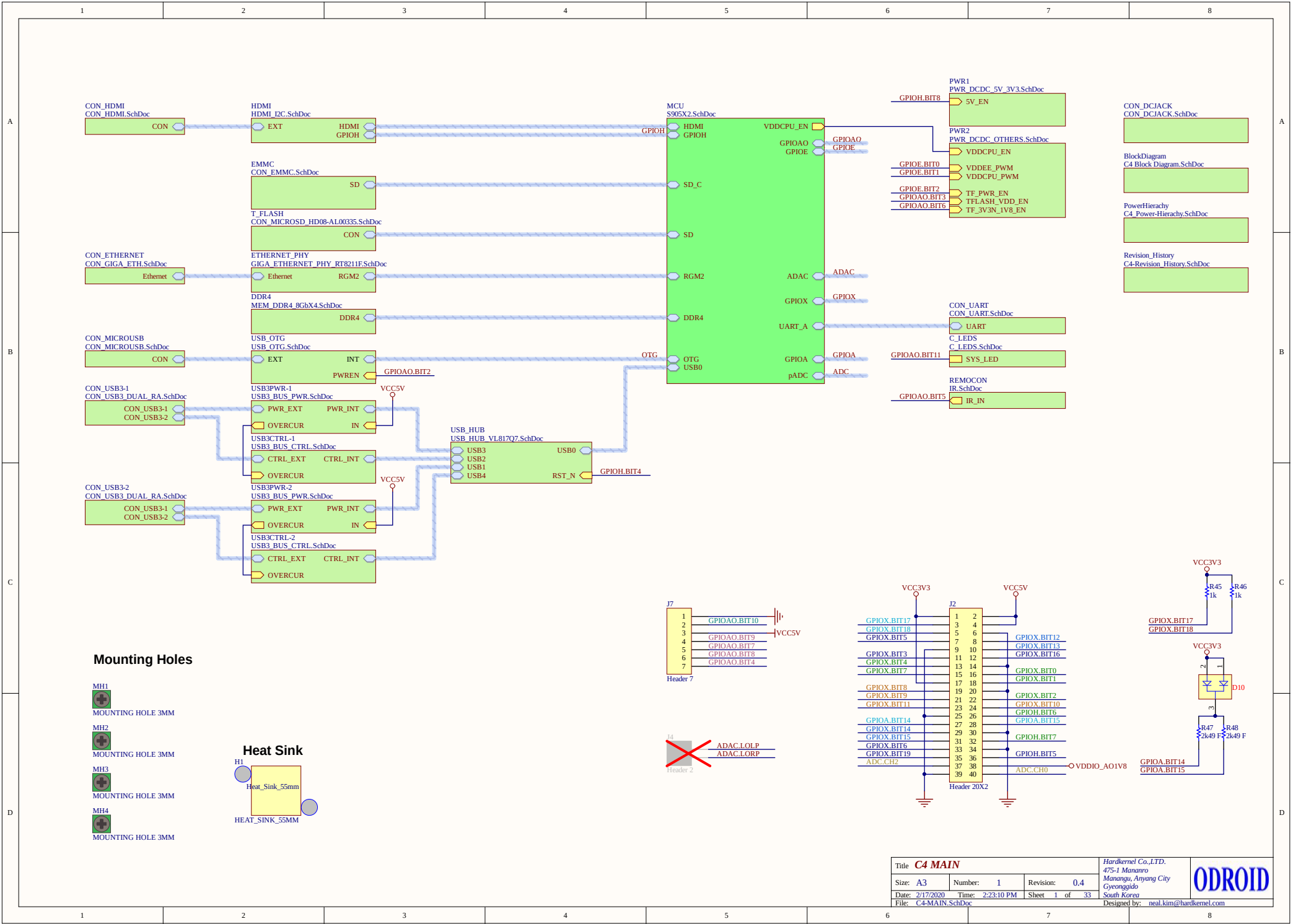
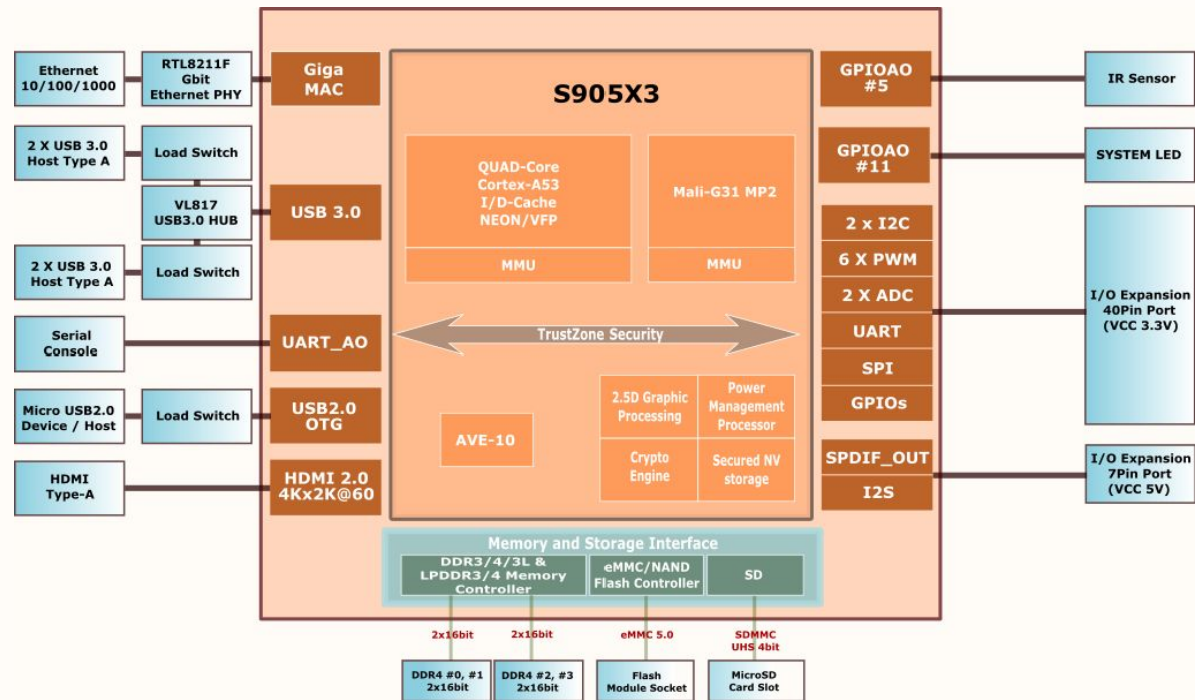






Title C4 Block Diagram			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		
Size: A4	Number: 2	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 2 of 33			
File: C4 Block Diagram.SchDoc			Designed by: ruppi kim@hardkernel.com		

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A

B

C

D

HW REVISION	DATE	Change Note
v1.0	2020.01.29	1. Added silkscreen certification mark.
v0.4	2019.11.29	1. Change USB_OTG Power Enable pin from GPIOH.BIT6 to GPIOAO.BIT2 2. Remove eMMC_nDET pin 3. Change TFLASH_VDD Enable pin from GPIOAO.BIT8 to GPIOAO.BIT3 4. Change TF_3V3N_1V8 Enable pin from GPIOAO.BIT7 to GPIOAO.BIT6 5. Assign GPIOE.BIT2 to the TF Power to turn ON/OFF 6. Rearrange Expansion Port 40Pin and 7Pin. 7. Change USB Load S/W from MP62551 to JW7111S 8. Change 5V DCDC Step-down from SY8120B1ABC to JW5057C 9. Add two spare land 3225 size for Cap 220uF next to USB 3.0 Connector
v0.3	2019.09.24	1. Removed the components related to CVBS OUT of S905X3 2. Changed R104 to 39.2k from 16k and R103 to 301k from 120k 3. Changed R108 to 56k from 10k 4. Changed PCB thickness from 1.2T to 1T and layer from 8 to 6. 5. Added L13 and C81 between AVDD0V8_HDMI of S905X3 and VDD_EE 6. Changed net and added components at VBUSDET of VL817.
v0.2	2019.07.19	1. Changed USB 3.0 HUB IC from VL817 to VL805. 2. Changed the connection of PIN35 from ADAC.LOLP to GPIOE.BIT2 on 40Pin Header. 3. Changed the connection of PIN36 from ADAC.LORP to GPIOH.BIT5 on 40Pin Header. 4. Added 2pin Header for Audio out (ADAC.LOLP, ADAC.LORP) 5. Removed external CPU RESET IC with the components. 6. Added 2pin Header for external 12V power input. 7. Changed PCB thickness from 1T to 1.2T and layer from 6 to 8.
v0.1	2019.05.20	1. The first revision.

Title

Revision History

Size: A3

Number: 3

Revision: 0.4

Date: 2/17/2020

Time: 2:23:10 PM

Sheet 3 of 33

File: C4-Revision_History.SchDoc

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Hardkernel Co.,LTD.
475-1 Mananro
Manangu, Anyang City
Gyeonggido
South Korea

ODROID

1

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3

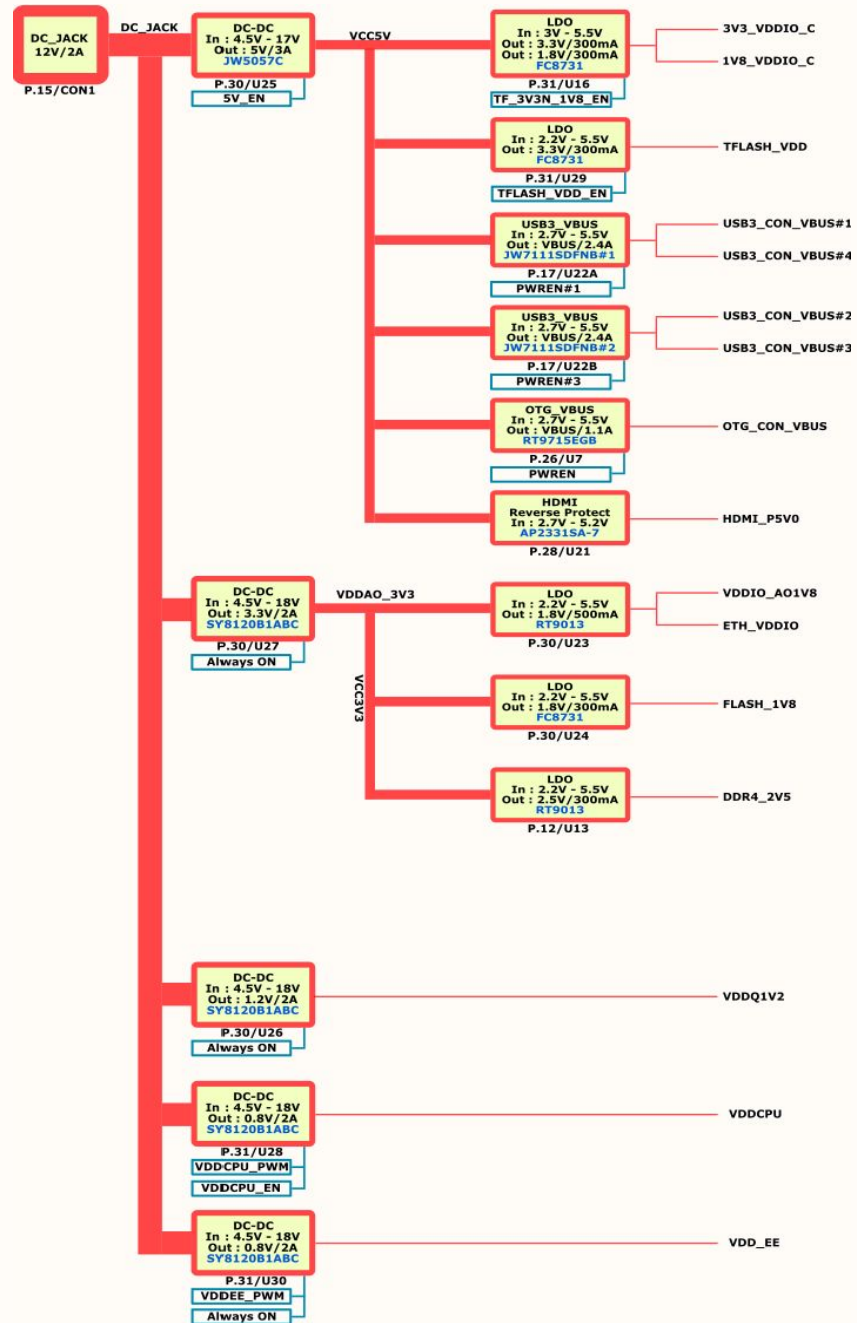
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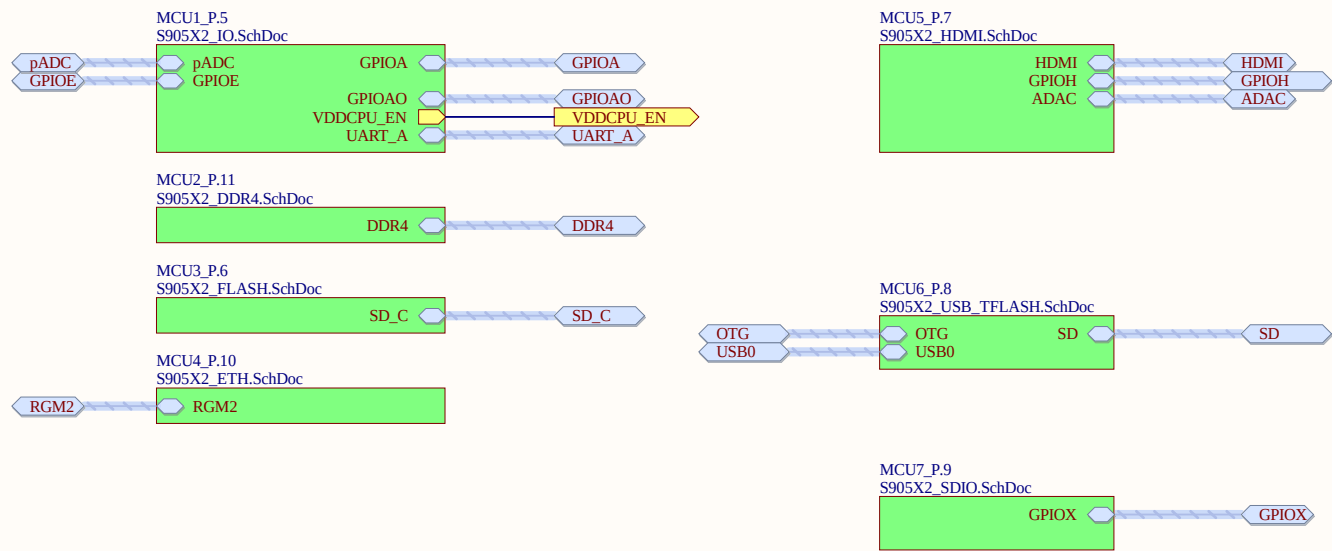
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6

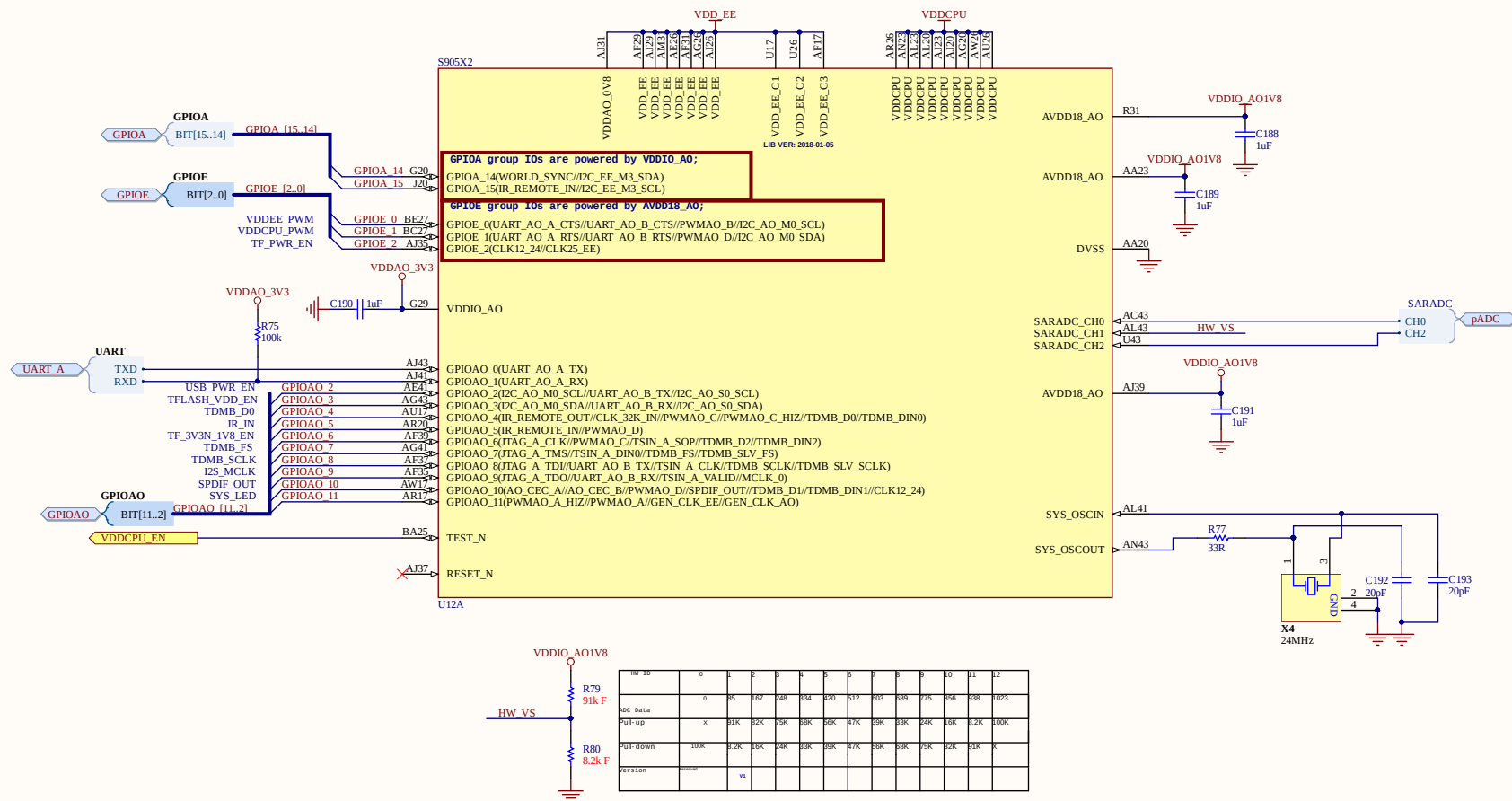
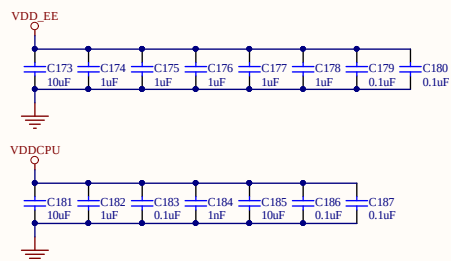
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8



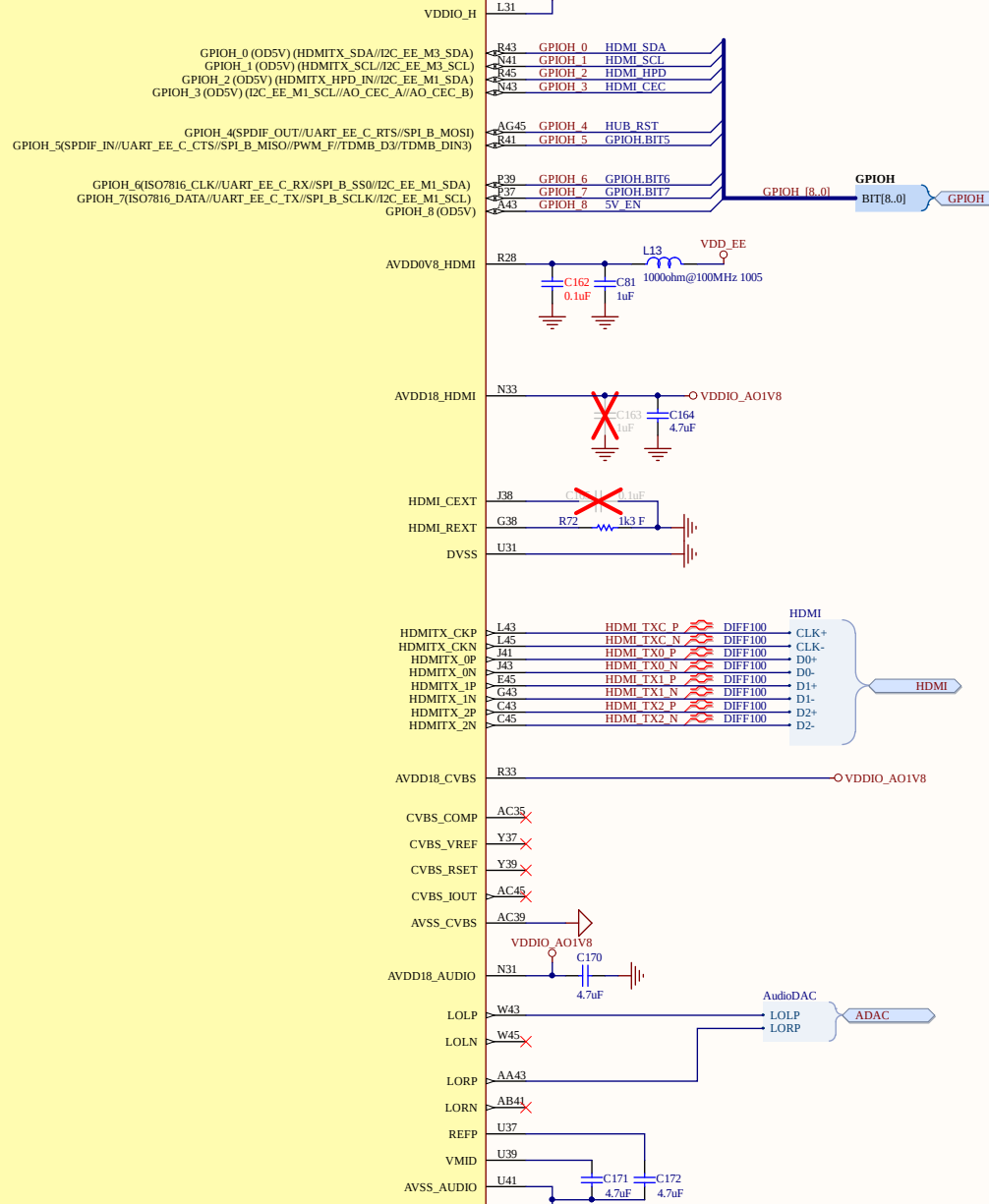


Title S905X2				Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 5	Revision: 0.4				
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 5 of 33				
File: S905X2.SchDoc				Designed by: ruppi kim@hardkernel.com		



S905X2

LIB VER: 2018-01-05



Short GND pin of REFP/VMID filter caps & AVSS_AUDIO together, then to GND (single point connection)

Title S905X2_HDMI

Size: A3

Number: 8

Revision: 0.4

Date: 2/17/2020

Time: 2:23:10 PM

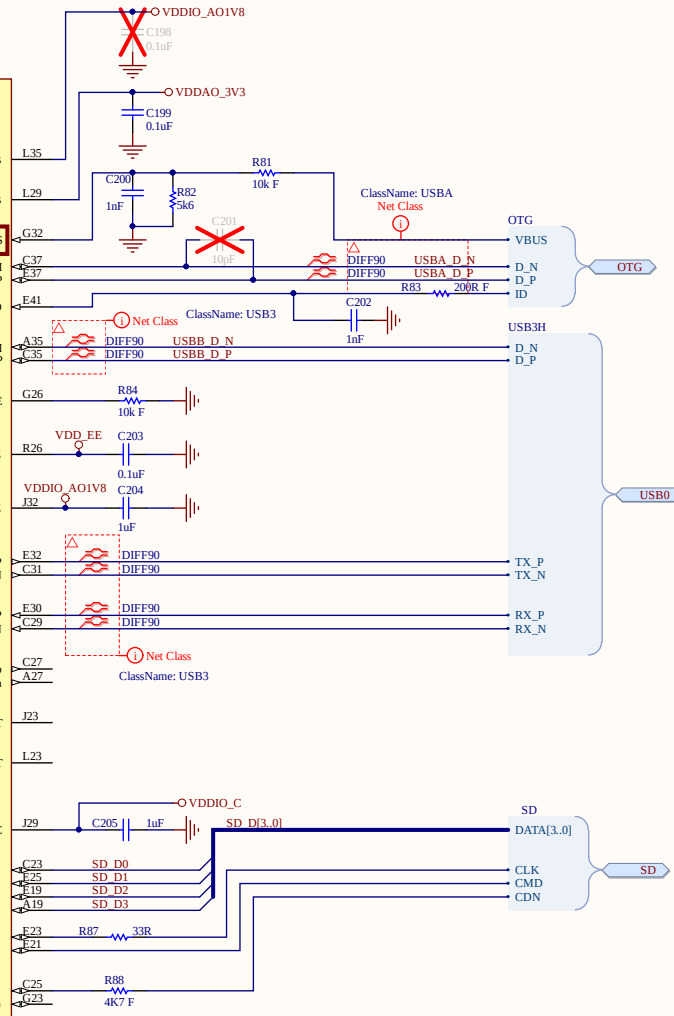
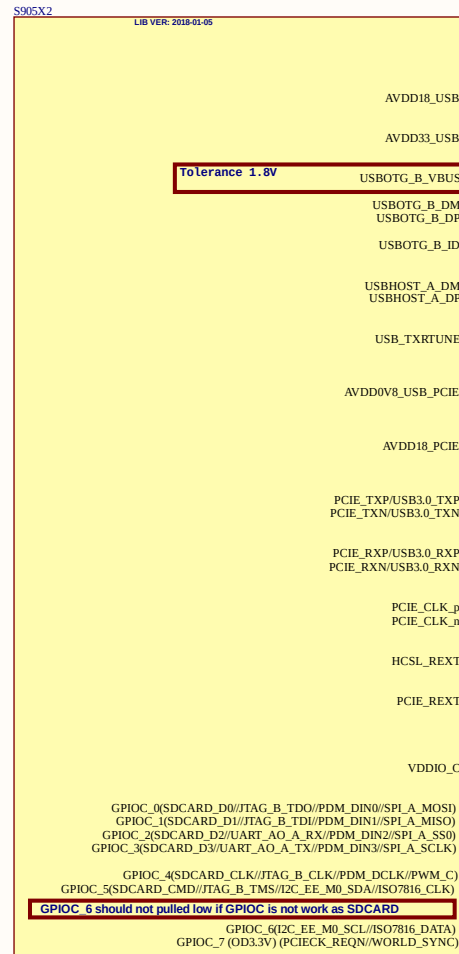
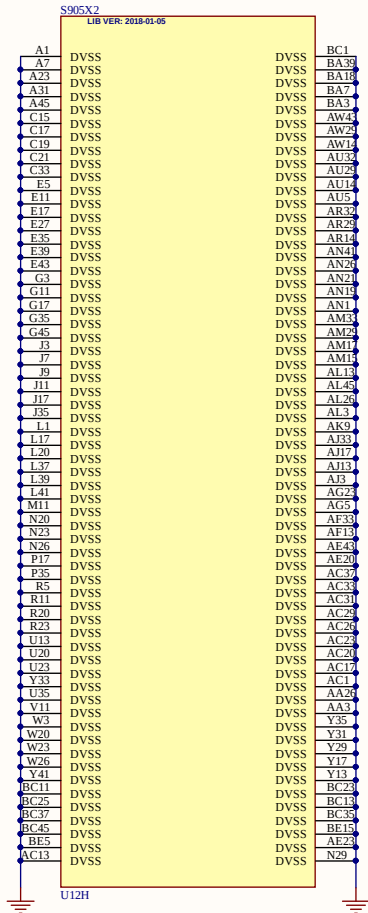
Sheet 8 of 33

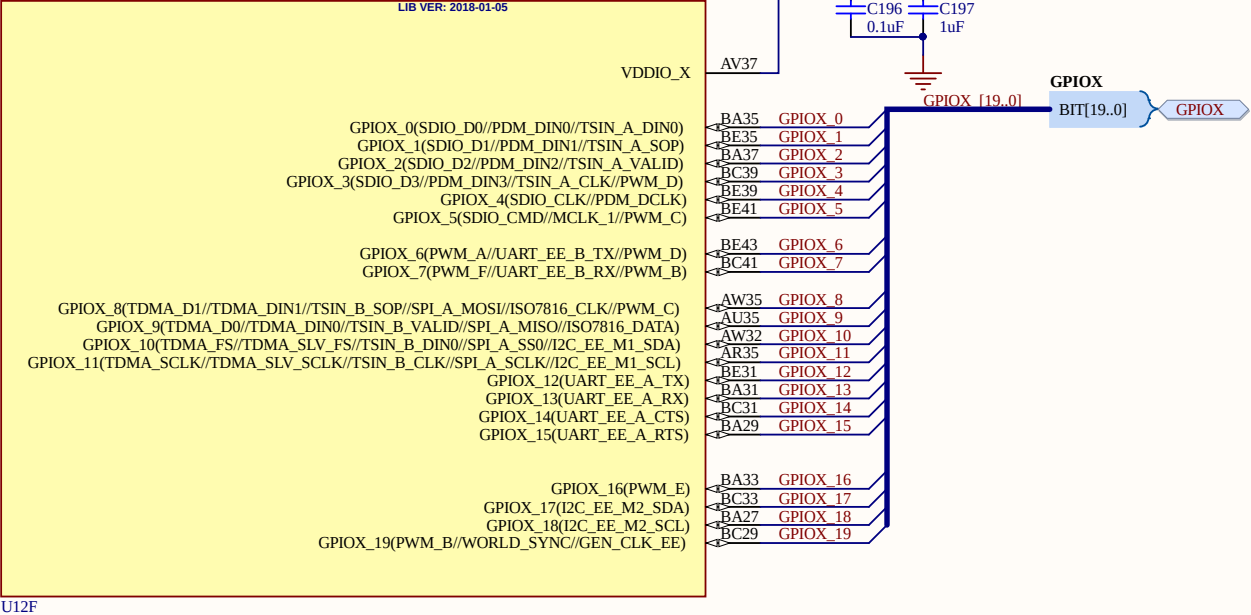
File: S905X2_HDMI.SchDoc

Hardkernel Co., LTD
475-1 Mananaro
Manangu, Anyang City
Gyeonggido
South Korea

Designed by: neal.kim@hardkernel.com

ODROID





Title S905X2_SDIO			Hardkernel Co., LTD 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea Designed by: neal.kim@hardkernel.com ODROID
Size: A4	Number: 10	Revision: 0.4	
Date: 2/17/2020	Time: 2:23:11 PM	Sheet 10 of 33	
File: S905X2_SDIO.SchDoc			

S905X2

LIB VER: 2018-01-05

ENET_TXP
ENET_TXNENET_RXP
ENET_RXN

ENET_ATP

ENET_EXTRES
J26R66
2k26 F

DVSS

AVDD18_ENET

VDDIO_AO1V8

C155
0.1uF

VDDIO_Z

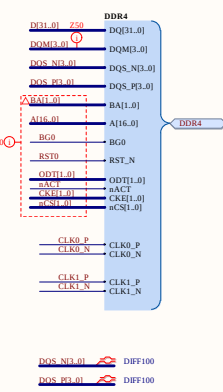
C157
0.1uF
C158
4.7uFGPIOZ_0(ETH_MDIO//ISO7816_CLK//BT656_A_VS//I2C_EE_M0_SDA)
GPIOZ_1(ETH_MDC//ISO7816_DATA//BT656_A_HS//I2C_EE_M0_SCL)GPIOZ_2(ETH_RGMII_RX_CLK//TSIN_B_VALID//TDMC_D0//TDMC_DIN0//PDM_DIN0/SDCARD_D0)
GPIOZ_3(ETH_RX_DV//TSIN_B_SOP//BT656_A_CLK//TDMC_D1//TDMC_DIN1//PDM_DIN1/SDCARD_D1)
GPIOZ_4(ETH_RXD0//TSIN_B_DIN0//BT656_A_DIN0//TDMC_D2//TDMC_DIN2//PDM_DIN2/SDCARD_D2)
GPIOZ_5(ETH_RXD1//TSIN_B_CLK//BT656_A_DIN1//TDMC_D3//TDMC_DIN3//PDM_DIN3/SDCARD_D3)
GPIOZ_6(ETH_RXD2_RGMII//TSIN_B_FAIL//BT656_A_DIN2//TDMC_FS//TDMC_SLV_FS//PDM_DCLK/SDCARD_CLK)
GPIOZ_7(ETH_RXD3_RGMII//TSIN_B_DIN1//BT656_A_DIN3//TDMC_SCLK//TDMC_SLV_SCLK//I2C_EE_M0_SDA/SDCARD_CMD)
CARD port on GPIOZ is not bootableGPIOZ_8(ETH_RGMII_TX_CLK//TSIN_B_DIN2//BT656_A_DIN4//MCLK_1//I2C_EE_M0_SCL)
GPIOZ_9(ETH_TXEN//TSIN_B_DIN3//BT656_A_DIN5)
GPIOZ_10(ETH_TXD0//TSIN_B_DIN4//BT656_A_DIN6)
GPIOZ_11(ETH_TXD1//TSIN_B_DIN5//BT656_A_DIN7)
GPIOZ_12(ETH_TXD2_RGMII//TSIN_B_DIN6)
GPIOZ_13(ETH_TXD3_RGMII//TSIN_B_DIN7//GEN_CLK_EE)GPIOZ_14 (OD3.3V) (ETH_LINK_LED//I2C_EE_M2_SDA)
GPIOZ_15 (OD3.3V) (ETH_ACT_LED//I2C_EE_M2_SCL)

RGM2

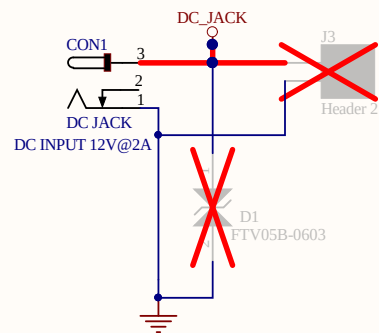
MDIO
MDICBC43
BE45
AW45
AY41
BA43
BA45RXCLK
RX_DV
RXD0
RXD1
RXD2
RXD3

RGM2

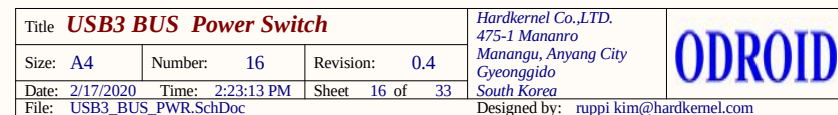
AV41
AU43
AT41
AM37
AM39
AM35TXCLK
TXEN
TXD0
TXD1
TXD2
TXD3AR45
AR43INTR
NRSTTitle **S905X2_ETH**Size: **A4**Number: **11**Revision: **0.4**Date: **2/17/2020** Time: **2:23:11 PM**Sheet **11** of **33**File: **S905X2_ETH.SchDoc**Hardkernel Co., LTD
475-1 Mananro
Manangu, Anyang City
Gyeonggido
South Korea
Designed by: neal.kim@hardkernel.com**ODROID**

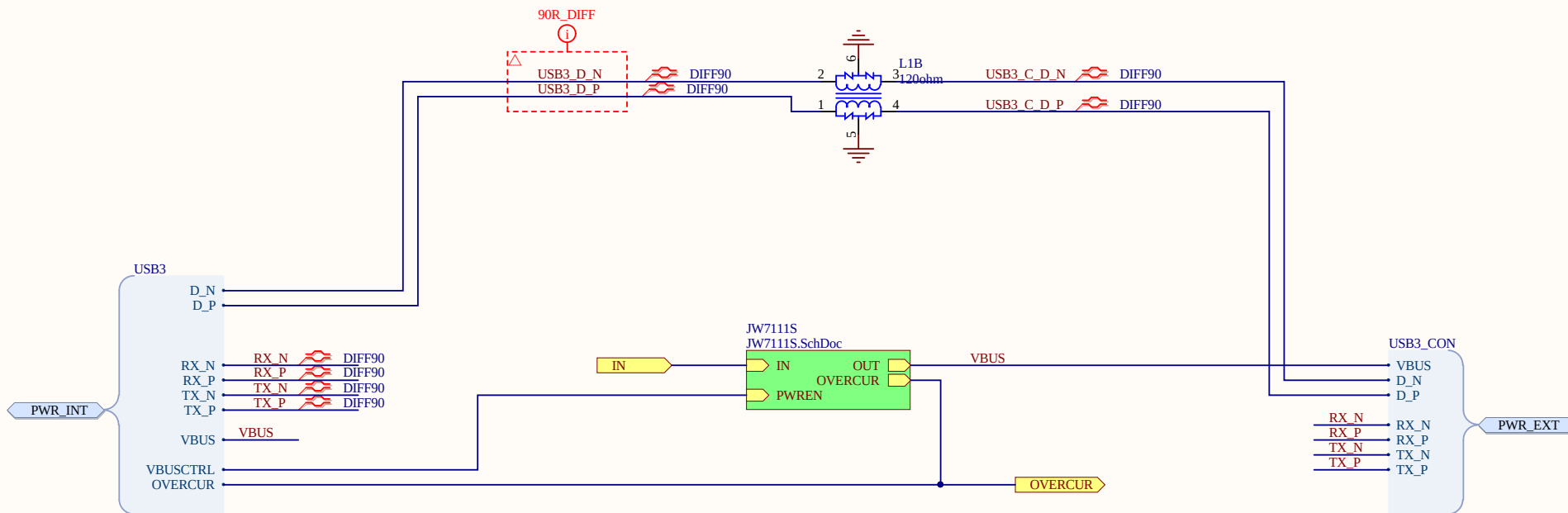


DD4 Density	Rank0 (2PCS x 16bit) U2 U4		Rank1(2PCS x 16bit) U3 U5	
1G Byte	512M Byte	512M Byte	NC	NC
2G Byte	512M Byte	512M Byte	512M Byte	512M Byte
	1G Byte	1G Byte	NC	NC
4G Byte	1G Byte	1G Byte	1G Byte	1G Byte

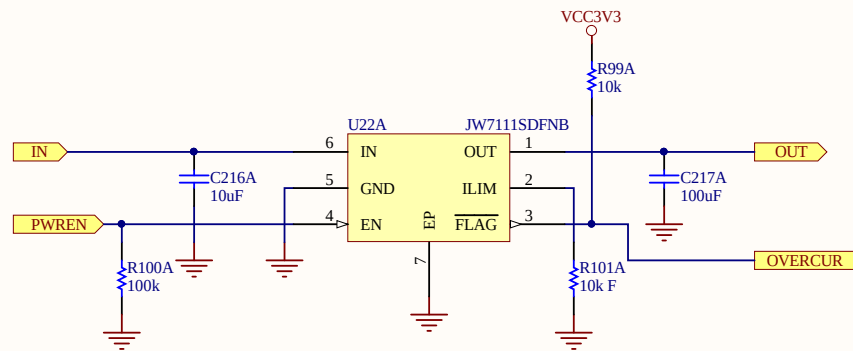


Title DC JACK			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 15	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 15 of 33		
File: CON_DCJACK.SchDoc			Designed by: ruppi.kim@hardkernel.com	

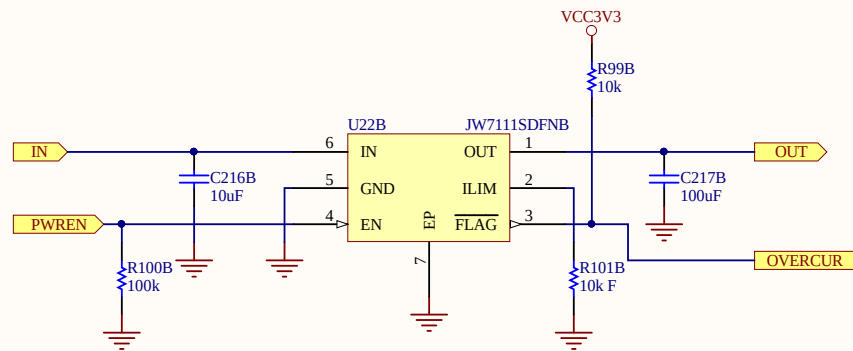




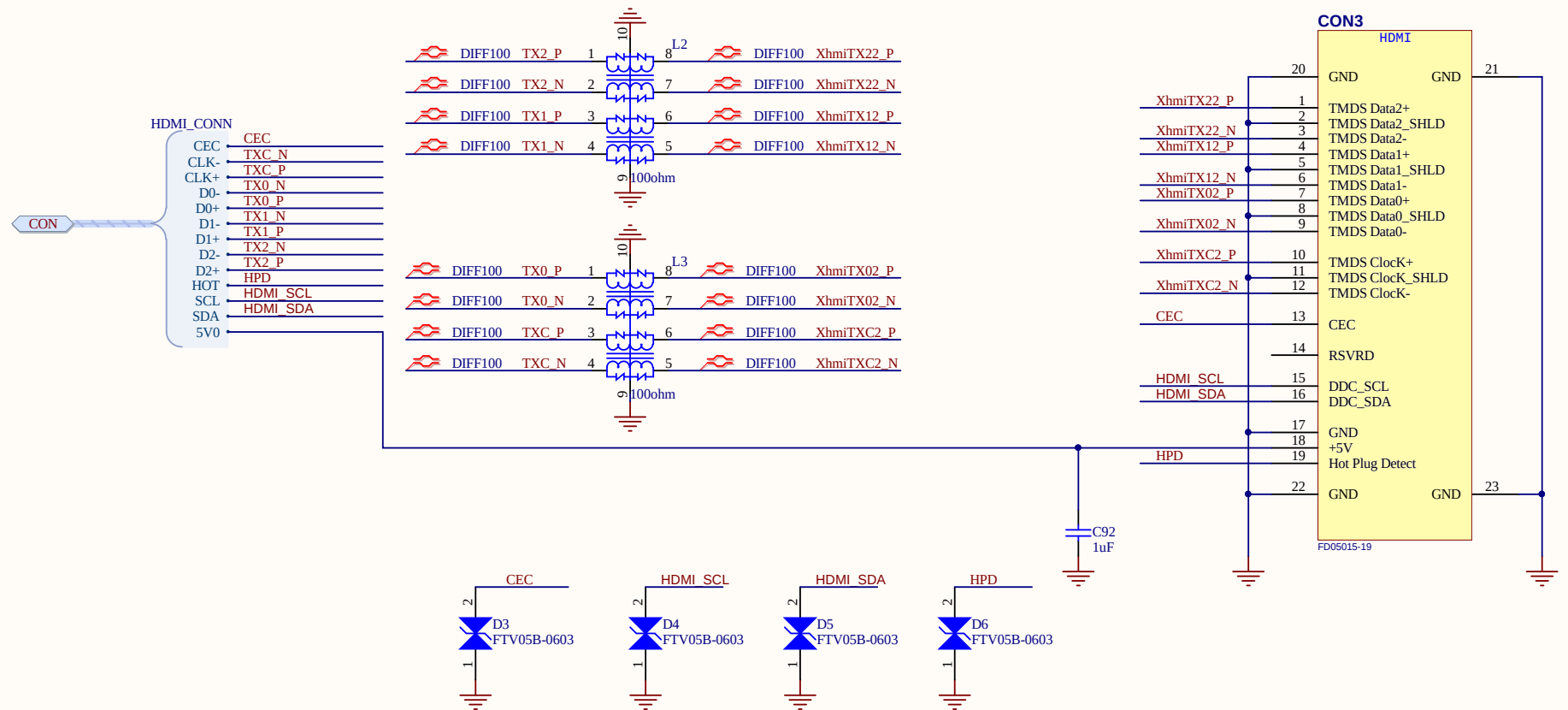
Title USB3 BUS Power Switch			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 16	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 16 of 33			
File: USB3 BUS PWR.SchDoc			Designed by: ruppi kim@hardkernel.com		



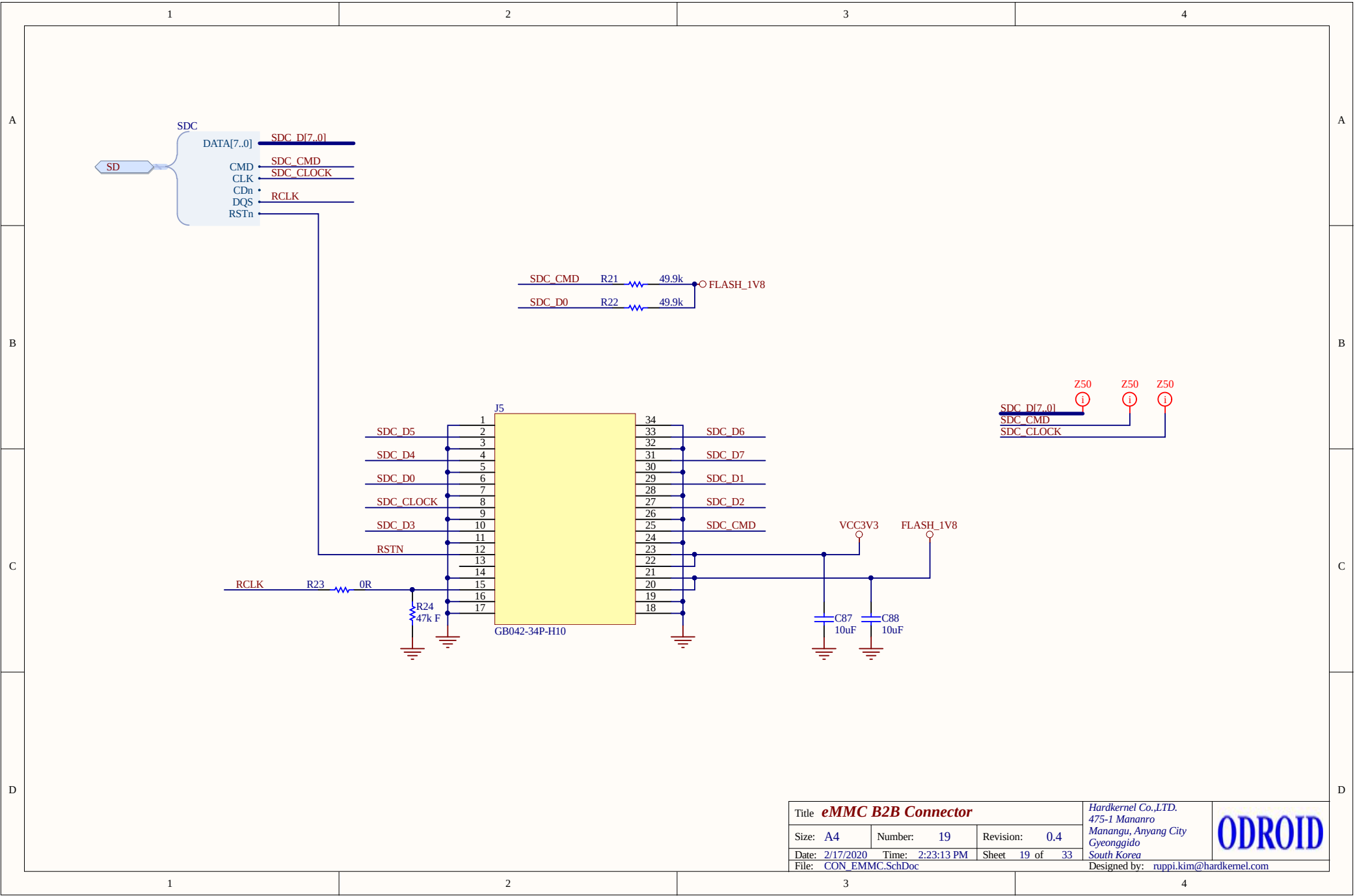
Title USB HOST Power Switch			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 17	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 17 of 33			
File: JW7111S.SchDoc			Designed by: ruppi kim@hardkernel.com		

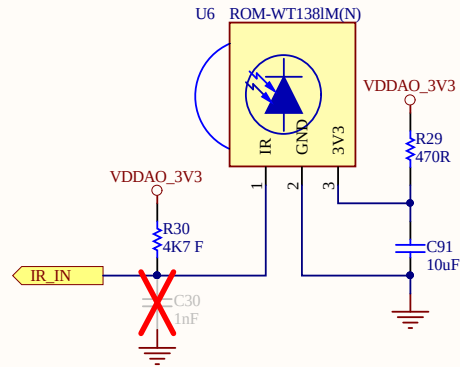


Title USB HOST Power Switch			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 17	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 17 of 33			
File: JW7111S.SchDoc			Designed by: ruppi kim@hardkernel.com		

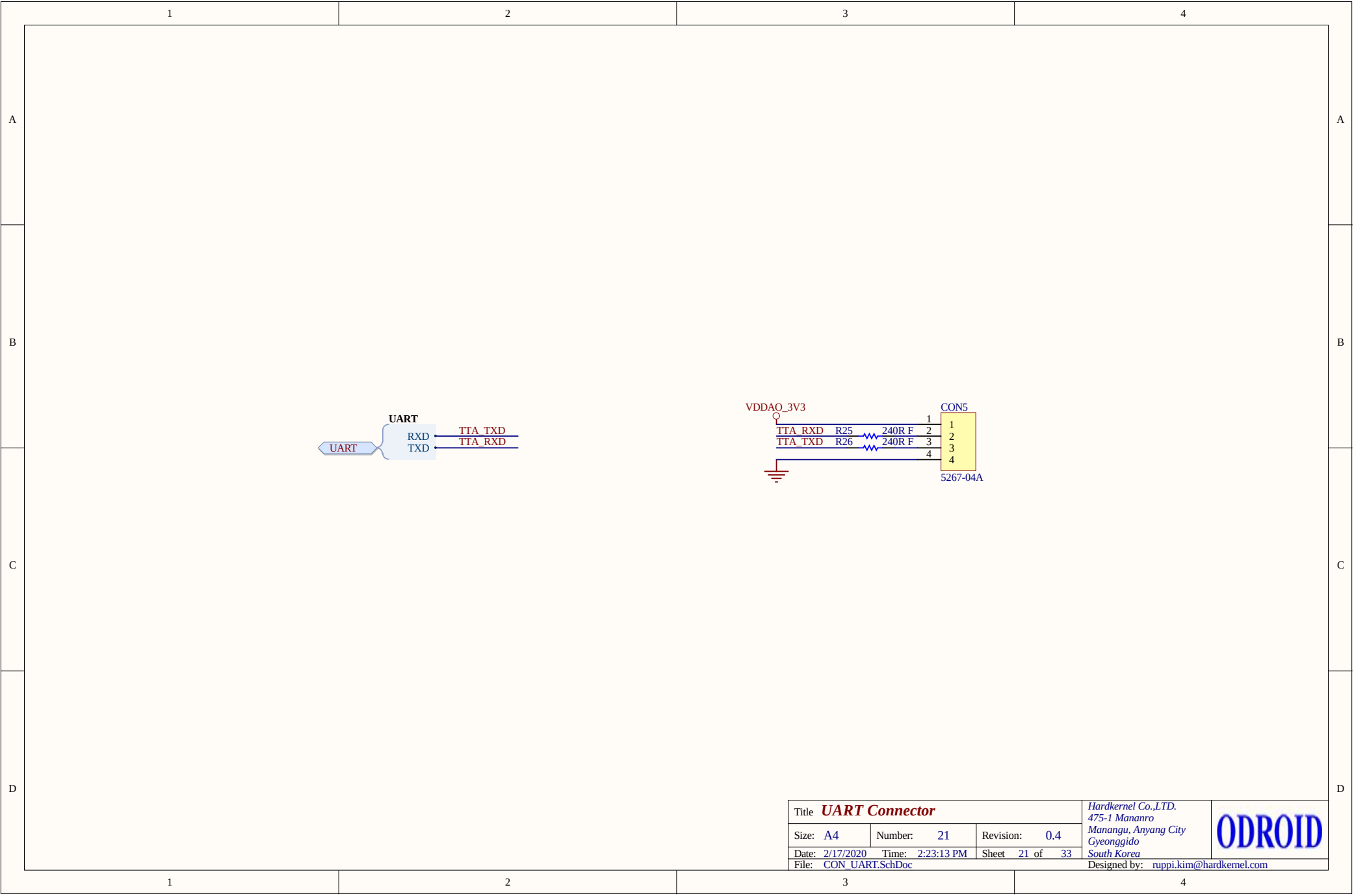


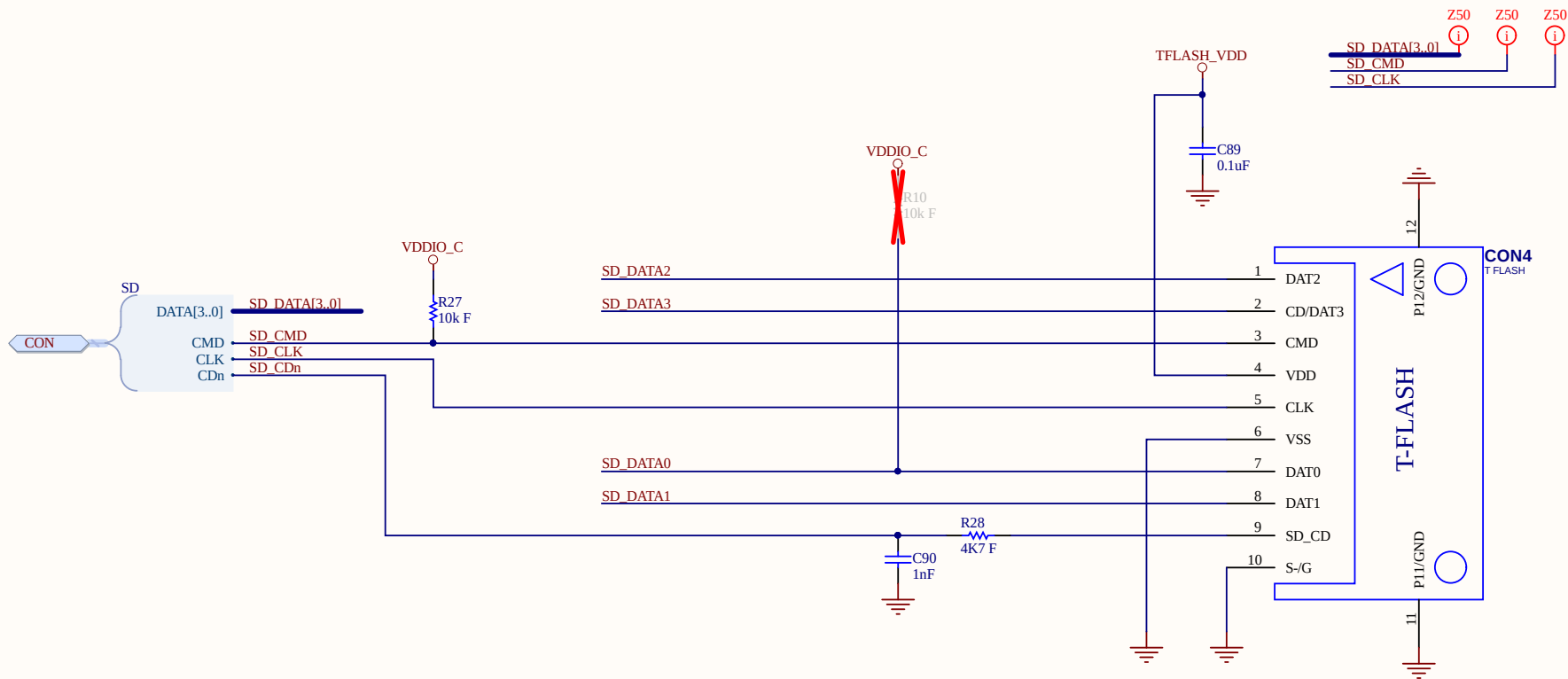
Title HDMI Connector			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 18	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 18 of 33			
File: CON_HDMI.SchDoc			Designed by: ruppi.kim@hardkernel.com		





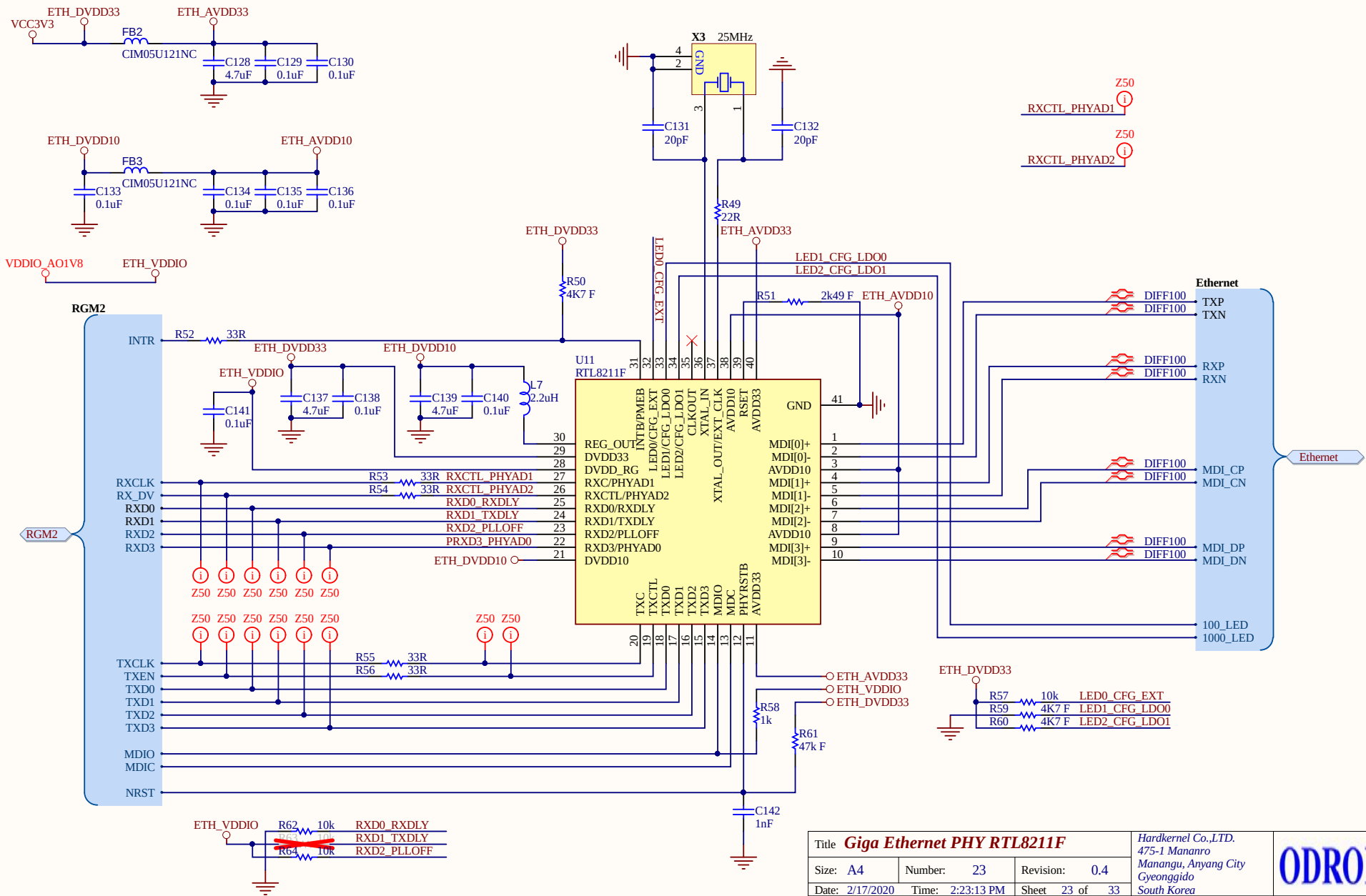
Title Remote Controller Receiver			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 20	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 20 of 33		
File: IR.SchDoc			Designed by: ruppi.kim@hardkernel.com	



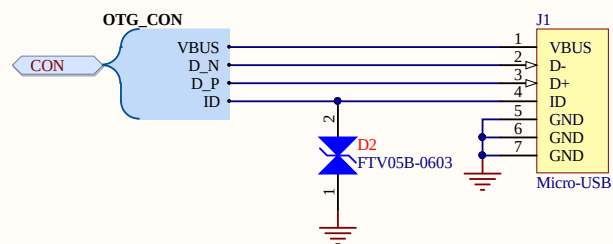


Title MicroSD Socket			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		
Size: A4	Number: 22	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 22 of 33			
File: CON_MICROSD HD08-AL00335.SchDoc			Designed by: ruppi.kim@hardkernel.com		

ODROID

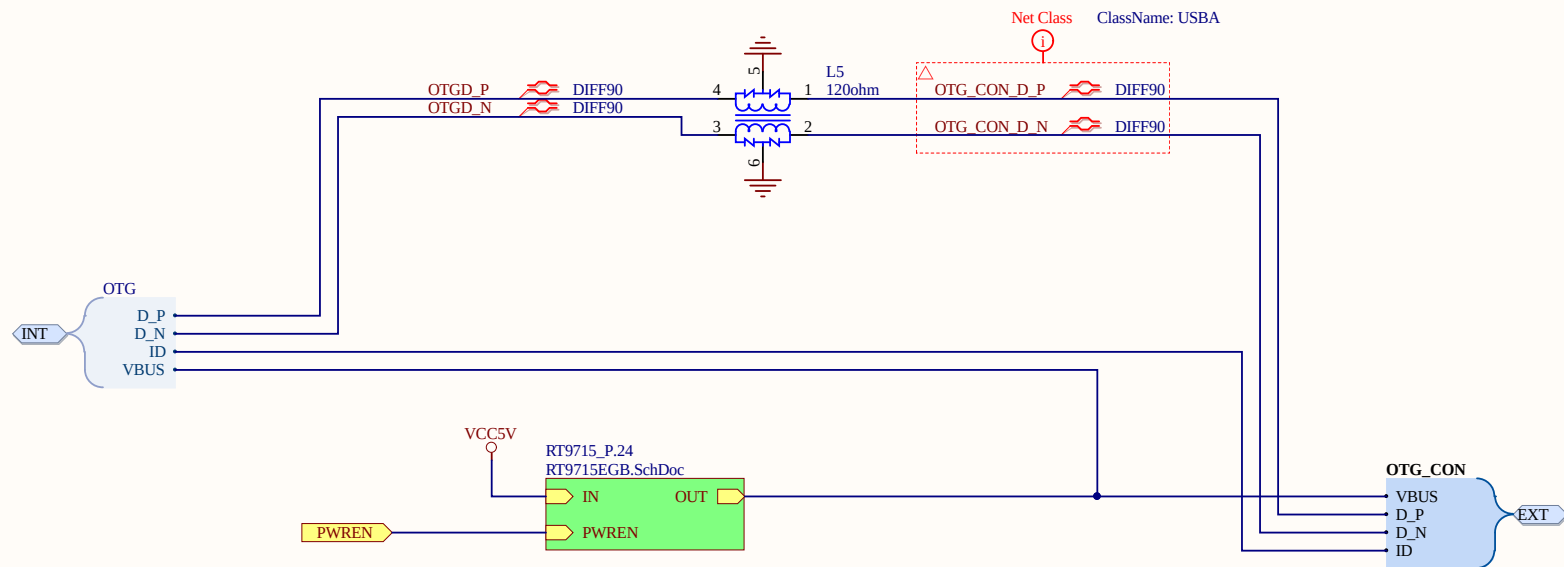


Title Giga Ethernet PHY RTL8211F				Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 23	Revision: 0.4				
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 23 of 33				
File: GIGA_ETHERNET_PHY_RT8211F.SchDoc			Designed by: ruppi.kim@hardkernel.com			

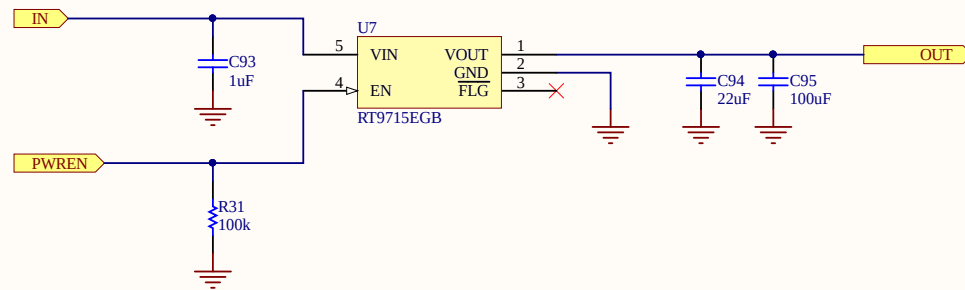


Title Micro USB Connector			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea Designed by: ruppi.kim@hardkernel.com	ODROID
Size: A4	Number: 24	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 24 of 33		
File: CON_MICROUSB.SchDoc				

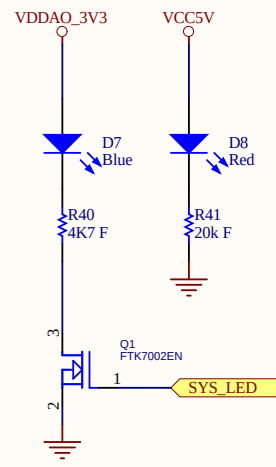
ODROID



Title USB OTG Power Switch			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 25	Revision: 0,4			
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 25 of 33			
File: USB_OTG.SchDoc			Designed by: ruppi.kim@hardkernel.com		

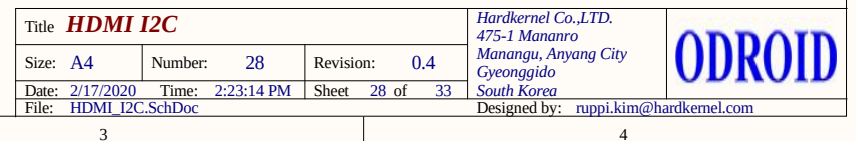


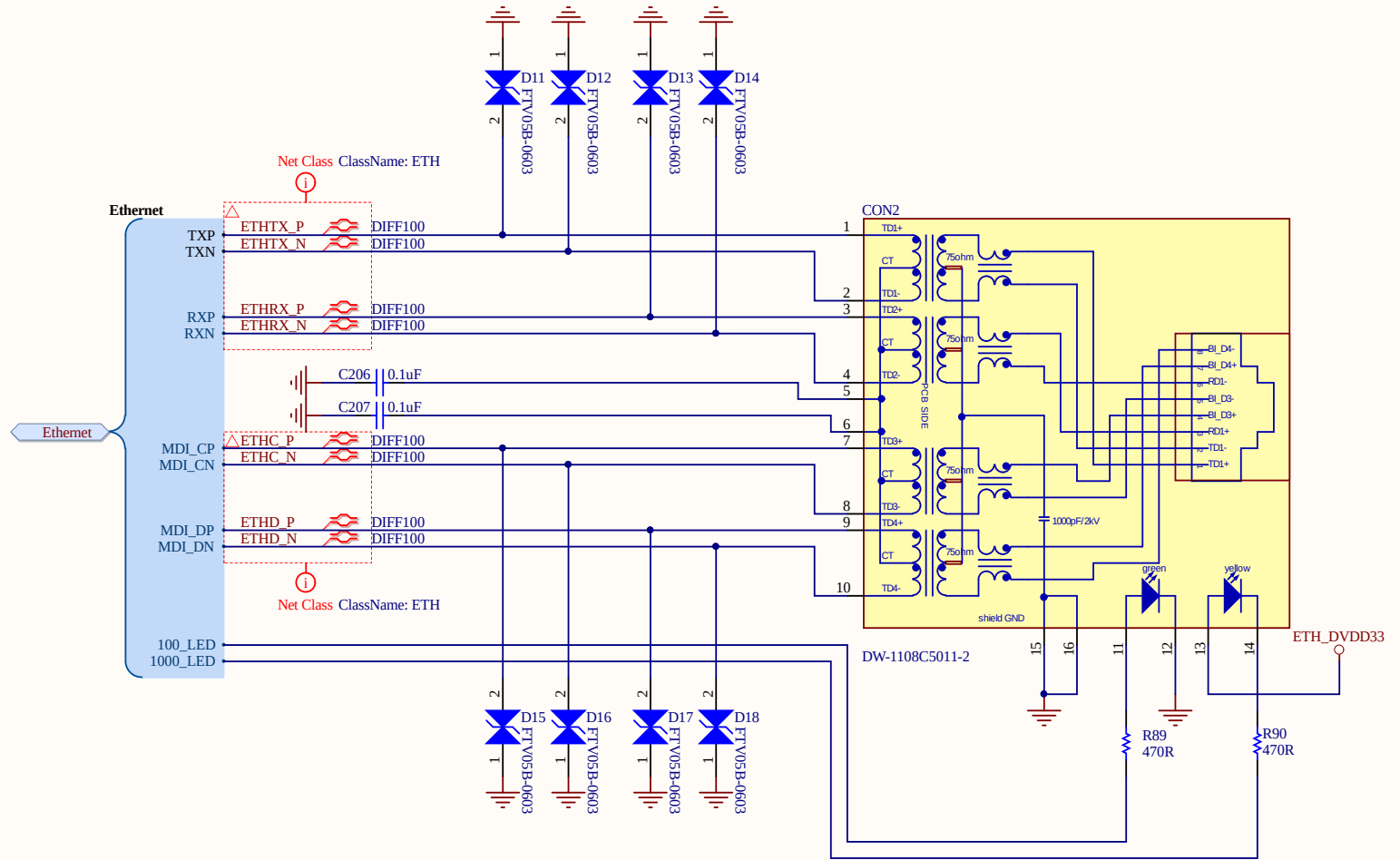
Title USB HOST PWR RT9715			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 26	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 26 of 33			
File: RT9715EGB.SchDoc			Designed by: ruppi.kim@hardkernel.com		



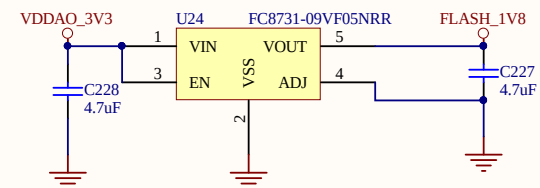
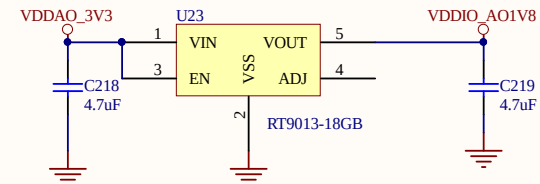
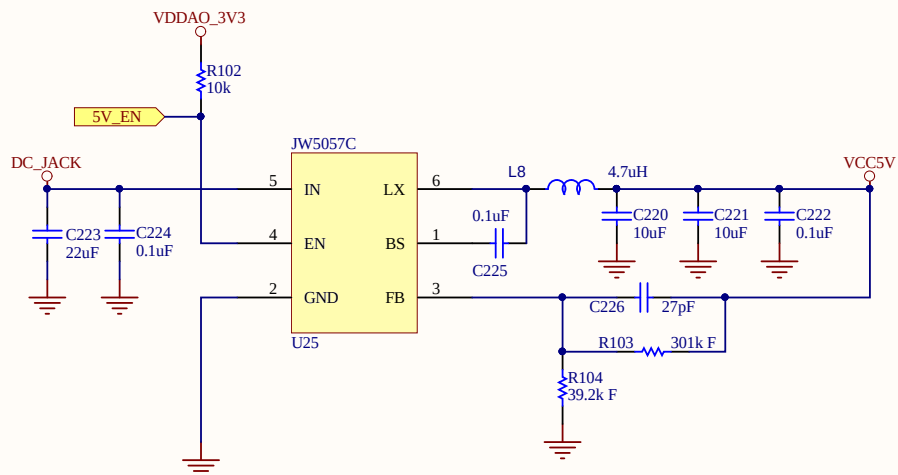
Title PWR SYSTEM LEDs			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea Designed by: *@hardkernel.com	
Size: A4	Number: 27	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 27 of 33		
File: C_LEDS.SchDoc				





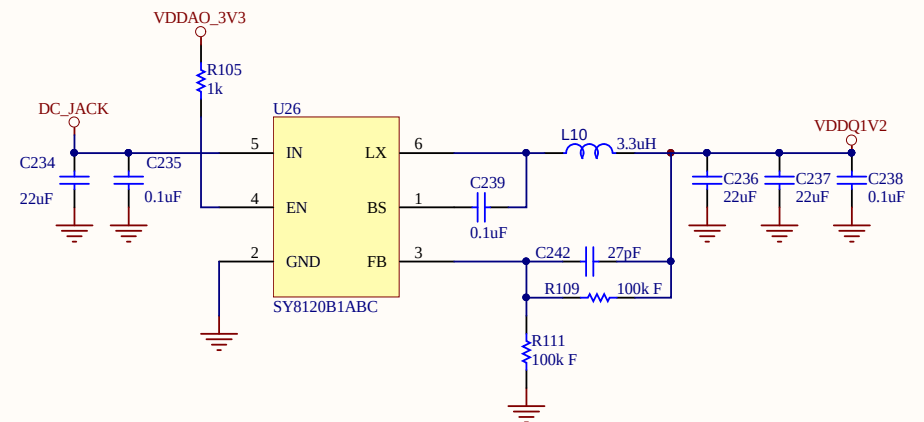
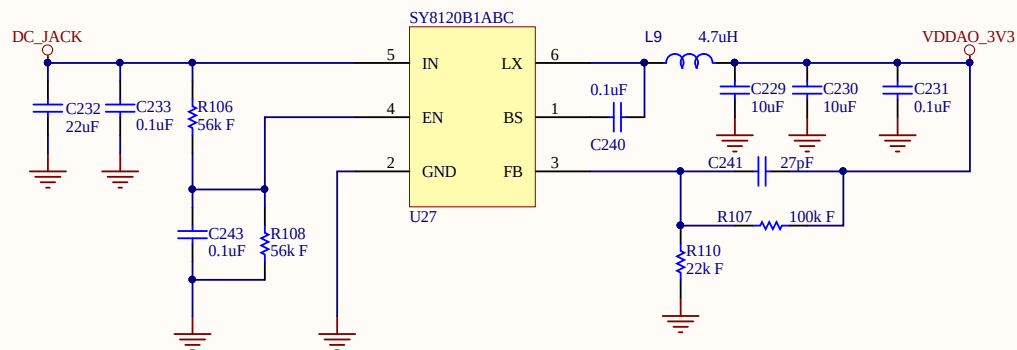


Title Giga Ethernet Connector			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido		
Size: A4	Number: 29	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 29 of 33	South Korea		
File: CON_GIGA_ETH.SchDoc			Designed by: ruppi.kim@hardkernel.com		

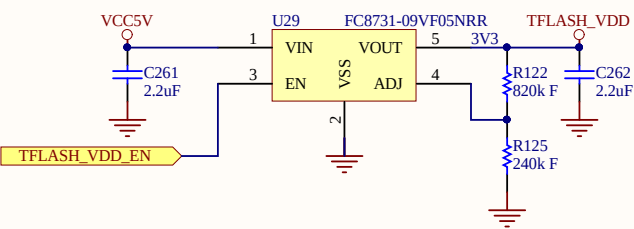
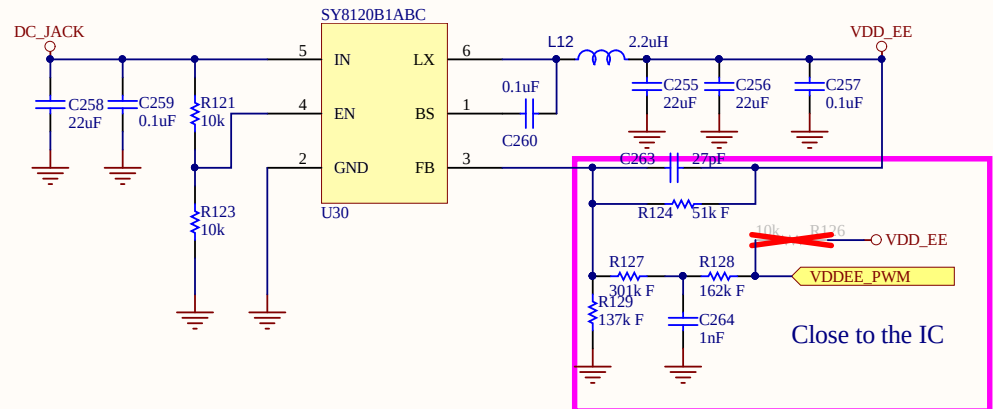
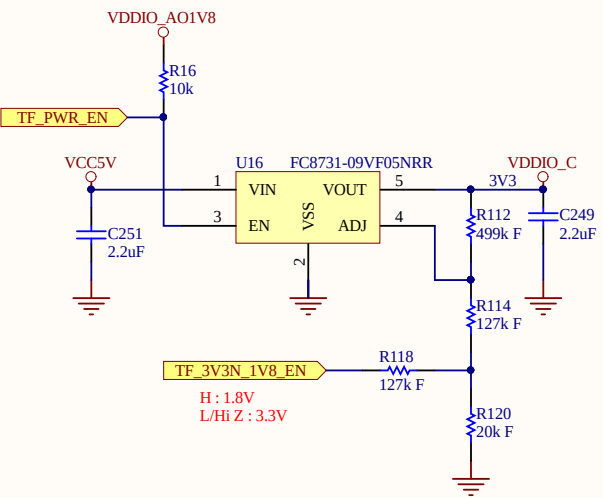
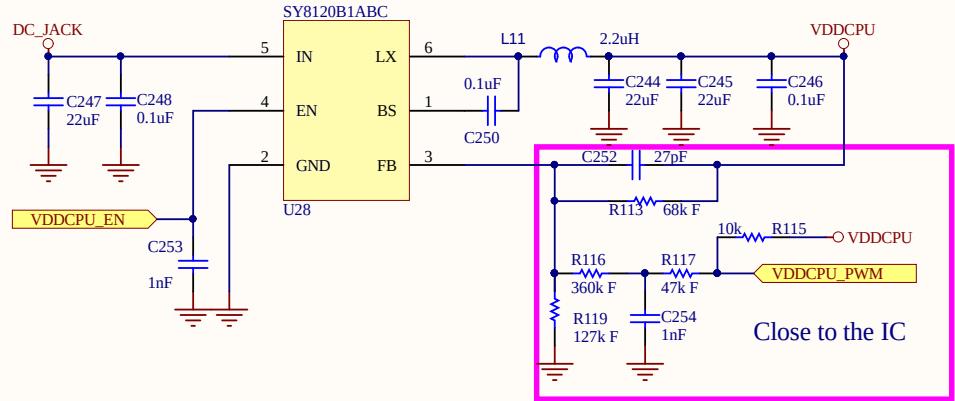


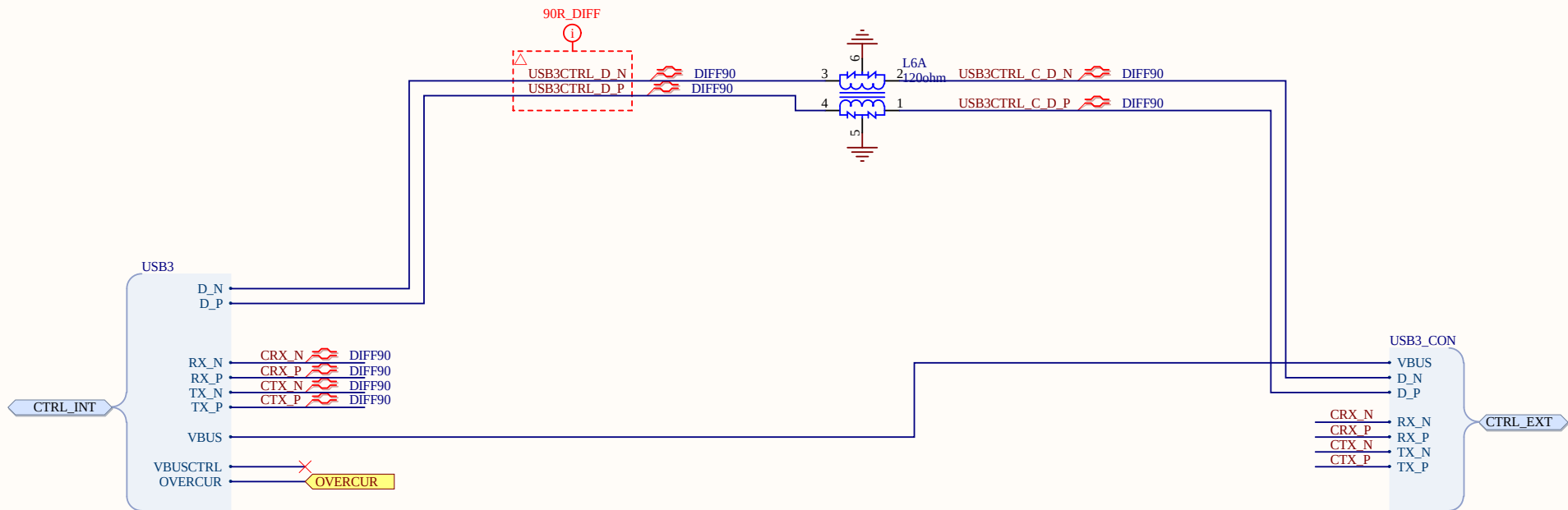
VDDAO_3V3

VCC3V3

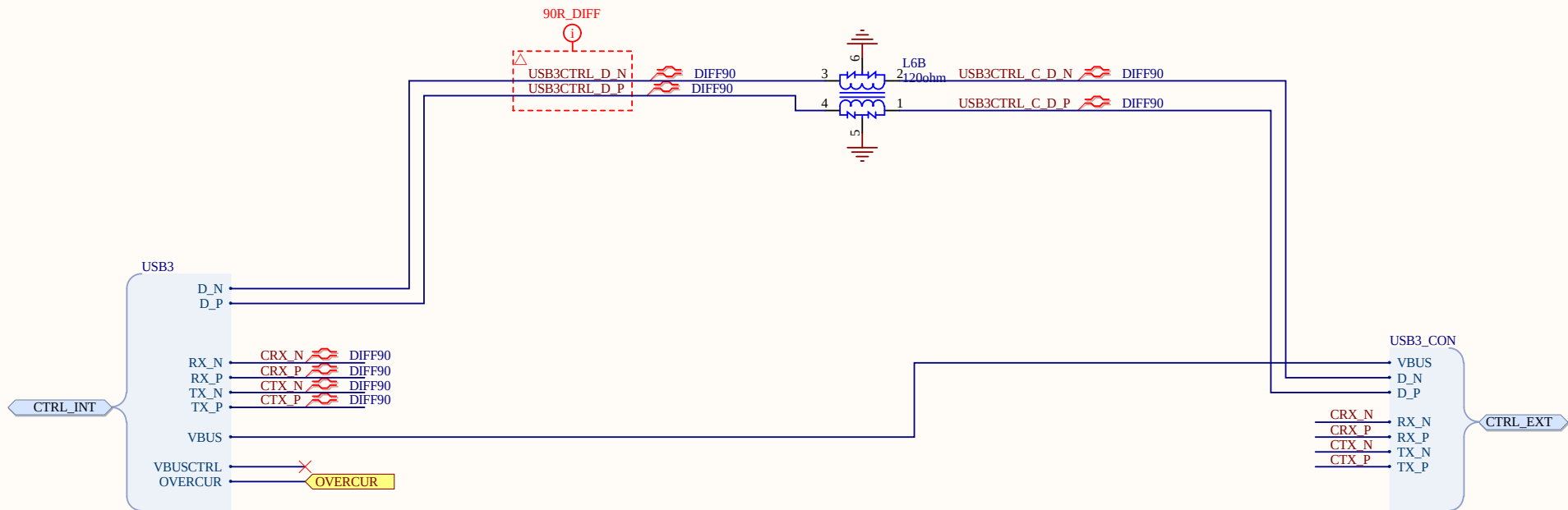


Title PWR_DCDC_5V_3V3			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido		ODROID
Size: A4	Number: 30	Revision: 0.4			
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 30 of 33	South Korea		
File: PWR_DCDC_5V_3V3.SchDoc			Designed by: neal.kim@hardkernel.com		

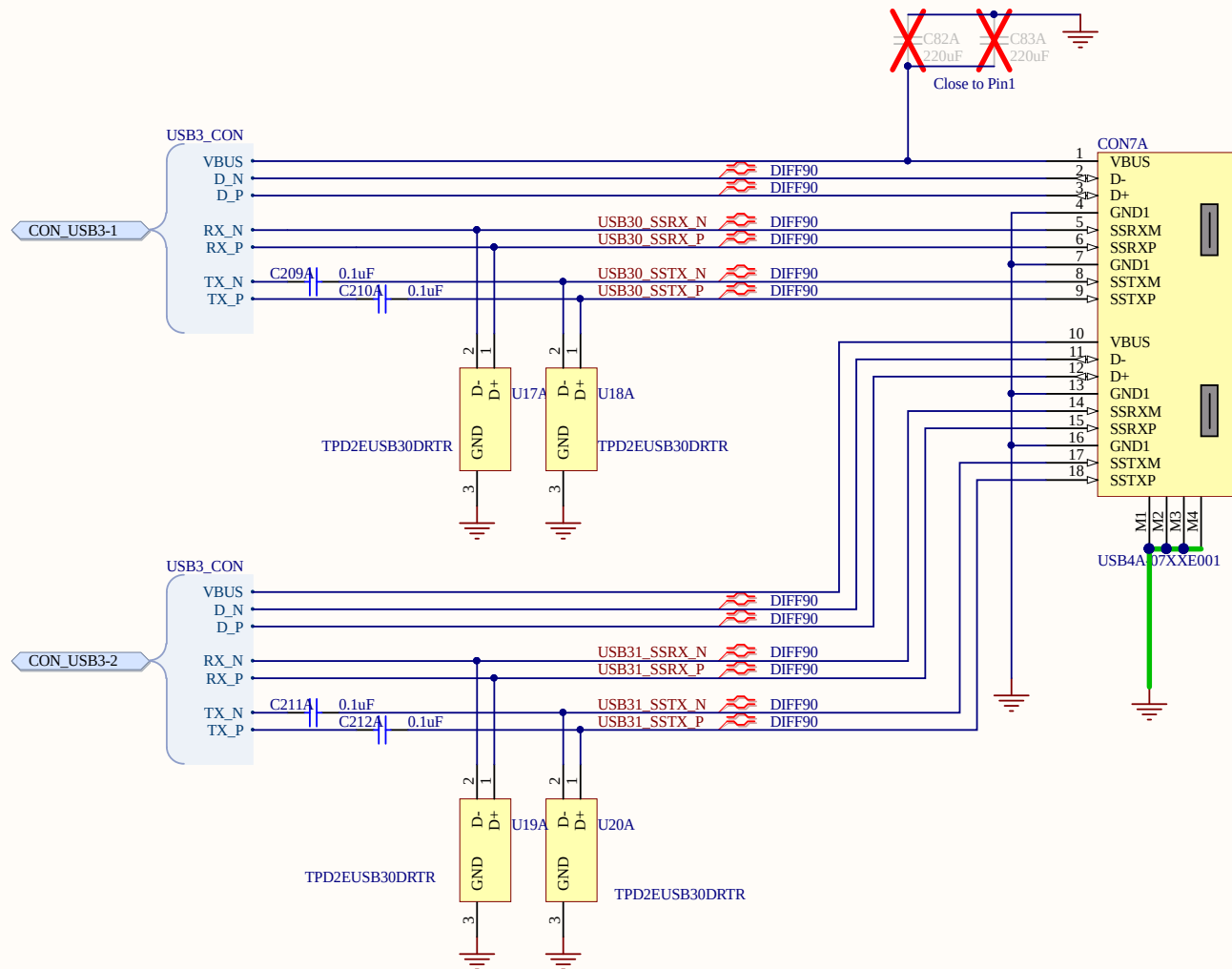




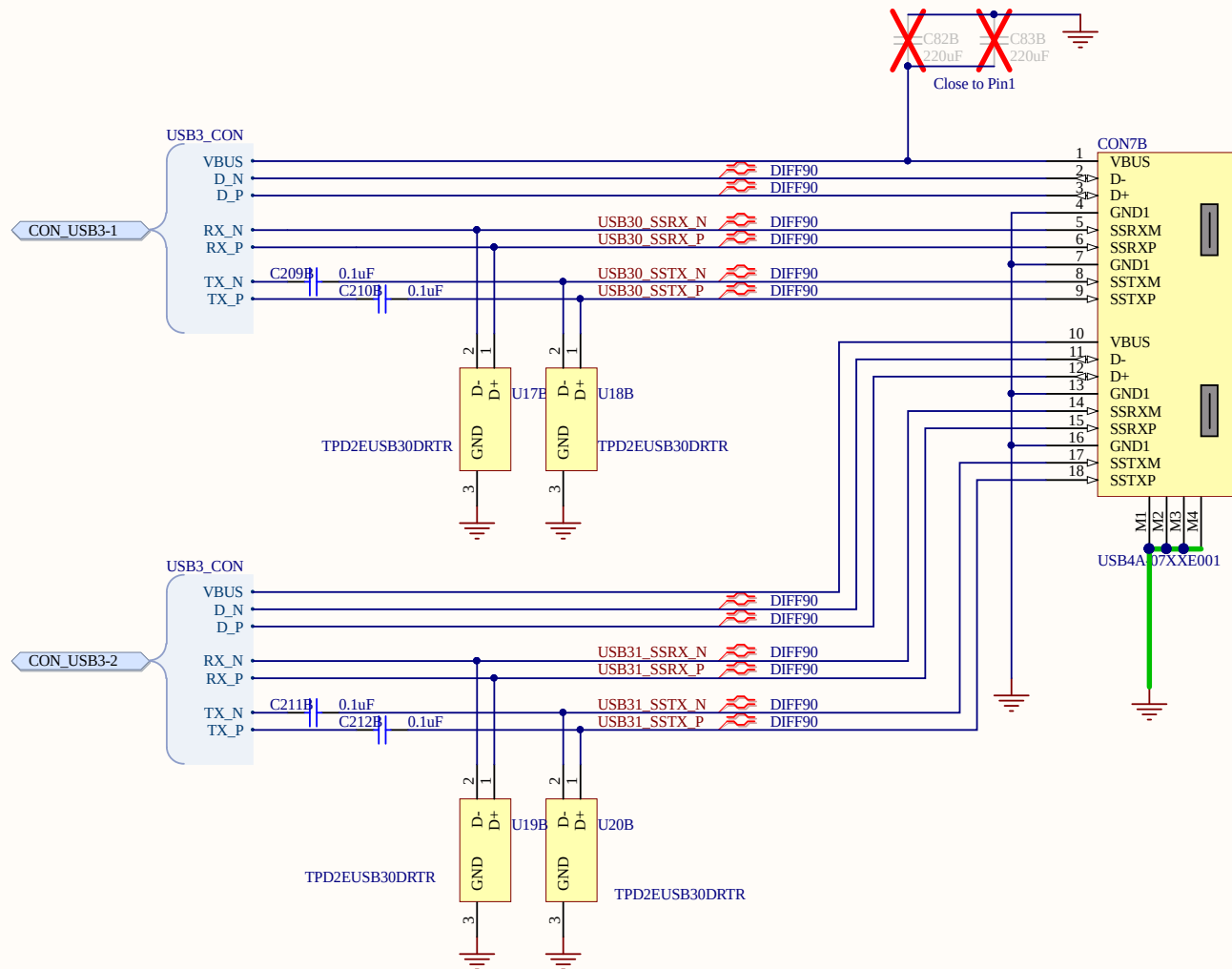
Title USB3_BUS_CTRL				Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		ODROID
Size: A4	Number: 32	Revision: 0.4				
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 32 of 33				
File: USB3_BUS_CTRL.SchDoc			Designed by: neal.kim@hardkernel.com			



Title USB3_BUS_CTRL			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido		ODROID
Size: A4	Number: 32	Revision: 0,4			
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 32 of 33	South Korea		
File: USB3_BUS_CTRL.SchDoc			Designed by: neal.kim@hardkernel.com		



Title USB 3.0 Type A Connector			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido		ODROID
Size: A4	Number: 33	Revision: 0.4	South Korea		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 33 of 33			
File: CON_USB3_DUAL_RA.SchDoc			Designed by: ruppi.kim@hardkernel.com		



Title USB 3.0 Type A Connector			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		
Size: A4	Number: 33	Revision: 0.4	Designed by: ruppi.kim@hardkernel.com		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 33 of 33			
File: CON_USB3_DUAL_RA.SchDoc					