

WizFi630A Datasheet

(Version 1.2.1)



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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
2016-03-18	1.2.1	Change of block diagram

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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

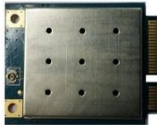



All functions in the below table are supported by Openwrt software.

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

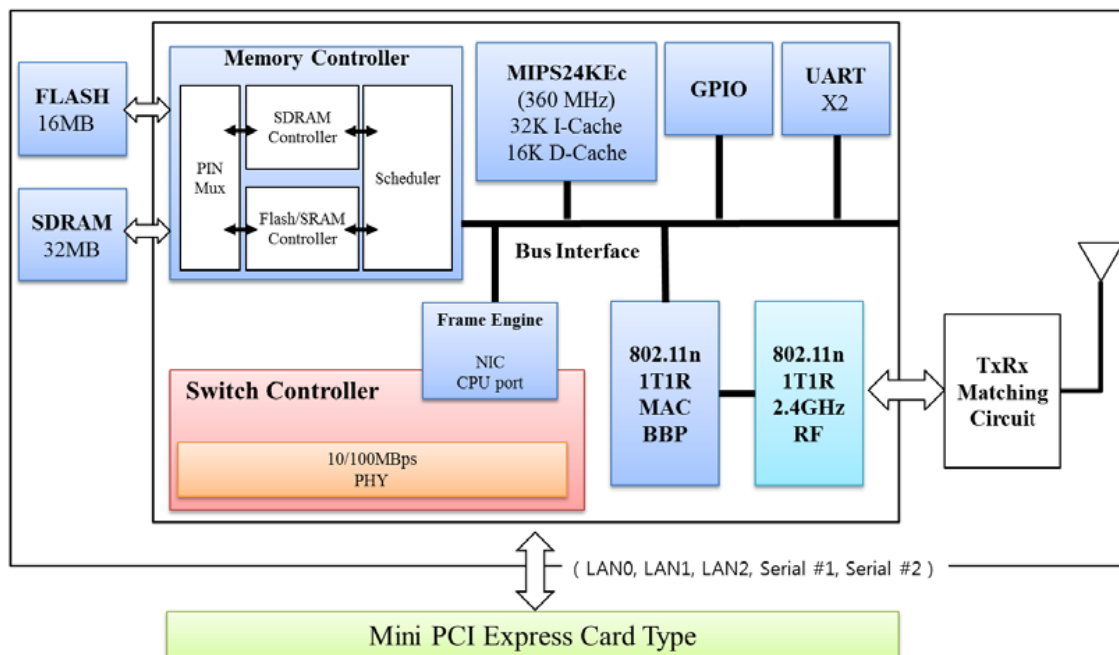


Figure 1. WizFi630A Block Diagram

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

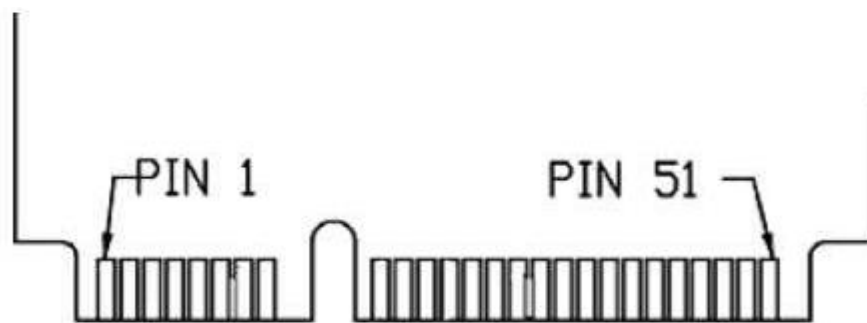


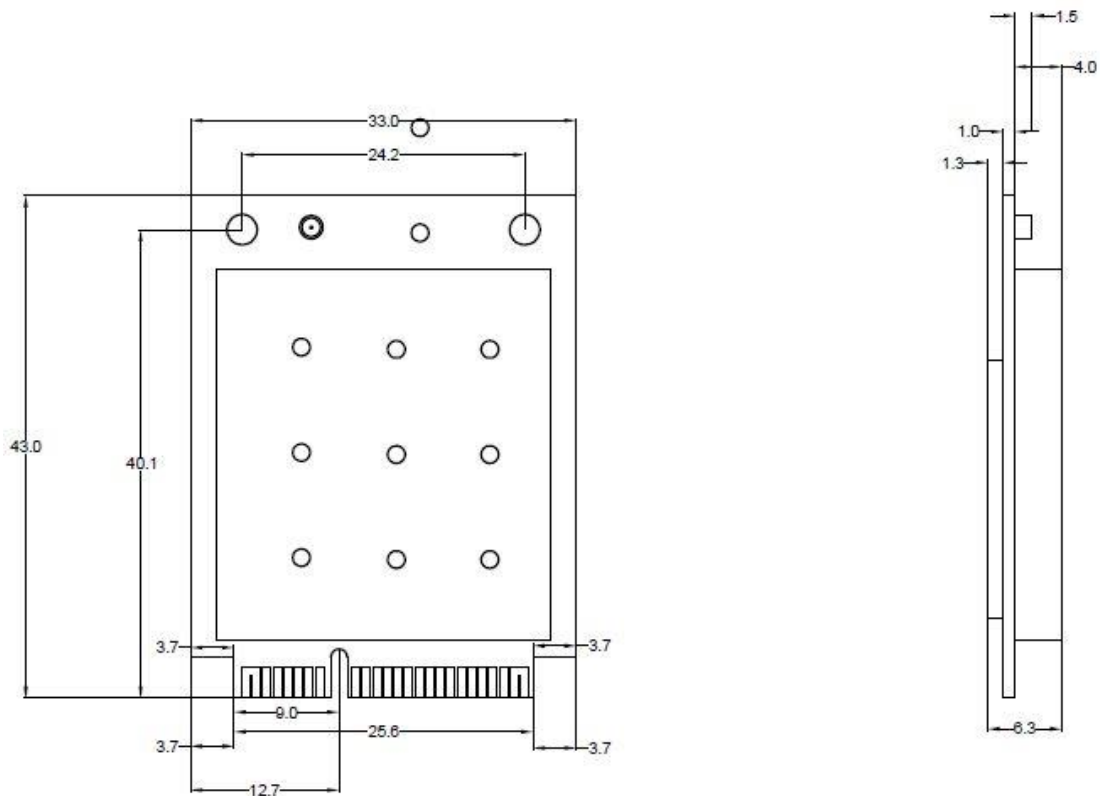
Figure 2 mini PCI connector Top View



Figure 3 min PCI connector Bottom View

2.4. Dimensions

	Length	Width	Height	Hole Width	HOLE Height	HOLE Φ
Dimensions (mm)	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

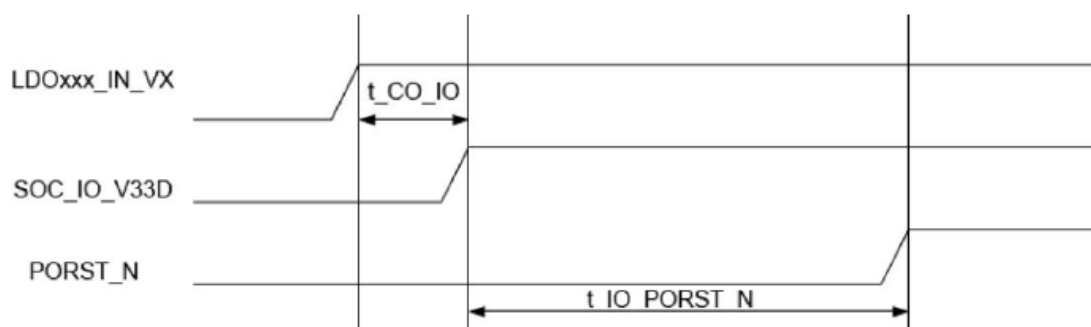


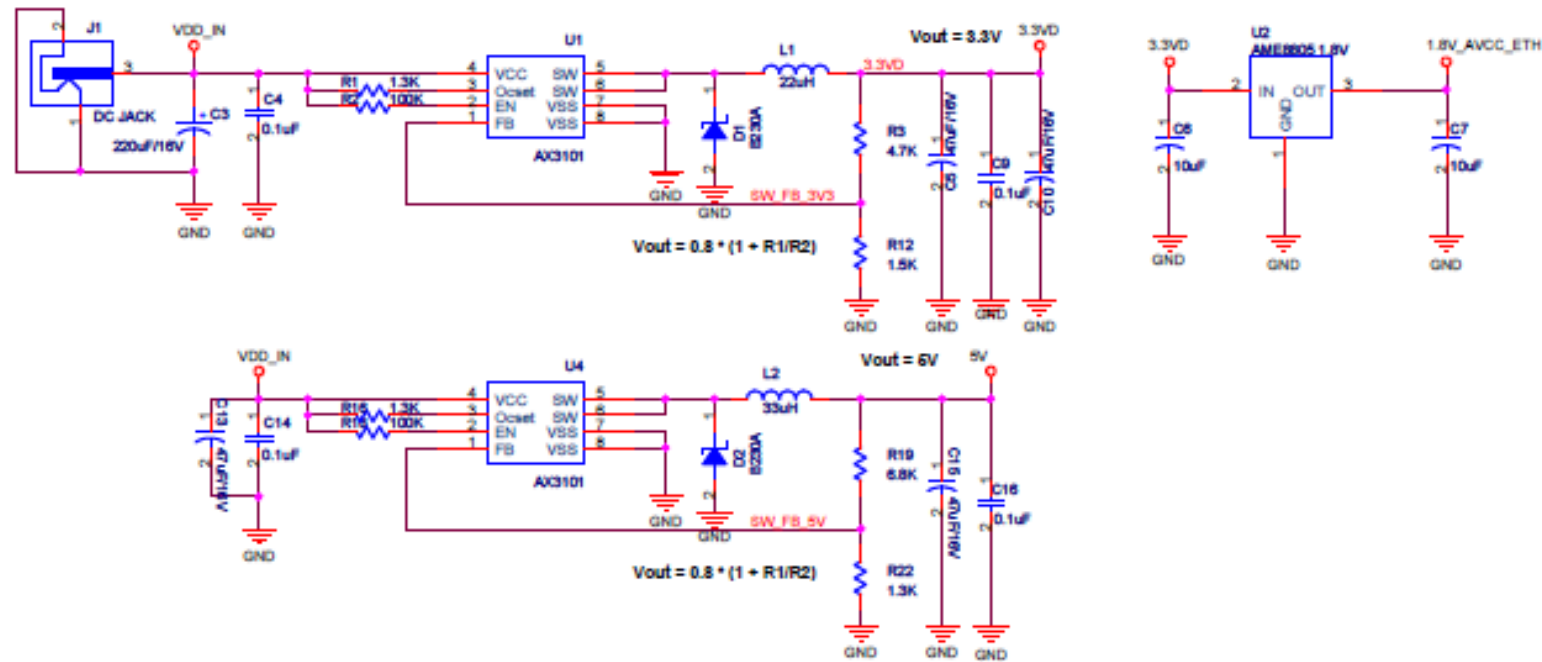
Figure 4 Power On Sequence

Symbol	Description	Min	Max	Unit
$t_{IO_PORST_N}$	Time between I/O power-on to PORST_N de-assertion	10		ms

4. Reference Schematic

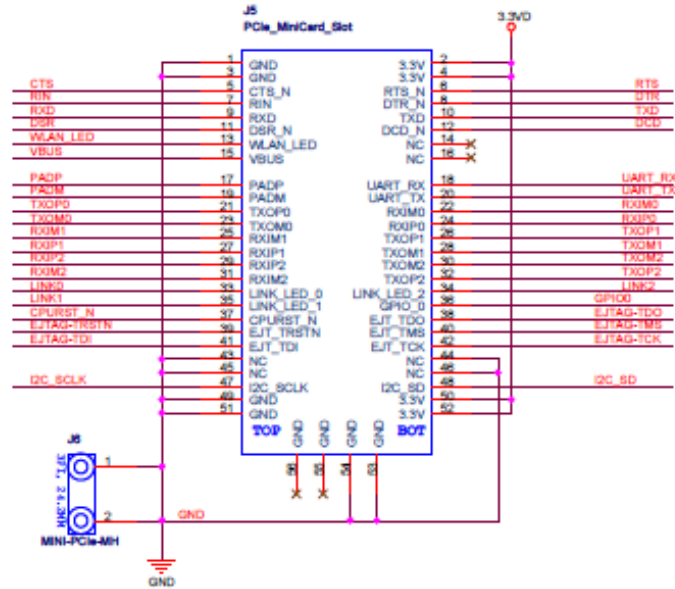
4.1. Power Part

POWER PART 5V DC

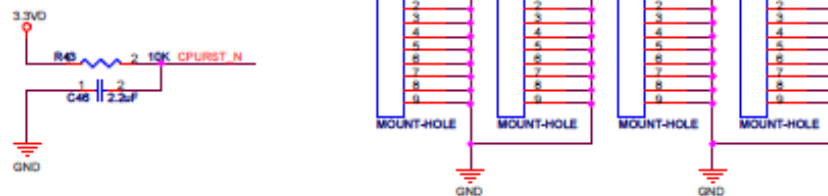


4.2. Main Connector and Reset Part

MAIN CONNECTOR PART

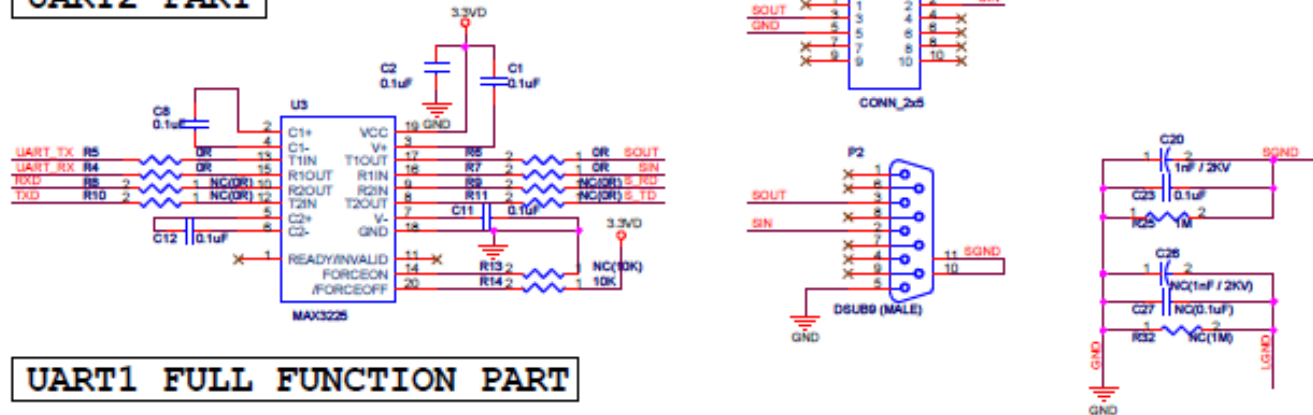


RESET PART

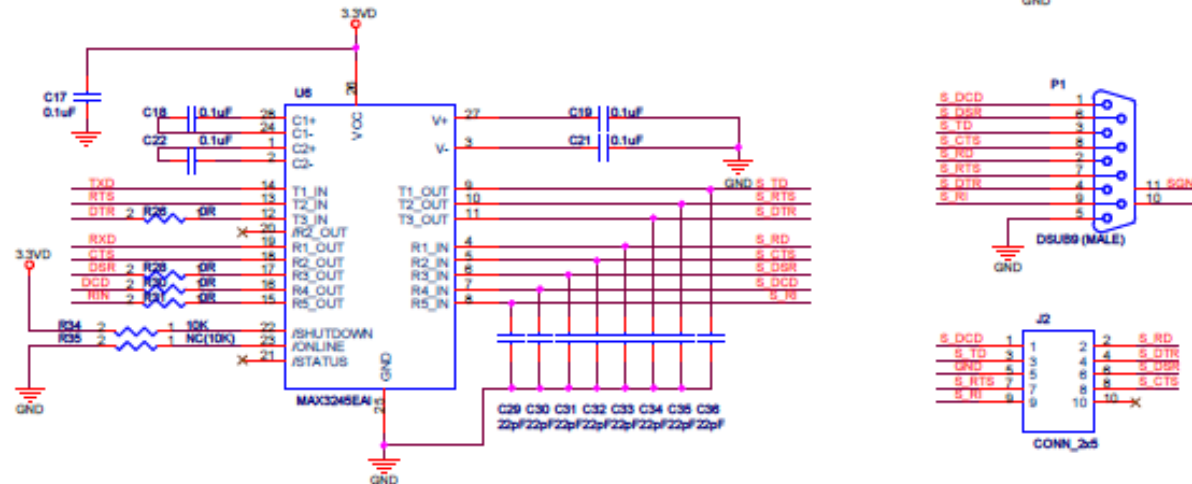


4.3. UART Part

UART2 PART

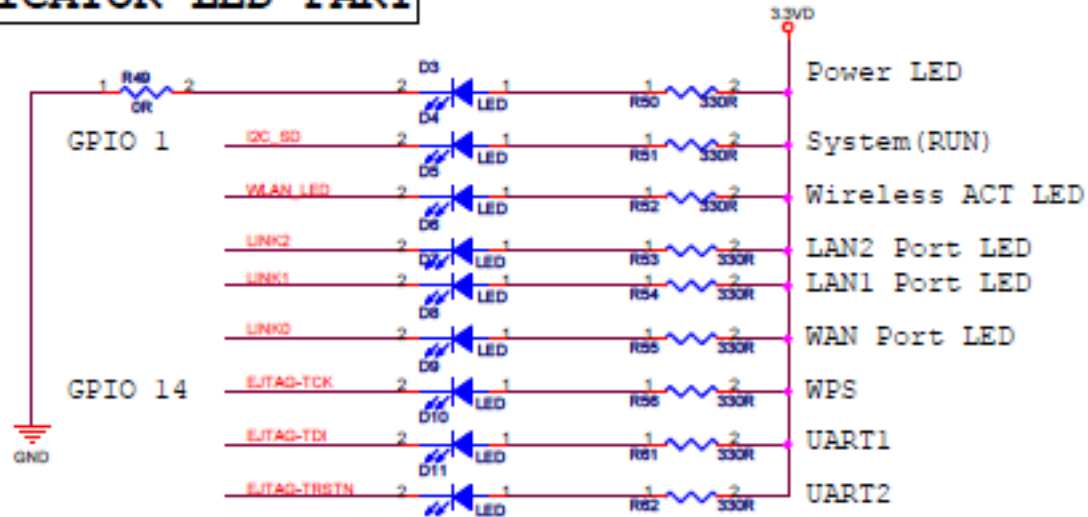


UART1 FULL FUNCTION PART



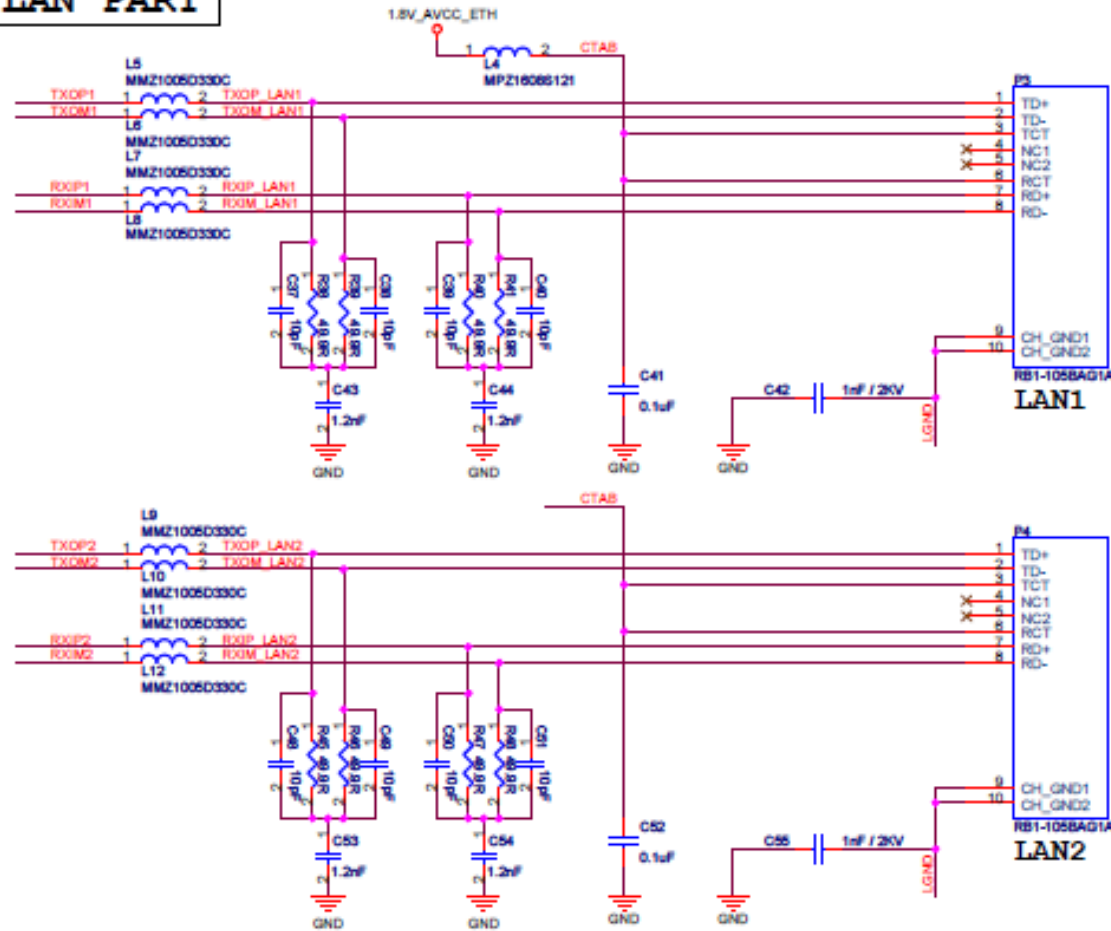
4.4. Indicator LED Part

INDICATOR LED PART

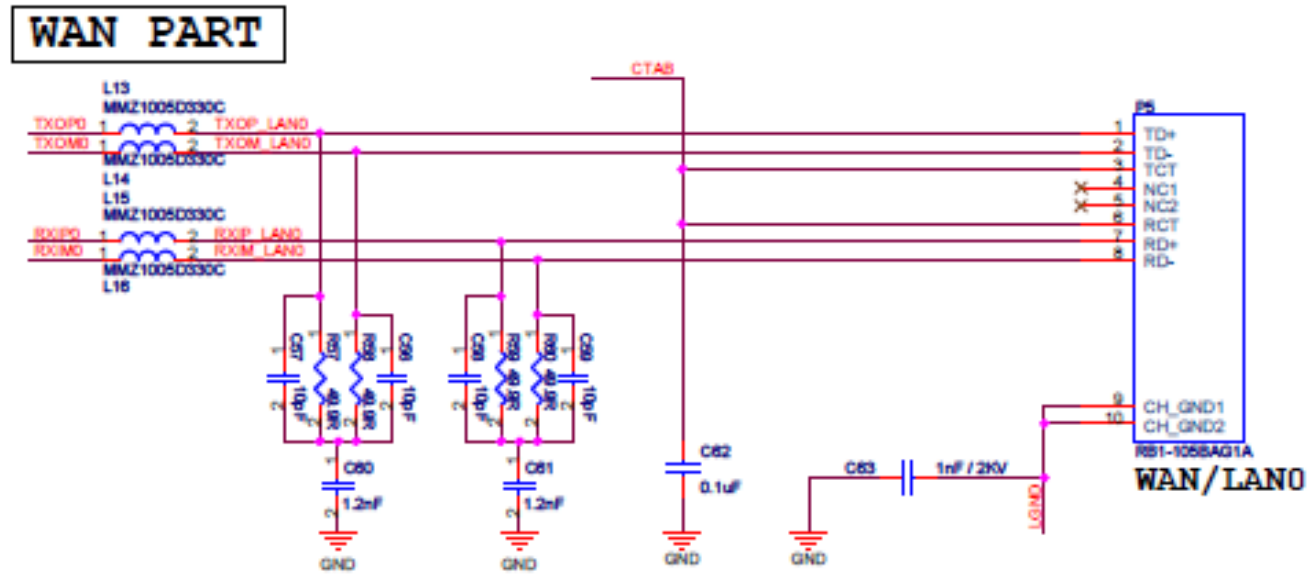


4.5. LAN Part

LAN PART



4.6. WAN Part



5. Important Notice

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