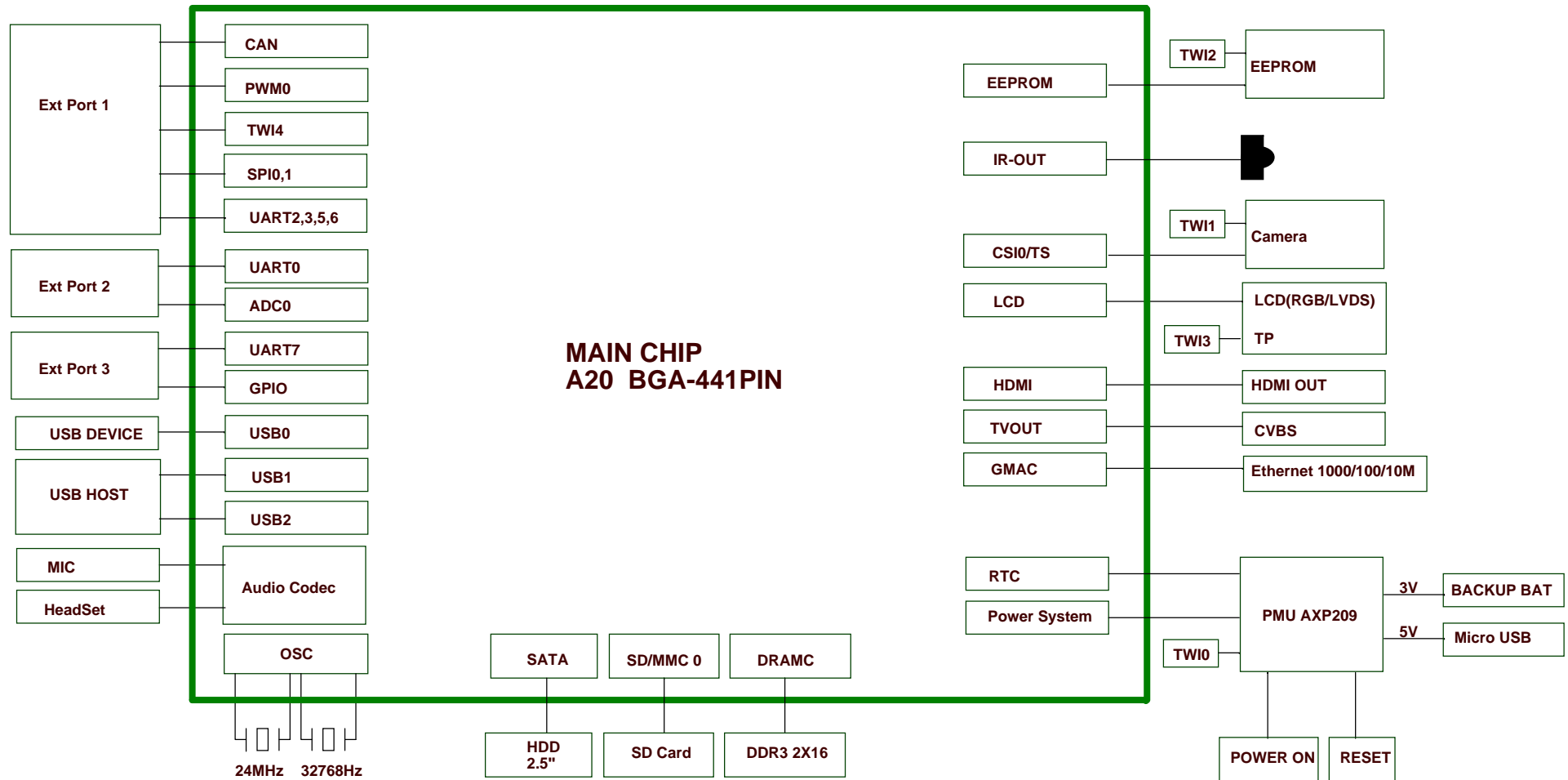


BLOCK



Differential pairs
Z0= 100ohm +/-5 ohm



Differential pairs
Z0= 90 ohm +/-5 ohm

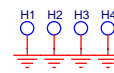
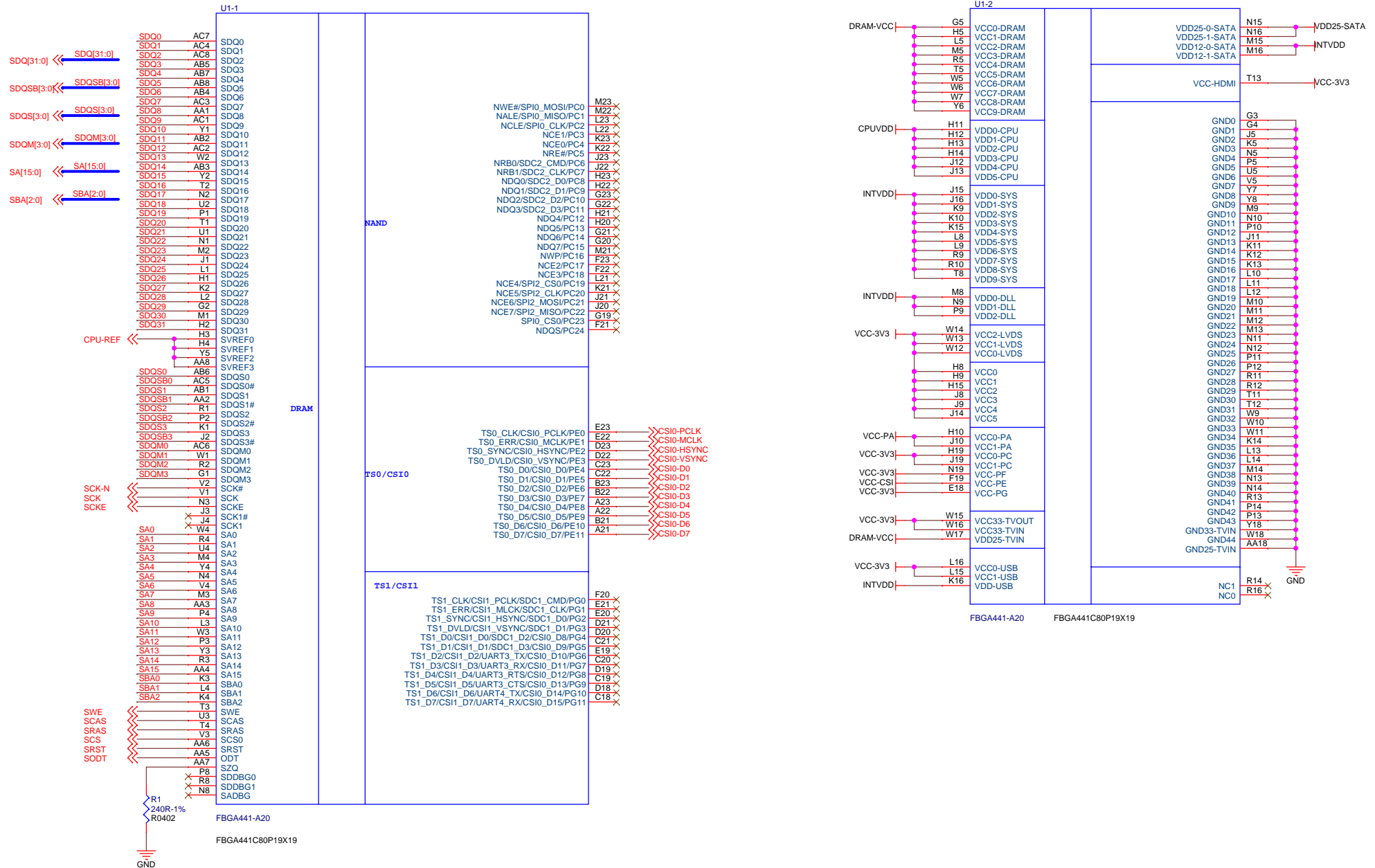


Z0= 50ohm +/-5 ohm



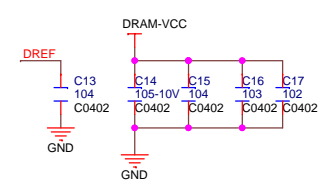
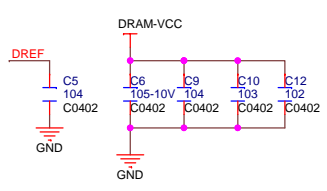
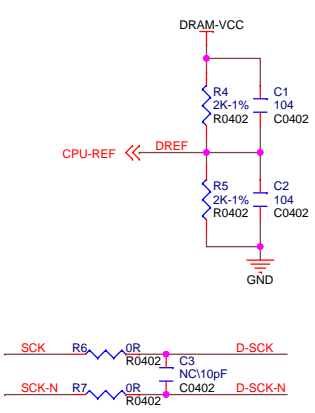
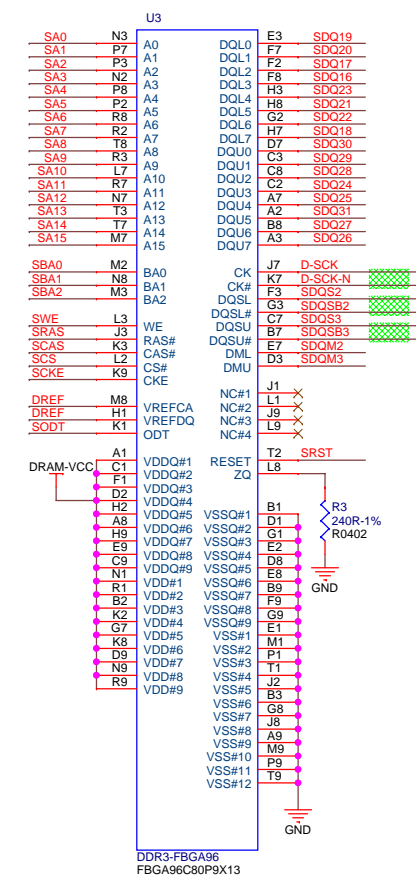
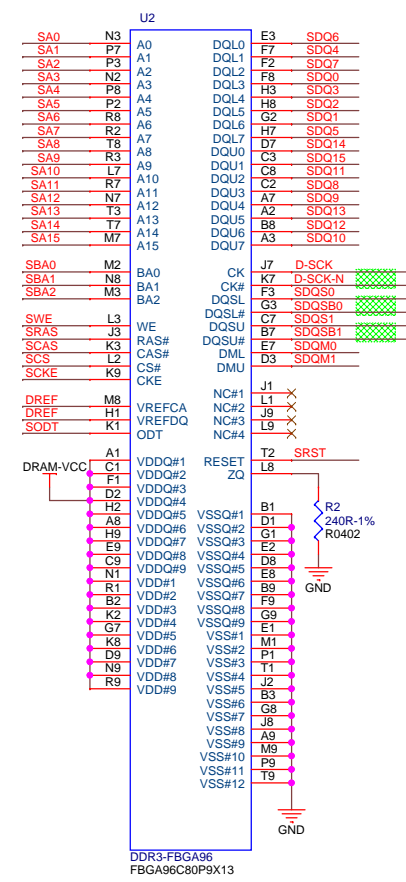
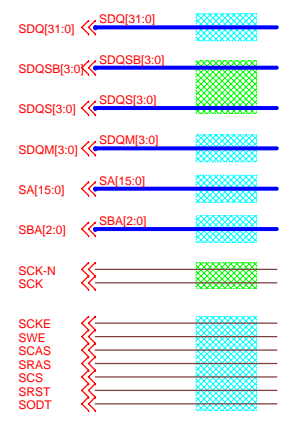
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	BLOCK	1.4
Date:	Monday, December 16, 2013	Sheet 1 of 13

CPU1



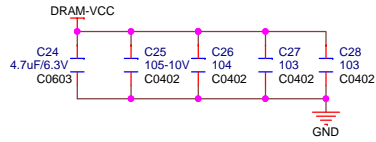
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	CPU1	1.4
Date:	Monday, December 16, 2013	Sheet 2 of 13

DDR3-16BITX2

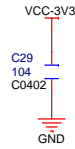


BESIDE CPU

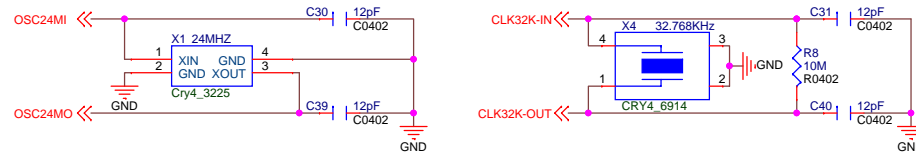
DRAM



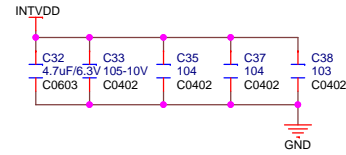
PLL



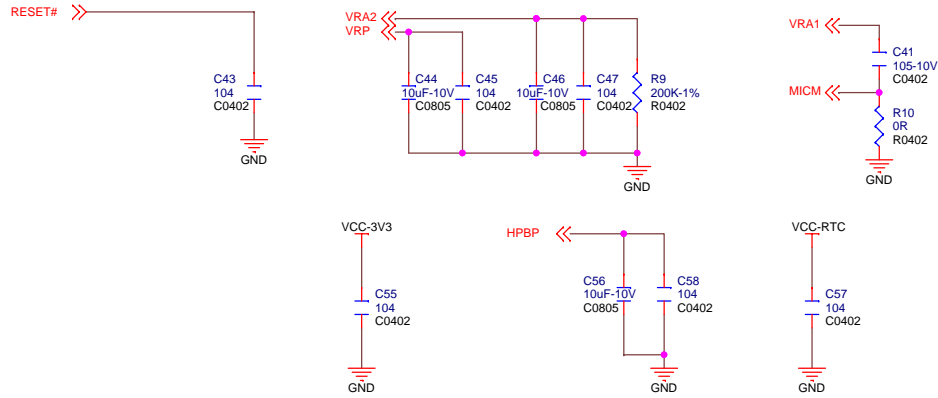
Crystal



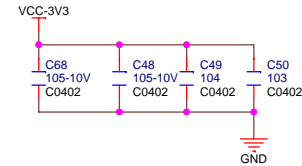
CORE



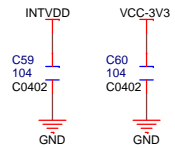
AUDIO&SYS



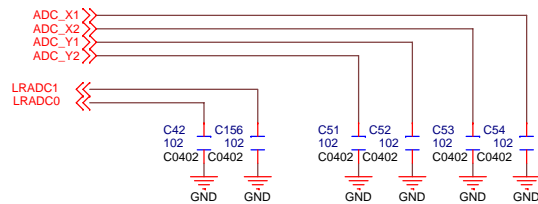
PIO-INTERFACE



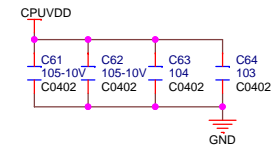
USB



ADC



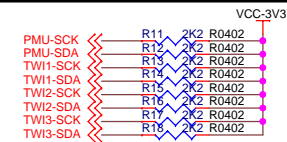
CPU&TV



SATA



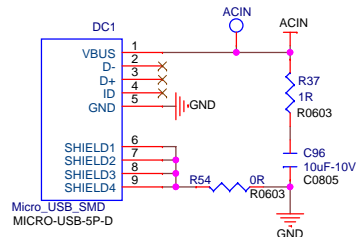
TWI-PULLUP



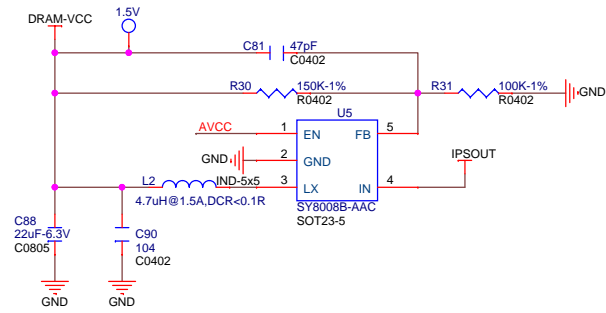
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	BESIDE CPU	1.4
Date:	Monday, December 16, 2013	Sheet 5 of 13

Power

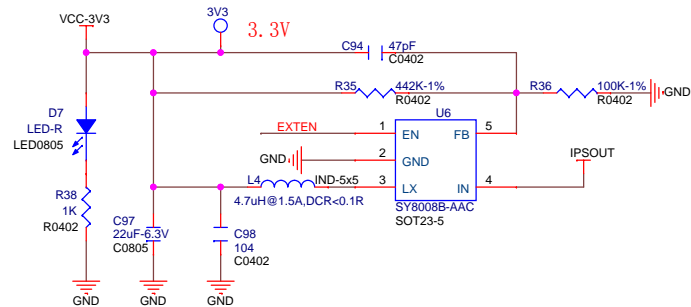
DC-IN



DRAM-VCC

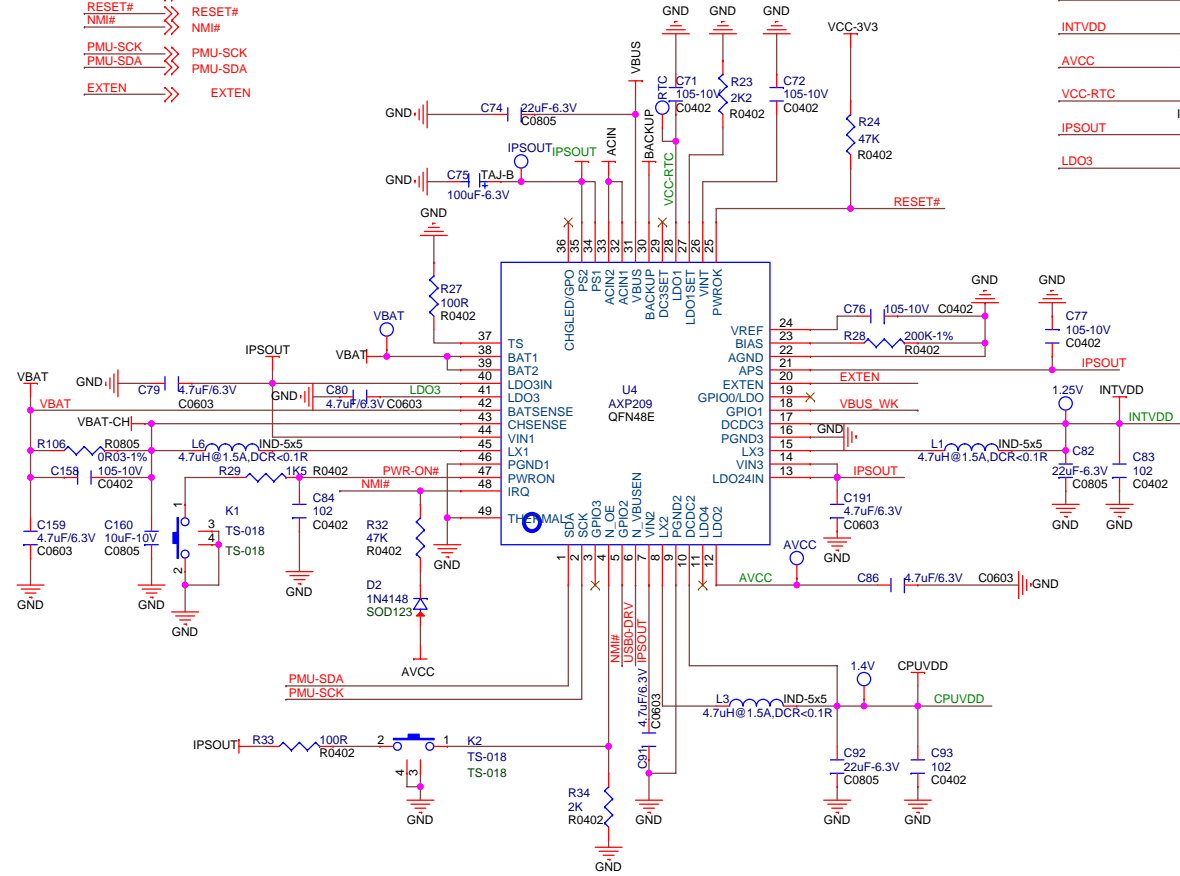


VCC-3V3



PMU-AXP209

- VBUS_WK >>> VBUS_WK
- USB0-DRV >>> USB0-DRV
- RESET# >>> RESET#
- NMI# >>> NMI#
- PMU-SCK >>> PMU-SCK
- PMU-SDA >>> PMU-SDA
- EXTEN >>> EXTEN

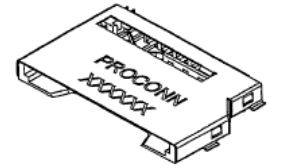
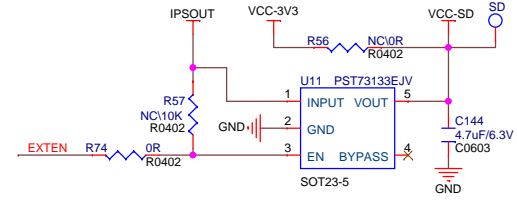
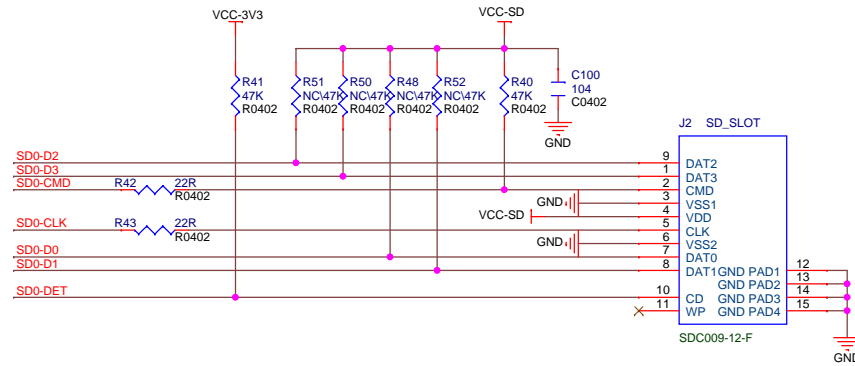


- DRAM-VCC >>> CPUVDD
- CPUVDD >>> VCC-3V3
- VCC-3V3 >>> INTVDD
- INTVDD >>> AVCC
- AVCC >>> VCC-RTC
- VCC-RTC >>> IPSOUT
- IPSOUT >>> LDO3

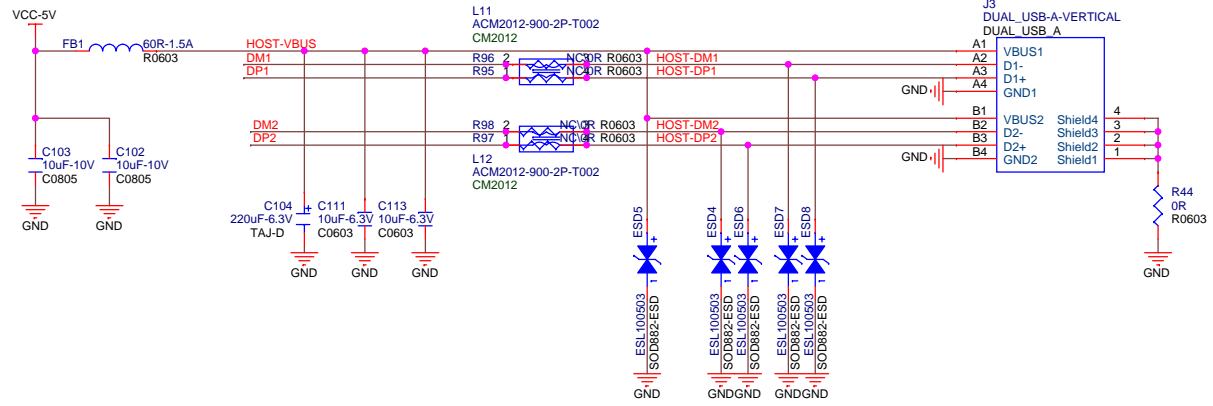


Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	POWER	1.4
Date:	Monday, December 16, 2013	Sheet 6 of 13

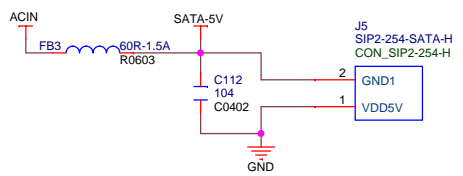
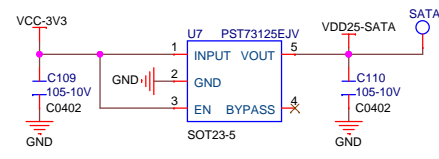
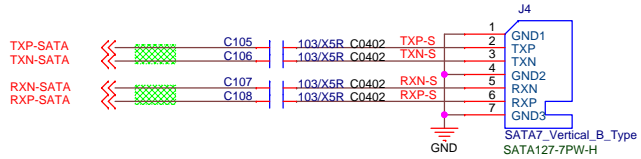
SD-USB-SATA



USB HOST



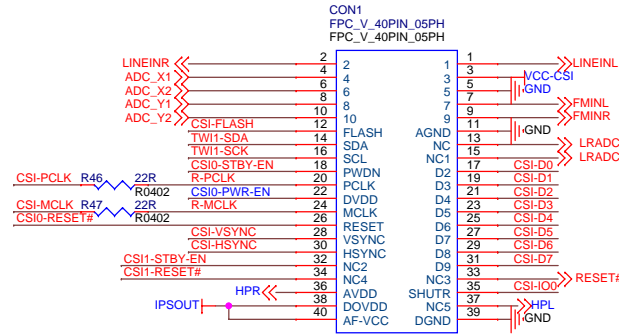
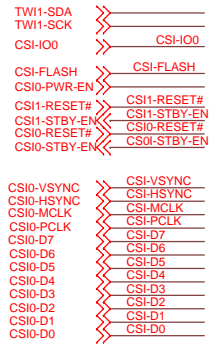
SATA



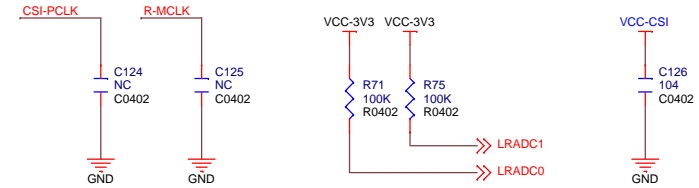
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	SD-USB-SATA	1.4
Date:	Monday, December 16, 2013	Sheet 7 of 13

CSI-HDMI

CSI

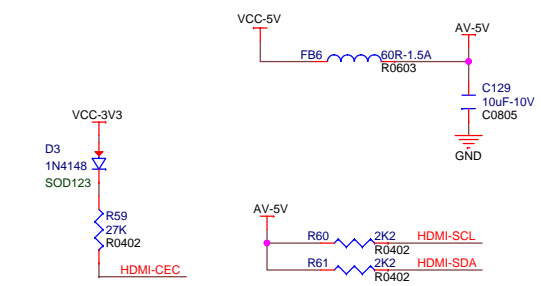
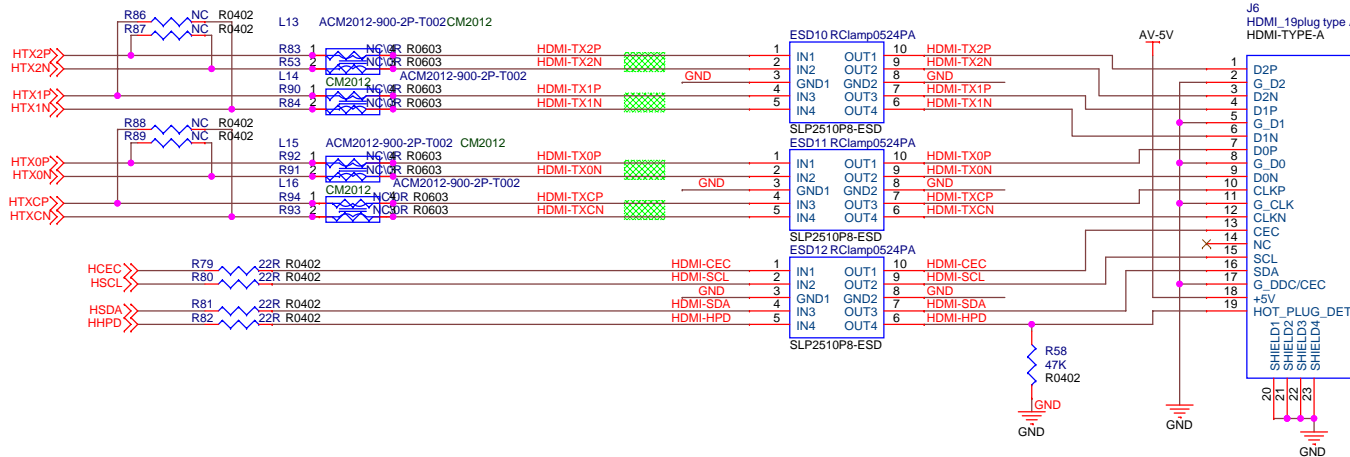


VCC-CSI为电源输入脚，给A20的PIN:F19供电
需与摄像头的I0 供电电压保持一致



CSI-RESET和CSI-STBY如需上拉，在子板上增加

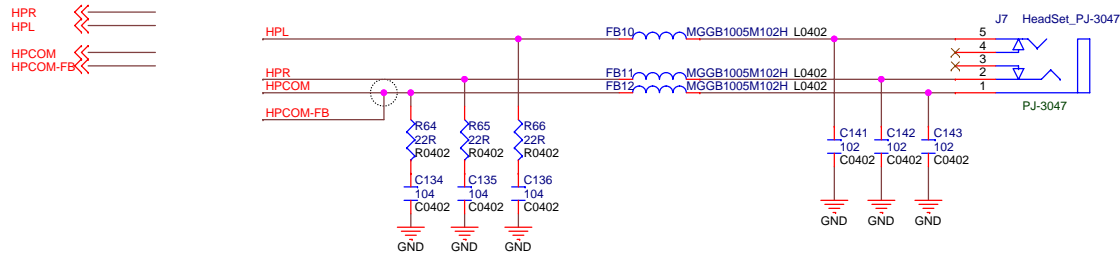
HDMI



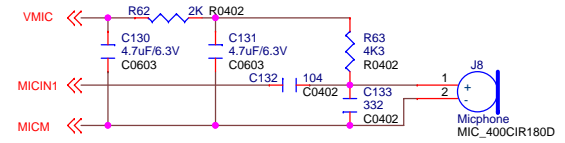
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	CSI-HDMI	1.4
Date:	Monday, December 16, 2013	Sheet 8 of 13

AUDIO-LCD-EEPROM

HeadSet

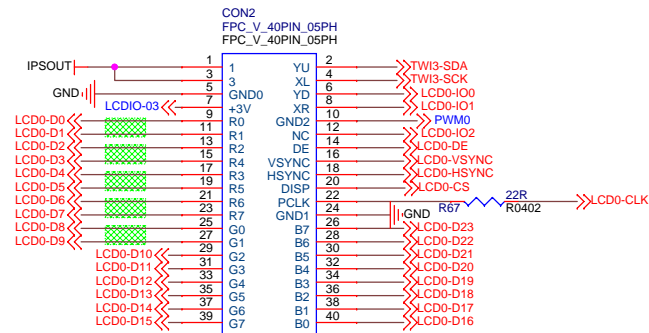


Microphone



LCD

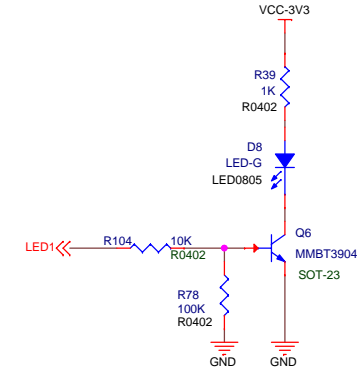
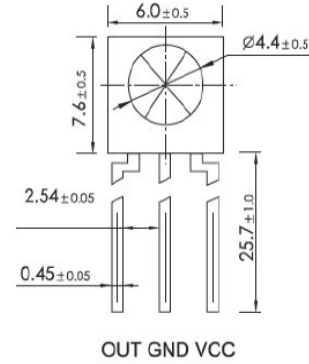
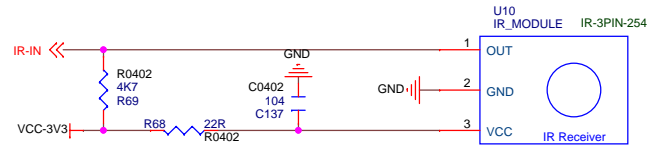
LCD0-D0	LVDS0-VP0
LCD0-D1	LVDS0-VN0
LCD0-D2	LVDS0-VP1
LCD0-D3	LVDS0-VN1
LCD0-D4	LVDS0-VP2
LCD0-D5	LVDS0-VN2
LCD0-D6	LVDS0-VPC
LCD0-D7	LVDS0-VNC
LCD0-D8	LVDS0-VP3
LCD0-D9	LVDS0-VN3



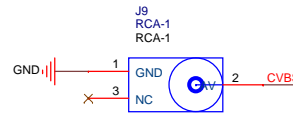
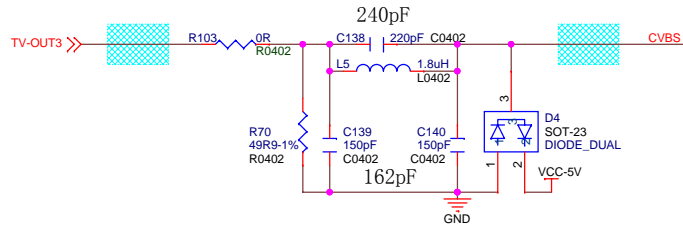
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	AUDIO-LCD-EEPROM	1.4
Date:	Monday, December 16, 2013	Sheet 9 of 13

IR-CVBS-ExtPort

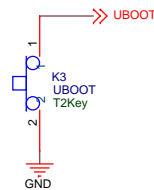
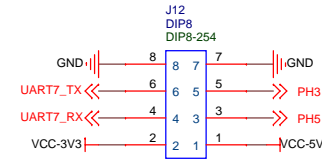
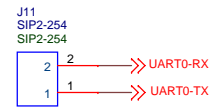
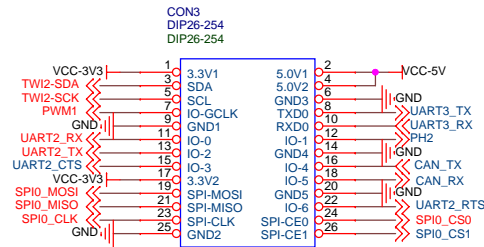
IR MODULE



CVBS



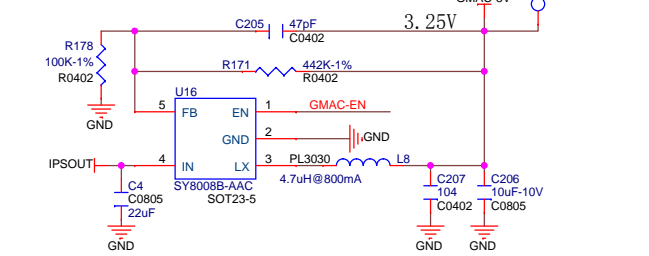
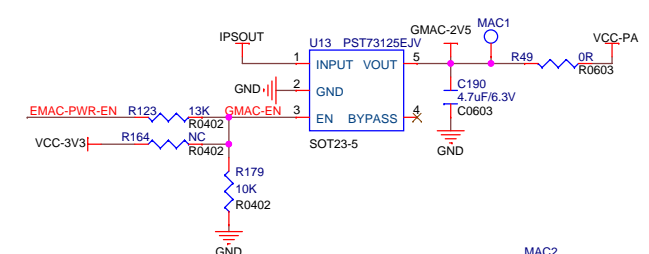
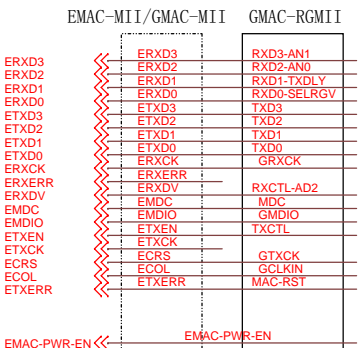
Ext Port



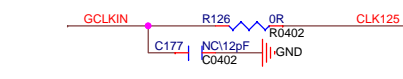
Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	IR-CVBS-ExtPort	1.4
Date:	Monday, December 16, 2013	Sheet 10 of 13

GMAC

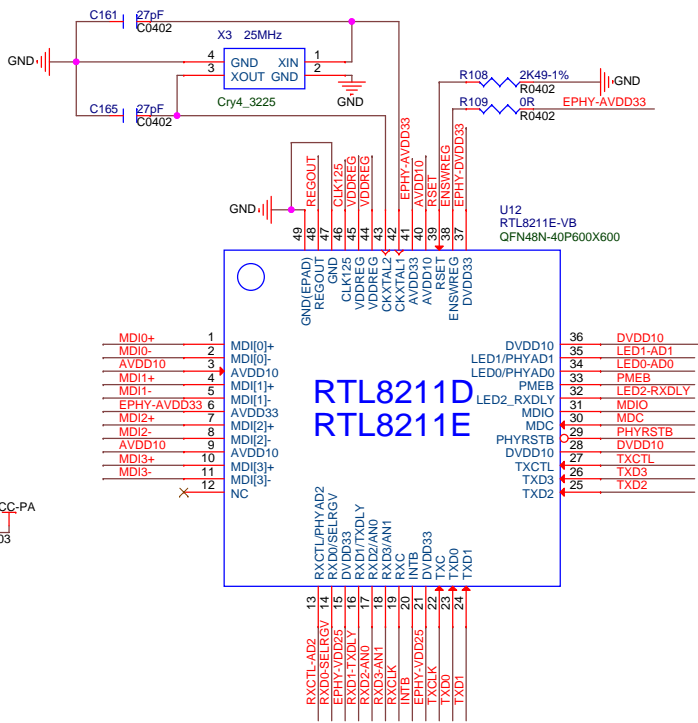
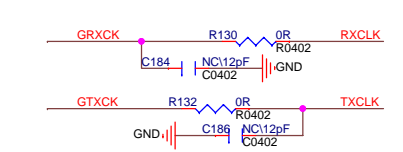
10/100/1000 RGMII Ethernet PHY



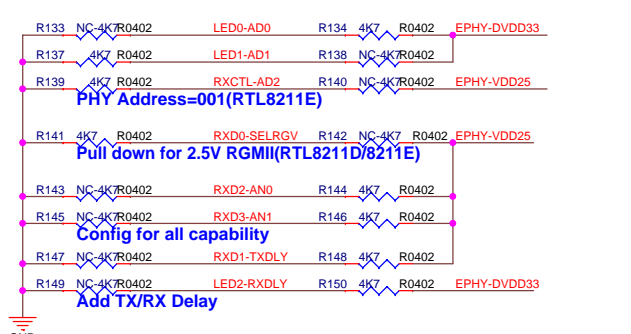
Place filter network close to CLK125. Reserved for EMI



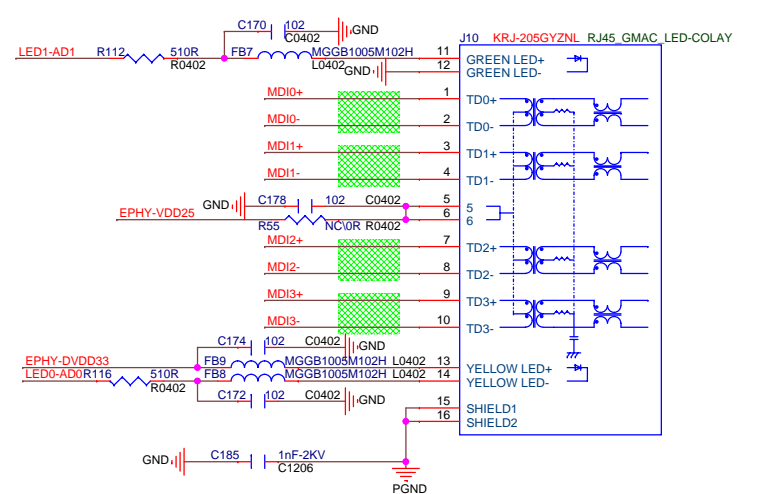
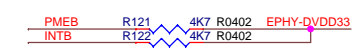
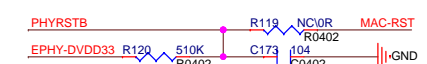
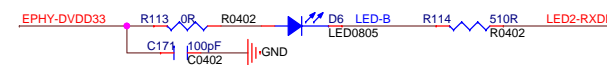
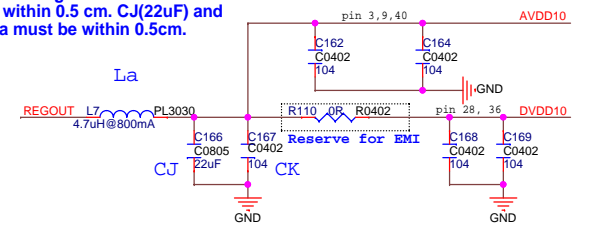
Place filter network close to RX_CLK. Reserved for EMI



Note 2: The Trace length from CA(22uF),CB(0.1uF) to Pin 44,45(VDDREG) must be within 0.5 cm. The trace width from AVDD33 to Pin 44,45 should >40mils.



Note 1: The Trace length between La and PHY's Pin48 must be within 0.5 cm. CJ(22uF) and CK(0.1uF) to La must be within 0.5cm.

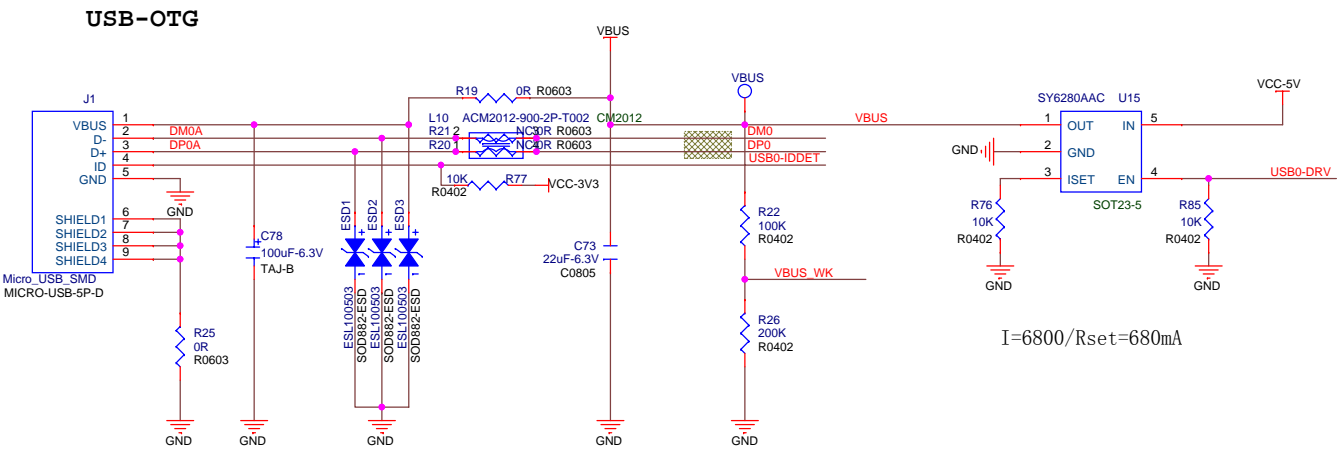


LED0: Blinking=Transmitting or Receiving. LED1: Link Up/Down

Design Name		A20_Banana_Pi	
Size	A3	Page Name	GMAC
Date:	Monday, December 16, 2013	Sheet	11 of 13
Rev	1.4		

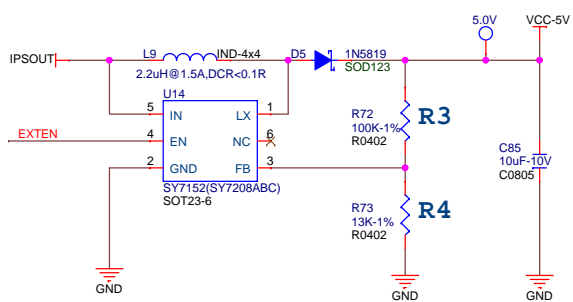
USB_OTG

- DM0 <<<
- DPO <<<
- USB0-IDDET <<<
- VBUS_WK <<<
- USB0-DRV <<<
- EXTEN <<<



$$I=6800/Rset=680mA$$

VCC-5V



$$V_{out} = 0.6 * (1 + R3/R4)$$

Design Name		
A20_Banana_Pi		
Size	Page Name	Rev
A3	Revision	1.4
Date:	Monday, December 16, 2013	Sheet 12 of 13

V1.00

1. 第一版

V1.01

1. 调整J10 Transformer线路
2. U1的PIN: H10、J10供电由VCC-3V3改为VCC-PA

V1.2

1. GMAC-3V改为DC-DC供电(U16)
2. 增加FB7~FB9 (网口灯EMI滤波)
3. C178改为102 (原来104)
4. 增加C185, 1nf-2KV
5. IR-IN修正为连接IRO-RX
6. R49改为0603封装 (原0402)
7. 增加FB10~FB12及电容 (耳机EMI滤波)
8. 增加U11 (SD卡3.3VLDO)
9. SATA座子改为弯插
10. 增加USB供电座子DC1
11. SATA供电改为ACIN, 只有接DC电源时才能用SATA
12. J3增加OTG功能, 增加相应DC-DC升压电路(U14、U15), 删除Q1 (VBUS连ACIN的MOS管)
13. HDMI供电改为VCC-5V
14. CON3, J12的VBUS改为VCC-5V
15. SD卡删除WP, 增加DET
16. ACIN的滤波电容C96增加1R电阻

V1.3

1. CON1改为40PIN, 增加ADC和AUDIO部分功能口
2. J3供电改为VCC-5V

V1.4

1. 去掉Camera的电源LDO
2. CON1的PIN22、36、37、38、40、3、5 分别改为CSIO-PWR-EN、HPR、HPL、IPSOUT、IPSOUT、VCC-CSI、GND
3. CVBS增加串联电阻R103, R70改为49.9欧姆
4. CON2的PIN7、10分别改为LCDIO-03、PWMO
5. EMAC-PWR-EN增加下拉电阻R179, R123改为13K
6. J3供电合并为一路, 增加220uF钽电容
7. 增加电源指示灯D7, IO灯D8
8. R75改为100uF钽电容
9. C73、C74、C97、C88、C82、C92改为22uF-6.3V
10. 增加C78
11. USB和HDMI增加共模滤波器
12. SD卡数据线预留上拉电阻
13. HDMI差分线预留并联电阻位置

A20	PIN	使用	不使用
HDMI	T13	VCC-3V3	VCC-3V3
SATA 2.5V	N15, N16	2.5V	DRAM-VCC(1.5V)
CSIO	F19 (VCC-PE)	VCC-2.8	VCC-2.8
CSI1	E18 (VCC-PG)	VCC-2.8	VCC-3V3
TVIN 2.5V	W17	2.5V	DRAM-VCC(1.5V)
TVIN 3.3V	W16	VCC-3V3	VCC-3V3
TVOUT 3.3V	W15	VCC-3V3	VCC-3V3
LVDS IO	W12, W13, W14	VCC-3V3	VCC-3V3
EMAC IO	J10, H10 (VCC-PA)	3.0V/2.5V	VCC-3V3
NAND IO	J19, H19 (VCC-PC)	VCC-3V3	VCC-3V3
SD IO	N19 (VCC-PF)	VCC-3V3	VCC-3V3
USB VDD	K16	INTVDD(1.2V)	VCC-3V3
USB VCC	L15, L16	VCC-3V3	VCC-3V3

Design Name			
A20_Banana_Pi			
Size	Page Name	Revision	
A3		1.4	
Date:	Monday, December 16, 2013	Sheet	13 of 13