

WizFi630A Datasheet

(Version 1.2)



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Document Revision History

| Date | Revision | Changes |
|------------|----------|---|
| 2015-09-01 | 1.0 | Release |
| 2015-11-02 | 1.1 | Update the power consumption |
| 2016-01-14 | 1.2 | Clearance of ambiguity of Temperature range |
| | | |
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1. Introduction

WizFi630A is a gateway module that transforms the RS-232 protocol and TCP/IP protocol into IEEE802.11 b/g/n wireless LAN protocol based on **OpenWRT**. WizFi630A enables a device with serial interface to connect to LAN or WLAN for remotely control, measuring, and administration. WizFi630A can also work as an IP router because of its internally embedded switch.

WizFi630A supports interfaces like Serial (UART), LAN, Wi-Fi(WLAN) to perform functions such as Serial(UART)-To-Wi-Fi, Serial-To-Ethernet and Ethernet-To-Wi-Fi which are supported by scripts and/or commands in **OpenWRT**. Users can connect to WizFi630A's internal web server or use serial commands for simple Wi-Fi settings; not only serial devices but 8/16/32 bit micro controllers can also use UART for simple Wi-Fi settings.

WizFi630A can significantly reduce the processes for wireless module design, testing, and certification. Therefore, WizFi630A can be the best solution for users who lack wireless network experience.

WizFi630A follows the 802.11b/g/n standard and support up to 150Mbps speed in wireless interface.

WizFi630A can be provided with an Evaluation board and documents so that anyone can develop a wireless solution.

This document provides the information which a hardware designer needs and another document, "WizFi630A Quick Guide", to make it running is available, too. However, please refer to the website, <http://wiki.openwrt.org/doc/start>, for more details about functions which **OpenWRT** supports, how to configure and how to update it.

1.1. Features

- ◆ Complies with IEEE802.11b/g/n.
- ◆ Gateway/AP(Bridge)/AP-Client/Client(Station)/Ad-hoc Mode , WDS/Repeater supports
- ◆ 1T1R RF Interface
- ◆ Physical link rate up to 150Mbps
- ◆ Built-in 3 Ethernet Ports
- ◆ 2 Serial Ports supports
- ◆ Working as Wi-Fi Router
- ◆ WEP 64/128bit, WPA/WPA2-PSK TKIP, AES
- ◆ 802.1x (Only in AP mode)
- ◆ 802.11e and WMM (Wi-Fi Multimedia)
- ◆ Router and Firewall function supports

1.2. Wireless Specifications

| Type | Description |
|--|--|
| Wireless Standard | IEEE802.11b/g/n |
| Frequency Range | USA: 2.400 ~ 2.483GHz Europe: 2.400 ~ 2.483GHz Japan: 2.400 ~ 2.497GHz China: 2.400 ~ 2.483GHz |
| Operating Channels | USA/Canada: 11(1 ~ 11) Major Europe Countries: 13(1 ~ 13) France: 4(10 ~ 13) Japan: 14 for 802.11b(1 ~ 14), 13 for 802.11g(1 ~ 13) Korea/China: 13(1 ~ 13) |
| Available Spectrum | 83.5MHz |
| Output Power (Tolerance(+/-1.5dBm)) | 802.11b: 17dBm@11Mbps 802.11g: 13dBm@54Mbps 802.11n: 13dBm@150Mbps/72Mbps |
| Receive Sensitivity | 802.11b: -79dBm@8% PER 802.11g: -65dBm@10% PER 802.11n: -62dBm@10% PER |
| Data Rates | 802.11b: 1,2,5.5,11Mbps 802.11g: 6,9,12,18,24,36,48,54Mbps 802.11n: 29.5,86.5,115,130,144,150Mbps |
| Modulation Type | 11g: OFDM(64QAM, 16QAM, QPSK, BPSK) 11b: DSS(CCK, DQPSK, DBPSK) |
| Antenna | u.FL (EVB : 1T1R 2dBi) |
| Encryption | 64/128Bit WEP, WPA |

Table 1. Wi-Fi Specifications

1.3. Hardware Specifications

| Type | Description |
|-------------------|--|
| Interface | Serial port : 2 EA LAN port : 3EA USB port : 1 USB Host Port |
| | U.FL(wireless) |
| Temperature | Operation: 0°C~+50°C Storage: -20°C ~ +70°C |
| Humidity | Operation: 10% to 90%, Non-Condensing Storage: 5% to 90%, Non-Condensing |
| Serial | Baud Rate : 1200 ~ 921,600bps |
| | Stop bits: 1, 2 |
| | Parity: None, Odd, Even |
| | Flow Control: UART1: XON/XOFF(software), CTS/RTS(hardware), none UART2: XON/XOFF, none |
| Input Power | DC 3.3V / 1A |
| Power Consumption | Max : 600mA (3.3V) |
| Dimension | 33mm X 43mm X 6.3mm |
| Weight | 6g |

Table 2. WizFi630A Module Specifications

1.4. Software Specifications

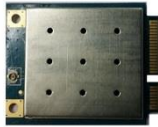



All functions in the below table are supported by Openwrt software.

| Type | Description |
|------------------------|--|
| Operation Mode | Access Point(Bridge), Client(Station), AP-Client |
| Wireless | Radio Enable/Disable |
| | SSID Hidden |
| | Multi SSID |
| | Rate Control |
| | TX Power Control |
| | Beacon Interval |
| | DTIM Period |
| | Fragment Length |
| Protocol | TCP, UDP, ARP, ICMP, DHCP, PPPoE, HTTP |
| Security | WEP 64/128bit |
| | WPA/WPA2-PSK - with Radius Server or Pre-Shared Key - Unicast Encryption: AES/TKIP |
| | MAC Address Filtering / Limiting |
| Network | Port Forwarding(UDP and/or TCP) |
| | DHCP Client / Server |
| | WDS(Wireless Distribution System) Support |
| | NAT |
| | VLAN |
| Management | Administrator ID / PWD |
| | Station & AP Association Information |
| | SSH(Secure Shell) Support |
| | Web based Configuration / Serial Command Configuration |
| | Upgrade through WEB UI |
| Serial To Wi-Fi | 2 Serial Port supports (This can be configured by Ser2Net open tool) |

Table 3. SW Specifications

1.5.EVB Construction

1.5.1. Contents

| Section | Qty. | Contents |
|---------------|------|--|
| WizFi630A | 1ea | WizFi630A |
| | |  |
| WizFi630A-EVB | 1ea | WizFi630A-EVB |
| | |  |
| Antenna | 1 ea | 2dBi WI-FI Antenna (Model : W5I-B0-08) |
| | |  |
| Serial Cable | 1 ea | Serial Cable |
| | |  |
| LAN Cable | 1 ea | LAN Cable |



| | | |
|----------------|------------|--|
| | |  |
| Adapter | 1ea | DC 5V/2A Adapter |
| | |  |

Table 4. WizFi630A-EVB Contents

1.6. Block Diagram

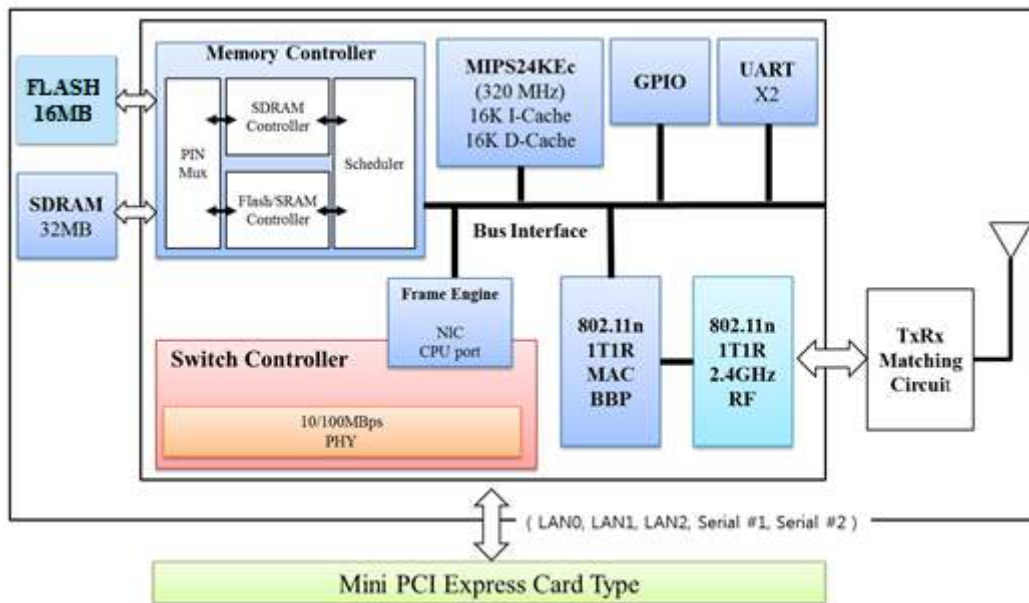


Figure 1. WizFi630A Block Diagram

2. Hardware Information

2.1. WizFi630A Pin Map

| No | T | Name | Shared | Description |
|----|----------|-----------|--------|------------------------------|
| 1 | | GND | | |
| 2 | | 3.3V | | |
| 3 | | GND | | |
| 4 | | 3.3V | | |
| 5 | I/O, IPD | CTS_N | GPIO9 | UART1 CTS-N |
| 6 | I/O, IPD | RTS_N | GPIO7 | UART1 RTS-N |
| 7 | I/O, IPD | RIN | GPIO14 | UART1 RIN |
| 8 | I/O, IPD | DTR_N | GPIO11 | UART1 DTR-N |
| 9 | I/O, IPD | RxD | GPIO10 | UART1 RXD |
| 10 | I/O, IPD | TxD | GPIO8 | UART1 TXD |
| 11 | I/O, IPD | DSR_N | GPIO13 | UART1 DSR-N |
| 12 | I/O, IPD | DCD_N | GPIO12 | UART1 DCD-N |
| 13 | O | WLAN_LED | | Wireless Init On |
| 14 | | NC | | |
| 15 | | NC(VBUS) | | USB OTG VBUS pin in WizFi630 |
| 16 | | NC | | |
| 17 | I/O | USB_PADP | | USB OTG data pin Data+ |
| 18 | I/O, IPD | UART_RX | | UART2 RxD |
| 19 | I/O | USB_PADM | | USB OTG data pin Data- |
| 20 | I/O, IPD | UART_TX | | UART2 TxD |
| 21 | O | TXOP0 | | 10/100 PHY Port #0 TXP |
| 22 | I | RXIM0 | | 10/100 PHY Port #0 RXN |
| 23 | O | TXOM0 | | 10/100 PHY Port #0 TXN |
| 24 | I | RXIP0 | | 10/100 PHY Port #0 RXP |
| 25 | I | RXIM1 | | 10/100 PHY Port #1 RXN |
| 26 | O | TXOP1 | | 10/100 PHY Port #1 TXP |
| 27 | I | RXIP1 | | 10/100 PHY Port #1 RXP |
| 28 | O | TXOM1 | | 10/100 PHY Port #1 TXN |
| 29 | I | RXIP2 | | 10/100 PHY Port #2 RXP |
| 30 | O | TXOM2 | | 10/100 PHY Port #2 TXN |
| 31 | I | RXIM2 | | 10/100 PHY Port #2 RXN |
| 32 | O | TXOP2 | | 10/100 PHY Port #2 TXP |
| 33 | O | LINK0_LED | | LAN port 0 Link LED |
| 34 | O | LINK2_LED | | LAN port 2 Link LED |
| 35 | O | LINK1_LED | | LAN port 1 Link LED |
| 36 | I/O, IPD | GPIO0 | GPIO0 | WPS Button Push |
| 37 | I, IPU | CPURST_N | | |
| 38 | I/O, IPD | EJTAG_TDO | GPIO17 | Reset Button Push(GPIO17) |

| | | | | |
|----|----------|--------------|--------|--|
| 39 | I/O, IPD | EJTAG_TRST_N | GPIO21 | UART2 Tx/Rx LED (This can be configured) |
| 40 | I/O, IPD | EJTAG_TMS | GPIO19 | General Purpose Input Switch SW1-1 |
| 41 | I/O, IPD | EJTAG_TDI | GPIO18 | UART1 Tx/Rx LED (This can be configured) |
| 42 | I/O, IPD | EJTAG_TCK | GPIO20 | WPS LED(GPIO20) |
| 43 | | NC | | |
| 44 | | NC | | |
| 45 | | NC | | |
| 46 | | NC | | |
| 47 | I/O, IPD | I2C_SCLK | GPIO2 | General Purpose Input Switch SW1-2 |
| 48 | I/O, IPD | I2C_SD | GPIO1 | RUN LED(GPIO1) |
| 49 | | GND | | |
| 50 | | 3.3V | | |
| 51 | | GND | | |
| 52 | | 3.3V | | |

Table 1. WizFi630A Pin Map

2.3. WizFi630A Pin-Out

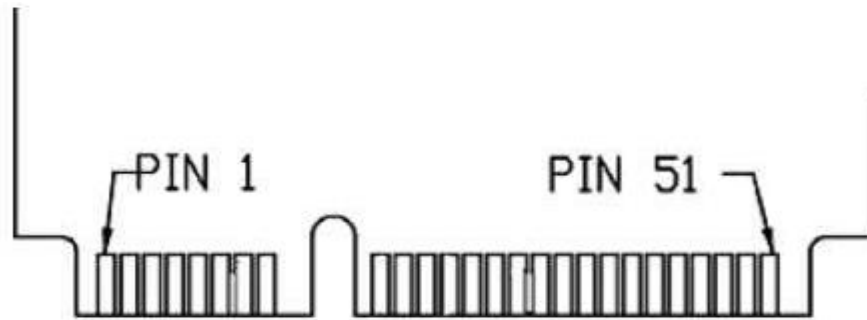


Figure 2 mini PCI connector Top View

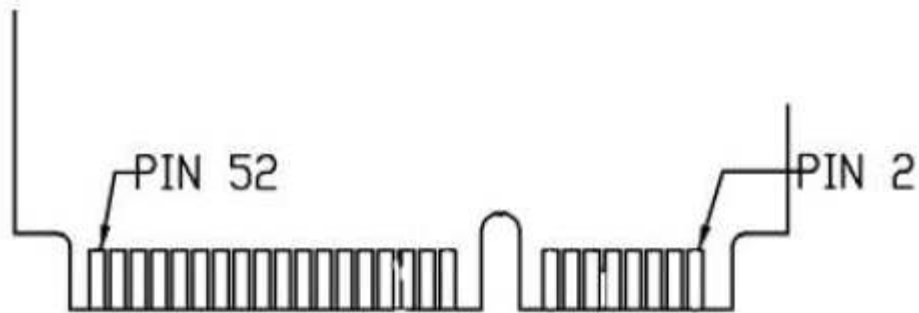
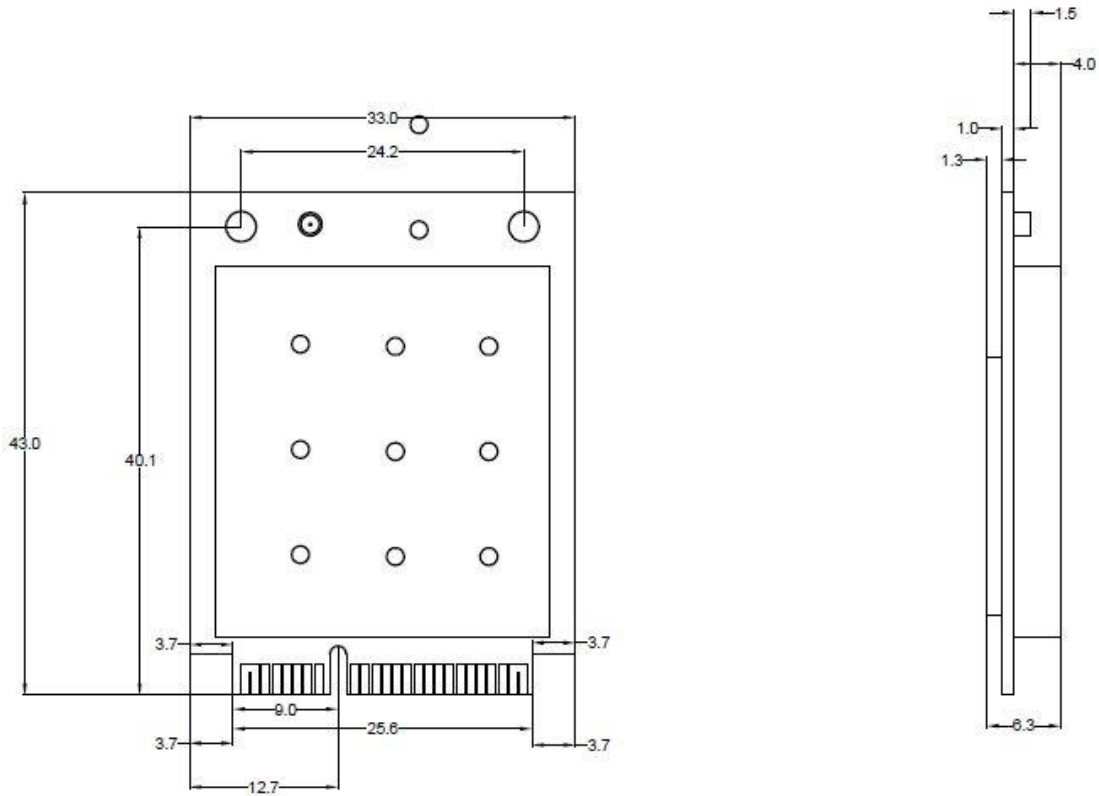


Figure 3 min PCI connector Bottom View

2.4. Dimensions

| Dimensions (mm) | Length | Width | Height | Hole Width | HOLE Height | HOLE Φ |
|---------------------|--------|-------|--------|------------|-------------|-------------|
| | 43 | 33 | 6.3 | 24.2 | 40 | 2.5 |
| Tolerance +/- 0.2mm | | | | | | |



3. Electrical Characteristics

3.1. Absolute Maximum Ratings

| | |
|------------------------------|--------------------------|
| Supply Voltage | 3.6V |
| Vcc to Vcc Decouple | -0.3 to +0.3V |
| Input, Output or I/O Voltage | GND – 0.3V to Vcc + 0.3V |

3.2. Operating Conditions

| | |
|---------------------------|------------|
| Operational Ambient Range | 0℃ to 50℃ |
| Supply Voltage | 3.3V ± 10% |

3.3. DC Electrical Characteristics

3.3.1. Power Consumption

| Supply Voltage | Conditions | Min | Typical | Max | Unit |
|----------------|------------|-----|---------|-----|------|
| 3.3V | Wifi off | 240 | - | - | mA |
| | Wifi on | 280 | - | 600 | |

3.3.2. DC characteristics for GPIO pins with 4mA driving capability

| Symbol | Min | Normal | Max | Unit |
|-----------------|------|--------|------|------|
| V _{IH} | 2.0 | | 5.5 | V |
| V _{IL} | -0.3 | | 0.8 | V |
| V _{OH} | 2.4 | | | V |
| V _{OL} | | | 0.4 | V |
| I _{OH} | 10.0 | 19.4 | 31.1 | mA |
| I _{OL} | 6.5 | 10.4 | 14.4 | mA |

3.3.3. DC characteristics for GPIO pins with 8mA driving capability

| Symbol | Min | Normal | Max | Unit |
|-----------------|------|--------|------|------|
| V _{IH} | 2.0 | | 5.5 | V |
| V _{IL} | -0.3 | | 0.8 | V |
| V _{OH} | 2.4 | | | V |
| V _{OL} | | | 0.4 | V |
| I _{OH} | 14.0 | 27.2 | 44.9 | mA |
| I _{OL} | 9.8 | 15.7 | 21.8 | mA |

3.4. AC Electrical Characteristics

3.4.1. Power On Sequence

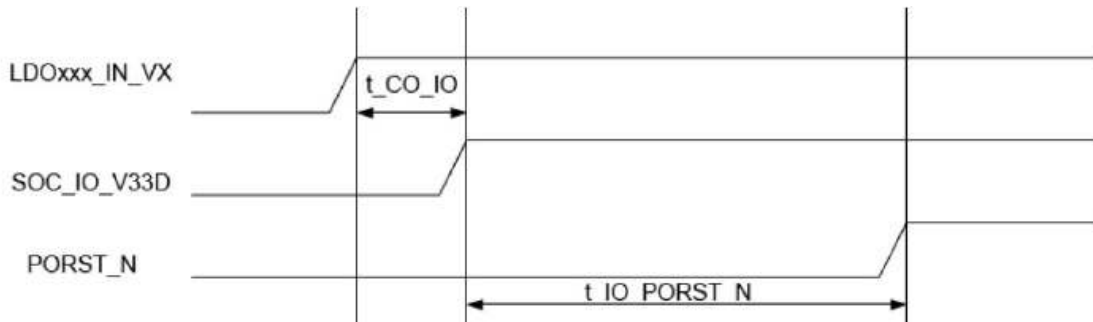


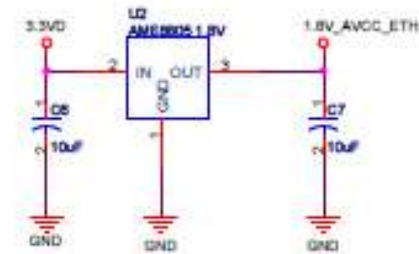
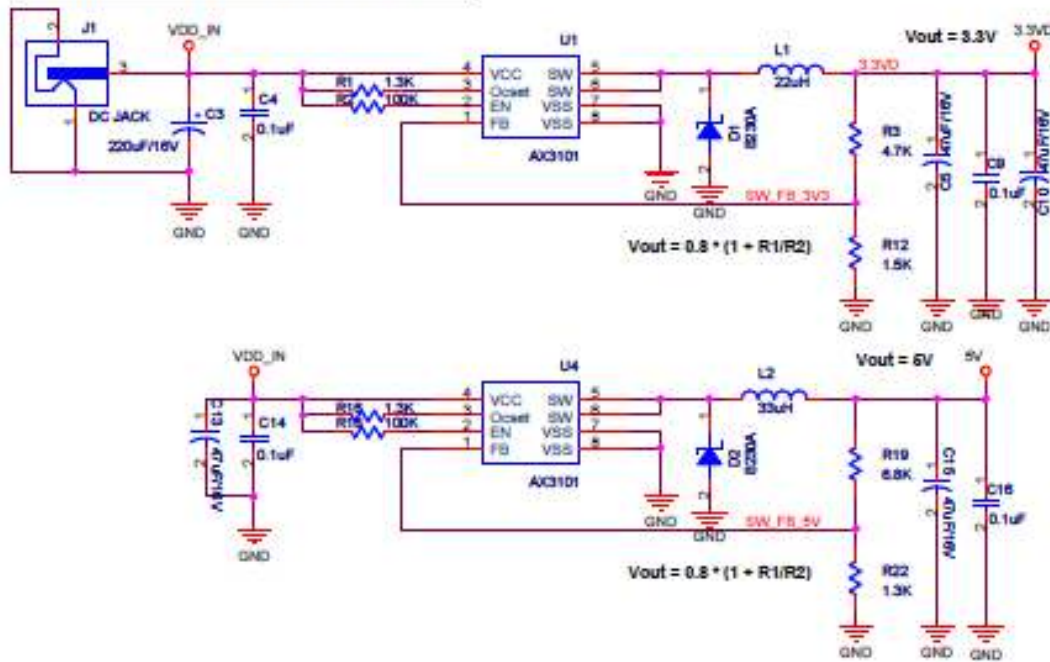
Figure 4 Power On Sequence

| Symbol | Description | Min | Max | Unit |
|-------------------------|--|-----|-----|------|
| t _{IO PORST N} | Time between I/O power-on to PORST_N deassertion | 10 | | ms |

4. Reference Schematic

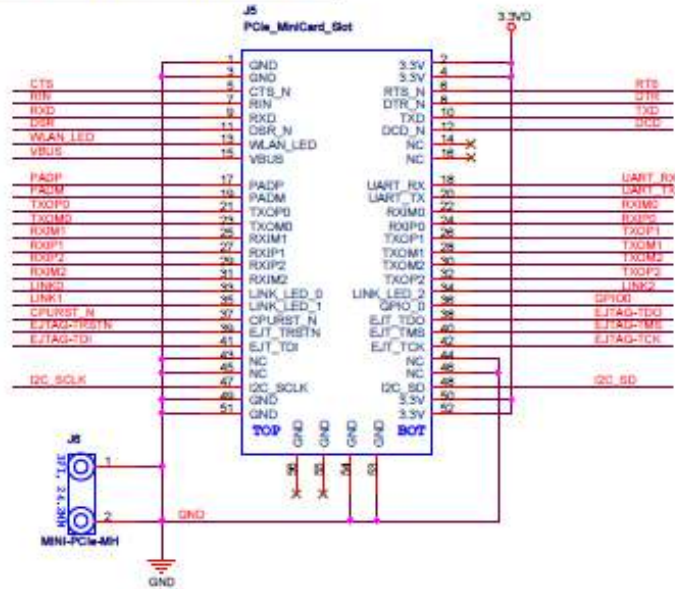
4.1. Power Part

POWER PART 5V DC

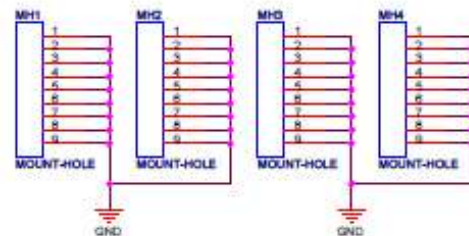
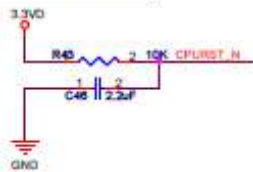


4.2. Main Connector and Reset Part

MAIN CONNECTOR PART

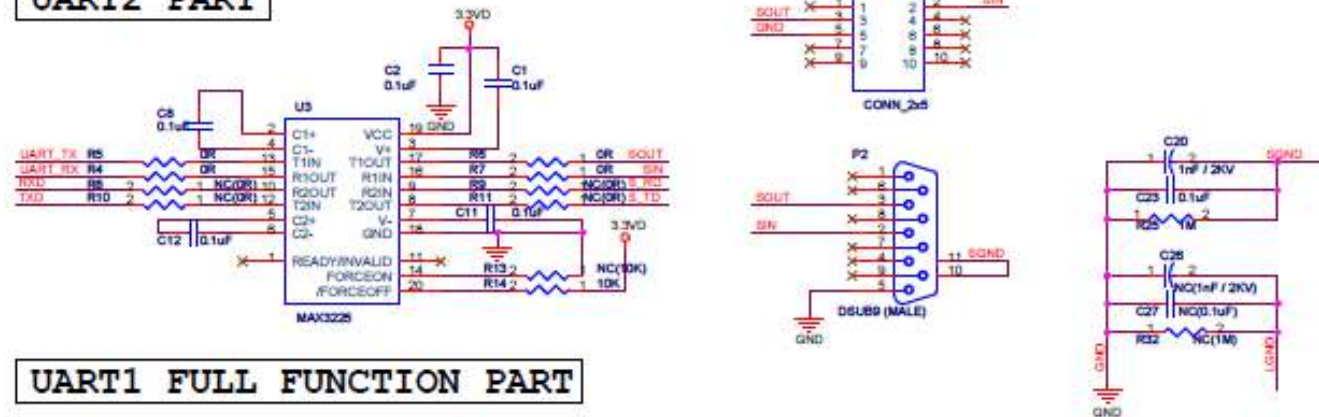


RESET PART

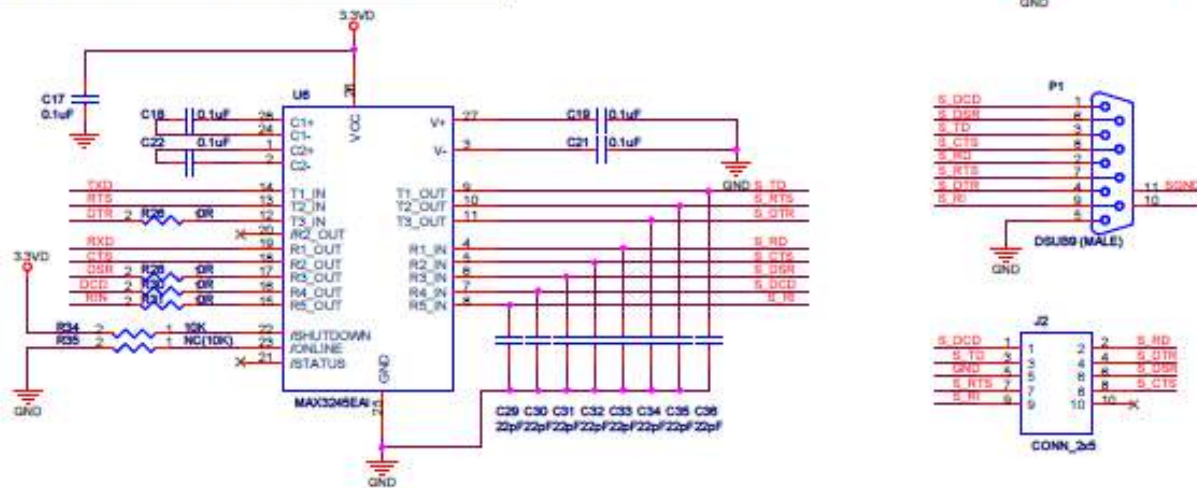


4.3. UART Part

UART2 PART



UART1 FULL FUNCTION PART



4.4. Indicator LED Part

INDICATOR LED PART



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