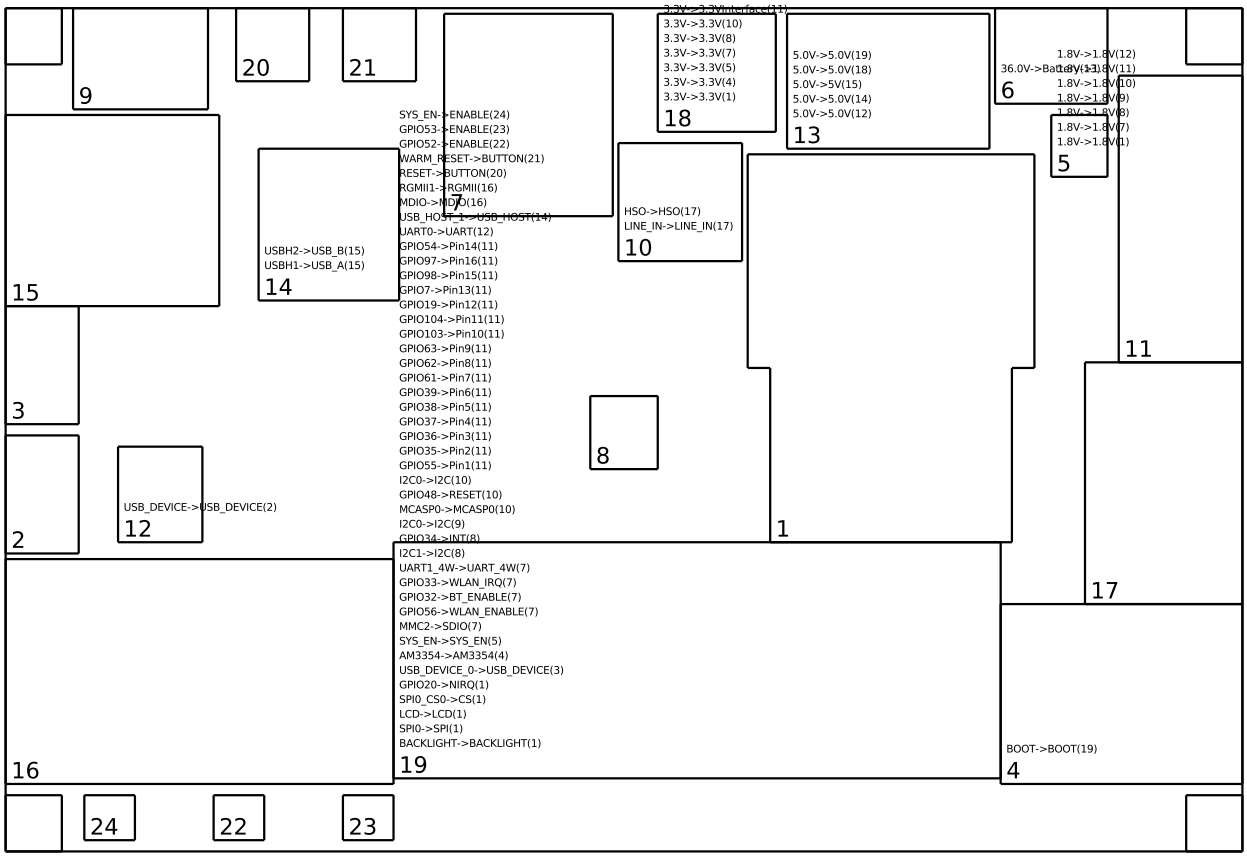
1.10.1 USB - UART (v12) (12) . . . 5

1.11 Processors 6
1.11.1 AM3354 Slim (v10) (19) 6
1.12 IO 7
1.12.1 Flip-side Tactile Switch (v3) (20) 7
1.12.2 Flip-side Tactile Switch (v3) (21) 7
1.12.3 Flip-side Blue LED (v1) (22) 7
1.12.4 Flip-side Red LED (v3) (23) 8
1.12.5 Flip-side Green LED (v1) (24) 8

2 Module Connections Graph **9**

3 Module Power Graph **10**

1 Modules on Board



1.1 LCD Display

1.1.1 4.3” LCD Flipside Resistive (v3) (1)

A 4.3 inch LCD connector that connects to AM3354 Slim (19)

1.2 Mechanical

1.2.1 Mounting Hole

A #0 mounting hole for securing the board with mounting pins.

1.2.2 Mounting Hole

A #0 mounting hole for securing the board with mounting pins.

1.2.3 Mounting Hole

A #0 mounting hole for securing the board with mounting pins.

1.2.4 Mounting Hole

A #0 mounting hole for securing the board with mounting pins.

1.3 USB

1.3.1 Micro-B Jack (v8) (2)

A USB micro-B port allows your design to connect as a USB device to a USB host.

This module is connected to USB - UART (12).

1.3.2 Micro-B Jack (v8) (3)

A USB micro-B port allows your design to connect as a USB device to a USB host.

This module is connected to AM3354 Slim (19).

1.3.3 3-Port Hub (v9) (14)

This USB hub offers three interfaces for USB ports from USB_HOST_1 on AM3354 Slim (19).

This hub is connected to the following USB ports:

- Dual Stacking USB (15)
- Dual Stacking USB (15)

1.3.4 Dual Stacking USB (v4) (15)

A dual A USB host stacked vertically that allows you to connect USB devices to the board. This port is connected to .

1.4 Memory

1.4.1 AM3354 Boot microSD (v8) (4)

A Micro SD card slot provides boot memory to .

1.5 Power

1.5.1 1.8V/0.6A Regulator (v5) (5)

This DC-DC regulator has an integrated inductor and tiny footprint. It provides power to modules that need a 1.8V input.

- 3.3V from 3.3V/1.5A Regulator (18)
- SYS_EN from AM3354 Slim (19)

The following modules receive 1.8V DC from this regulator:

- 4.3" LCD Flipside Resistive (1), Wi-link 8 (7), IMU (8), Real Time Clock (9), Audio Codec (10), 20 pin header (11), USB - UART (12)

1.5.2 Battery 2S Balance Connector (v6) (6)

This is a standard 2S LiPo balance connector (XH Type). Although it's a 2S connector, it can provide 16.0V or 36.0V.

The following modules are powered by this regulator:

- 36.0V to 5V/5A Regulator (13)

1.5.3 Real Time Clock (v7) (9)

This real-time clock backup is powered by a coin cell battery.

This module is connected to I2C0 on AM3354 Slim (19).

1.5.4 5V/5A Regulator (v3) (13)

Takes 6 - 36V input from Battery 2S Balance Connector (6) and provides up to 5A at 5V to:

1.5.5 3.3V/1.5A Regulator (v8) (18)

This DC to DC step down regulator provides a 3.3V DC output at 1.5A needed by certain components on this board. It is capable of accepting an input voltage between 3.1 to 16V DC. Currently, its input is 5V from 5V/5A Regulator (13).

The following modules are powered by this regulator:

- 3.3V to 4.3" LCD Flipside Resistive (1), AM3354 Boot microSD (4), 1.8V/0.6A Regulator (5), Wi-link 8 (7), IMU (8), Audio Codec (10), 20 pin header (11), 3-Port Hub (14), Gigabit Ethernet (16), Flip-side Tactile Switch (20), Flip-side Tactile Switch (21), Flip-side Blue LED (22), Flip-side Red LED (23), Flip-side Green LED (24)

1.6 Network

1.6.1 Gigabit Ethernet (v7) (16)

This 10/100/1000 Base-T connector offers gigabit Ethernet over twisted pair for networking functionality.

This networking interface is connected to AM3354 Slim (19).

1.6.2 Wi-link 8 (v12) (7)

The TI Wilink8 module includes BT4.1 and 802.11(a/b/g/n) signals on one antenna. 802.11 traffic passes through the SDIO port, which is connected to the the AM3354 Slim (19). BT traffic passes through the 4-wire UART channel, which is connected to the the AM3354 Slim (19).

The module can be powered down using . The wireless is enabled using GPIO AM3354 Slim (19) with IRQ on GPIO AM3354 Slim (19) and the BT is enabled using GPIO AM3354 Slim (19).

To function, the clock on the AM3354 Slim (19) must be run at 32.768kHz which is provided by a dedicated crystal.

1.7 Sensors

1.7.1 IMU (v9) (8)

This inertial measurement unit provides motion sensing with a 3-axis gyroscope and 3-axis accelerometer.

This module is connected to AM3354 Slim (19) via I2C at default address 0x69. You can alter the address to 0x68 by changing/soldering the resistors on board.

Visit `http://www.invensense.com/mems/gyro/mpu6050.html` for details.

1.8 Audio

1.8.1 Audio Codec (v11) (10)

A low-power stereo audio codec with stereo headphone amplifier, as well as multiple inputs and outputs programmable in single-ended or fully differential configurations.

For more information, visit `http://www.ti.com/product/tlv320aic3106`.

This module provides the following output buses:

- LINE_IN to Dual Audio (17)
- HSO to Dual Audio (17)

1.8.2 Dual Audio (v9) (17)

These two standard 3-position 3.5mm audio jacks offer stereo line input and stereo audio output. They are connected to Audio Codec (10).

1.9 Headers

1.9.1 20 pin header (v6) (11)

A header offering up to 20 pins for various GPIO or PWM signals of your choice.

To output signals at a custom voltage, a zero ohm resistor can be depopulated and an external reference provided.

This module has the following connections:

- 1.8V from 1.8V/0.6A Regulator (5)
- 3.3V from 3.3V/1.5A Regulator (18)
- GPIO97 from AM3354 Slim (19)
- GPIO98 from AM3354 Slim (19)
- GPIO54 from AM3354 Slim (19)
- GPIO7 from AM3354 Slim (19)
- GPIO19 from AM3354 Slim (19)
- GPIO104 from AM3354 Slim (19)
- GPIO103 from AM3354 Slim (19)
- GPIO63 from AM3354 Slim (19)
- GPIO62 from AM3354 Slim (19)
- GPIO36 from AM3354 Slim (19)
- GPIO35 from AM3354 Slim (19)
- GPIO55 from AM3354 Slim (19)
- GPIO61 from AM3354 Slim (19)
- GPIO39 from AM3354 Slim (19)
- GPIO38 from AM3354 Slim (19)
- GPIO37 from AM3354 Slim (19)

1.10 Connectivity

1.10.1 USB - UART (v12) (12)

Also known as an FTDI, this USB to UART converter allows a USB connection to the board to behave as a virtual RS232 serial connection. It offers direct and complete access to the system from a development machine.

This USB to UART converter connects a host machine connected to to AM3354 Slim (19) on its UART bus.

1.11 Processors

1.11.1 AM3354 Slim (v10) (19)

TI's AM3354 microprocessors, based on the ARM Cortex-A8. Includes 512MB of DDR2 RAM and built-in power management provided by TPS65217B.

Requires:

- 5.0V from 5V/5A Regulator (13)
- BOOT from AM3354 Boot microSD (4)

Provides:

- RESET to Flip-side Tactile Switch (20)
- MMC2 to Wi-link 8 (7)
- GPIO62 to 20 pin header (11)
- GPIO61 to 20 pin header (11)
- GPIO63 to 20 pin header (11)
- GPIO48 to Audio Codec (10)
- GPIO20 to 4.3" LCD Flipside Resistive (1)
- USB_DEVICE_0 to Micro-B Jack (3)
- SPI0 to 4.3" LCD Flipside Resistive (1)
- GPIO7 to 20 pin header (11)
- RGMII1 to Gigabit Ethernet (16)
- I2C0 to Real Time Clock (9), Audio Codec (10)
- MDIO to Gigabit Ethernet (16)
- GPIO103 to 20 pin header (11)
- I2C1 to IMU (8)
- UART0 to USB - UART (12)
- MCASP0 to Audio Codec (10)
- GPIO98 to 20 pin header (11)
- GPIO97 to 20 pin header (11)
- BACKLIGHT to 4.3" LCD Flipside Resistive (1)
- UART1_4W to Wi-link 8 (7)
- SYS_EN to 1.8V/0.6A Regulator (5), Flip-side Green LED (24)
- GPIO19 to 20 pin header (11)

- GPIO38 to 20 pin header (11)
- GPIO39 to 20 pin header (11)
- GPIO54 to 20 pin header (11)
- GPIO55 to 20 pin header (11)
- GPIO56 to Wi-link 8 (7)
- GPIO32 to Wi-link 8 (7)
- GPIO33 to Wi-link 8 (7)
- AM3354 to AM3354 Boot microSD (4)
- GPIO36 to 20 pin header (11)
- GPIO37 to 20 pin header (11)
- GPIO34 to IMU (8)
- GPIO35 to 20 pin header (11)
- USB_HOST_1 to 3-Port Hub (14)
- SPI0_CS0 to 4.3” LCD Flipside Resistive (1)
- GPIO52 to Flip-side Blue LED (22)
- WARM_RESET to Flip-side Tactile Switch (21)
- LCD to 4.3” LCD Flipside Resistive (1)
- GPIO53 to Flip-side Red LED (23)
- GPIO104 to 20 pin header (11)

1.12 IO

1.12.1 Flip-side Tactile Switch (v3) (20)

This 4.9 sq. mm light touch switch provides a user input for the signal on . It can be found on the flip-side of the board.

1.12.2 Flip-side Tactile Switch (v3) (21)

This 4.9 sq. mm light touch switch provides a user input for the signal on . It can be found on the flip-side of the board.

1.12.3 Flip-side Blue LED (v1) (22)

This 1608 standard size blue LED, placed on the backside, provides an indicator for the signal GPIO52 on AM3354 Slim (19).

1.12.4 Flip-side Red LED (v3) (23)

This 1608 standard size red LED, placed on the backside, provides an indicator for the signal GPIO53 on AM3354 Slim (19).

1.12.5 Flip-side Green LED (v1) (24)

This 1608 standard size green LED, placed on the backside, provides an indicator for the signal SYS_EN on AM3354 Slim (19).

2 Module Connections Graph

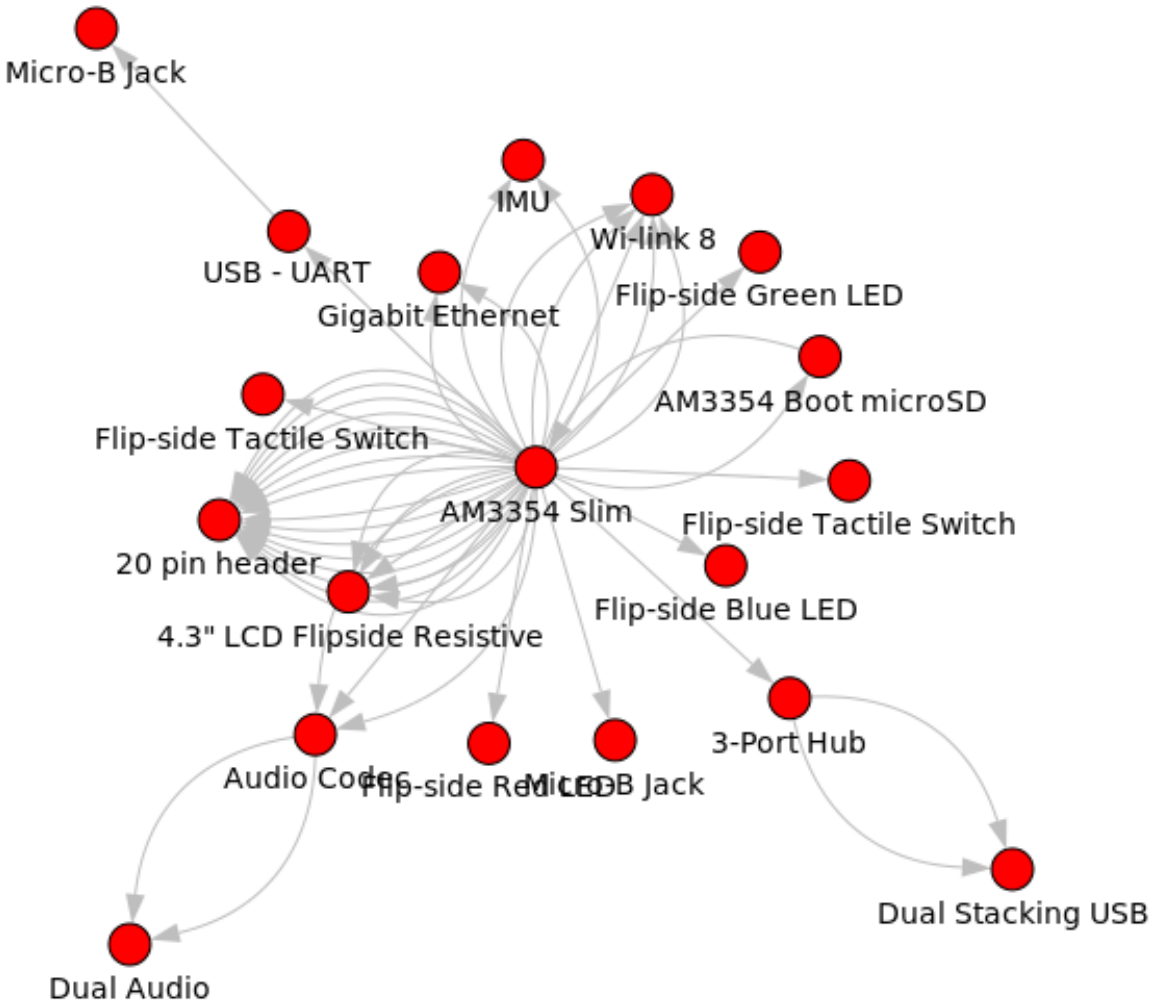
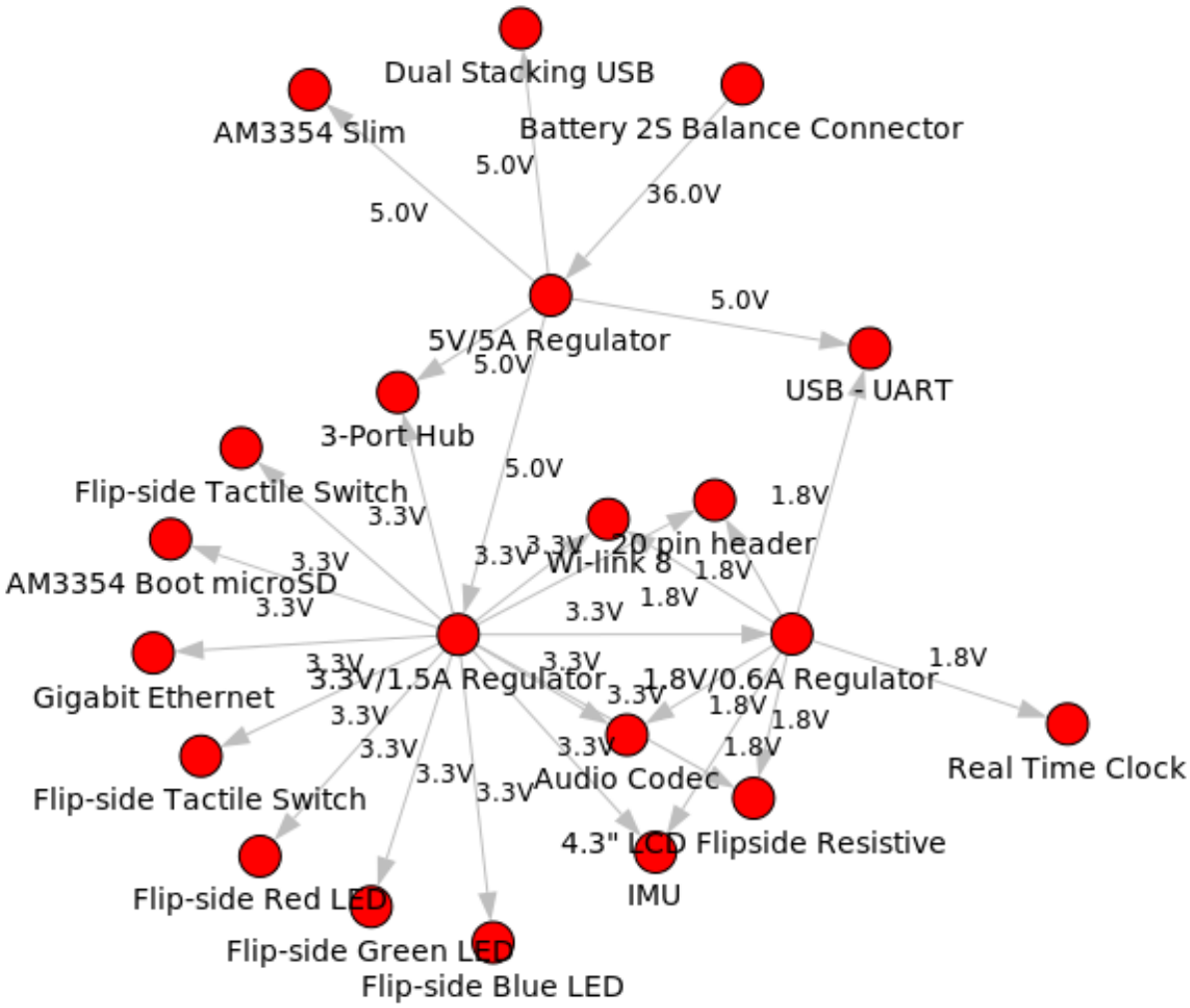


Figure 1: excludes power modules

3 Module Power Graph



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