Revision History

Version	Date	Author	Change Note	Approved
V1.0	2017.01.12	Linus.Lin	First edition	

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	Revision History		
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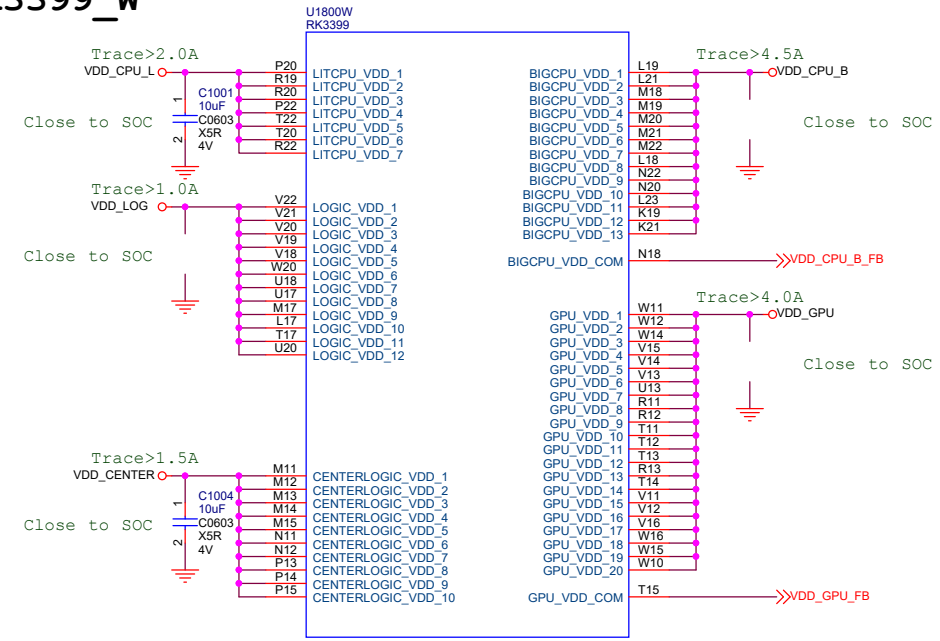
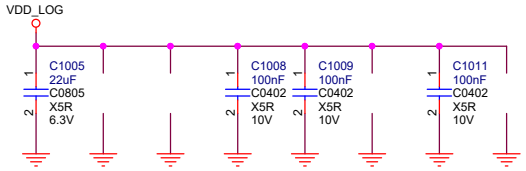
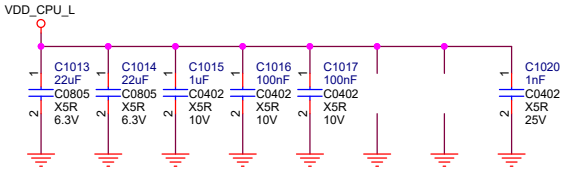
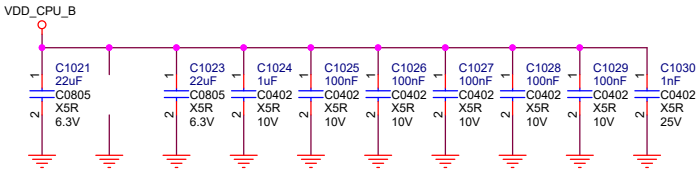
RK3399_W

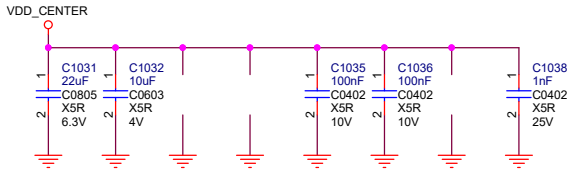


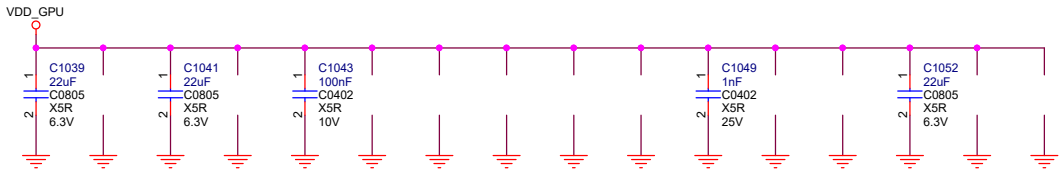
Note:All the Power filter capacitor should be place close to the power pin of RK3399



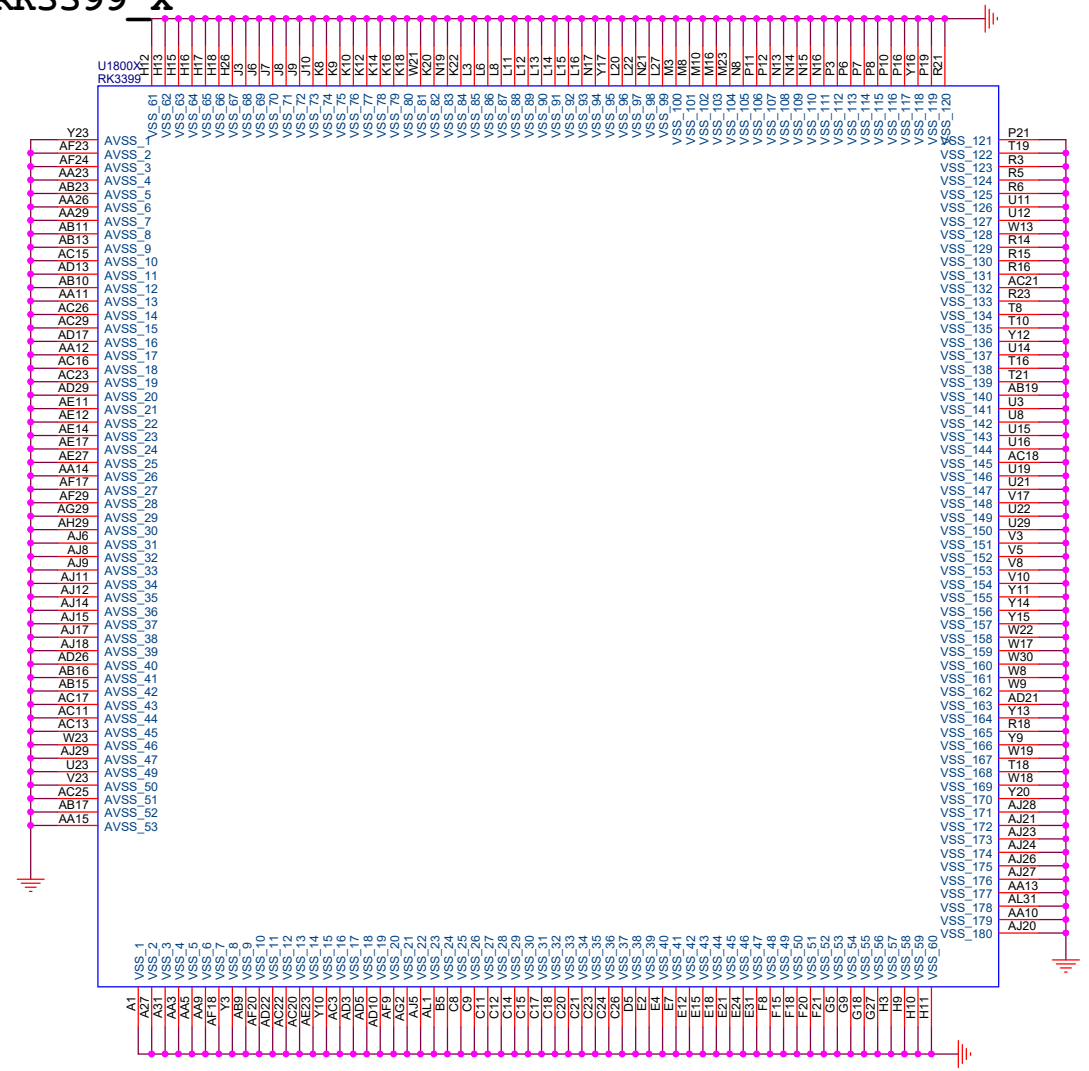








RK3399_X



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 Power		
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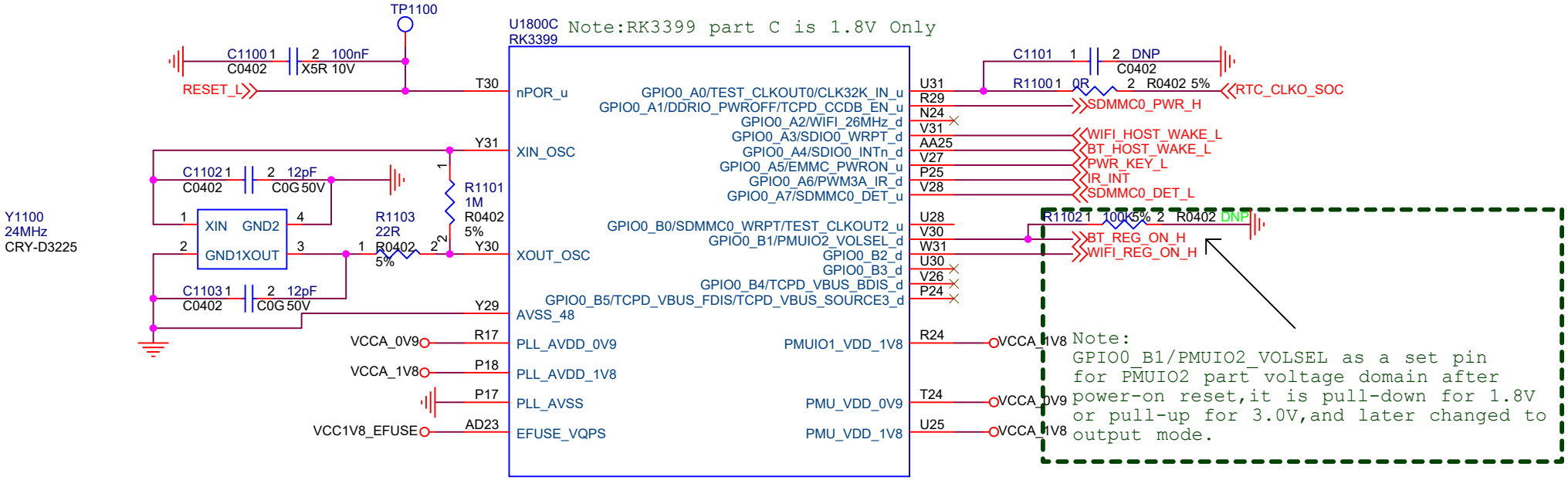
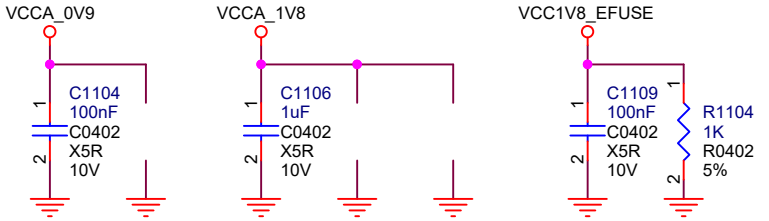
RK3399_C





Note:All the Power filter capacitor should be place close to the power pin of RK3399

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 PMU Controller		
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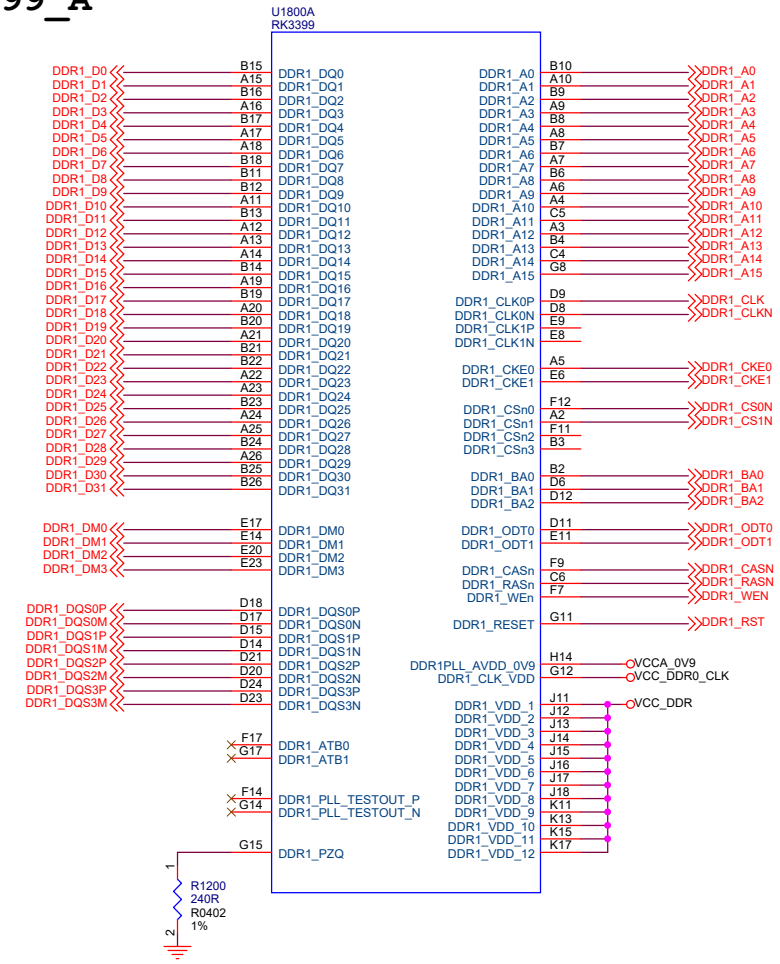
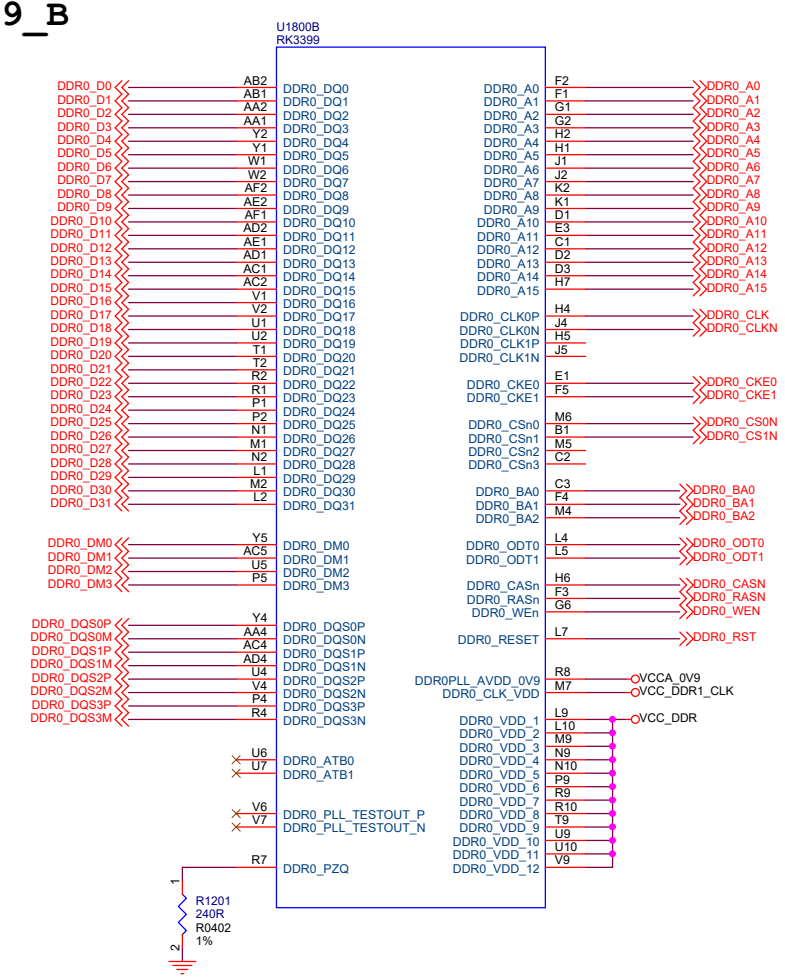
RK3399_A

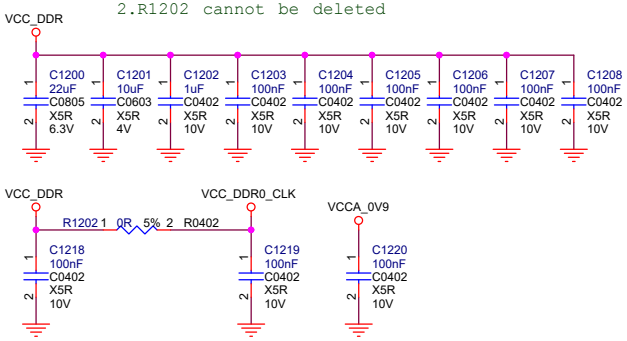


RK3399_B



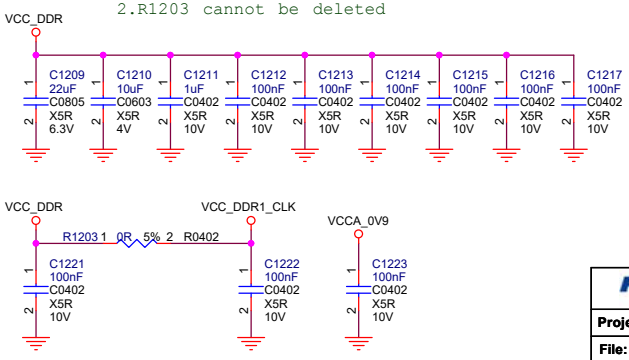
DDR FILTER

Note:
1.All the Power filter capacitor should be place close to the power pin of RK3399
2.R1202 cannot be deleted



DDR FILTER

Note:
1.All the Power filter capacitor should be place close to the power pin of RK3399
2.R1203 cannot be deleted



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 DDR Controller		
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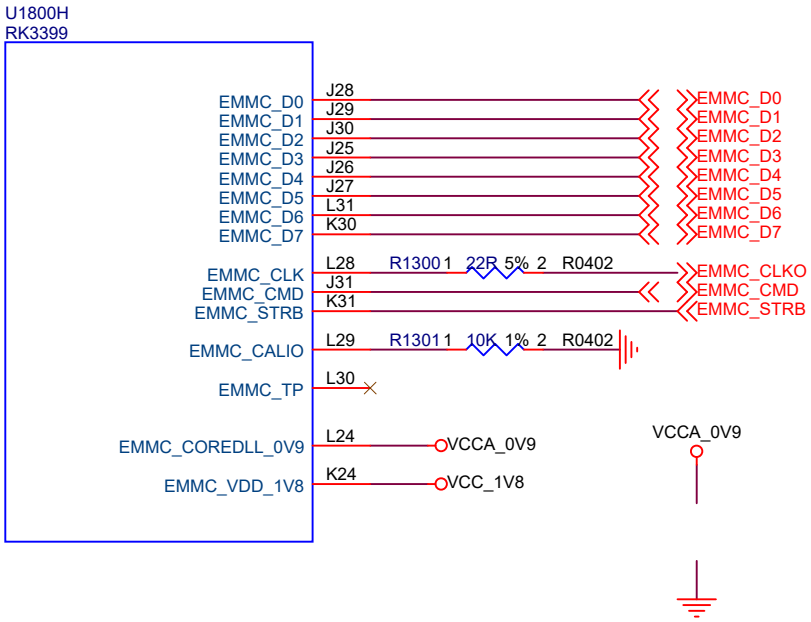
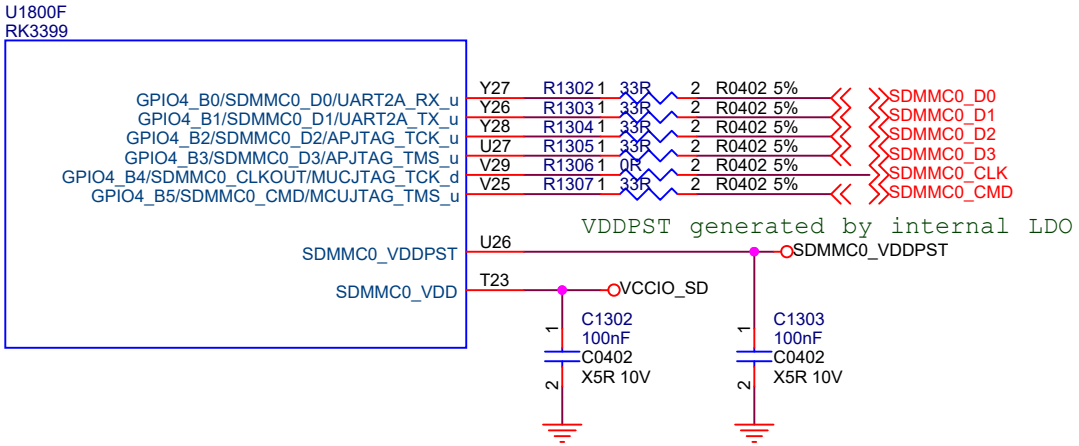
RK3399_H



EMMC design rule:
1.Data[0:3] ,CMD and Strobe lines routing parallel as a group, and be isolated with other signal by GND line,the skew between group is less than 200mil;
2.Clk should be isolated with other signal by GND line;The skew between data signal is less than 20ps;
3.Max trace length < 3.93 inchs;
4.Trace impedance 50ohm+/-10%;
5.The distance between other signals follows the 3W rule;
6.R1300 should be place close to RK3399;

Note:All the Power filter capacitor should be place close to the power pin of RK3399

RK3399_F



SDMMC design rule:
1.Data[0:3] and CMD lines routing parallel as a group, and be isolated with other signal by GND line,the skew between group is less than 200mil;
2.Clk should be isolated with other signal by GND line;The skew between data signal is less than 20ps;
3.Max trace length < 3.93 inchs;
4.Trace impedance 50ohm+/-10%;
5.The distance between other signals follows the 3W rule;

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 FLASH/SDMMC Controlle		
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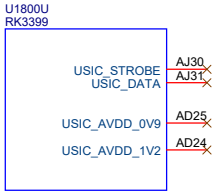
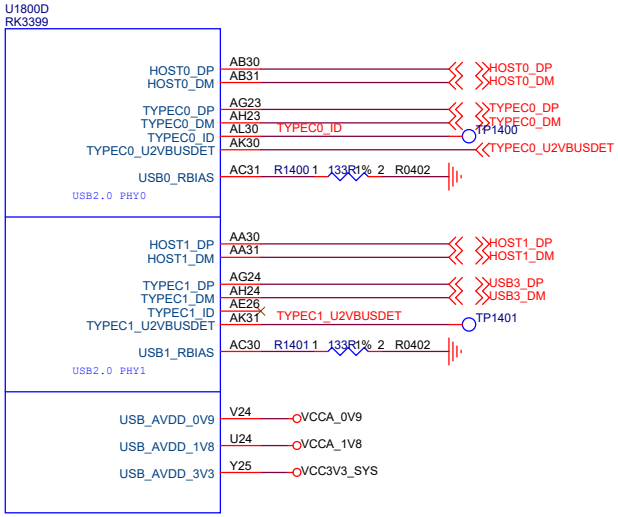
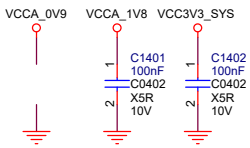
RK3399_U



RK3399_D

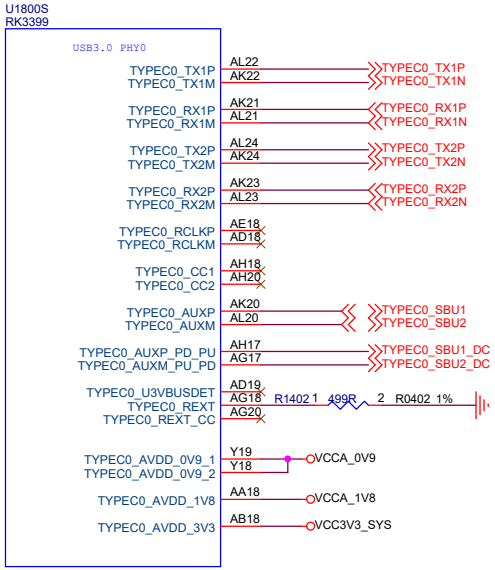


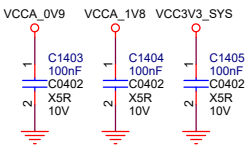


Note:All the Power filter capacitor should be place close to the power pin of RK3399

USB2.0 design rule:
1.Max intra-pair skew < 4 ps;
2.Max trace length < 6 inchs;
3.Max allowed via < 6;
4.Trace impedance 90ohm+/-10%;
5.The distance between other signals follows the 3W rule;

RK3399_S

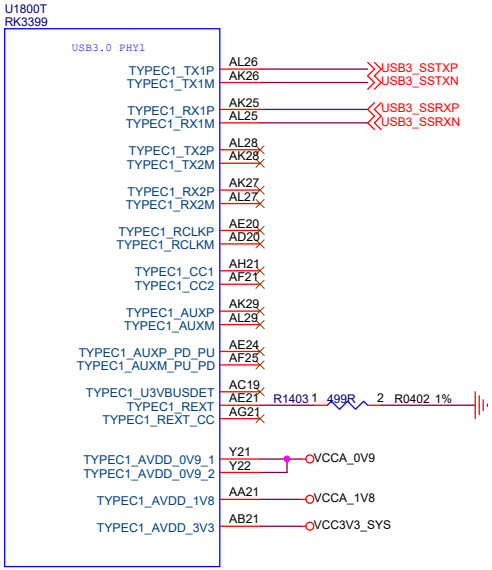




Note:All the Power filter capacitor should be place close to the power pin of RK3399

USB3.0 design rule:
1.Max intra-pair skew < 4 ps;
2.Max length skew between TX and RX < 1.6 ns;
3.Max trace length < 6 inchs;
4.Max allowed via < 4;
5.Trace impedance 90ohm+/-10%;
6.The distance between other signals follows the 3W rule;

RK3399_T



DP design rule:
1.Max intra-pair skew < 4 ps;
2.Max trace length < 6 inchs;
3.Max allowed via < 4;
4.Trace impedance 90ohm+/-10%;
5.The distance between other signals follows the 3W rule;

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
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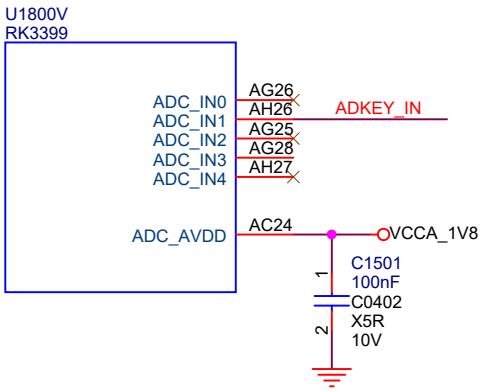
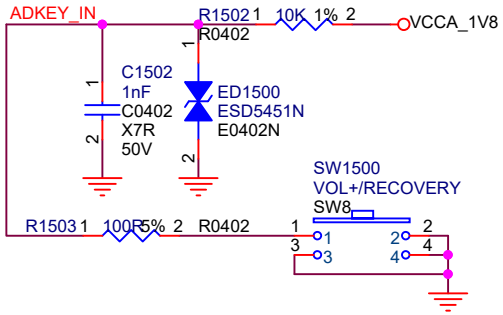
RK3399_V



Note:All the Power filter capacitor should be place close to the power pin of RK3399

KEY



Note:
1.If ADKEY_IN=0V at boot-time,
then system will enter into Recovery mode.
2.R1503,SW1500,ED1500 do not paster in Mass Production.

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
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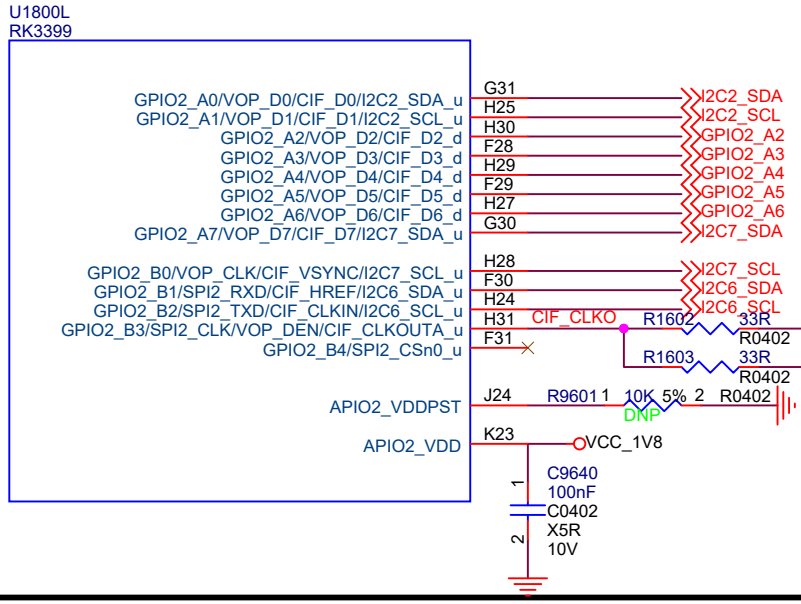
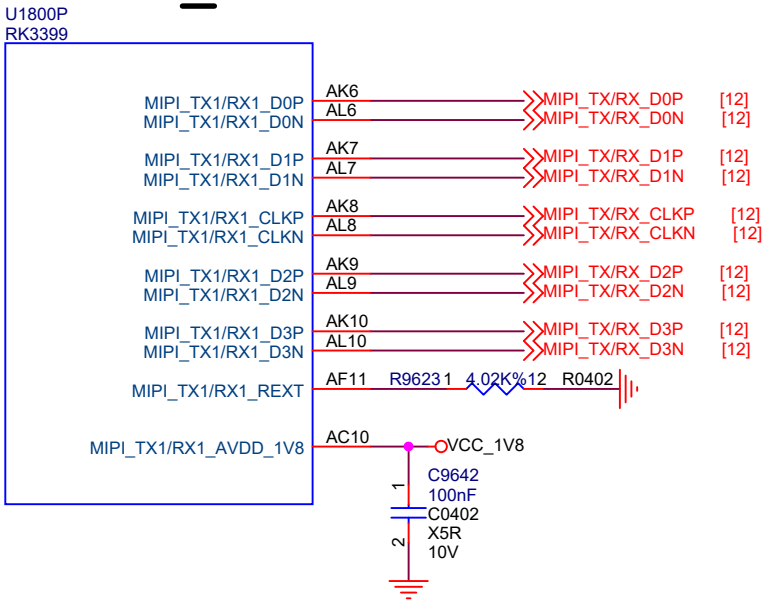
RK3399_L



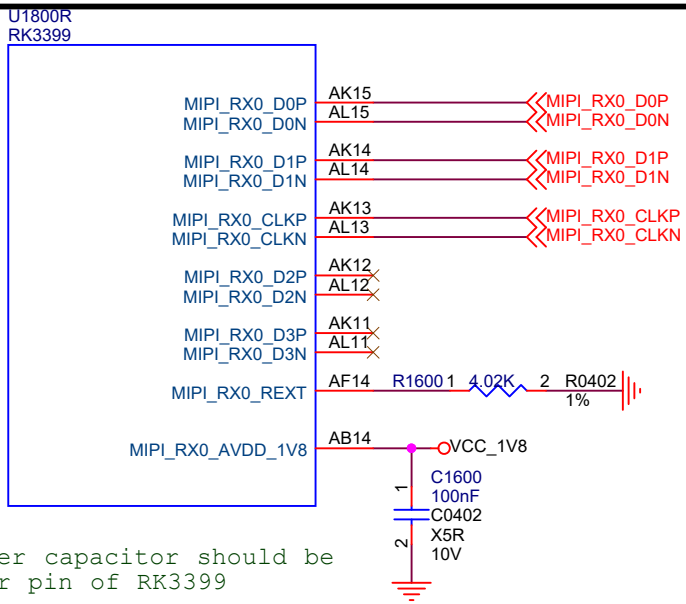
MIPI_MCLK0 [26]
MIPI_MCLK1 [26]

MIPI design rule:
1.Max intra-pair skew < 4 ps;
2.Max length skew between clk and data < 7ps;
3.Max trace length < 7.2 inchs;
4.Max allowed via < 4;
5.Trace impedance 100ohm+/-10%;
6.The distance between other signals follows the 3W rule;

RK3399_P



RK3399_R



Note:All the Power filter capacitor should be place close to the power pin of RK3399

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 DVP Interface		
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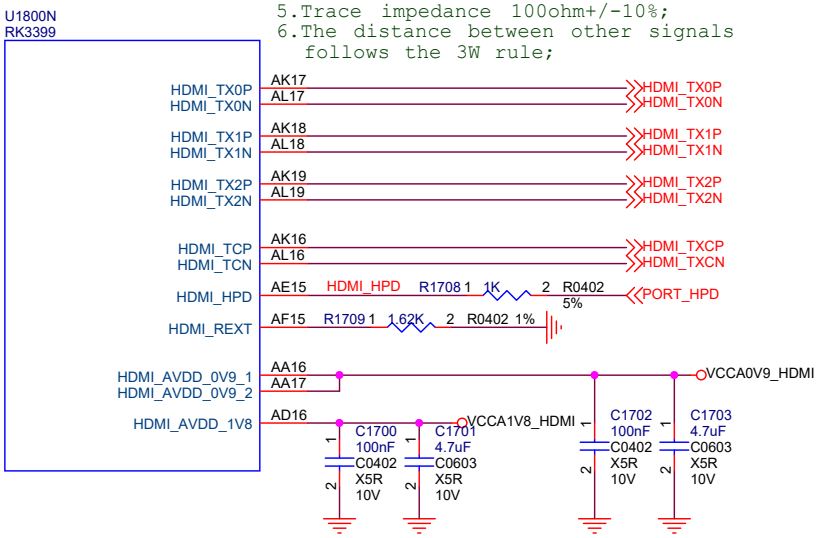
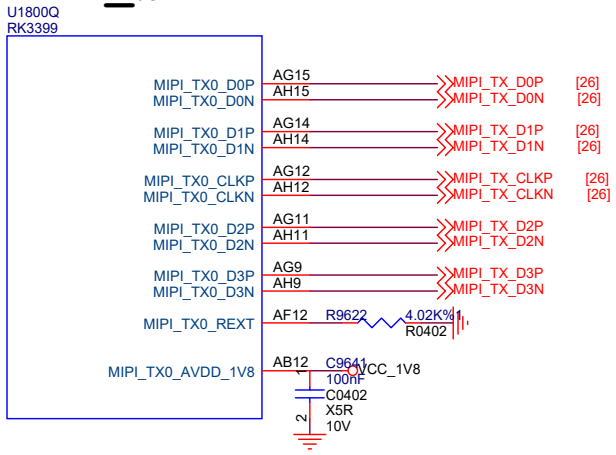
RK3399_N

HDMI design rule:
1.Max intra-pair skew < 4 ps;
2.Max length skew between clk and data < 80 ps;
3.Max trace length < 9.8 inchs;
4.Max allowed via < 4;
5.Trace impedance 100ohm+/-10%;
6.The distance between other signals follows the 3W rule;

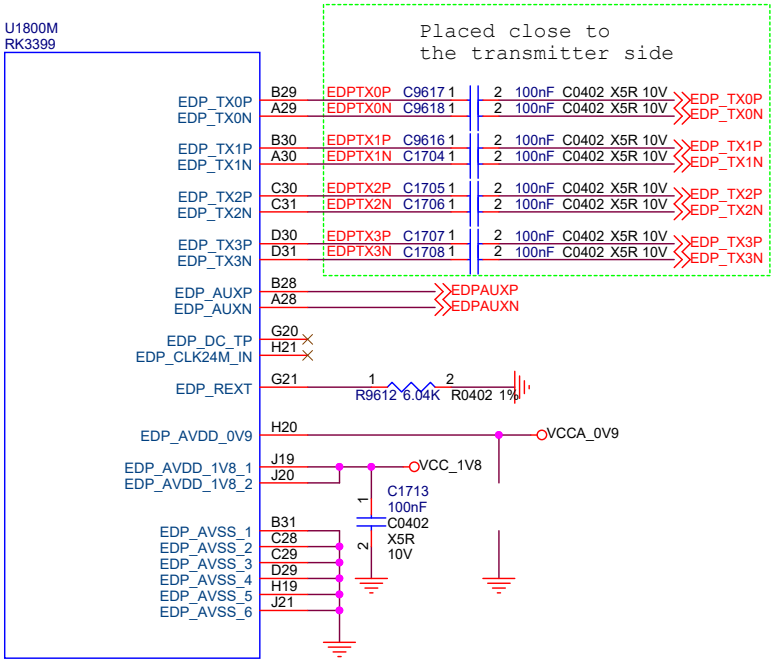


Note:All the Power filter capacitor should be place close to the power pin of RK3399

RK3399_Q



RK3399_M



eDP design rule:
1.Max intra-pair skew < 4 ps;
2.Max trace length < 6 inchs;
3.Max allowed via < 4;
4.Trace impedance 90ohm+/-10%;
5.The distance between other signals follows the 3W rule;

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
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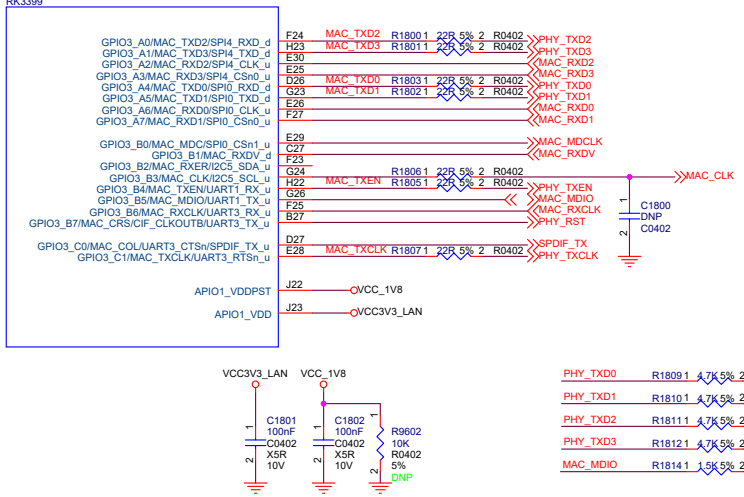
RK3399_I

U1800I
RK3399

Note:RK3399 part I is 3.3V only

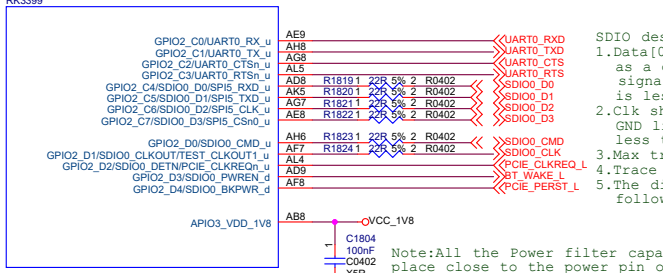


Note:All the Power filter capacitor should be place close to the power pin of RK3399

RK3399_G

U1800G
RK3399

Note:RK3399 part G is 1.8V only



C1804 100nF C0402 X5R 10V

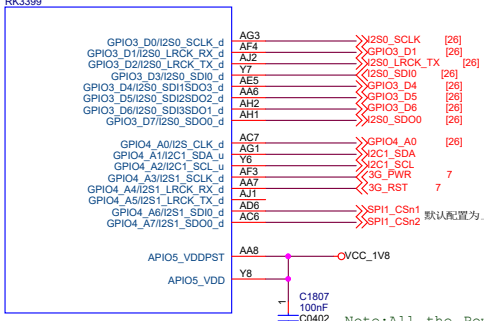
Note:All the Power filter capacitor should be place close to the power pin of RK3399

SDIO design rule:
1.Data[0:3] and CMD lines routing parallel as a group, and be isolated with other signal by GND line,the skew between group is less than 200mil;
2.Clk should be isolated with other signal by GND line;The skew between data signal is less than 20ps;
3.Max trace length < 3.93 inchs;
4.Trace impedance 50ohm+/-10%;
5.The distance between other signals follows the 3W rule;

RK3399_J

U1800J
RK3399

Note:RK3399 part J is 1.8V/3.0V mode



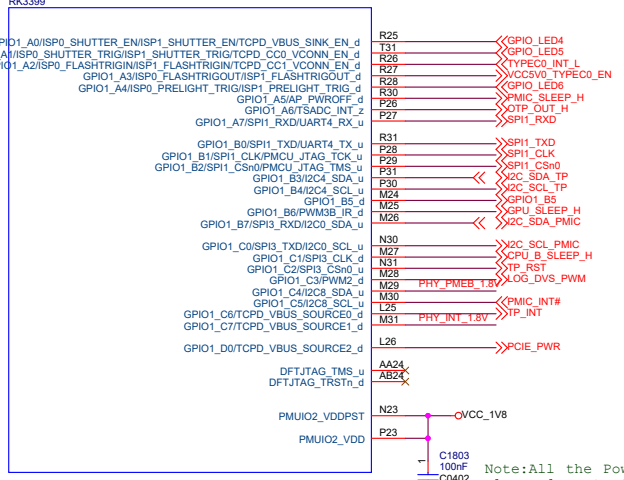
C1807 100nF C0402 X5R 10V

Note:All the Power filter capacitor should be place close to the power pin of RK3399

RK3399_E

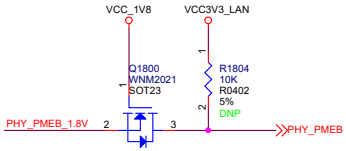
U1800E
RK3399

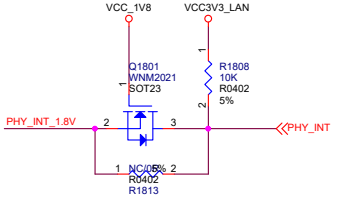
Note:RK3399 part E is 1.8V/3.0V mode



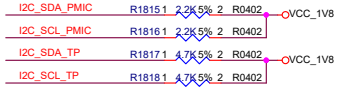
C1803 100nF C0402 X5R 10V

Note:All the Power filter capacitor should be place close to the power pin of RK3399





1.8V Only	VDDPST=VDDIO=1.8V
3.3V Only	VDDPST=1.8V,VDDIO=3.3V
other	3.0V mode:VDDPST=1.5V,VDDIO=3.0V 1.8V mode:VDDPST=1.8V,VDDIO=1.8V

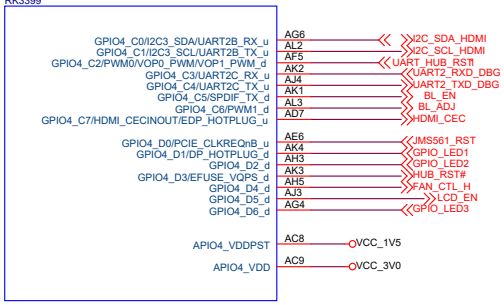


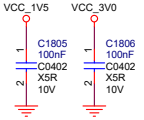
Note:PMUIO2 part voltage support 1.8V and 3.0V mode, software config should match with hardware design.

RK3399_K

U1800K
RK3399

Note:RK3399 part J is 1.8V/3.0V mode





Note:All the Power filter capacitor should be place close to the power pin of RK3399

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 GPIO		
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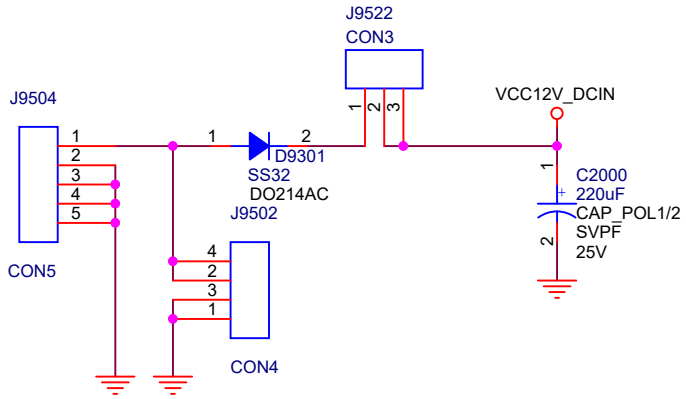
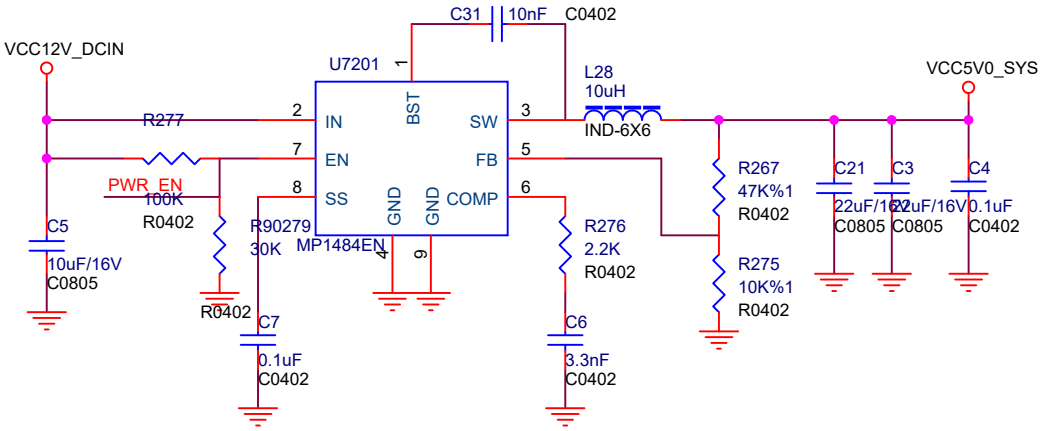
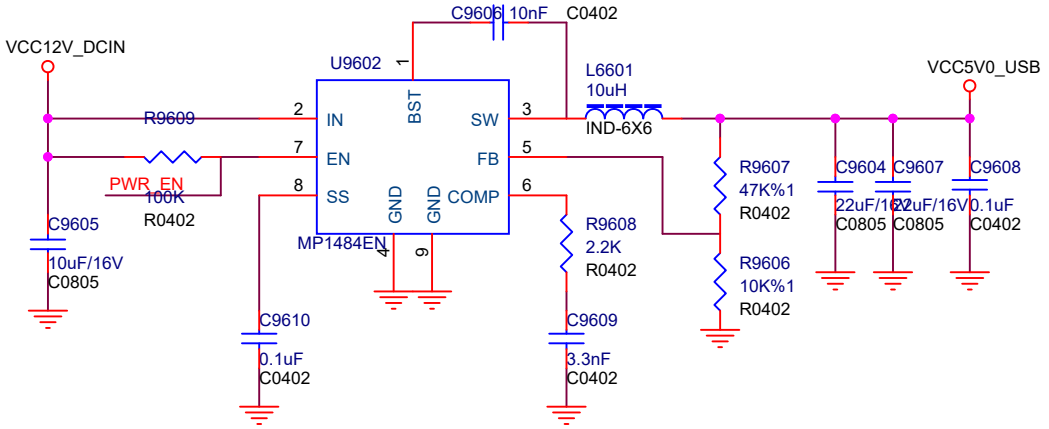
DC IN & SYSTEM Power







Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	Power-DC IN		
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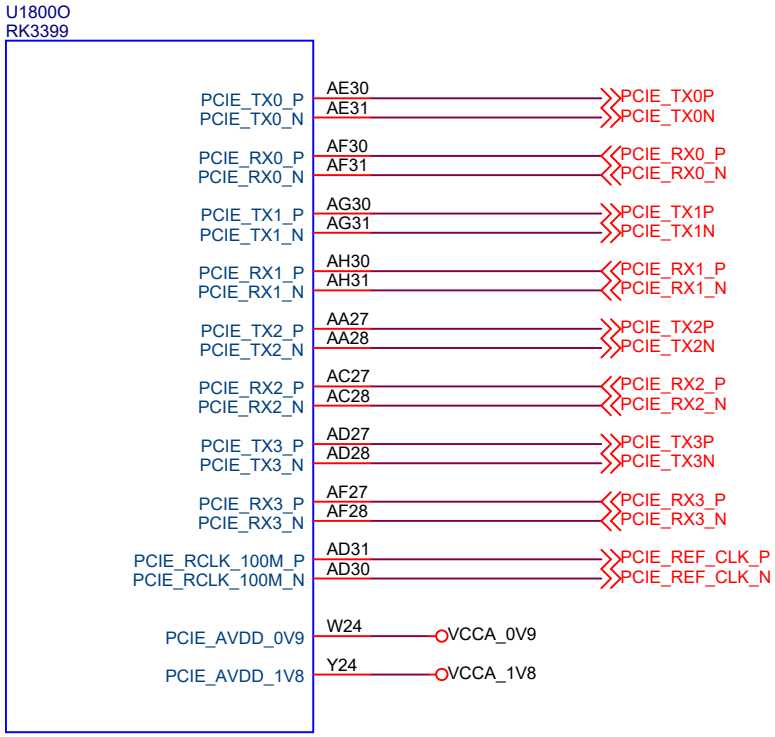
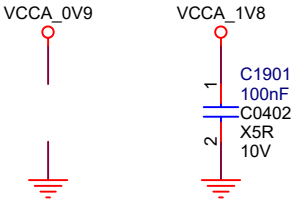
RK3399_O



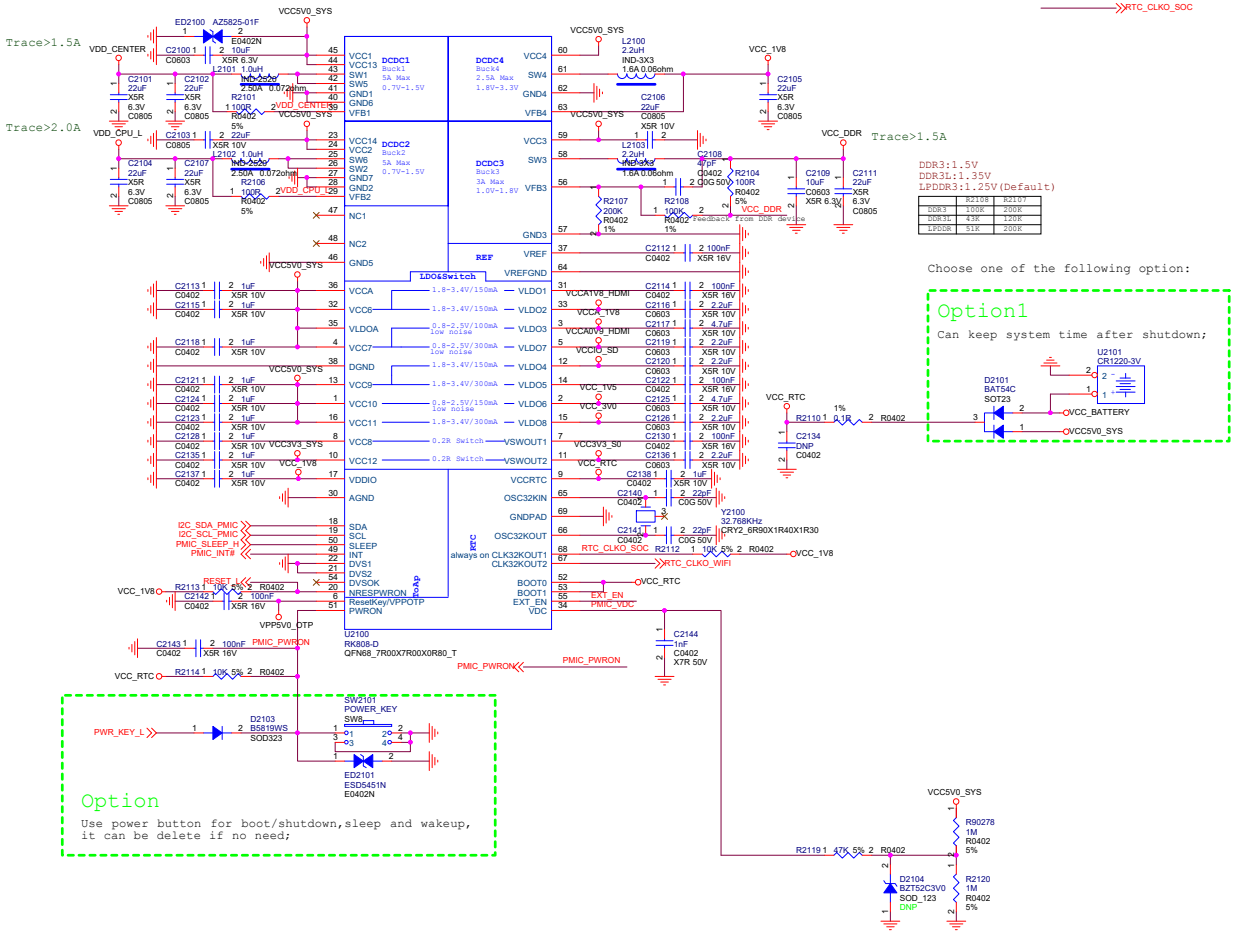
PCIE design rule:
1.Max intra-pair skew < 4ps;
2.Max inter-pair skew < 1.6 ns;
3.Max trace length < 14 inchs;
4.Max allowed via < 4;
5.Trace impedance 100ohm+/-10%;
6.The distance between other signals follows the 3W rule;



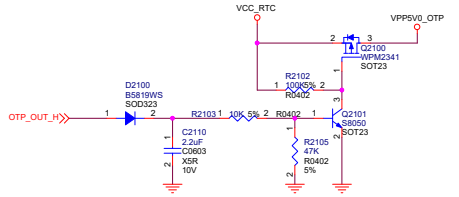
Note:All the Power filter capacitor should be place close to the power pin of RK3399

Rockchip 瑞芯微电子 Fuzhou Rockchip Electronics			
Project:	RK3399_FICUS_96BOARDS		
File:	RK3399 PCIE		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	12 of 33

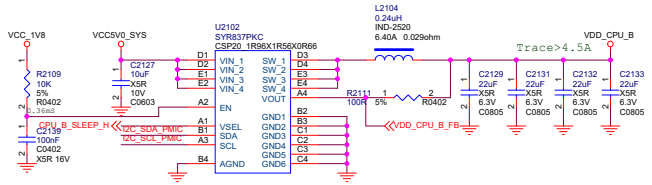
PMIC RK808-D



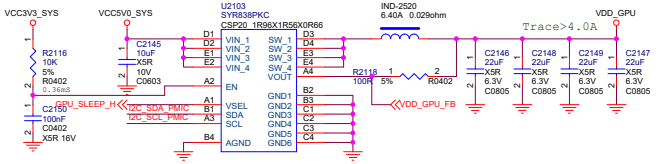
Over-temperature Protection & RESET



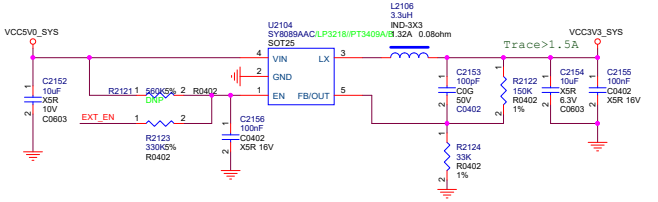
VDD_CPU_B Power



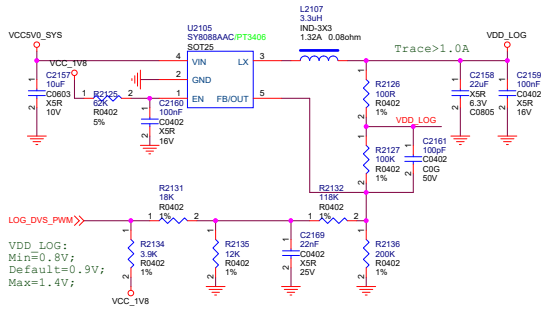
VDD_GPU Power



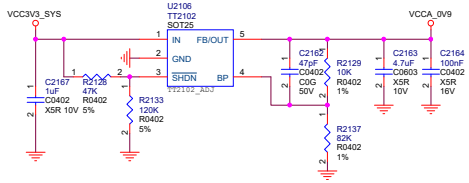
VCC3V3_SYS Power



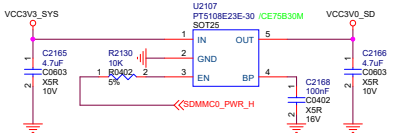
VDD_LOG Power



VCCA_0V9 Power



VCC3V0_SD Power



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics
Project:	RK3399_FICUS_96BOARDS
File:	Power-PMIC RK808-D
Date:	Friday, July 06, 2018
Rev:	V1.0
Designed by:	Linus
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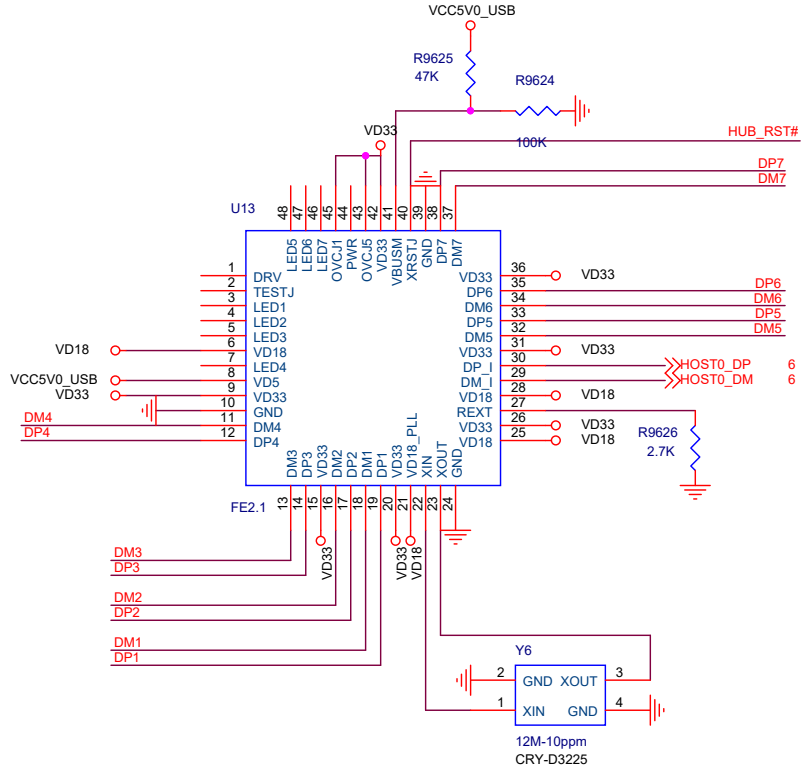
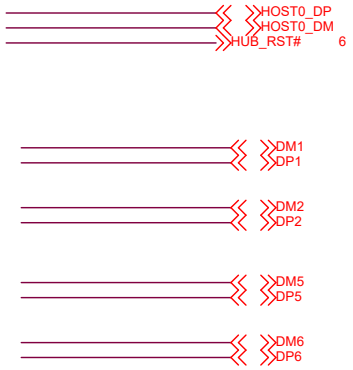
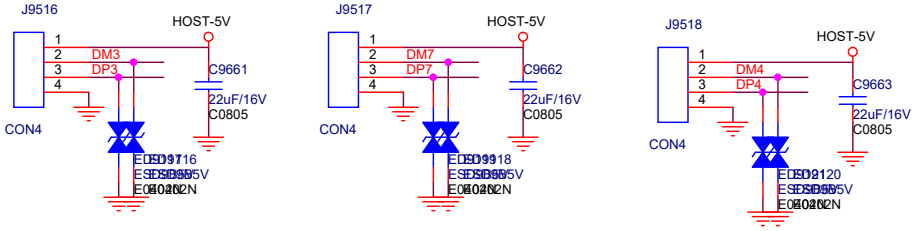
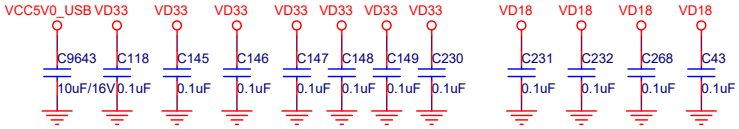


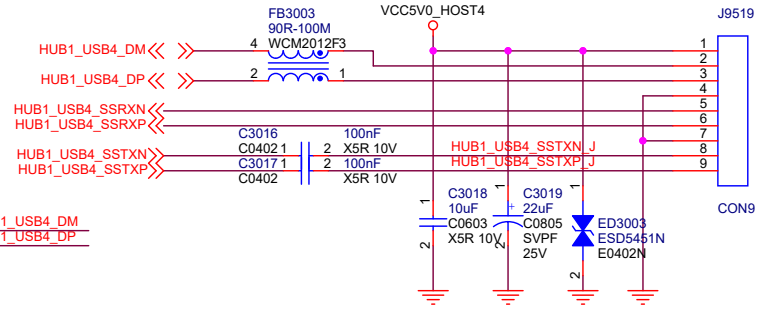


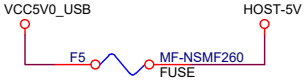
USB2.0 Port4

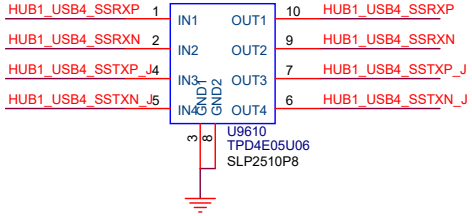


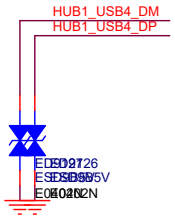


USB3.0 Port4









Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB2.0 HUB		
Date:	Friday, July 06, 2018	Rev:	V1.0
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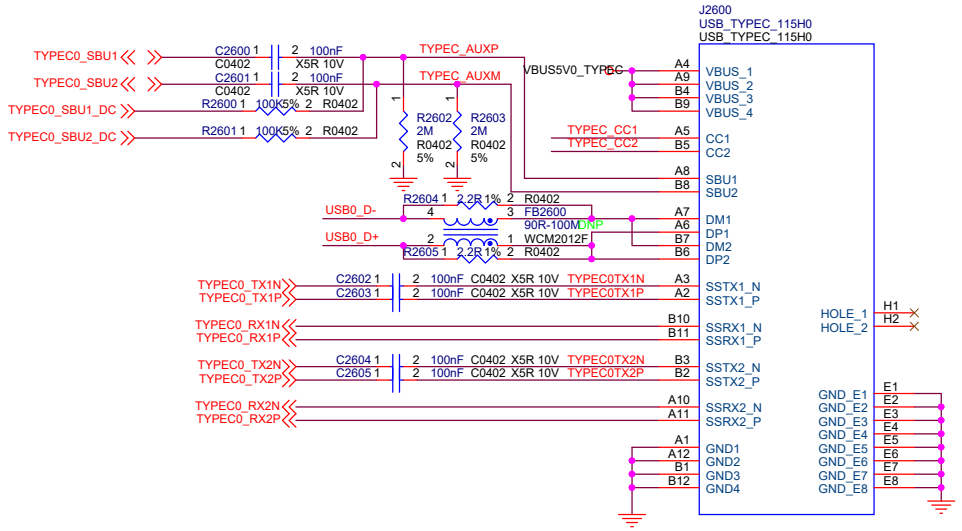
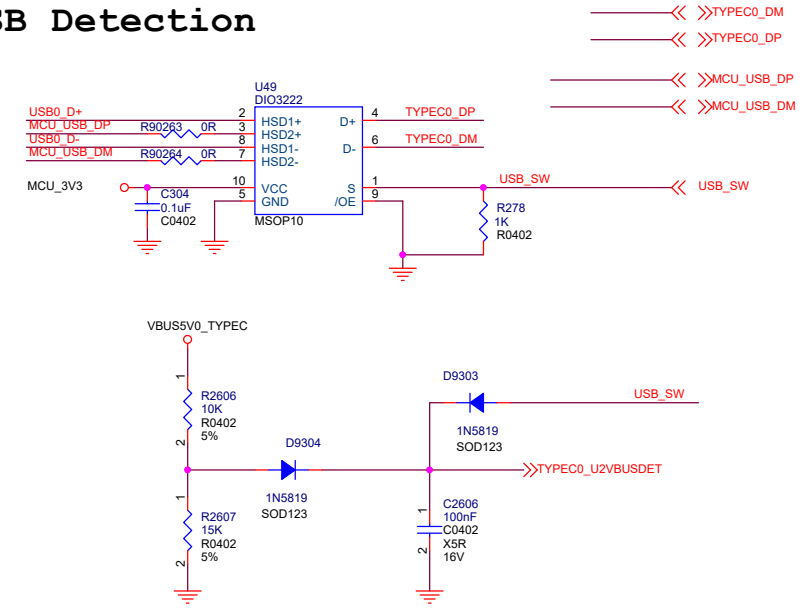
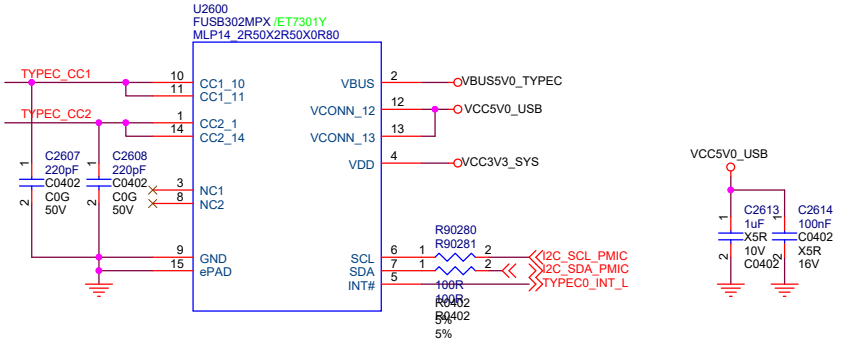
USB Type-C Port



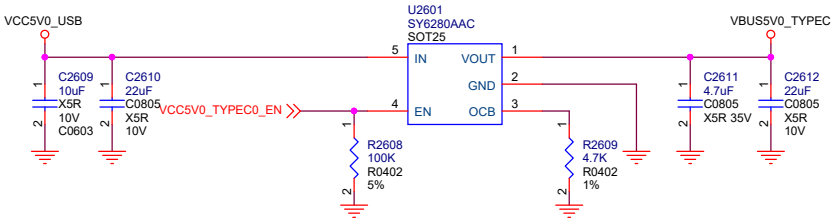
USB Detection



USB Type-C CC CTRL

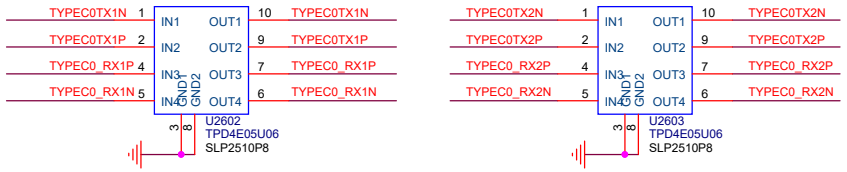


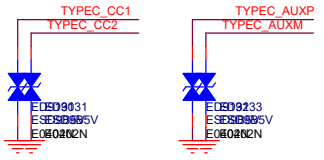
USB Type-C Power



ESD

Note:All the ESD component should be place close to the port and Cj<=0.4pF





Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB Type-C Port		
Date:	Friday, July 06, 2018	Rev:	V1.0
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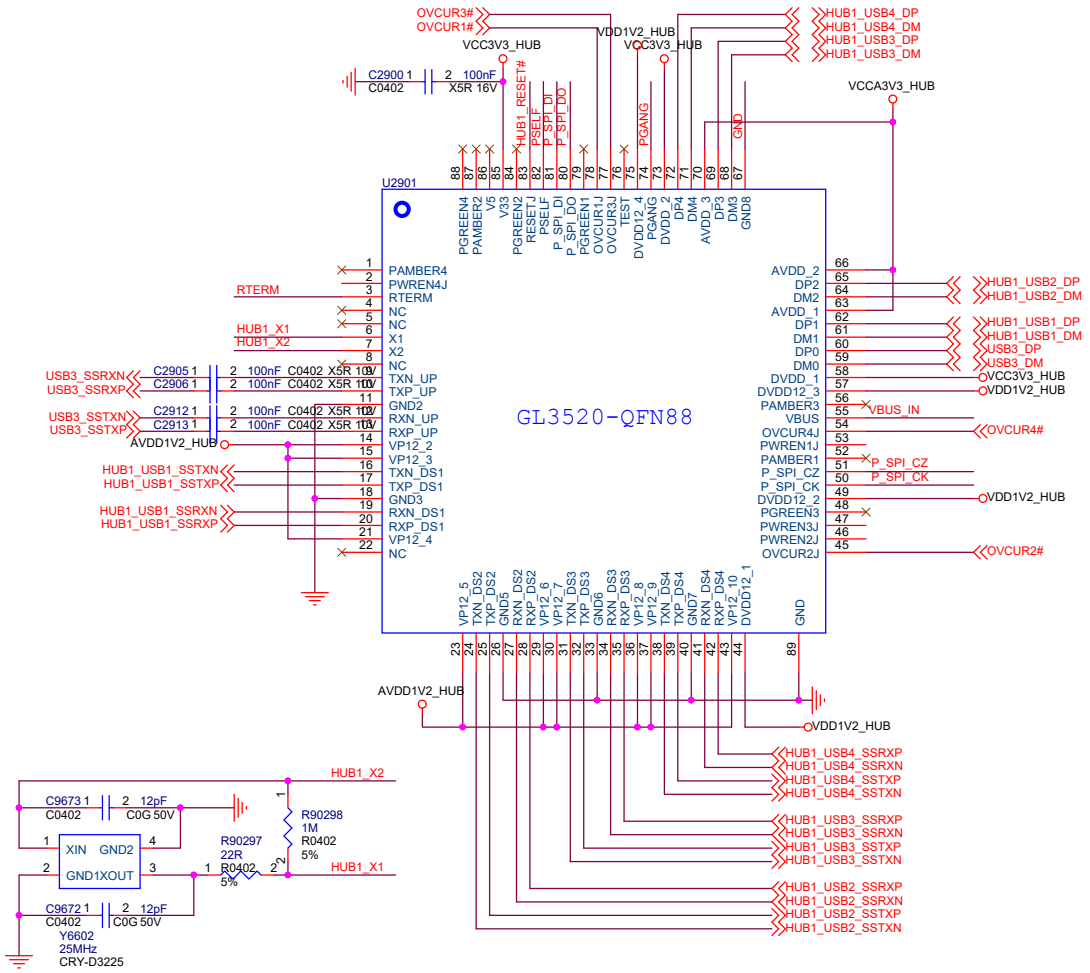
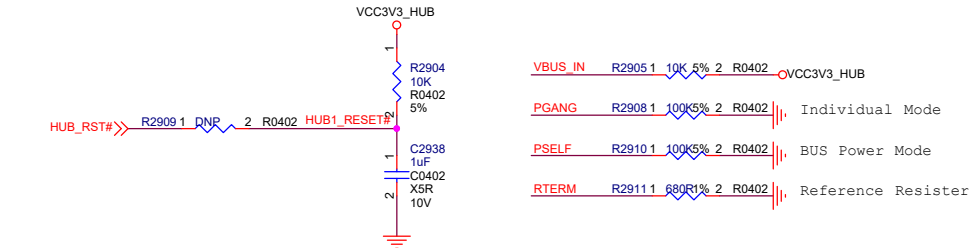
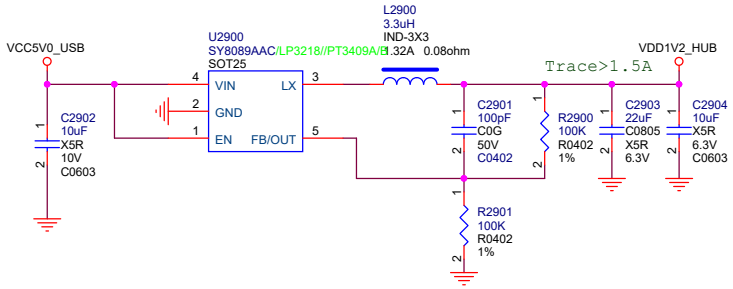
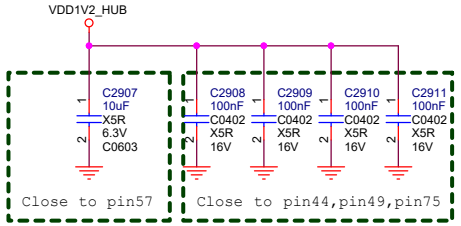
USB3.0 HUB

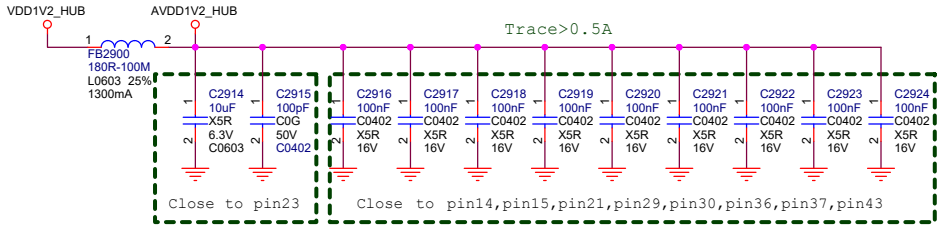


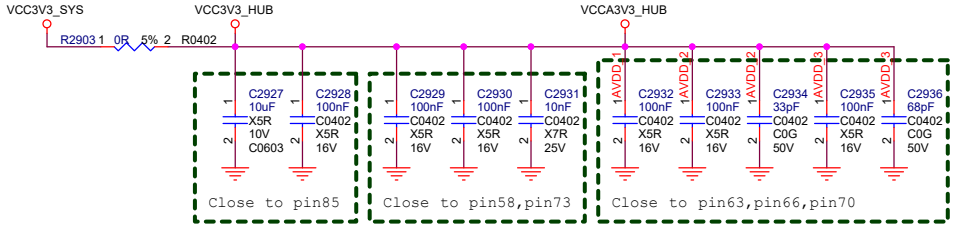


HUB Power

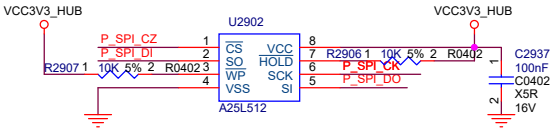








SPI Flash



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB3.0 HUB-GL3523-1 (option)		
Date:	Friday, July 06, 2018	Rev:	V1.0
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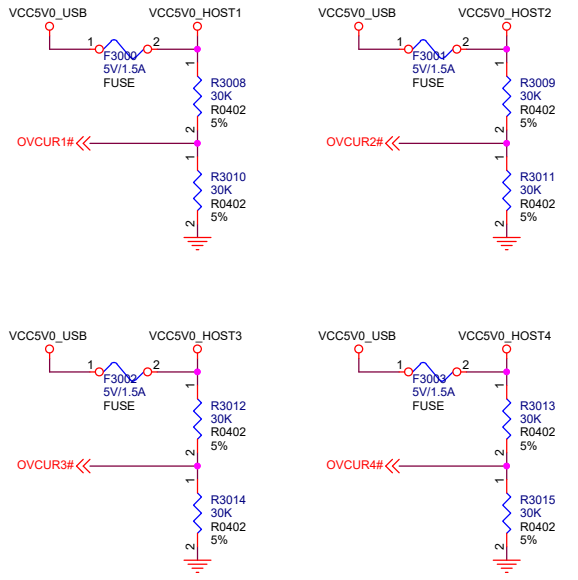
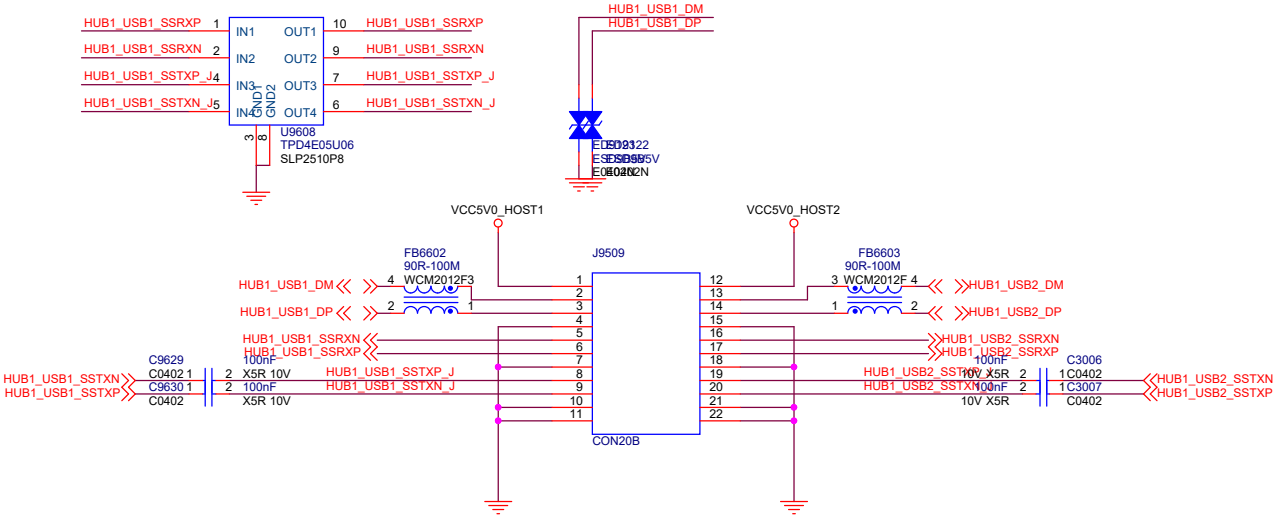
Option2

POLY-FUSE CIRCUIT

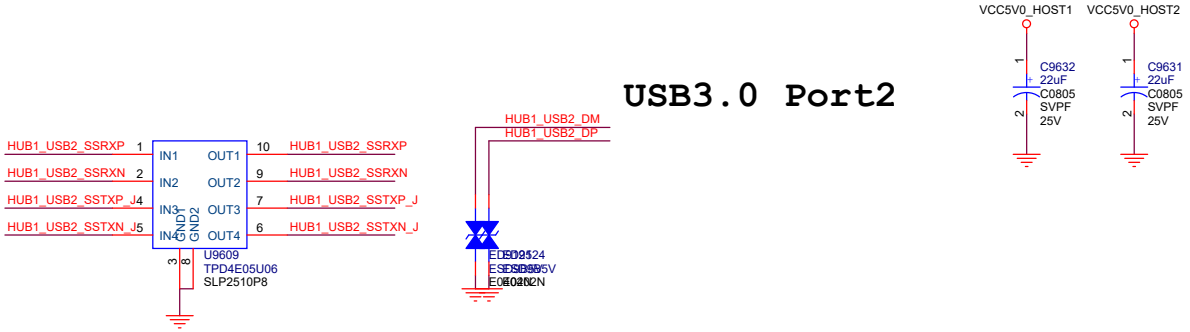


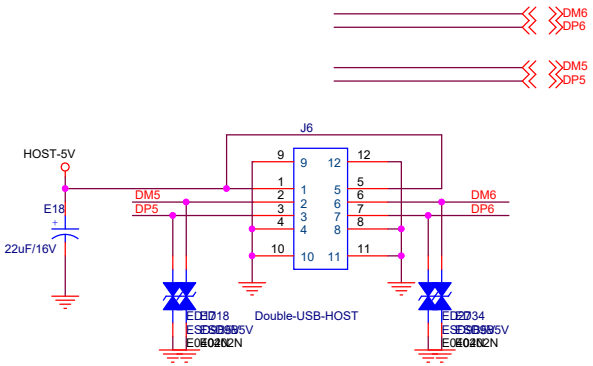
OVCUR1#~4# Floating : Non-Removable (Compound device)

USB3.0 Port1



USB3.0 Port2





Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB3.0 HUB-GL3523-2 (option)		
Date:	Friday, July 06, 2018	Rev:	V1.0
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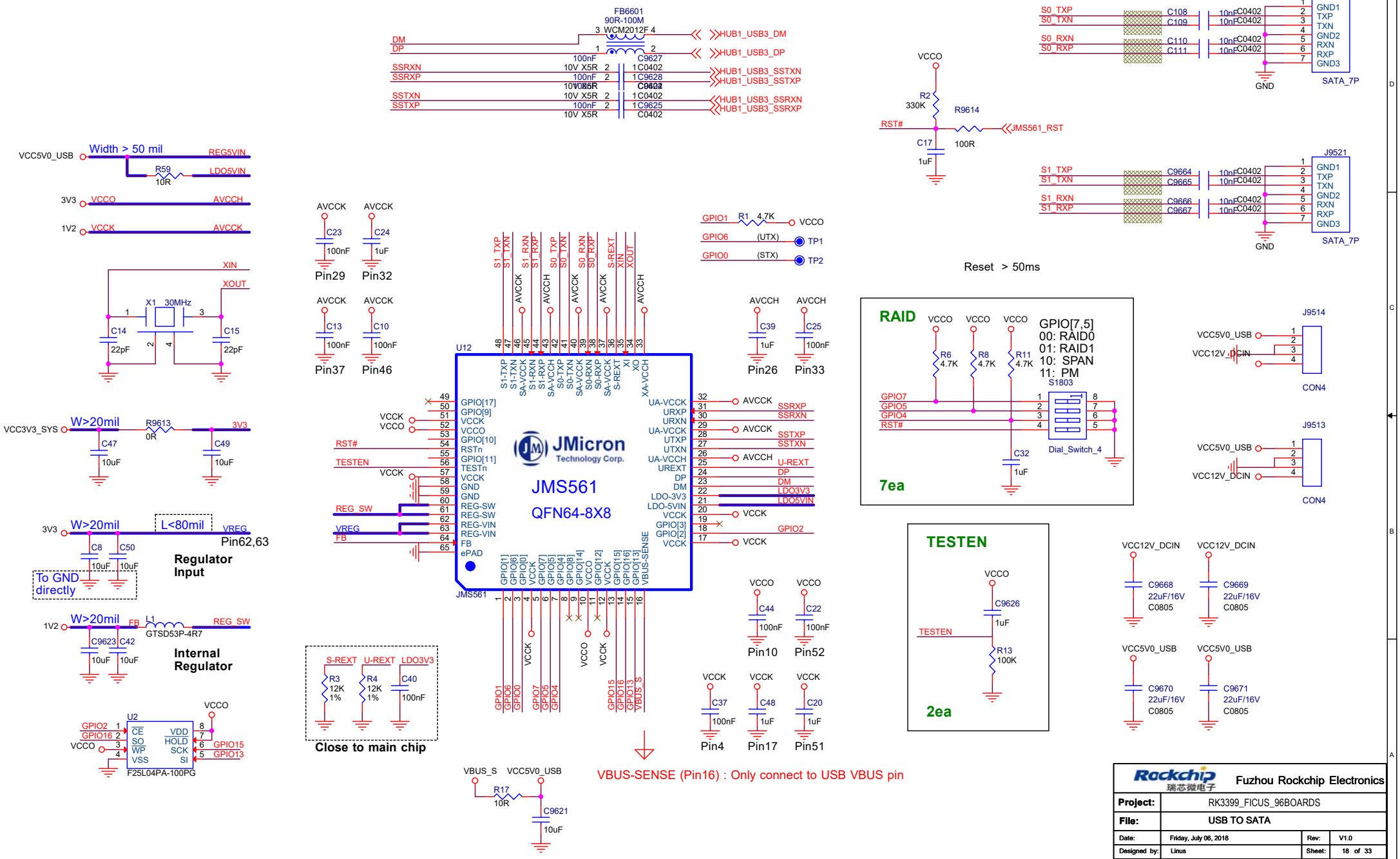
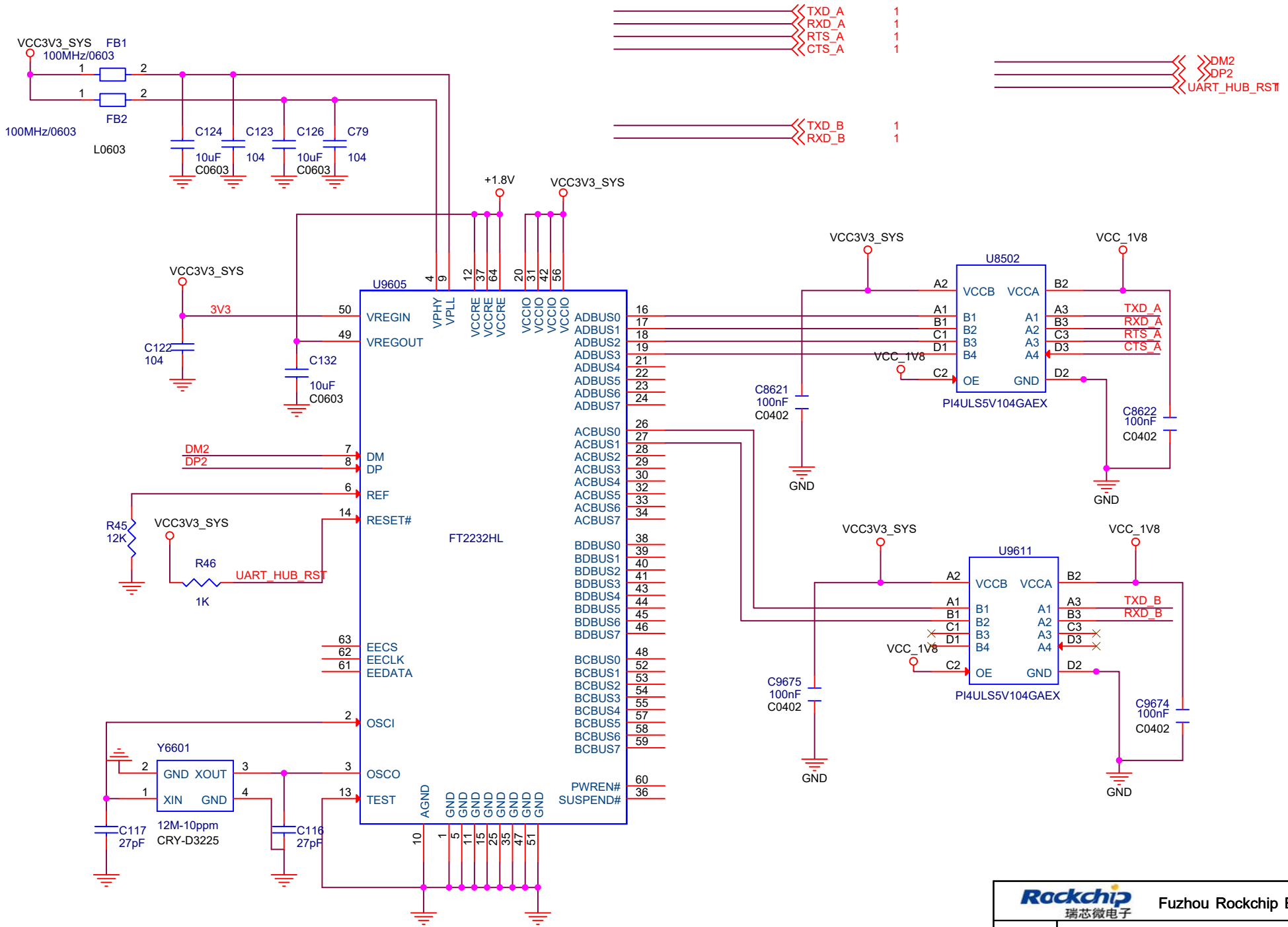
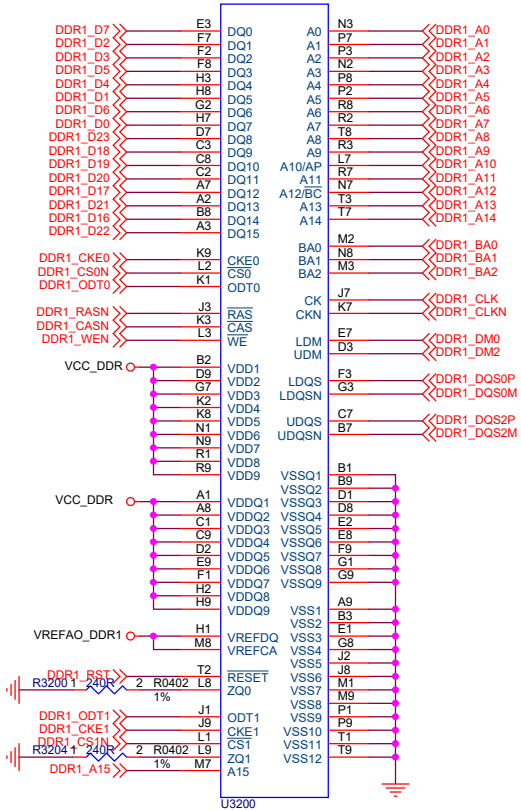


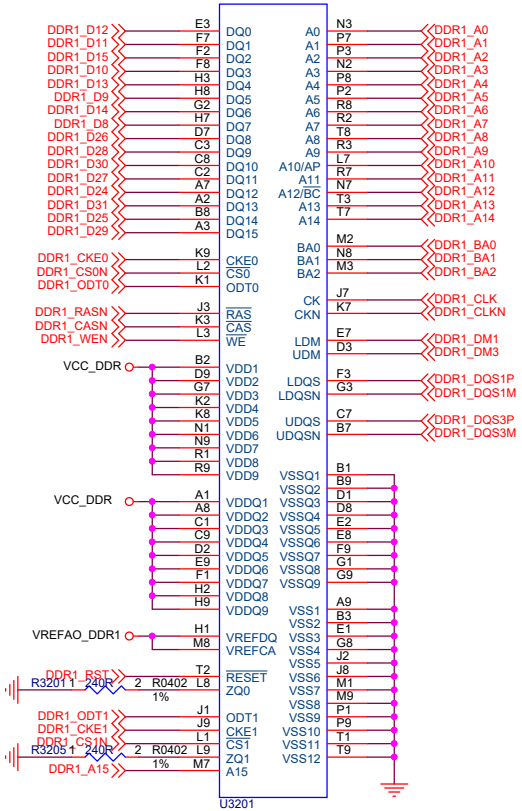
Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB TO SATA		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	18 of 33

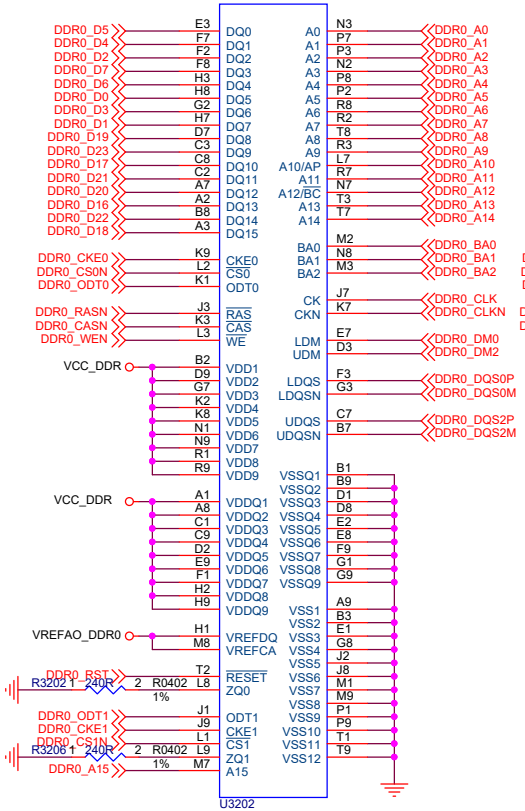


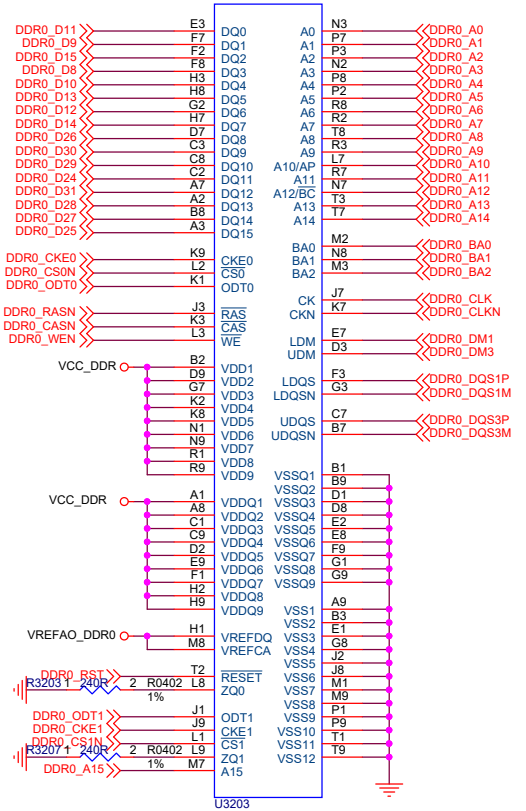
Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	USB TO UART		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	19 of 33

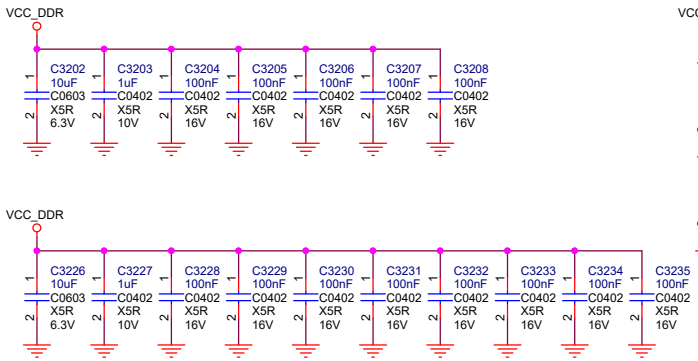
DDR3 4x16bit

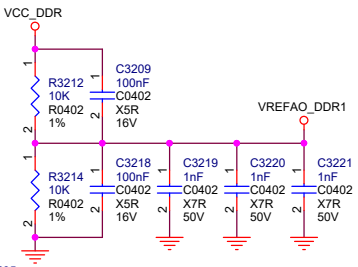


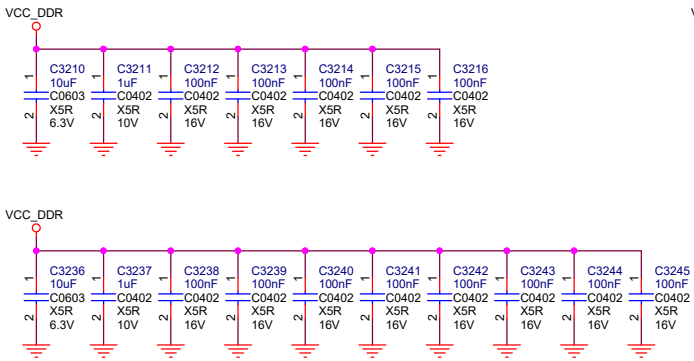


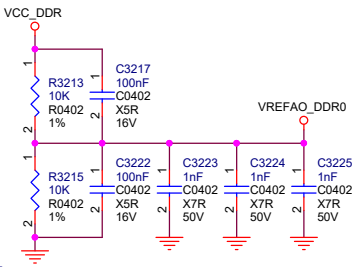










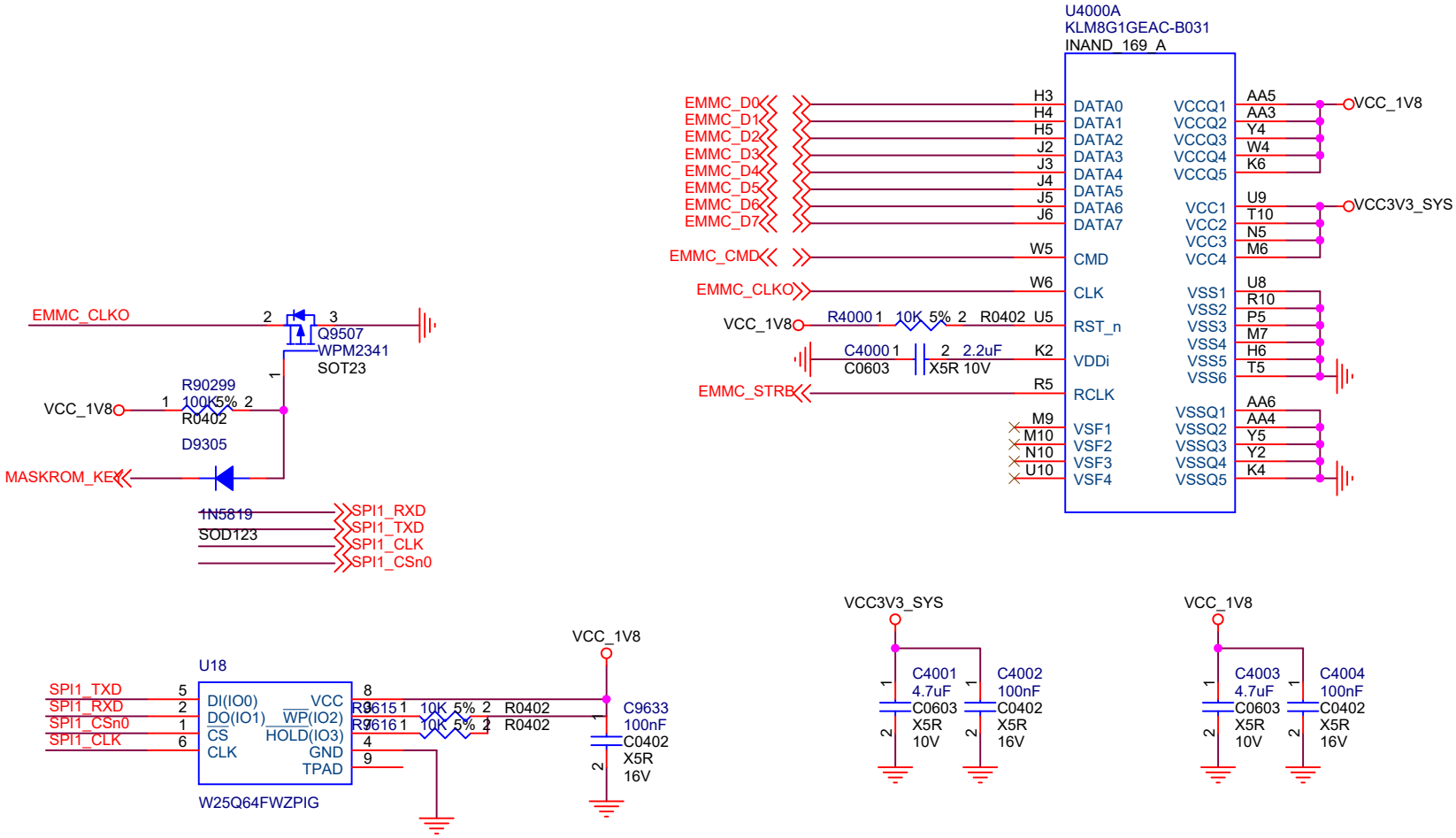


Note:All the Power filter capacitor should be place close to the power pin of DDR

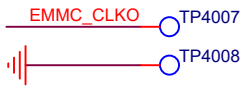
Note:All the Power filter capacitor should be place close to the power pin of DDR

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	RAM-DDR3 4x16bit(option)		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	20 of 33

eMMC FLASH



Note:
Reserve PAD for Update.



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	Memory-eMMC		
Date:	Friday, July 06, 2018	Rev:	V1.0
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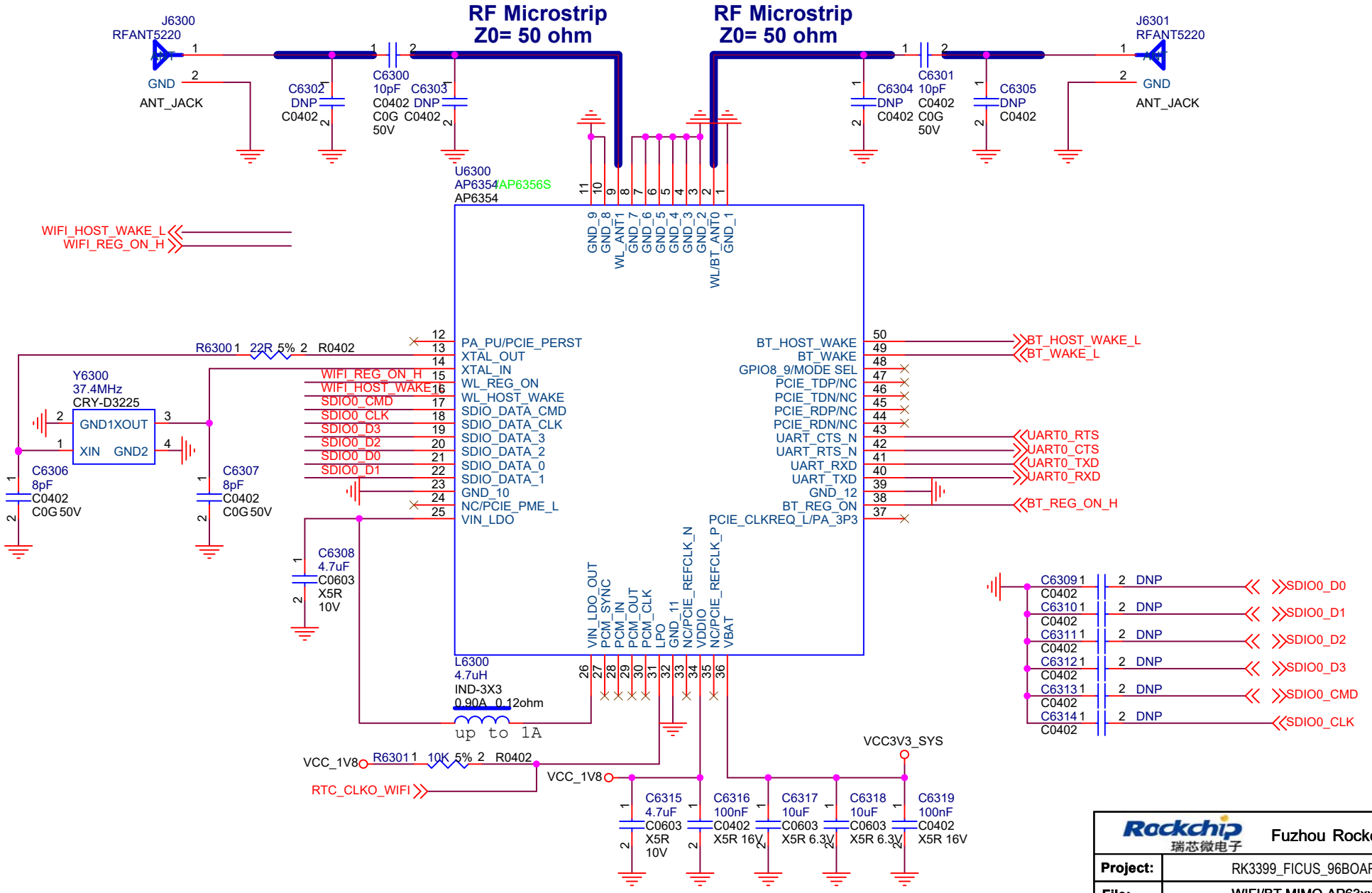
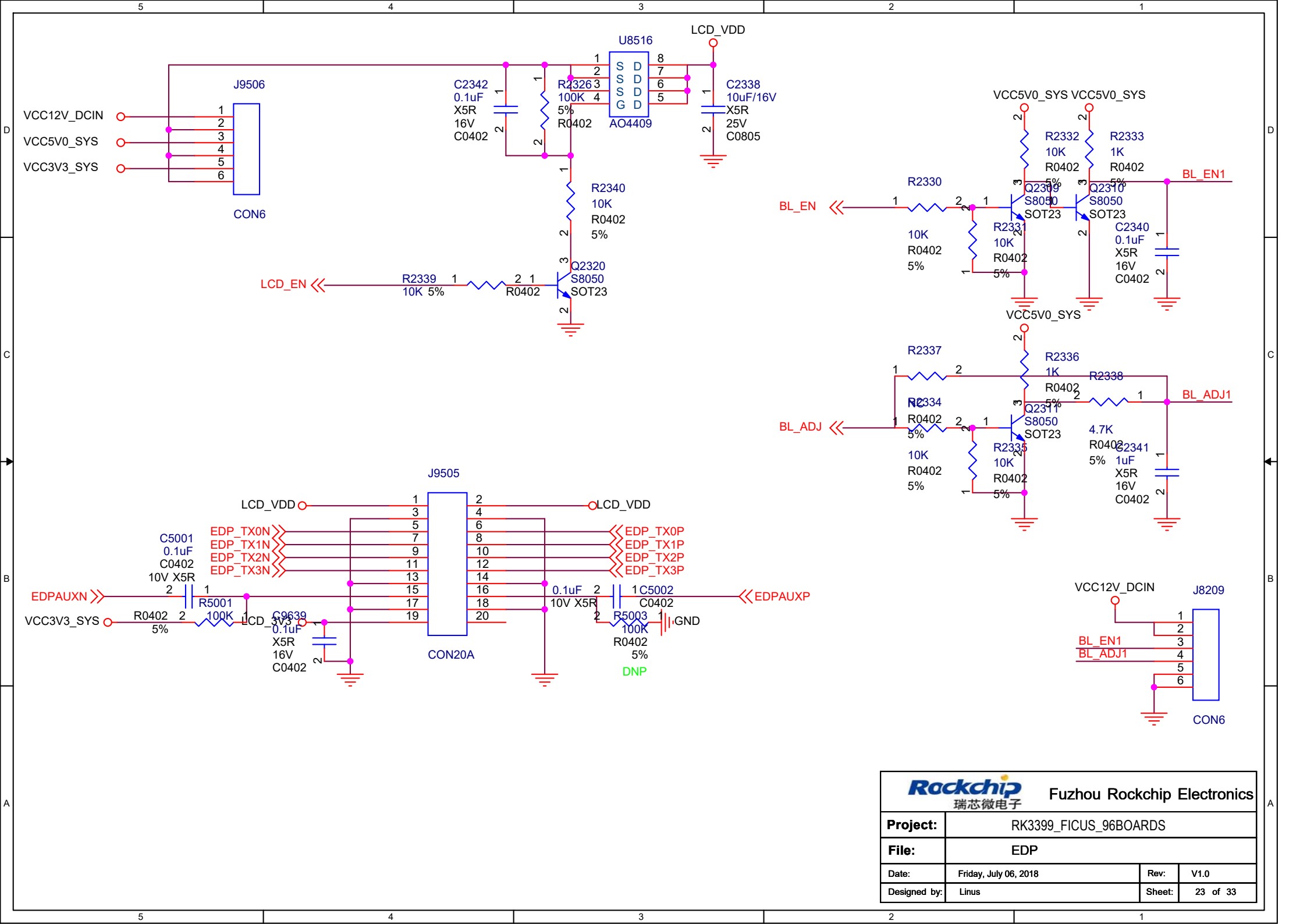
SDIO WIFI/BT MODULE-MIMO

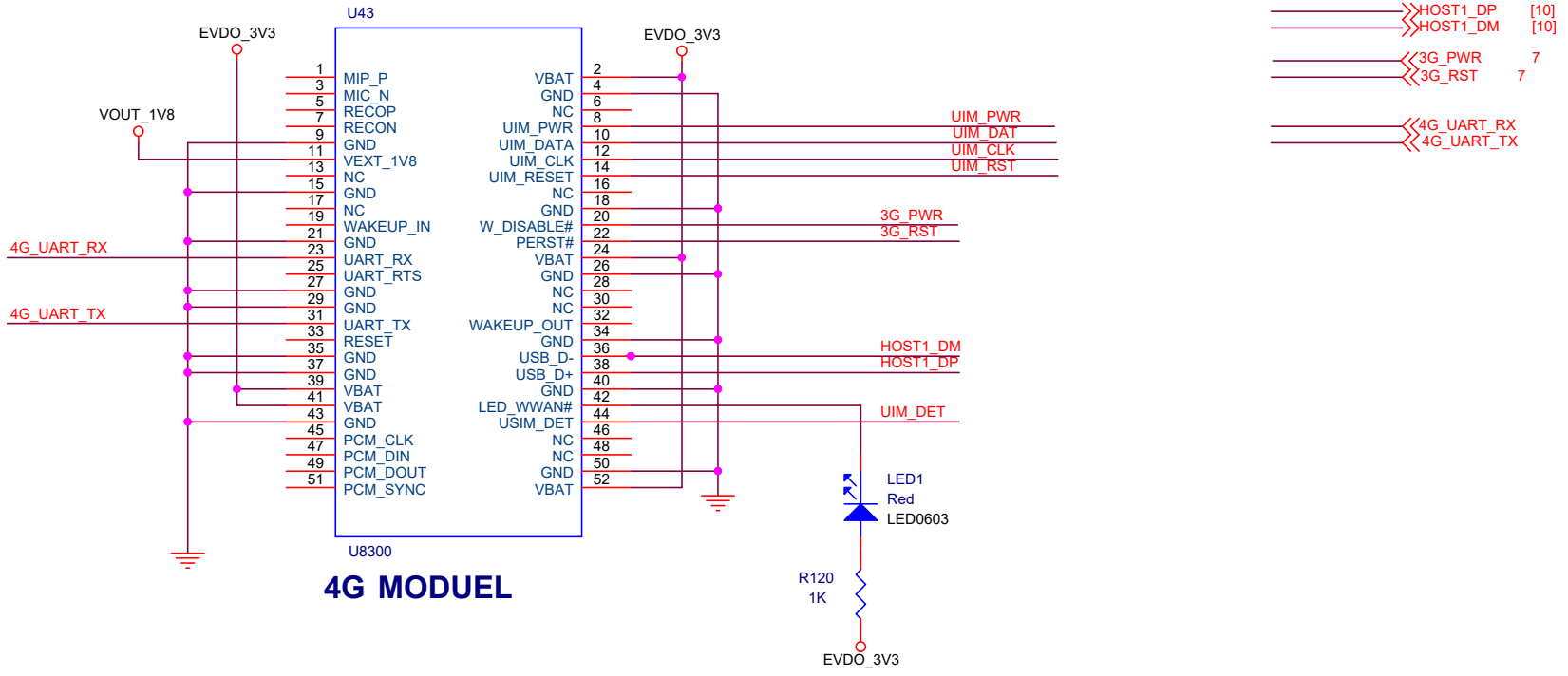
Note:VBAT voltage range is 3.0V~4.8V,
and peak current is at least 400mA.



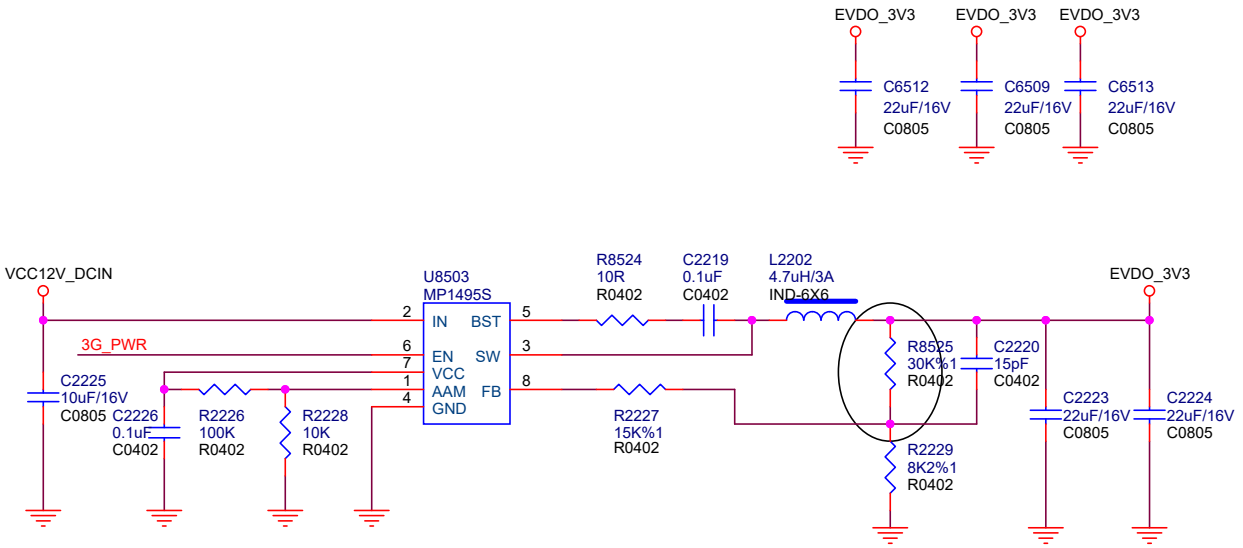
Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	WIFI/BT MIMO-AP63xx		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	22 of 33

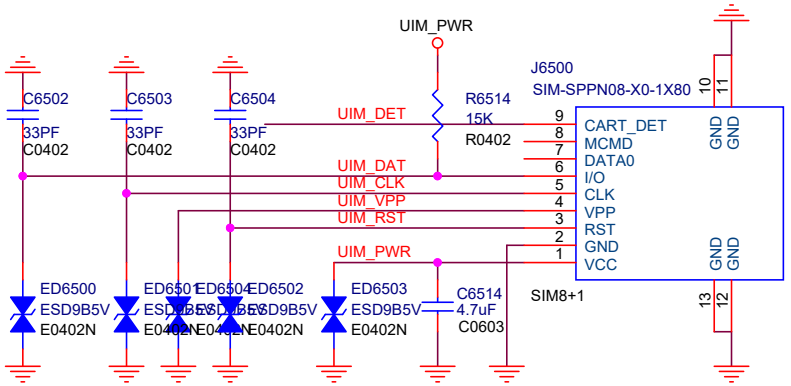


Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	EDP		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	23 of 33



4G MODUEL





Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	4G		
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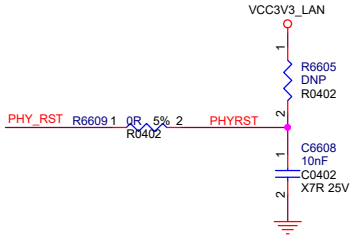
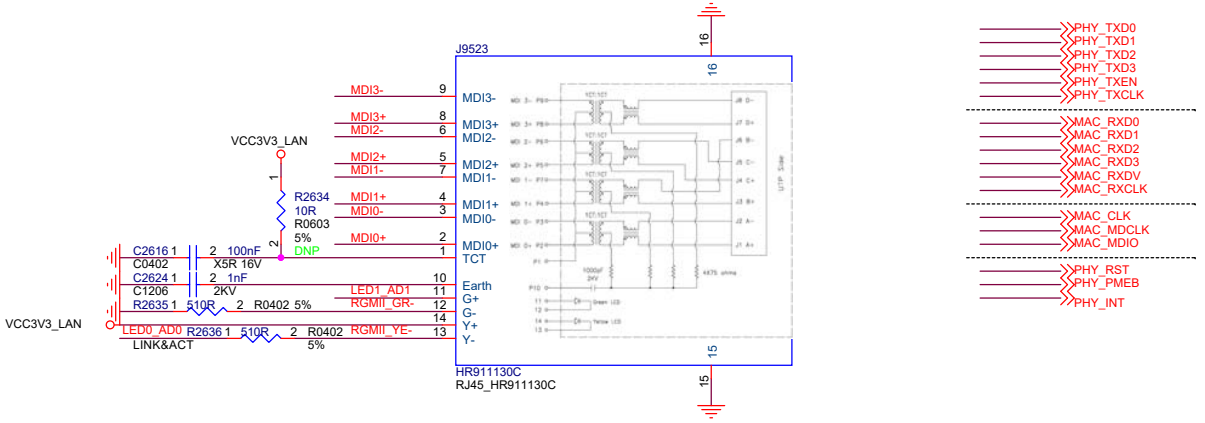
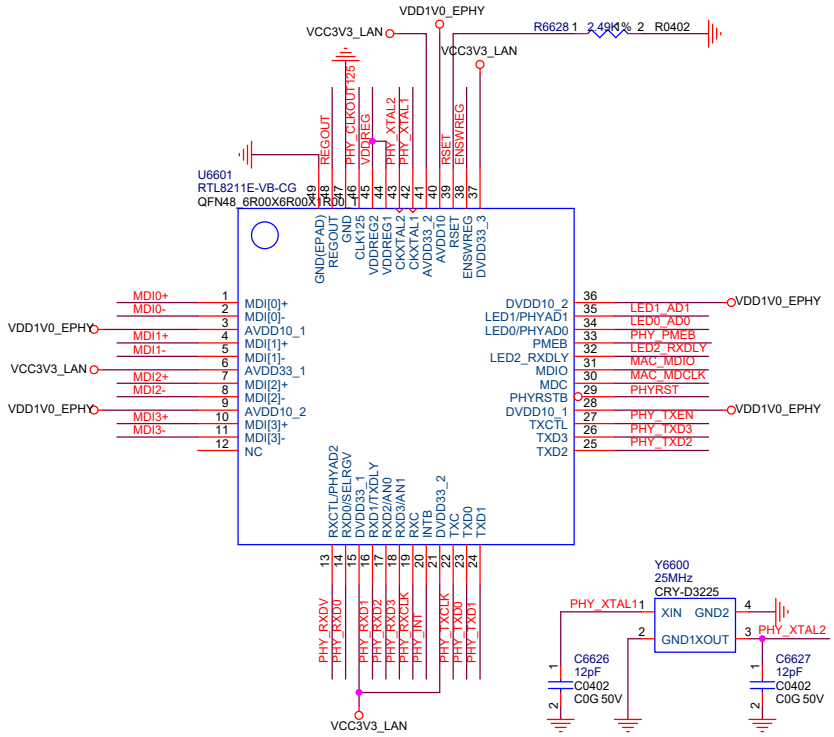
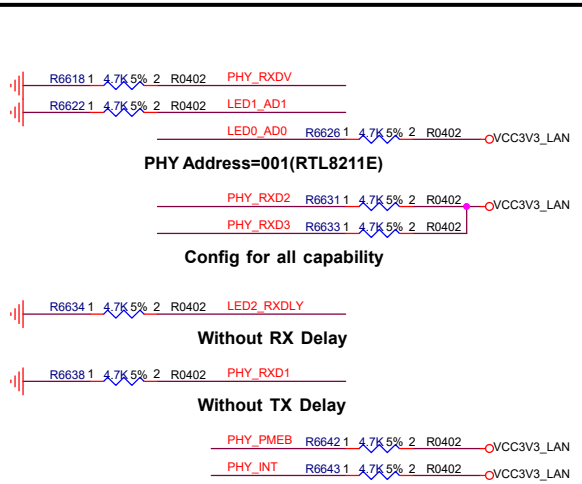
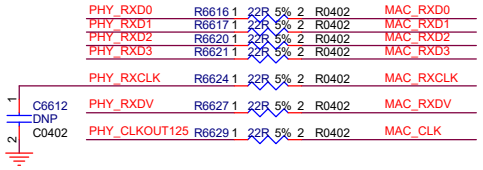
GMAC 10/100/1000 RGMII Ethernet PHY

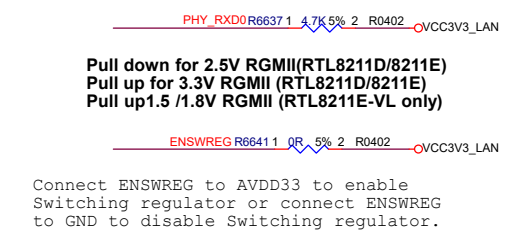


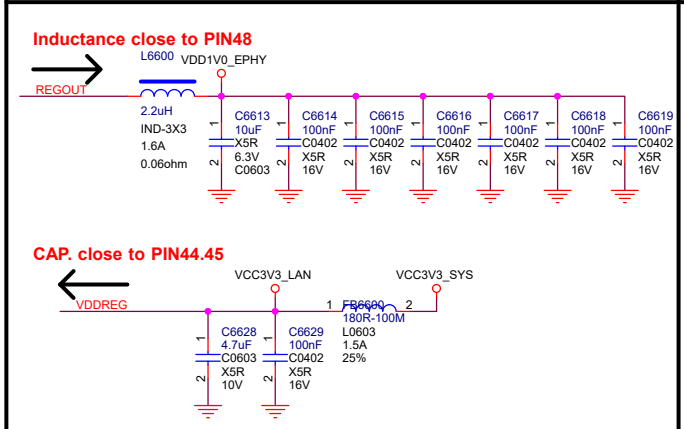


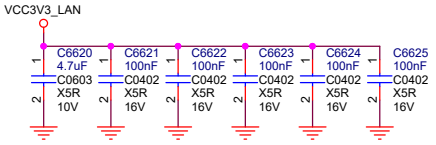












Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	GMAC-RTL8211E		
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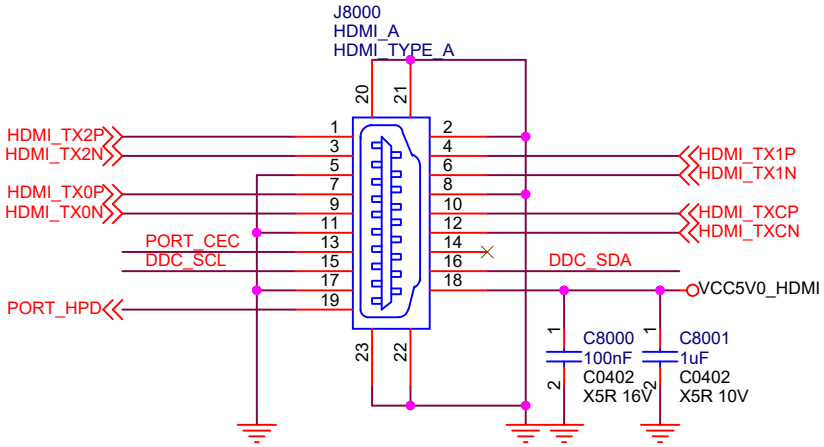
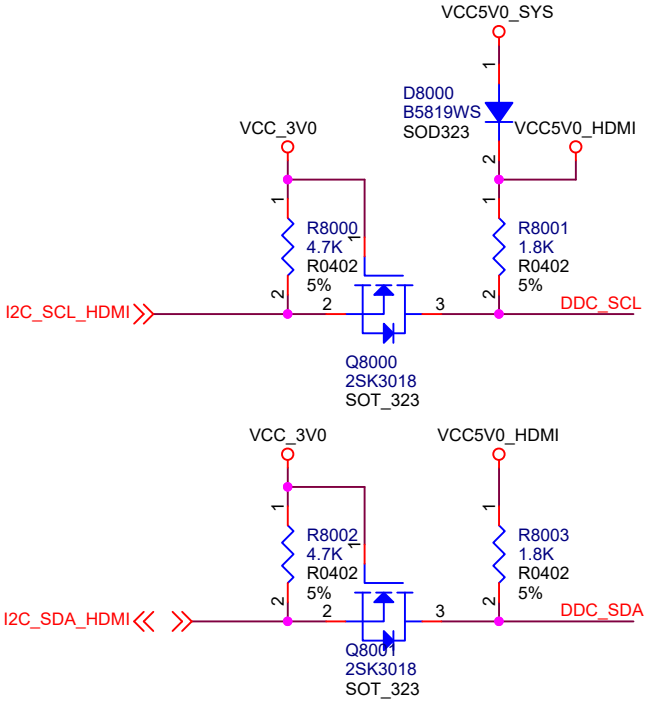
Designed by:	Linus	Sheet:	25 of 33

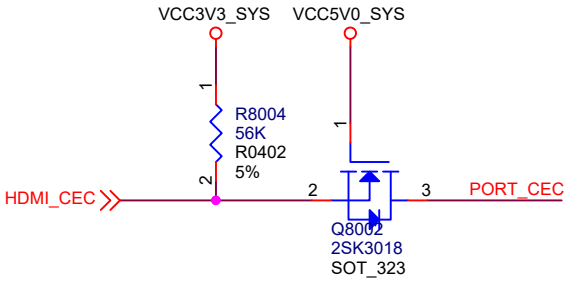
HDMI Output





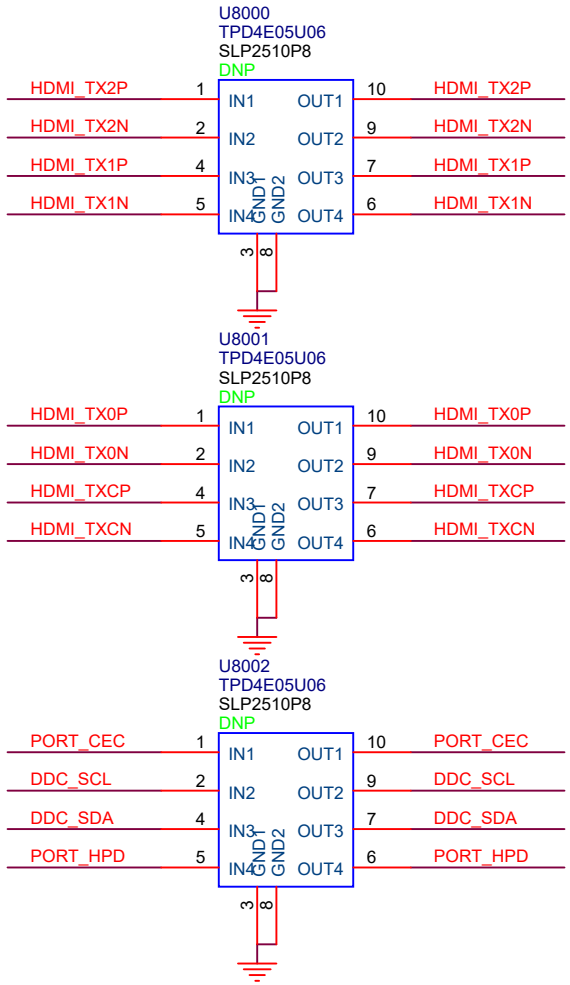
Option3

Use for HDMI CEC function,
it can be delete if no need;



ESD

Note:All the ESD component should be place close to the port and Cj<=0.4pF



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	HDMI Output		
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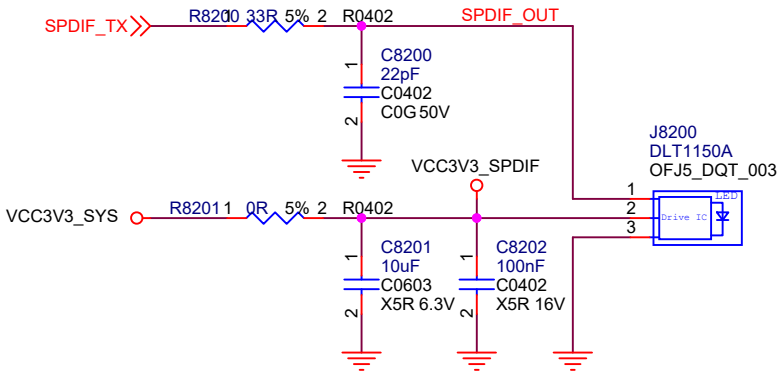
SPDIF OUT



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	SPDIF Output		
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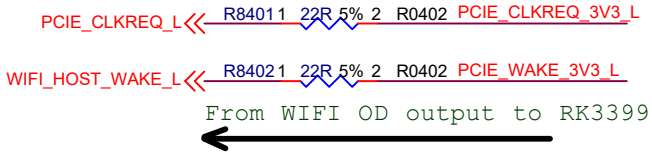
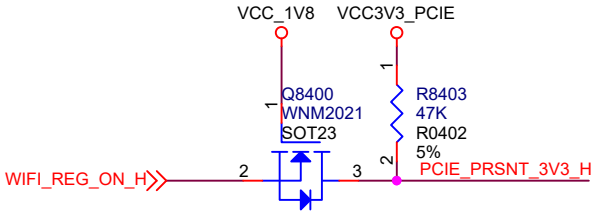
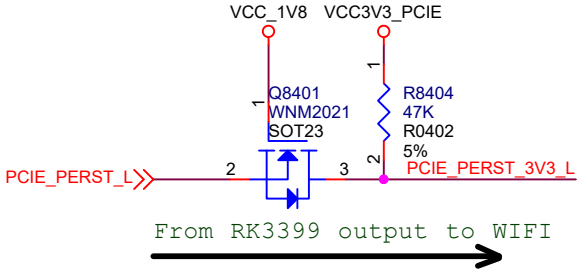
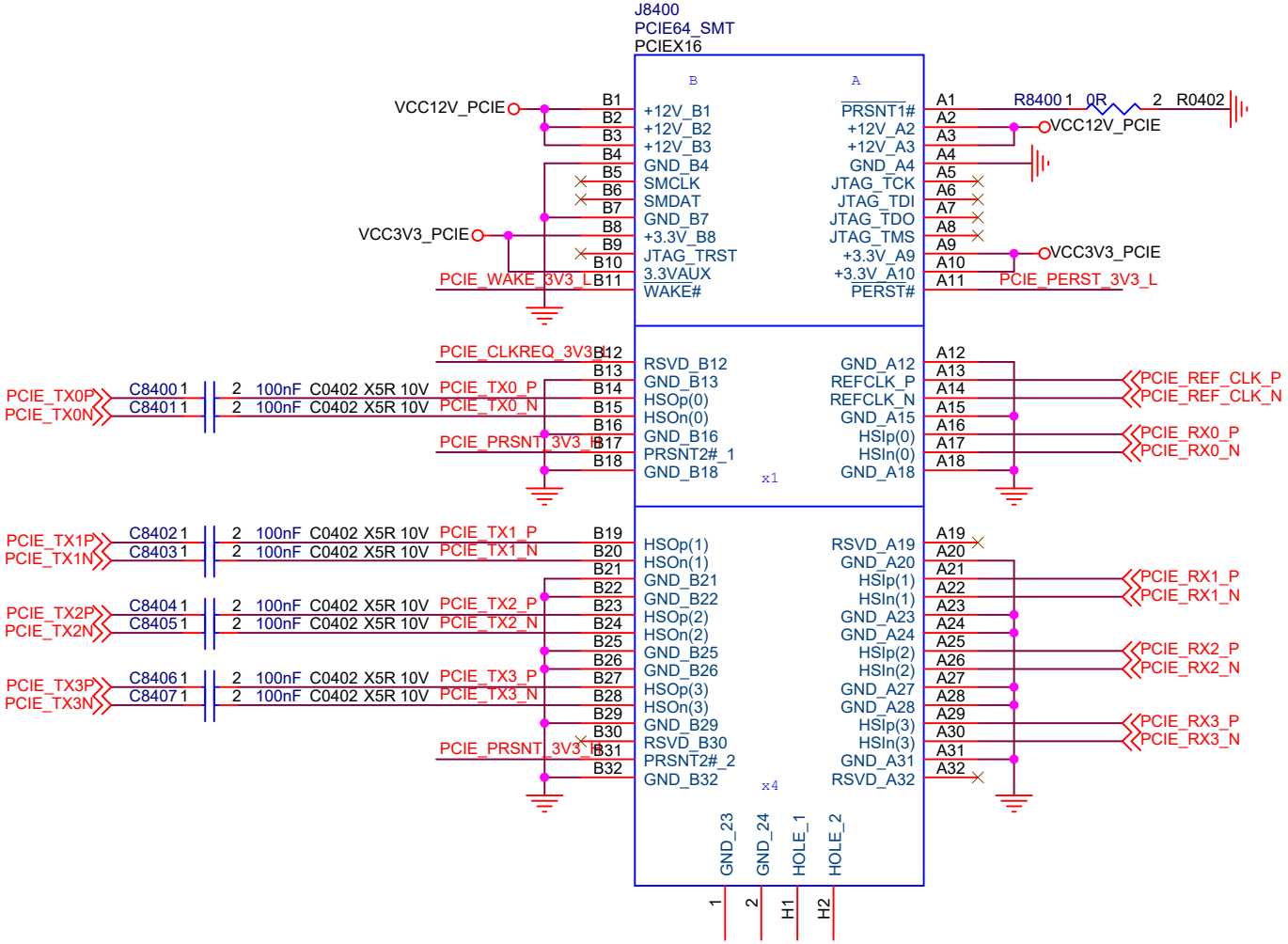
PCIe Slot-x4

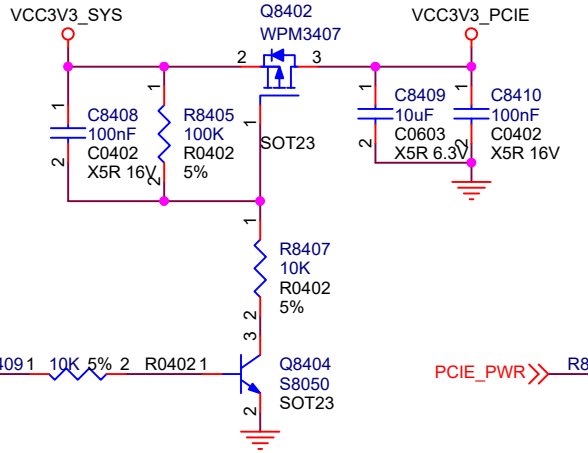
Note:VCC3V3_PCIE peak current
is at least 1.5A.

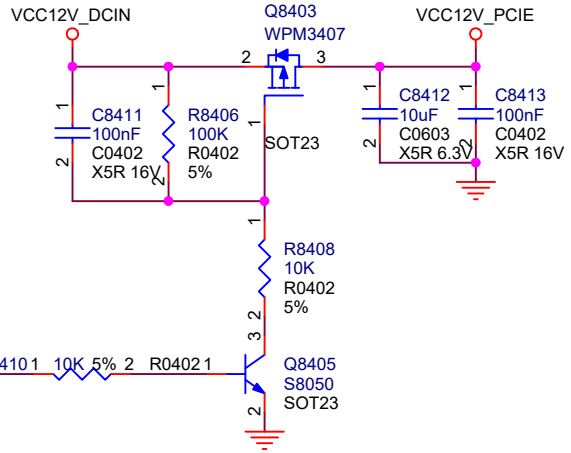


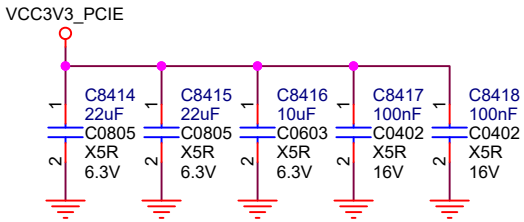












Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	PCIe Slot-x16 (option)		
Date:	Friday, July 06, 2018	Rev:	V1.0
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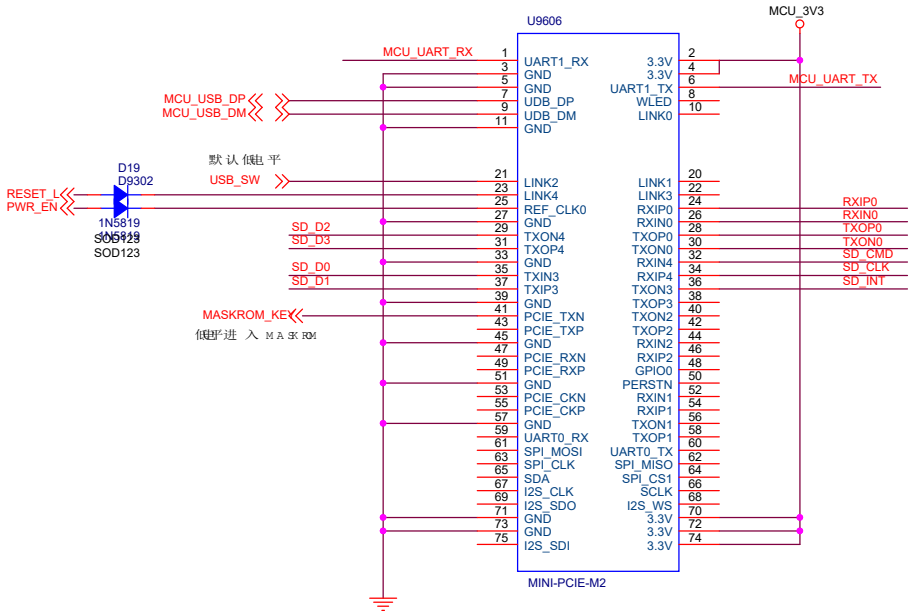

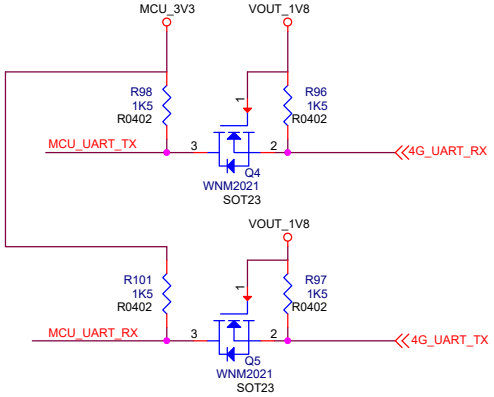

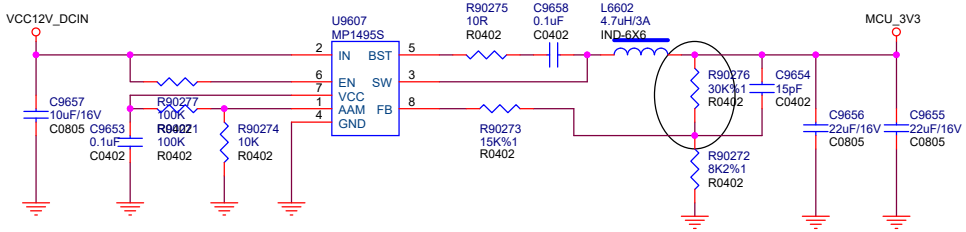

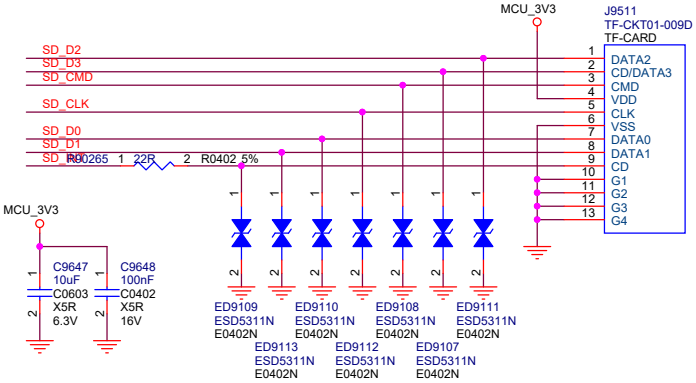

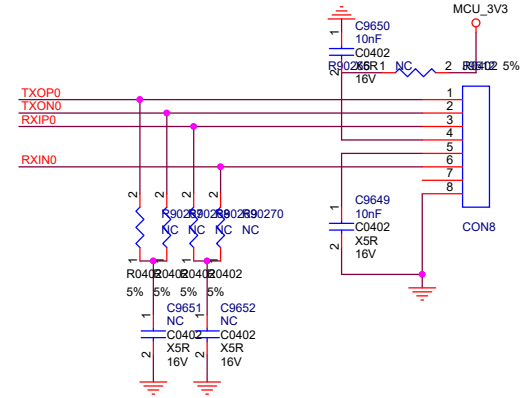

Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	MCU		
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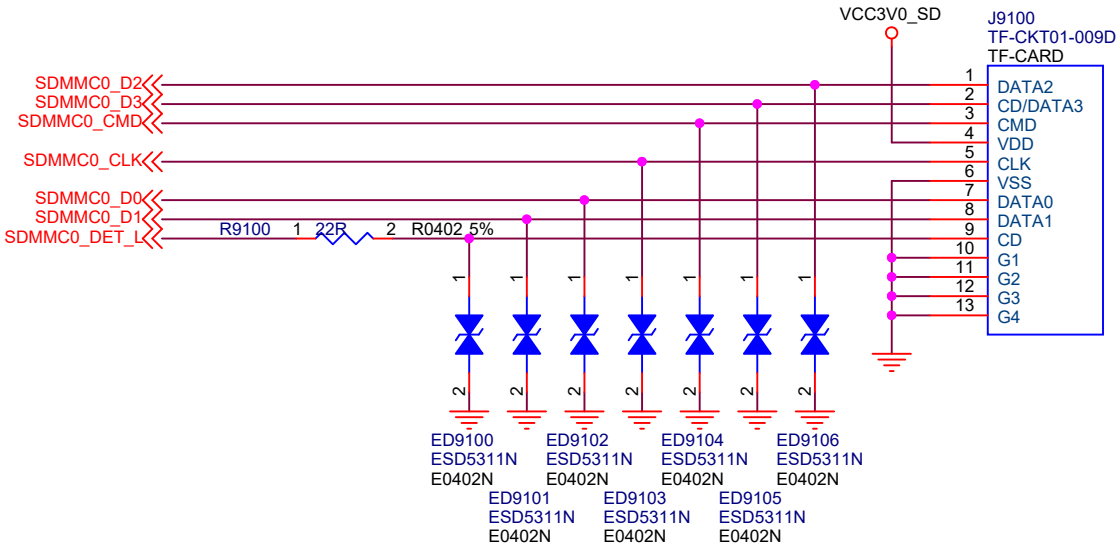
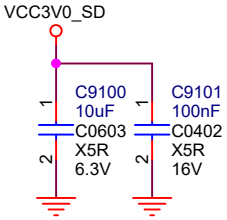
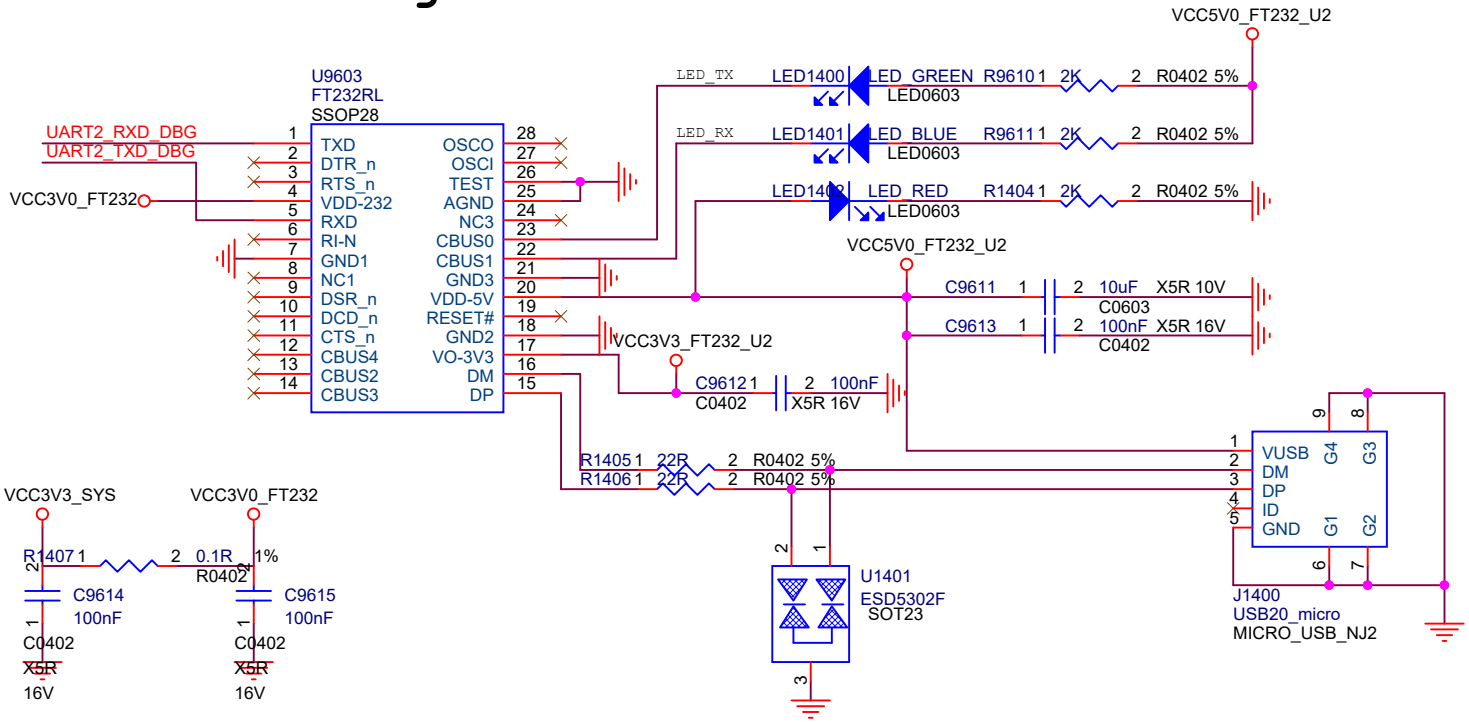
TF CARD





UART for debug



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	TF Card/UART		
Date:	Friday, July 06, 2018	Rev:	V1.0
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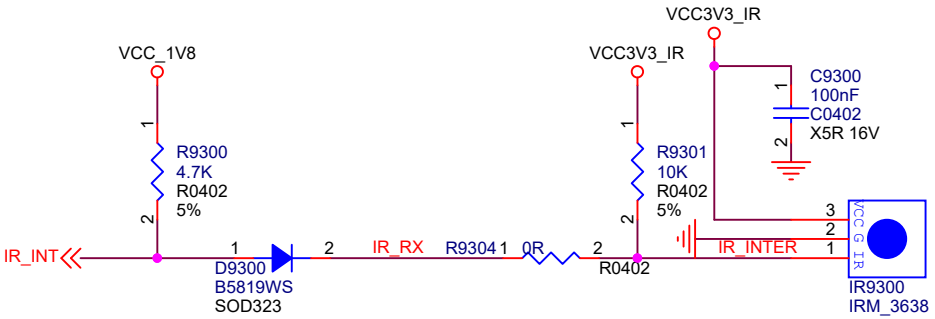
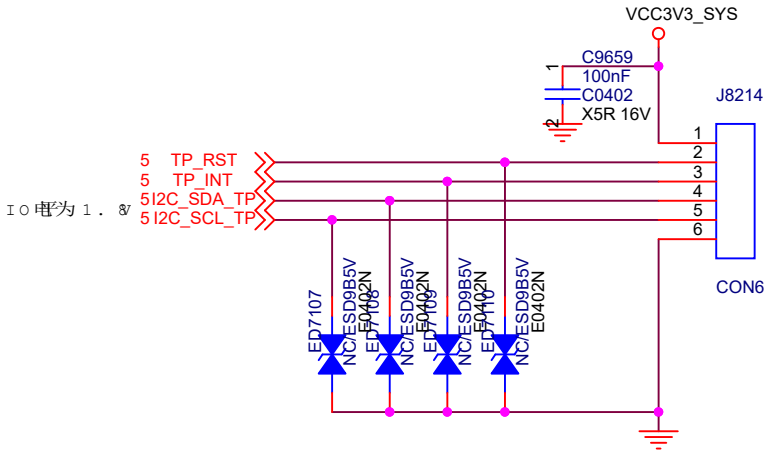
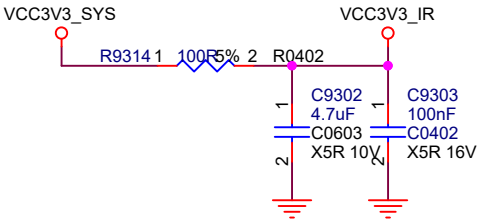
IR Receiver



TP



IR Power



Rockchip 瑞芯微电子 Fuzhou Rockchip Electronics			
Project:	RK3399_FICUS_96BOARDS		
File:	IR&TP		
Date:	Friday, July 06, 2018	Rev:	V1.0
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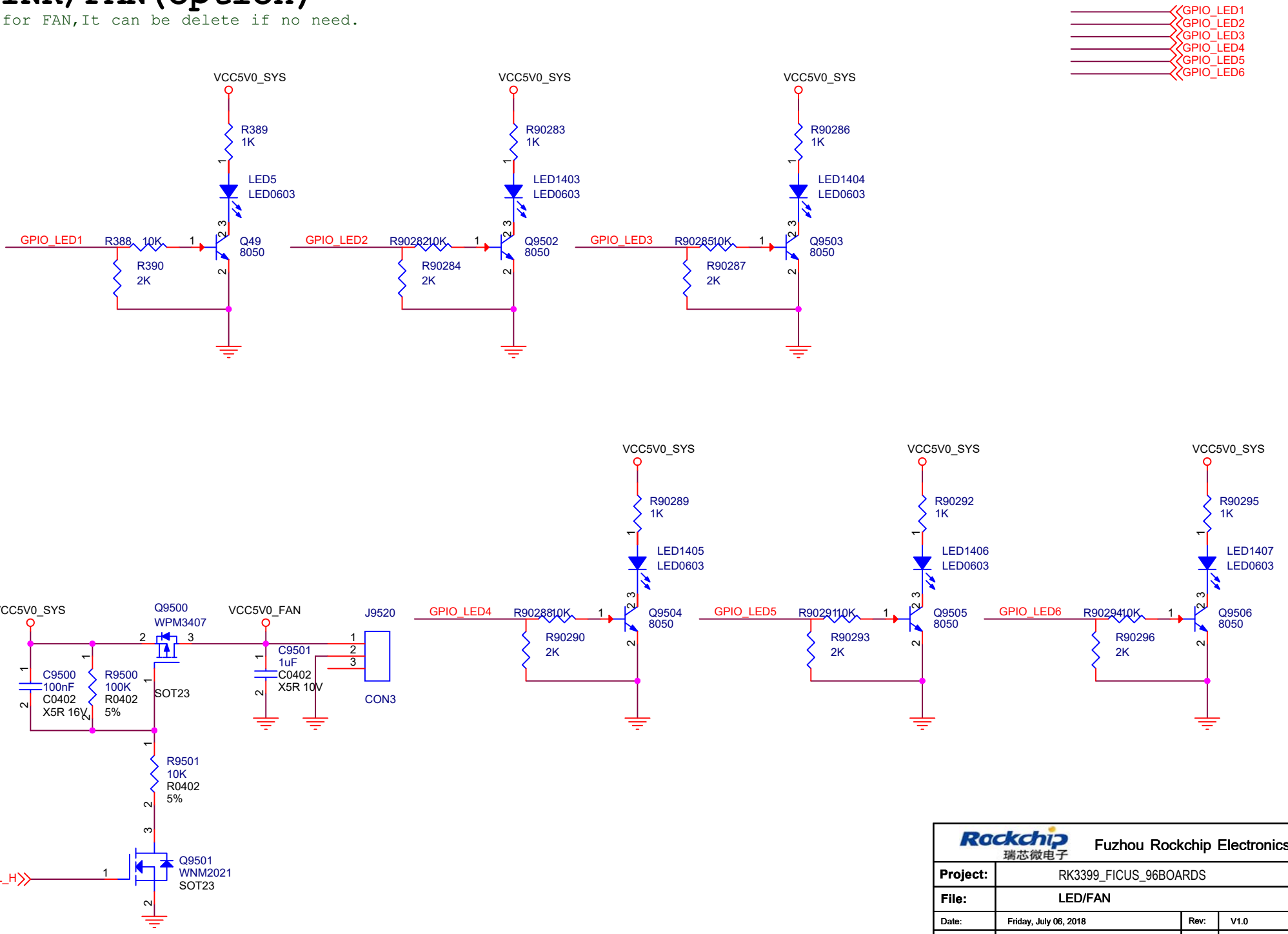
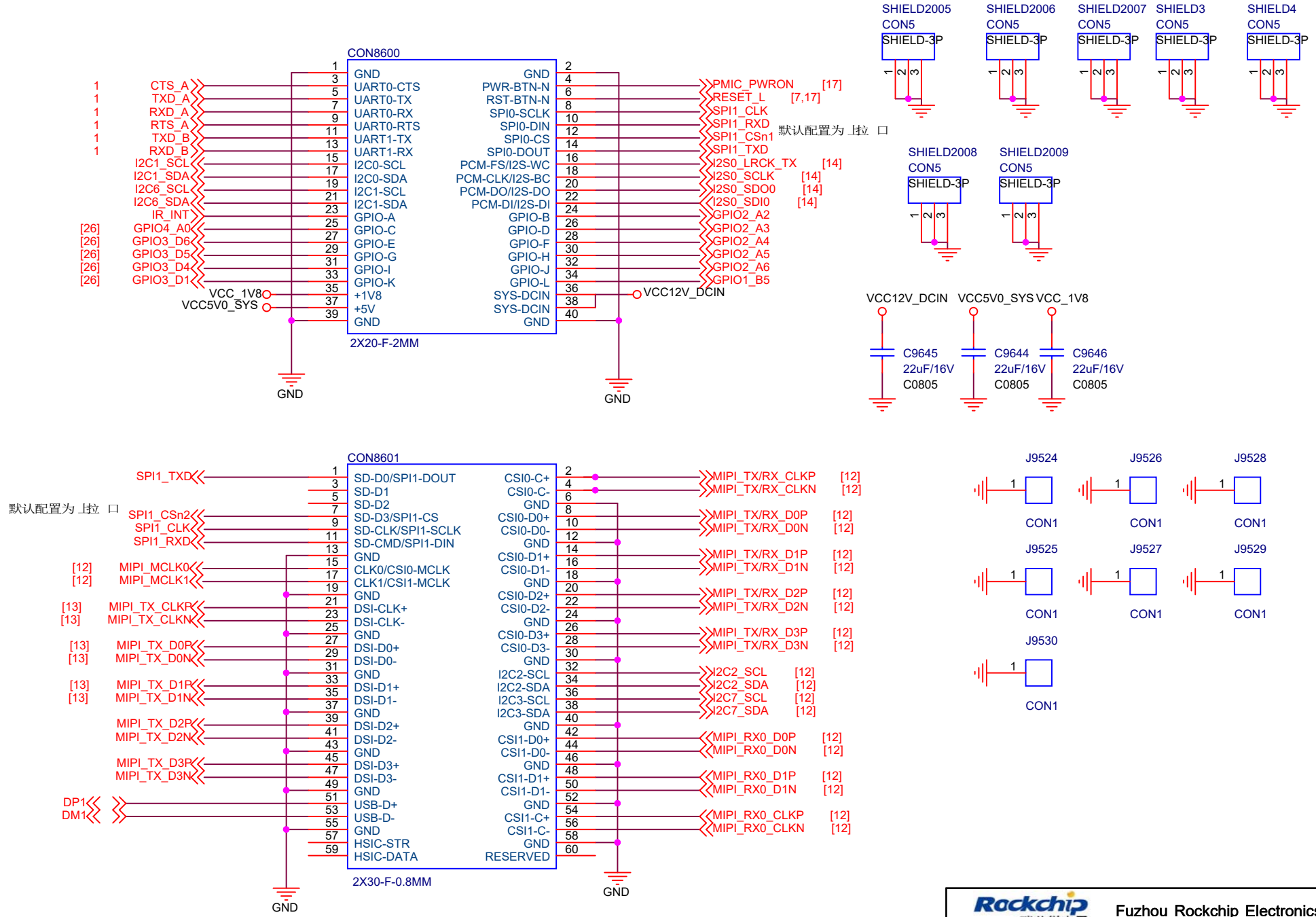
HEATSINK/FAN(option)

Note:Power for FAN,It can be delete if no need.



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics		
Project:	RK3399_FICUS_96BOARDS		
File:	LED/FAN		
Date:	Friday, July 06, 2018	Rev:	V1.0
Designed by:	Linus	Sheet:	32 of 33



Rockchip 瑞芯微电子	Fuzhou Rockchip Electronics
Project:	RK3399_FICUS_96BOARDS
File:	CONNECT
Date: Friday, July 06, 2018	Rev: V1.0
Designed by: Linus	Sheet: 33 of 33