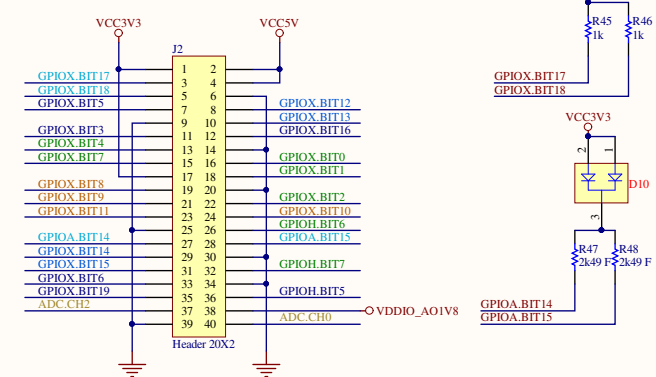
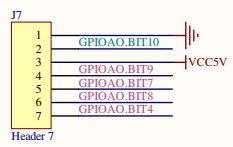
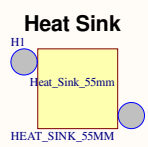
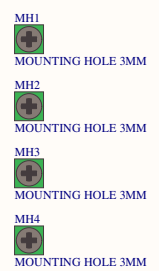
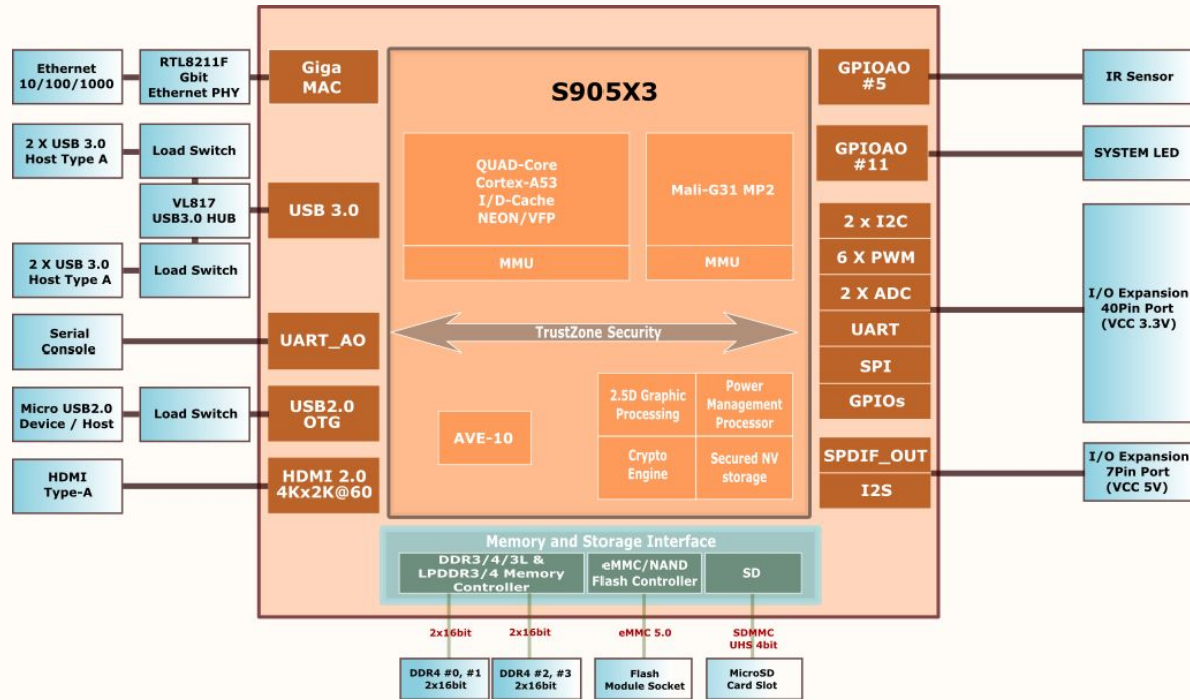



**Mounting Holes**

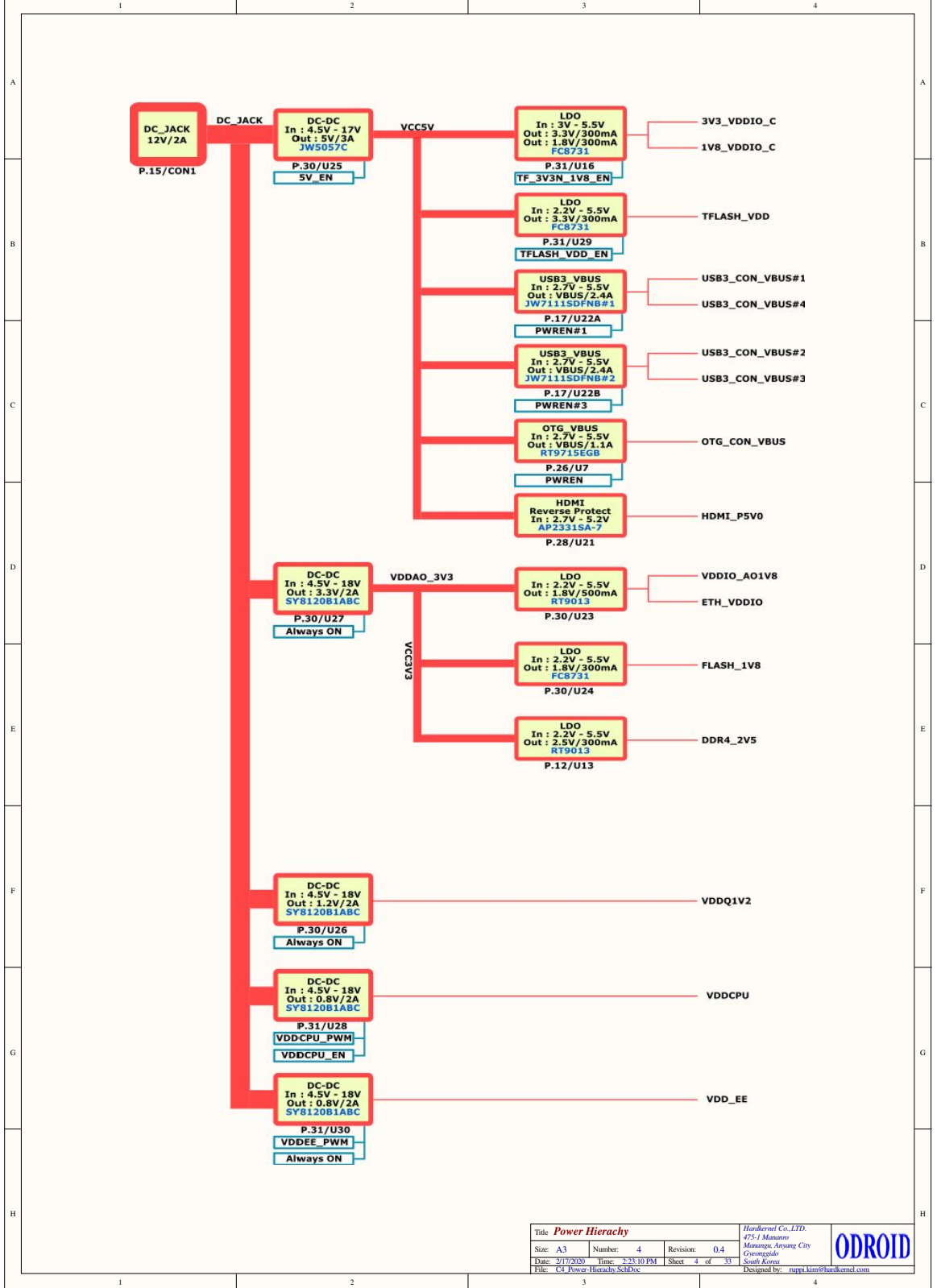


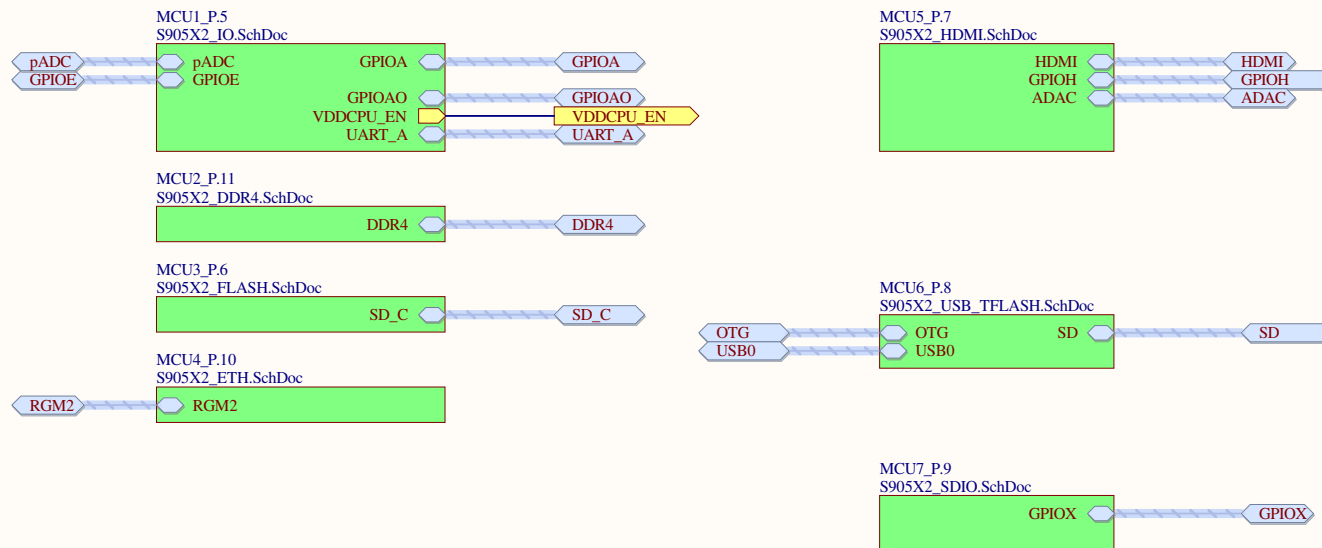
Title <b>C4 MAIN</b>			Hardkernel Co., LTD. 475-1 Mananro Mananaru, Anyang City Gyeonggido South Korea	
Size: A3	Number: 1	Revision: 0.4	Designed by: neal.kim@hardkernel.com	
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 1 of 33		
File: C4-MAIN.SchDoc				




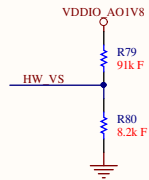
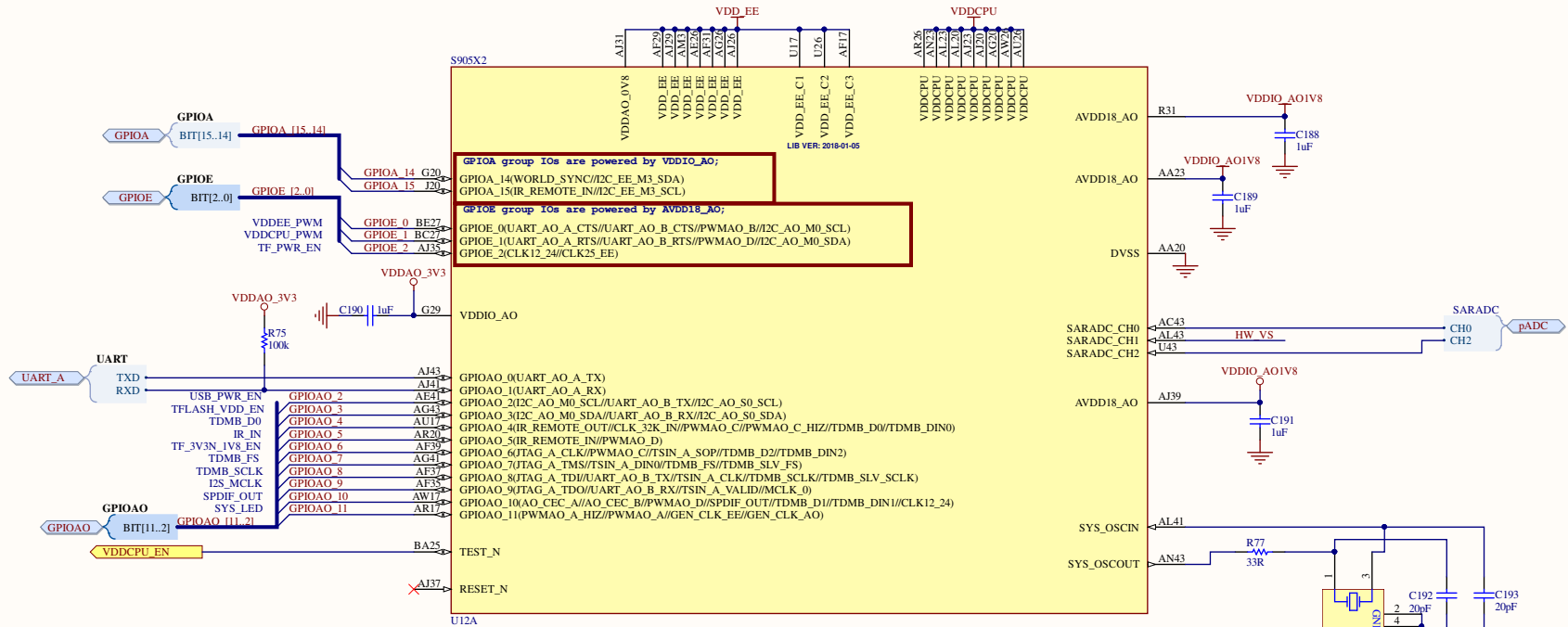
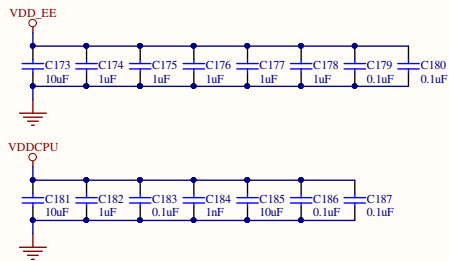
Title <b>C4 Block Diagram</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea Designed by: ruppi kim@hardkernel.com	
Size: A4	Number: 2	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 2 of 33		
File: C4 Block Diagram.SchDoc				

HW REVISION	DATE	Change Note
v1.0	2020.01.29	1. Added silkscreen certification mark.
v0.4	2019.11.29	<ol style="list-style-type: none"> <li>1. Change USB_OTG Power Enable pin from GPIOH.BIT6 to GPIOAO.BIT2</li> <li>2. Remove eMMC_nDET pin</li> <li>3. Change TFLASH_VDD Enable pin from GPIOAO.BIT8 to GPIOAO.BIT3</li> <li>4. Change TF_3V3N_1V8 Enable pin from GPIOAO.BIT7 to GPIOAO.BIT6</li> <li>5. Assign GPIOE.BIT2 to the TF Power to turn ON/OFF</li> <li>6. Rearrange Expansion Port 40Pin and 7Pin.</li> <li>7. Change USB Load S/W from MP62551 to JW7111S</li> <li>8. Change 5V DCDC Step-down from SY8120B1ABC to JW5057C</li> <li>9. Add two spare land 3225 size for Cap 220uF next to USB 3.0 Connector</li> </ol>
v0.3	2019.09.24	<ol style="list-style-type: none"> <li>1. Removed the components related to CVBS OUT of S905X3</li> <li>2. Changed R104 to 39.2k from 16k and R103 to 301k from 120k</li> <li>3. Changed R108 to 56k from 10k</li> <li>4. Changed PCB thickness from 1.2T to 1T and layer from 8 to 6.</li> <li>5. Added L13 and C81 between AVDD0V8_HDMI of S905X3 and VDD_EE</li> <li>6. Changed net and added components at VBUSDET of VL817.</li> </ol>
v0.2	2019.07.19	<ol style="list-style-type: none"> <li>1. Changed USB 3.0 HUB IC from VL817 to VL805.</li> <li>2. Changed the connection of PIN35 from ADAC.LOLP to GPIOE.BIT2 on 40Pin Header.</li> <li>3. Changed the connection of PIN36 from ADAC.LORP to GPIOH.BIT5 on 40Pin Header.</li> <li>4. Added 2pin Header for Audio out (ADAC.LOLP, ADAC.LORP )</li> <li>5. Removed external CPU RESET IC with the components.</li> <li>6. Added 2pin Header for external 12V power input.</li> <li>7. Changed PCB thickness from 1T to 1.2T and layer from 6 to 8.</li> </ol>
v0.1	2019.05.20	1. The first revision.



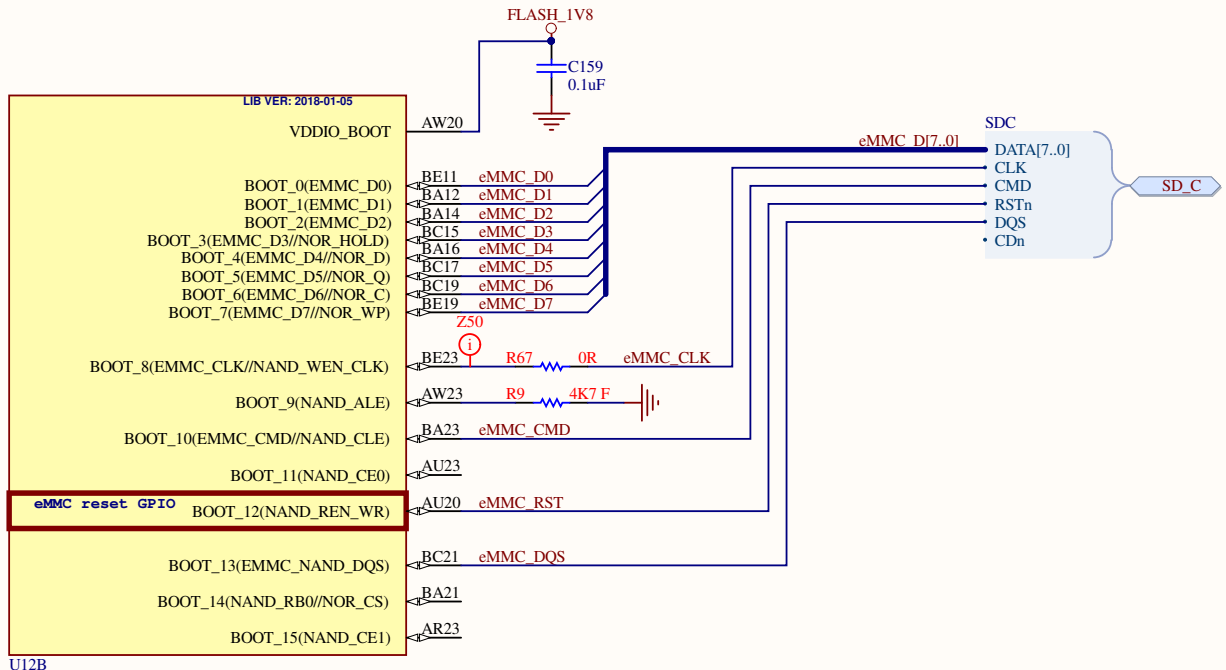


Title <b>S905X2</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 5	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 5 of 33	Designed by: ruppi kim@hardkernel.com	
File: S905X2.SchDoc				

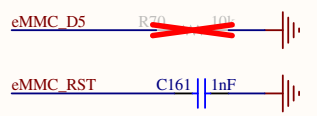


HW_VS	0	1	2	3	4	5	6	7	8	9	10	11	12
IO Data	0	35	87	248	334	820	512	303	889	775	356	358	1023
Pull-up	x	91K	82K	75K	88K	25K	87K	88K	28K	88K	8.2K	100K	
Pull-down	100K	8.2K	8K	24K	33K	88K	87K	88K	75K	82K	91K	x	
Direction													

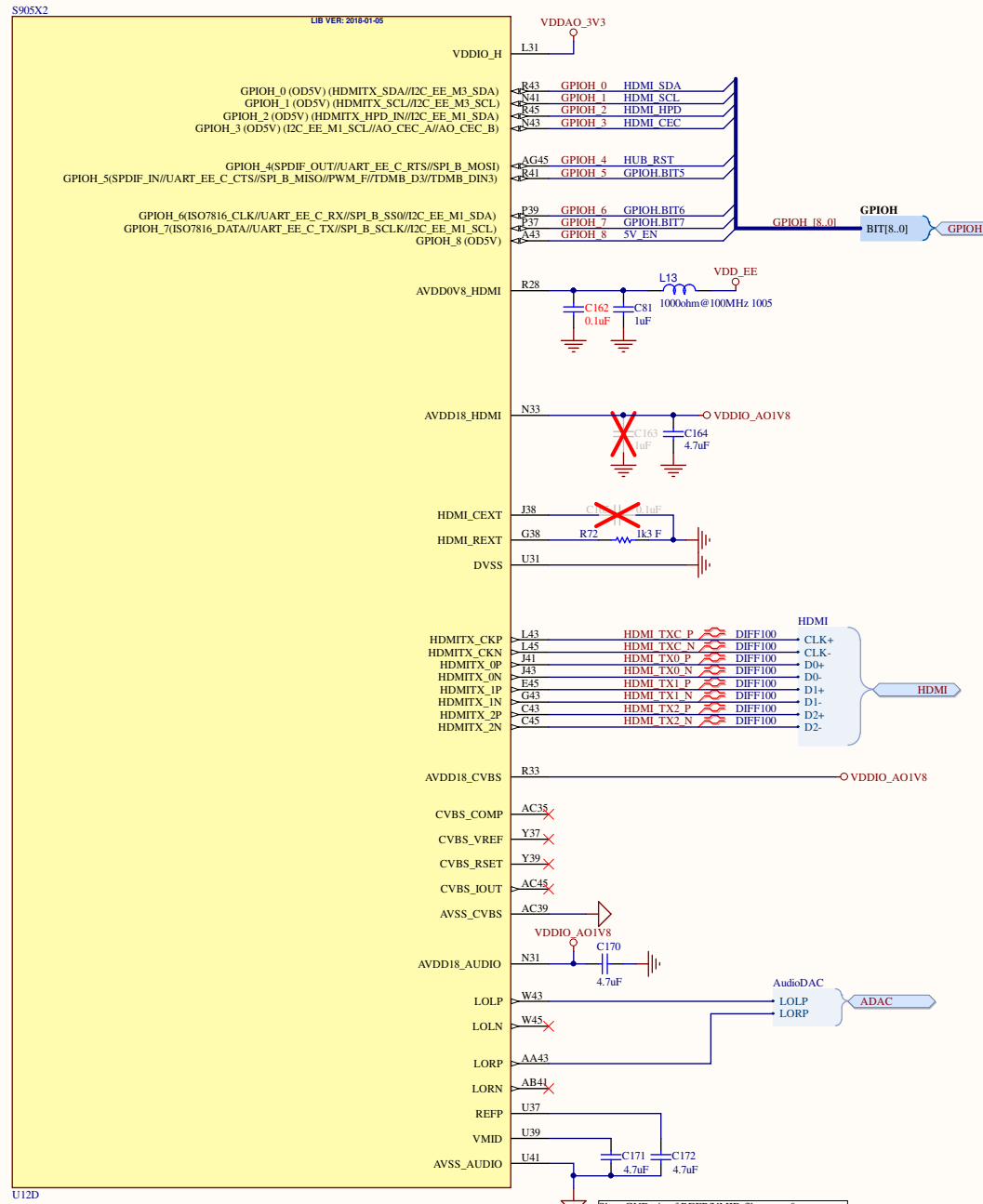





U12B



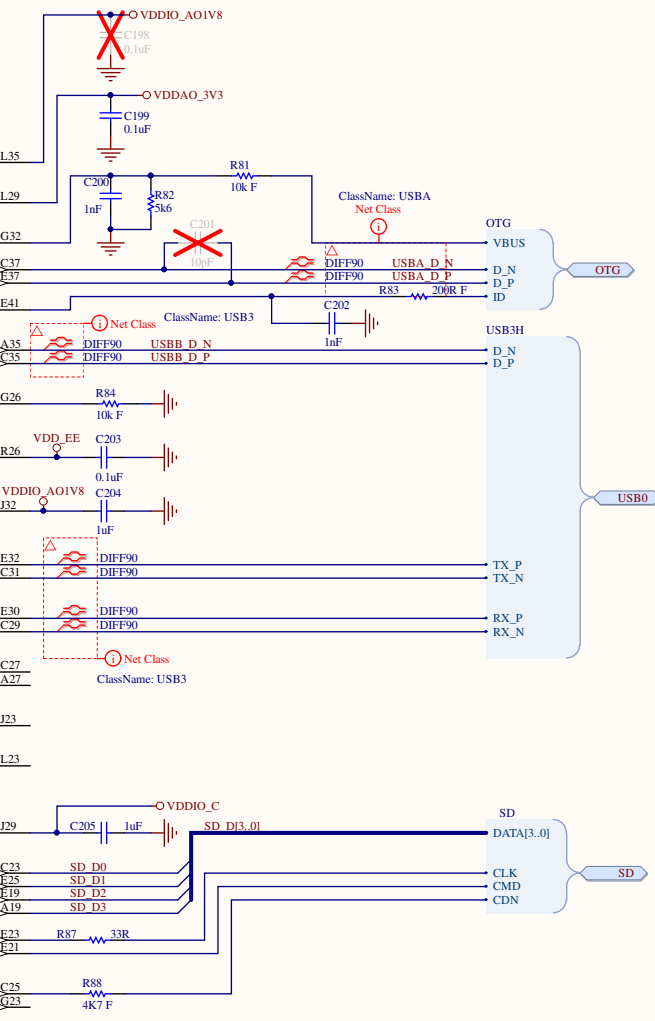
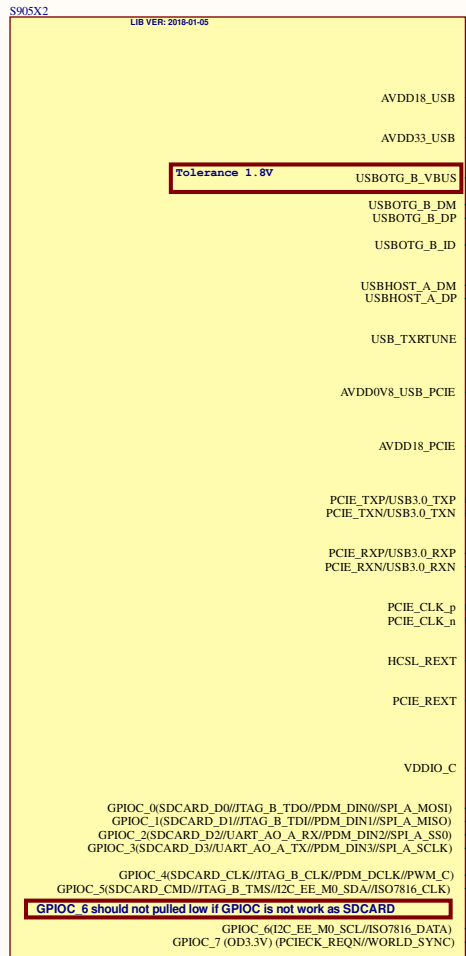
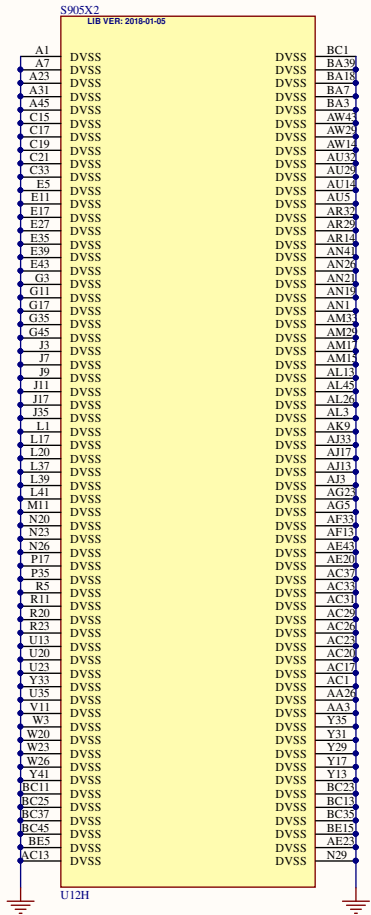
Title <b>S905X2_FLASH</b>			Hardkernel Co., LTD. 475-1 Mananro Manangu, Anyang City Kyeonggido South Korea Designed by: neal.kim@hardkernel.com	
Size: A4	Number: 7	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 7 of 33		
File: S905X2_FLASH.SchDoc				

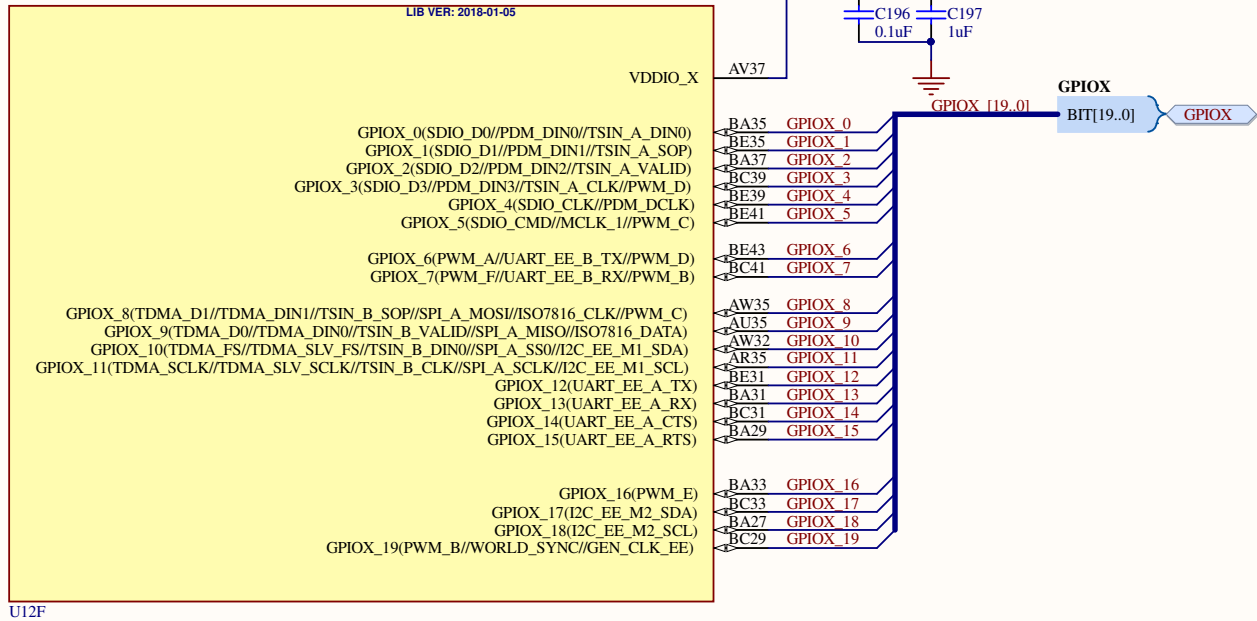


Short GND pin of REFP/VMID filter caps & AVSS\_AUDIO together, then to GND (single point connection)

Title <b>S905X2_HDMI</b>			Hardkernel Co., LTD 475-1 Mananro Mananaru, Anyang City Gyeonggido South Korea	
Size: A3	Number: 8	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:10 PM	Sheet 8 of 33		
File: S905X2_HDMI.SchDoc				



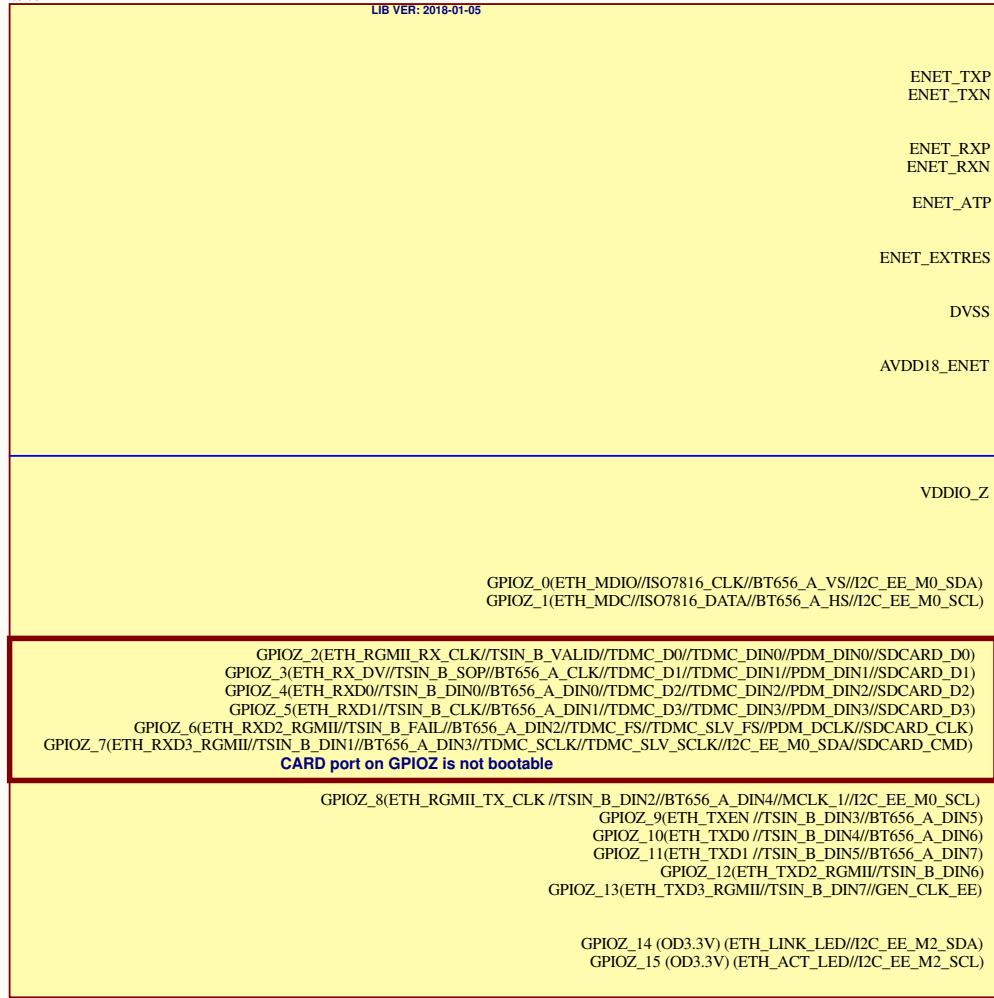





Title <b>S905X2_SDIO</b>			Hardkernel Co., LTD 475-1 Manango Manango, Anyang City Gyeonggido		<b>ODROID</b>
Size: A4	Number: 10	Revision: 0.4	South Korea		
Date: 2/17/2020	Time: 2:23:11 PM	Sheet 10 of 33	Designed by: neal.kim@hardkernel.com		
File: S905X2_SDIO.SchDoc					

S905X2

LIB VER: 2018-01-05



U12G

Title <b>S905X2_ETH</b>			Hardkernel Co., LTD 475-1 Manango Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 11	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:11 PM	Sheet 11 of 33		
File: S905X2_ETH.SchDoc			Designed by: neal.kim@hardkernel.com	

A

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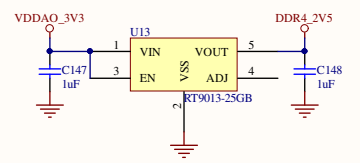
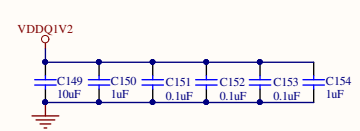
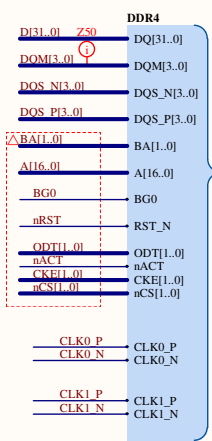
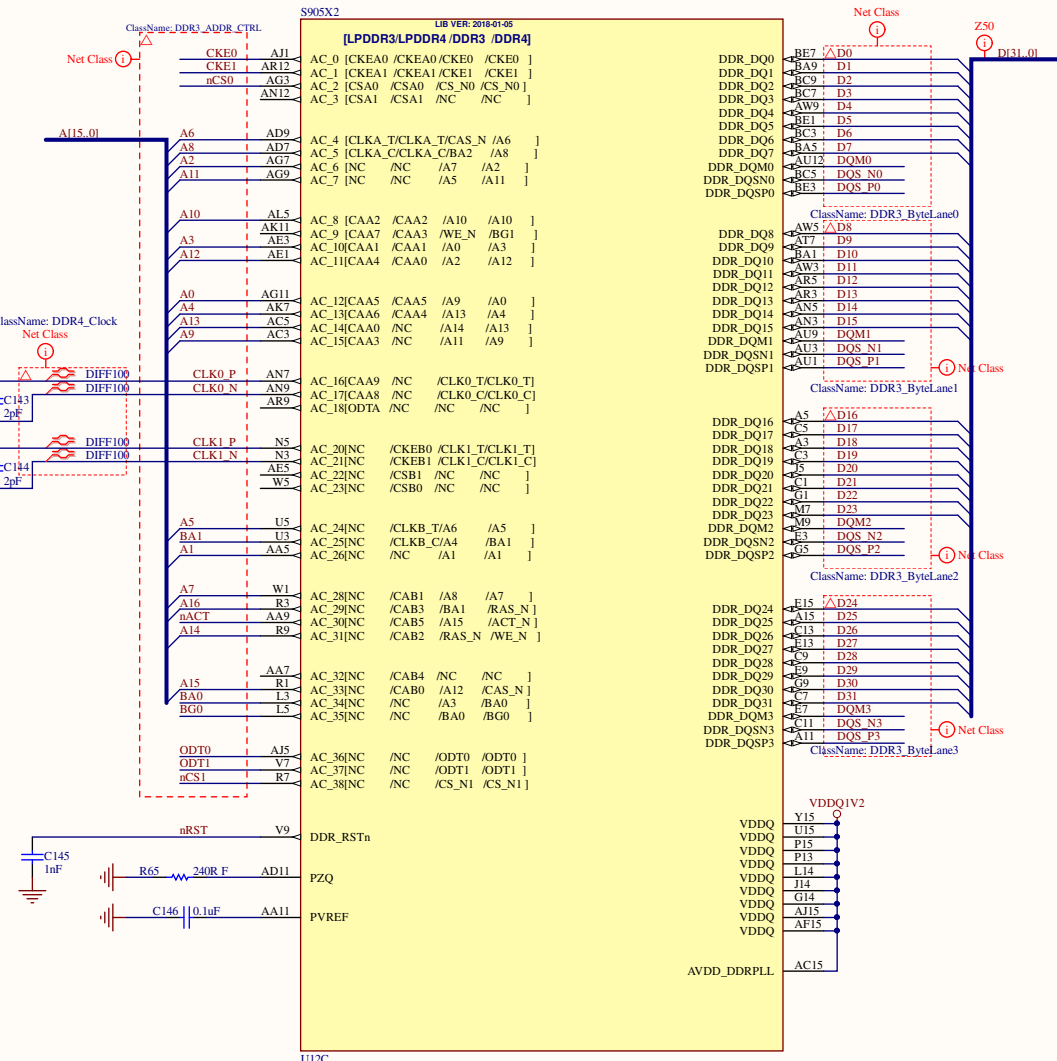
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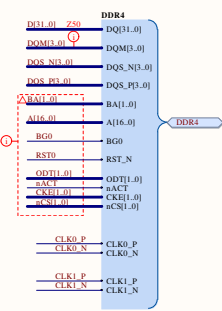
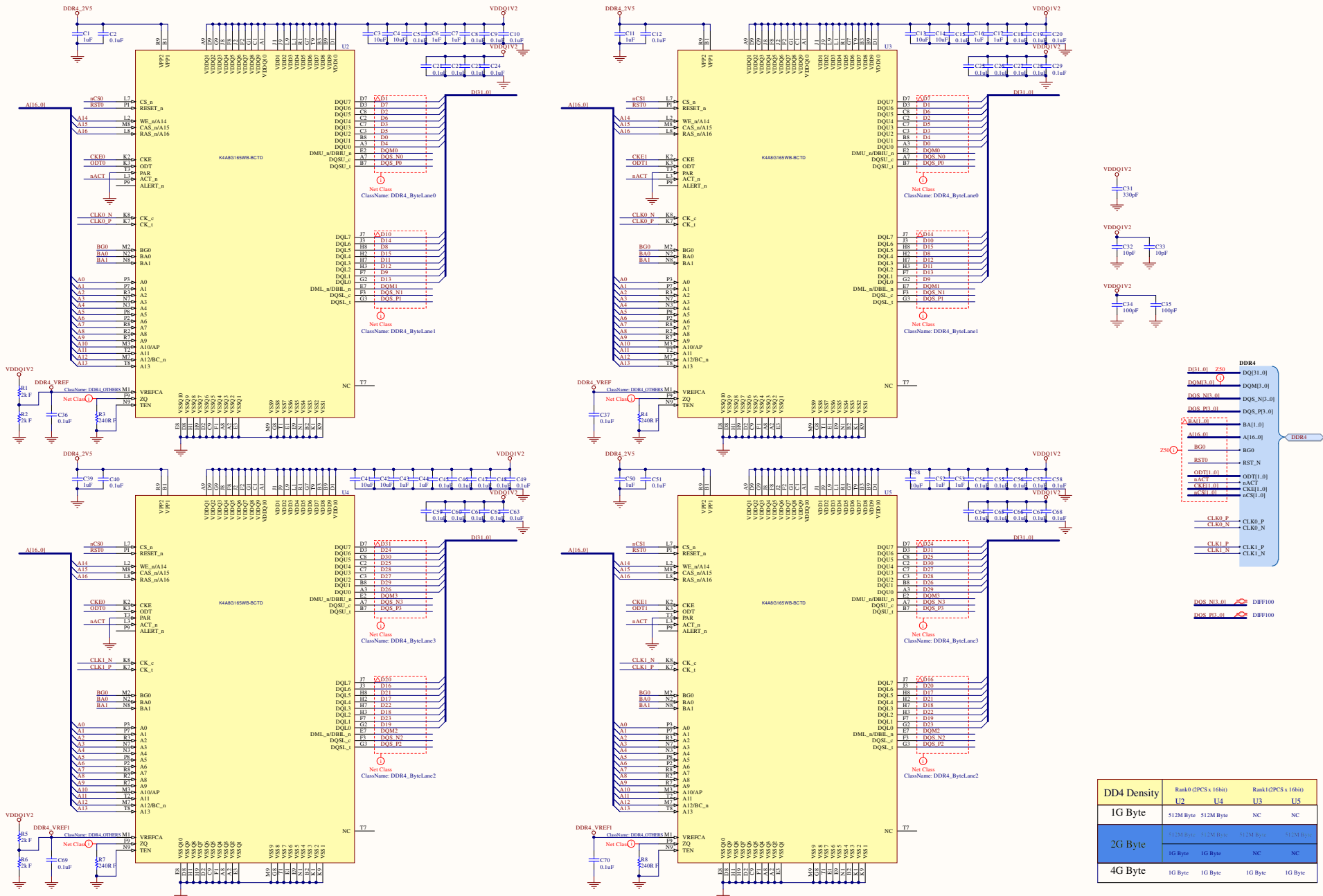
A

B

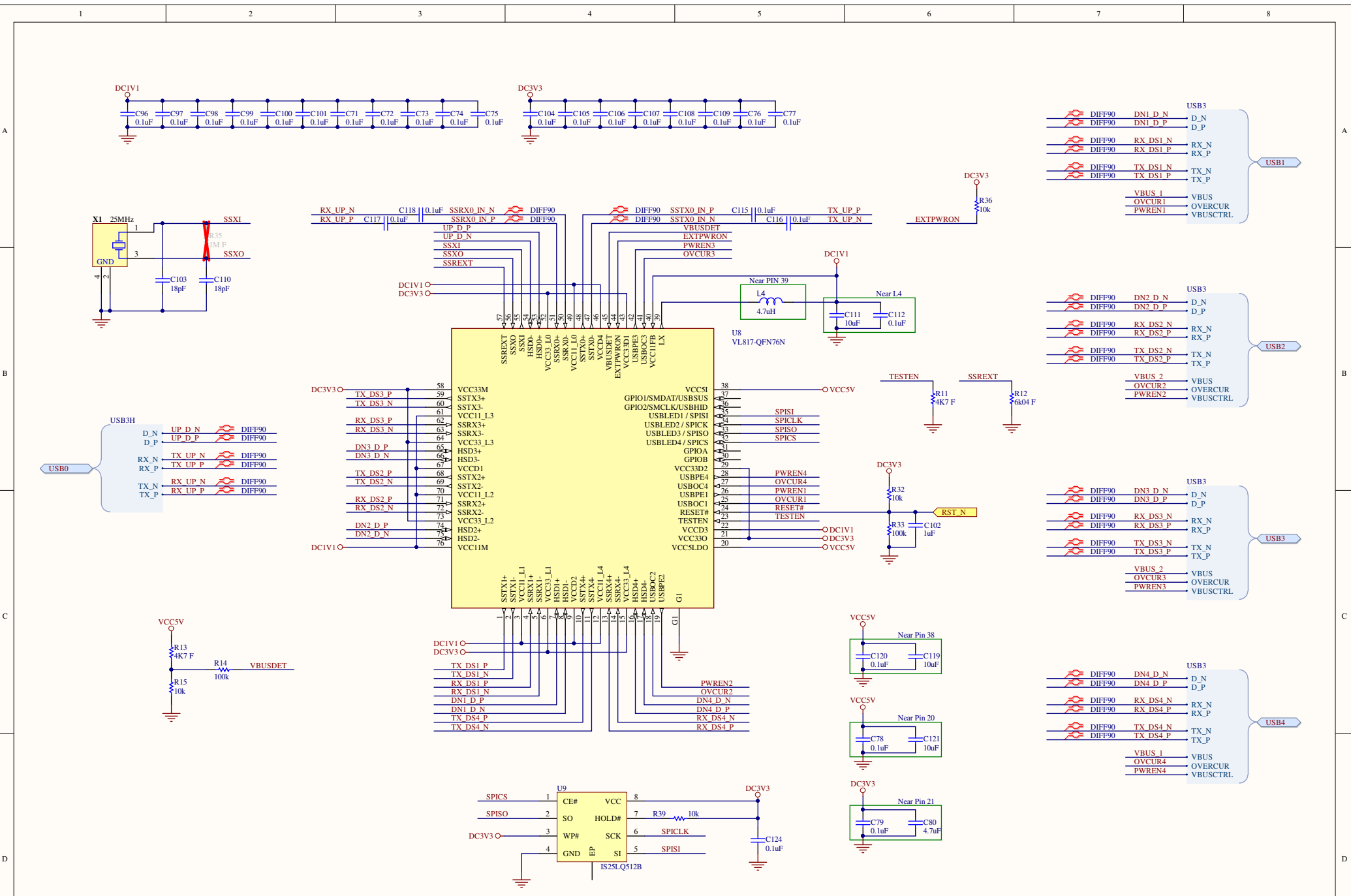
C

D





DD4 Density	Rank0 (2PCS x 16Gb)		Rank1 (2PCS x 16Gb)	
	U2	U4	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 <b>USB HUB VL817Q7</b>			Hardkernel Co., LTD. 475-1 Mananro Mananaru, Anyang City Gyeonggido South Korea	
Size: A3	Number: 14	Revision: 0.4	ODROID	
Date: 2/17/2020	Time: 2:23:12 PM	Sheet 14 of 33	Designed by: neal.kim@hardkernel.com	
File: USB_HUB_VL81707.SchDoc				

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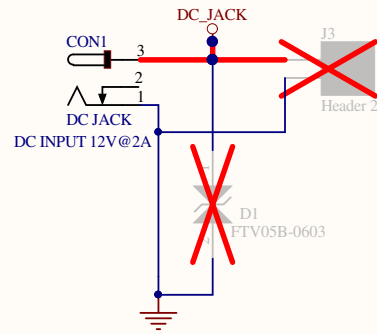
B

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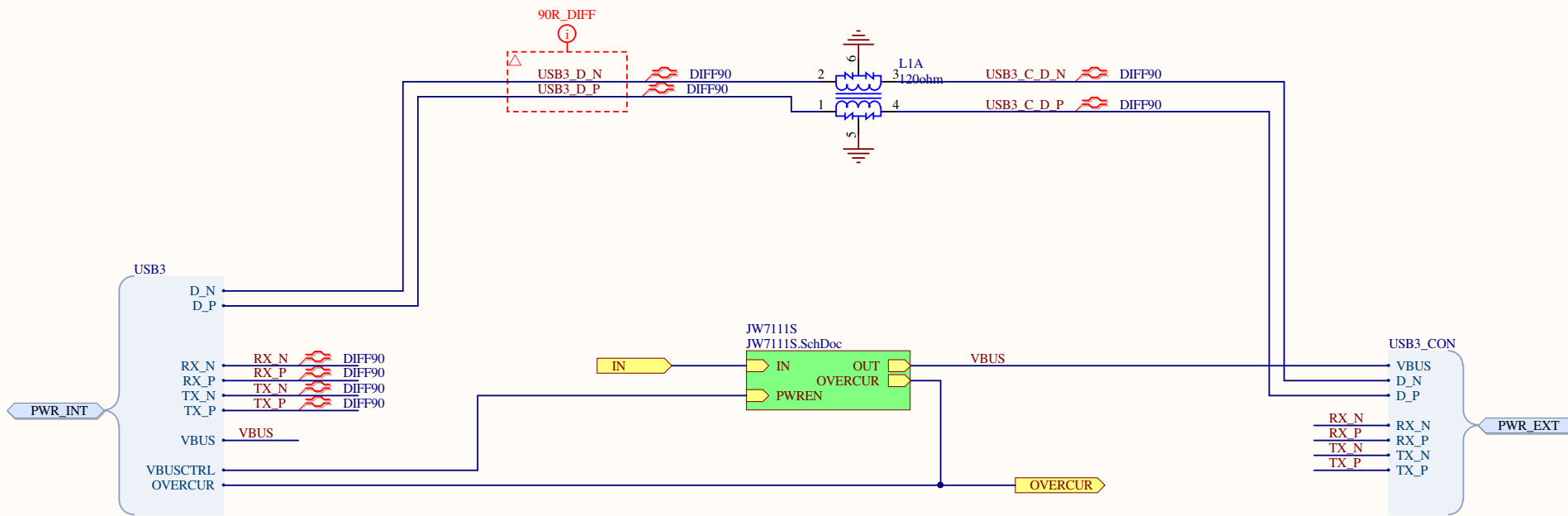
Title <b>DC JACK</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		<b>ODROID</b>
Size: A4	Number: 15	Revision: 0,4	Designed by: ruppi.kim@hardkernel.com		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 15 of 33			
File: CON_DCJACK.SchDoc					


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2

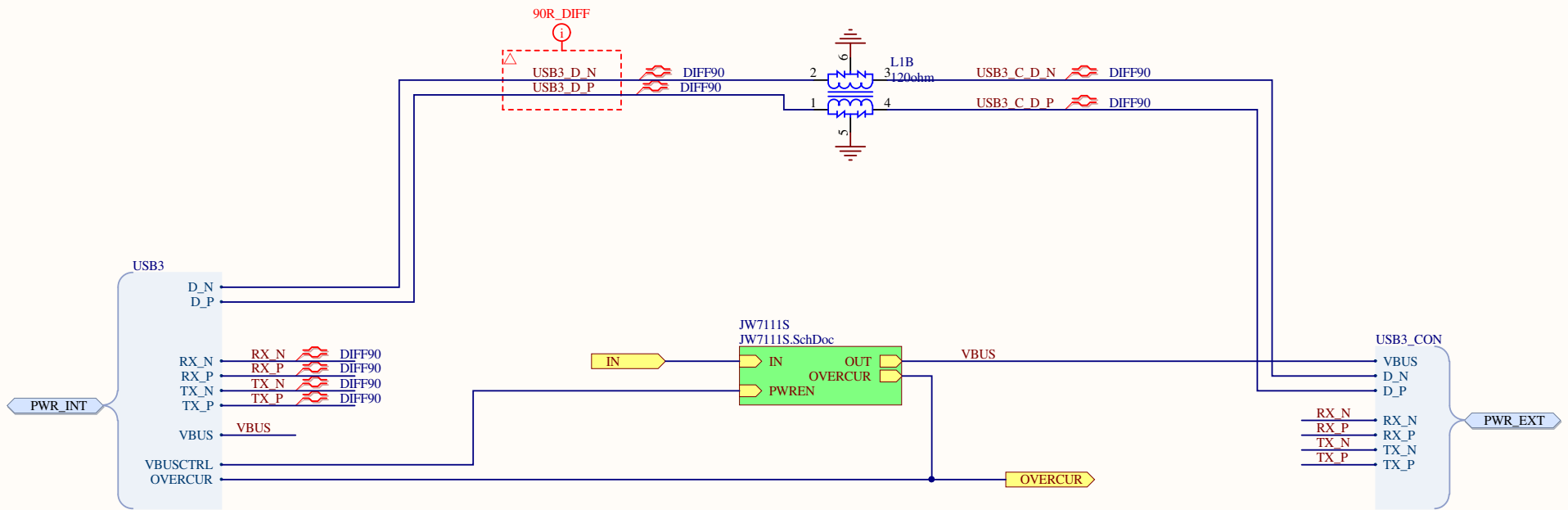
3

4

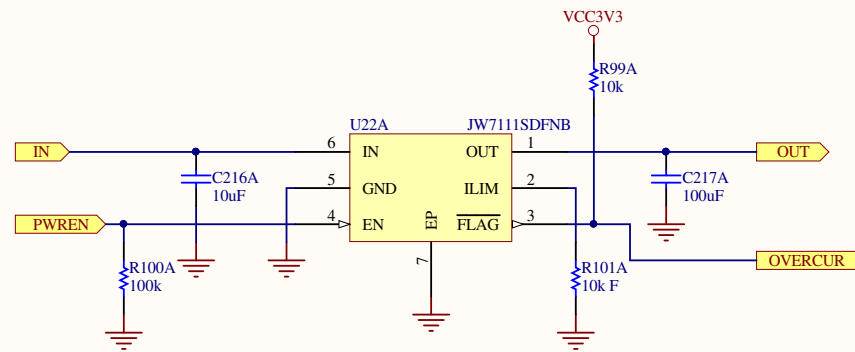


Title <b>USB3 BUS Power Switch</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 16	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 16 of 33		
File: USB3_BUS_PWR.SchDoc			Designed by: ruppi kim@hardkernel.com	

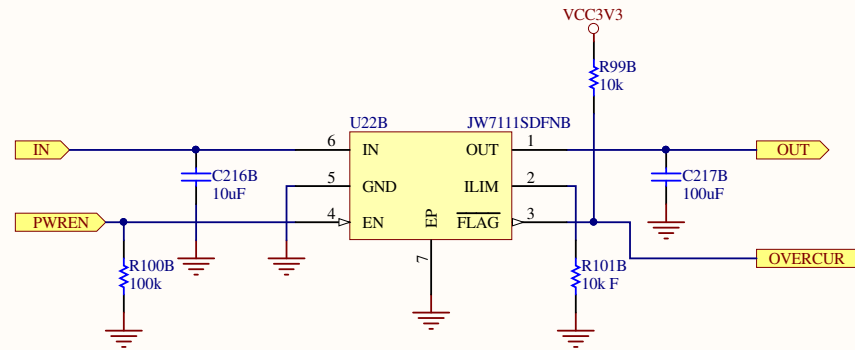





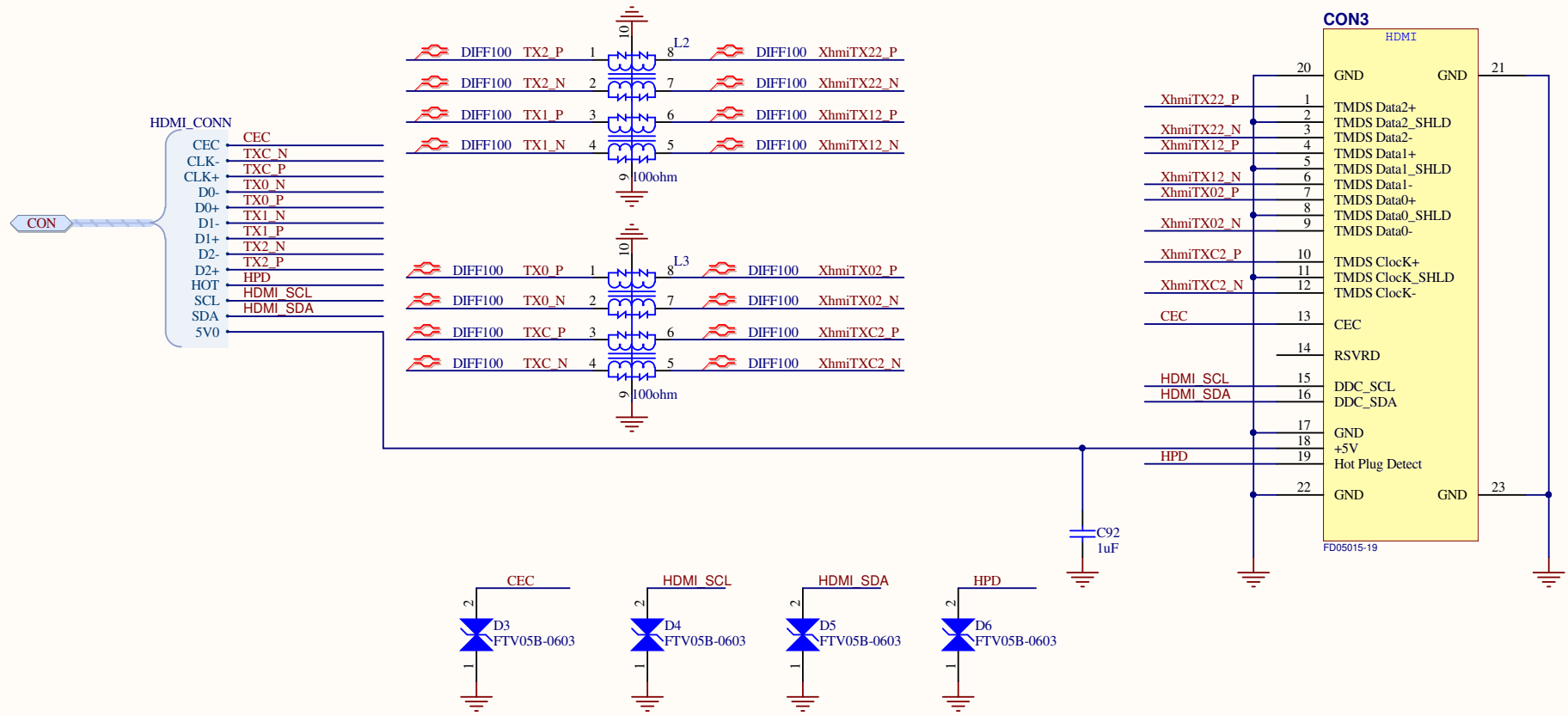
Title <b>USB3 BUS Power Switch</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	<b>ODROID</b>
Size: A4	Number: 16	Revision: 0.4	Designed by: ruppi kim@hardkernel.com	
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 16 of 33		
File: USB3_BUS_PWR.SchDoc				




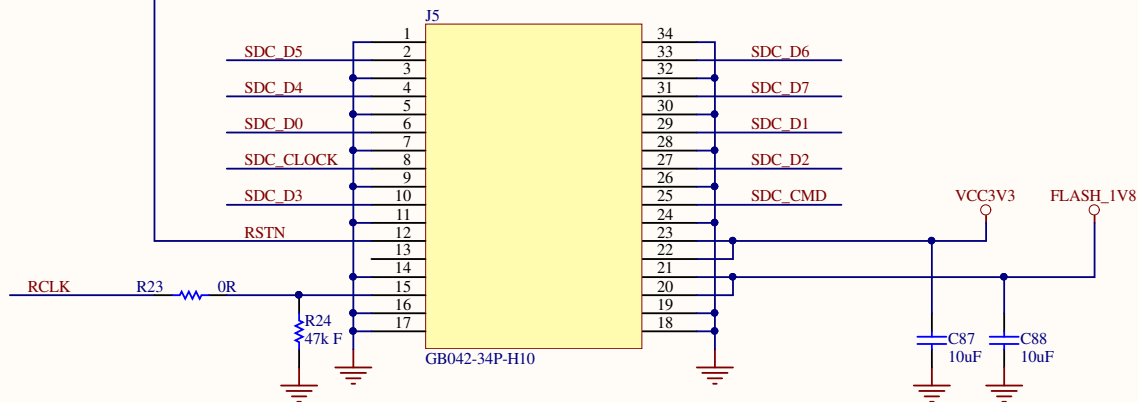
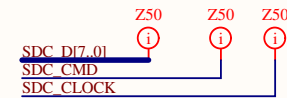
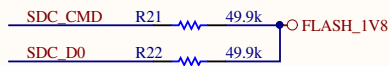
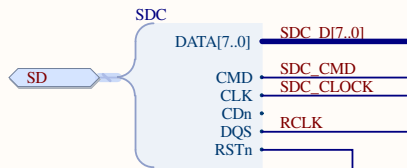
Title <b>USB HOST Power Switch</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		<b>ODROID</b>
Size: A4	Number: 17	Revision: 0,4			
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 17 of 33			
File: JW7111S.SchDoc			Designed by: ruppi.kim@hardkernel.com		



Title <b>USB HOST Power Switch</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
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 <b>HDMI Connector</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
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 <b>eMMC B2B Connector</b>			Hardkernel Co.,LTD. 475-1 Manango Manangu, Anyang City Gyeonggido South Korea	<b>ODROID</b>
Size: A4	Number: 19	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 19 of 33	Designed by: ruppi.kim@hardkernel.com	
File: CON_EMMC.SchDoc				

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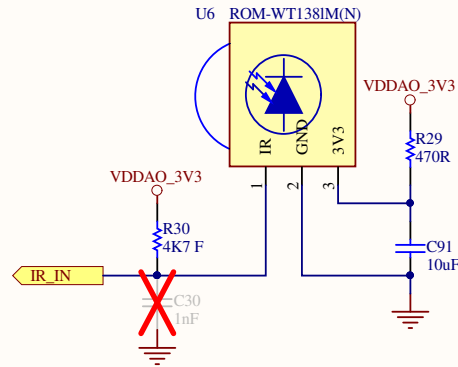
B


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C

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D



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

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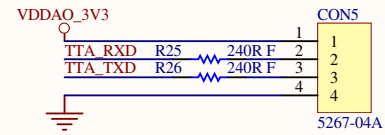
B


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C

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D



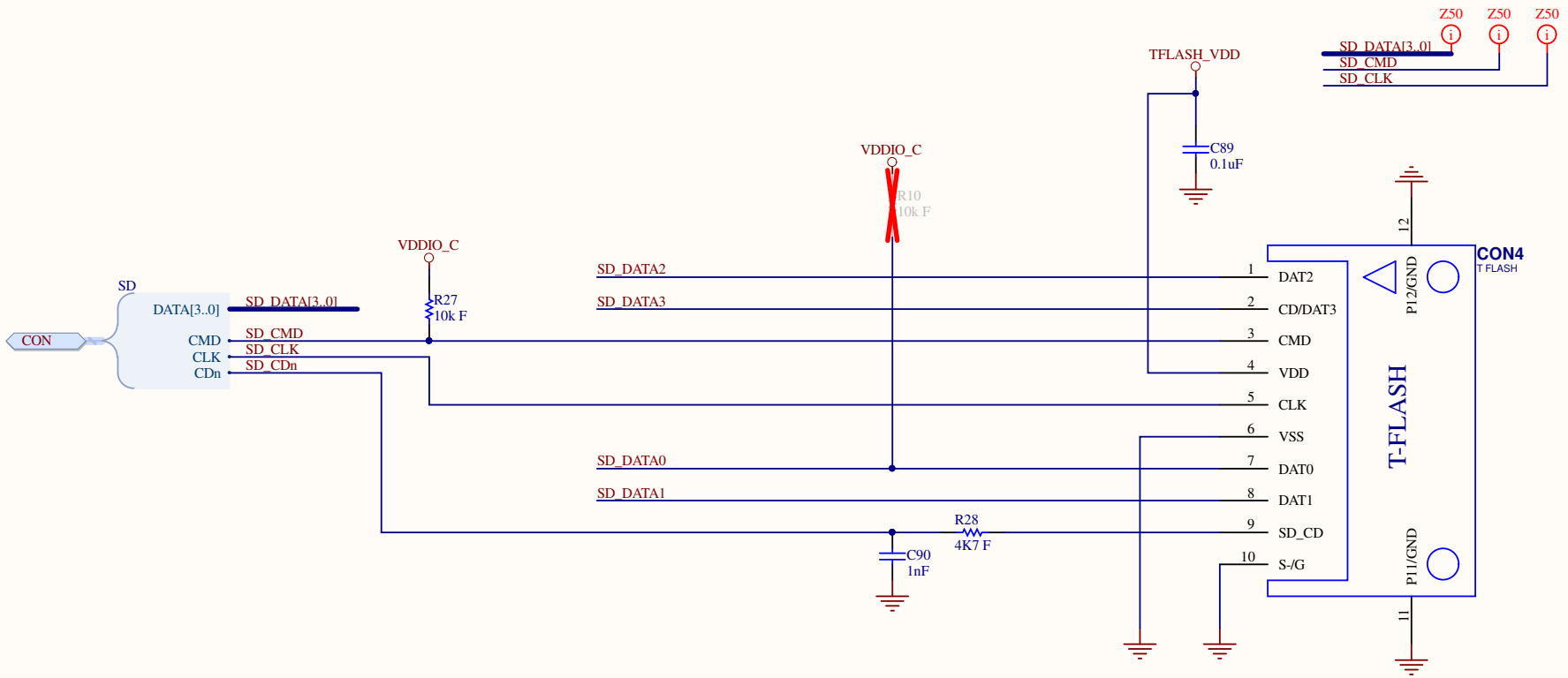
Title <b>UART Connector</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	
Size: A4	Number: 21	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 21 of 33	Designed by: ruppi.kim@hardkernel.com	
File: CON_UART.SchDoc				

1

2

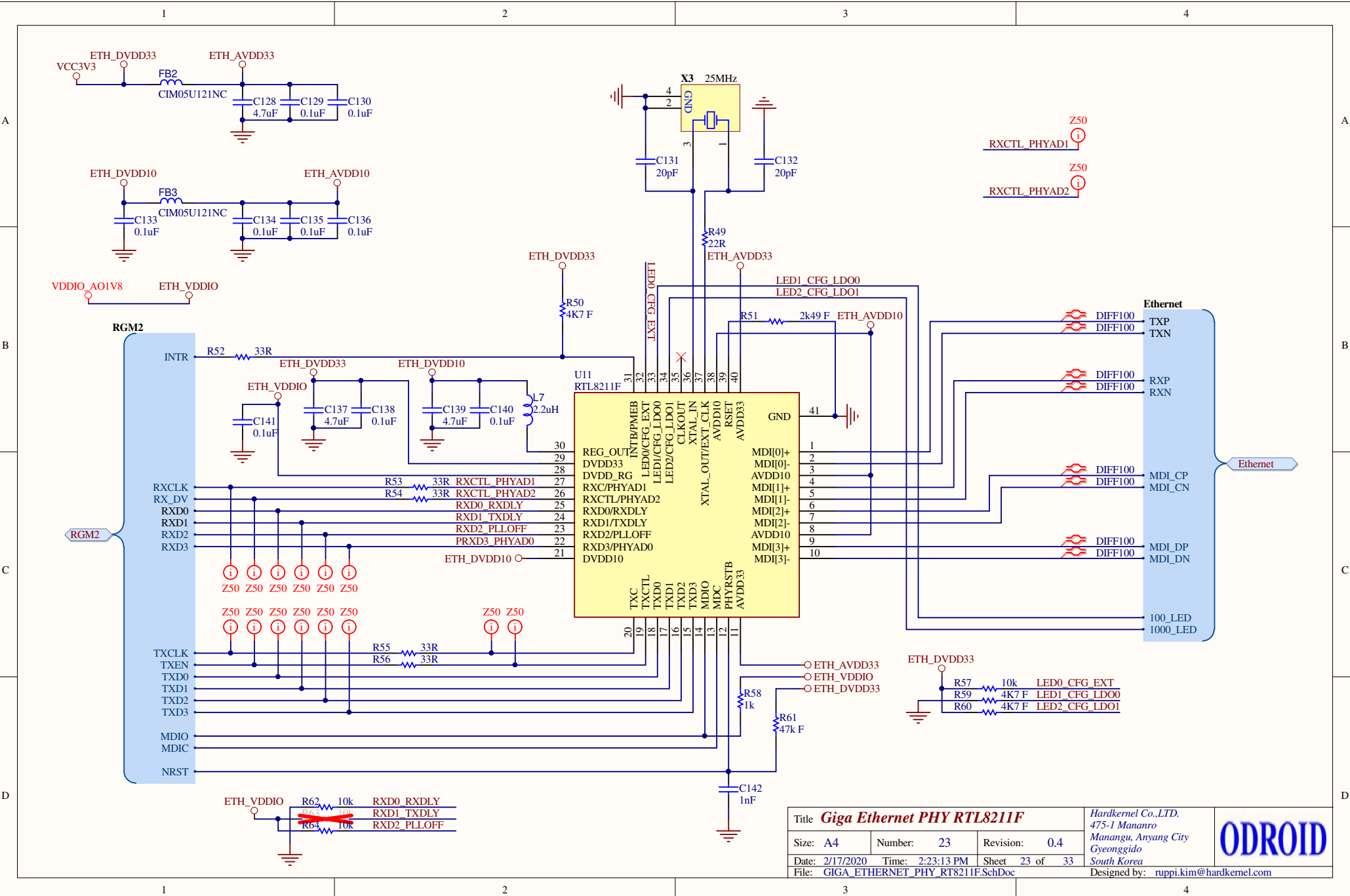
3

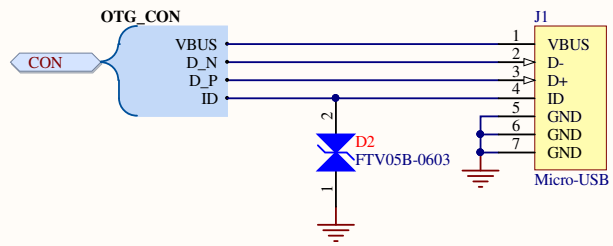
4



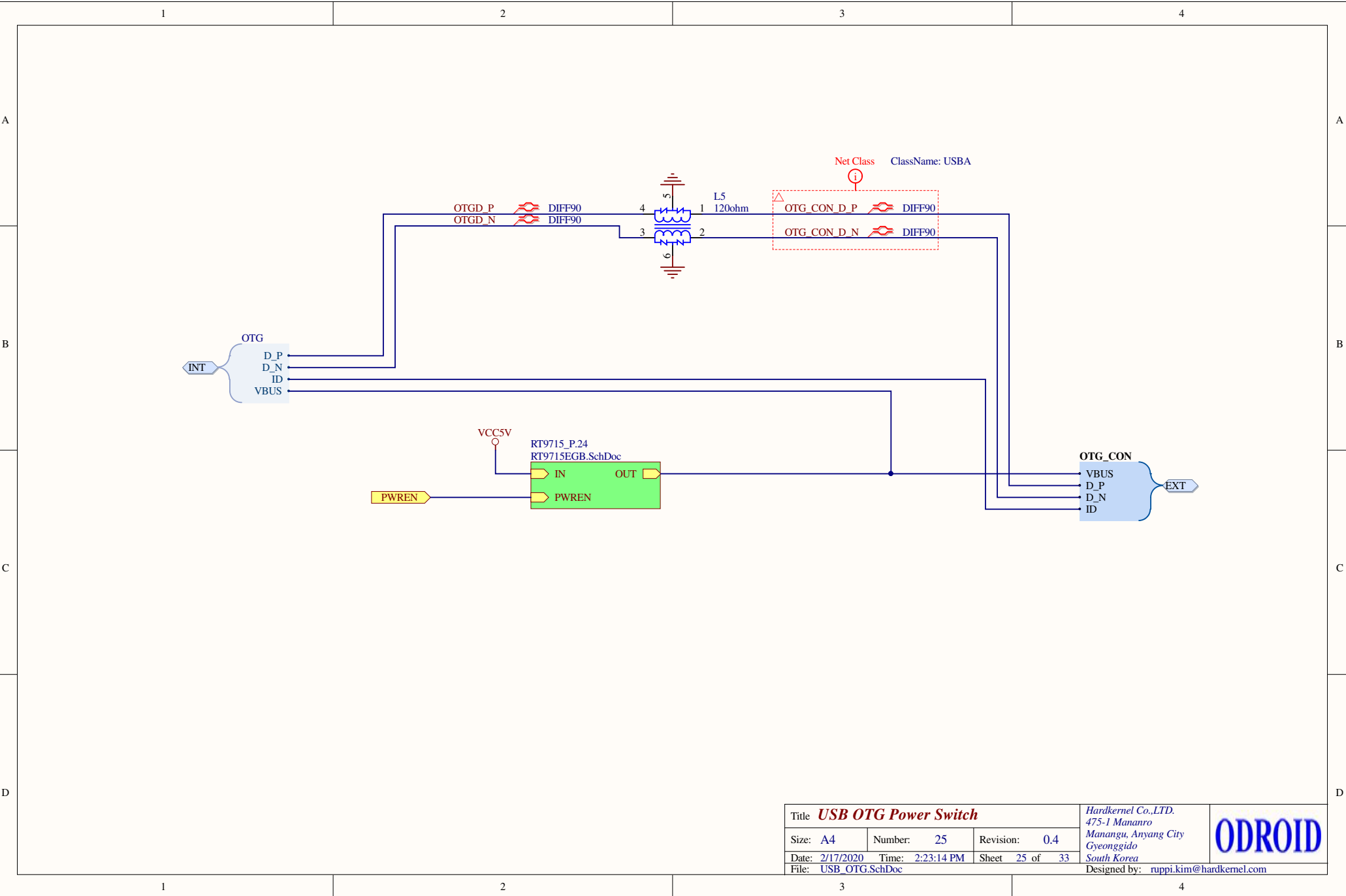
Title <b>MicroSD Socket</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		<b>ODROID</b>
Size: A4	Number: 22	Revision: 0.4	Designed by: ruppi.kim@hardkernel.com		
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 22 of 33			
File: CON_MICROSD_HD08-AL00335.SchDoc					



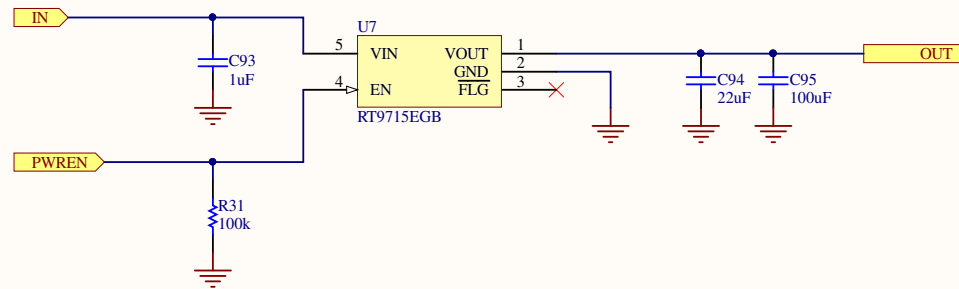




Title <b>Micro USB Connector</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido	<b>ODROID</b>
Size: A4	Number: 24	Revision: 0,4	South Korea	
Date: 2/17/2020	Time: 2:23:13 PM	Sheet 24 of 33	Designed by: ruppi.kim@hardkernel.com	
File: CON_MICROUSB.SchDoc				



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



Title <b>USB HOST PWR RT9715</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea		<b>ODROID</b>
Size: A4	Number: 26	Revision: 0,4	Designed by: ruppi.kim@hardkernel.com		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 26 of 33			
File: RT9715EGB.SchDoc					

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A

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B

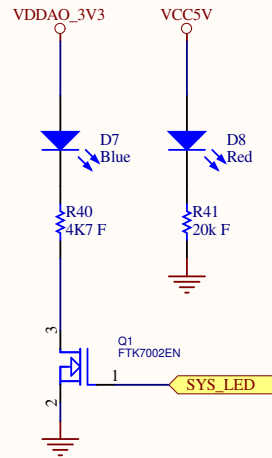
B

C

C

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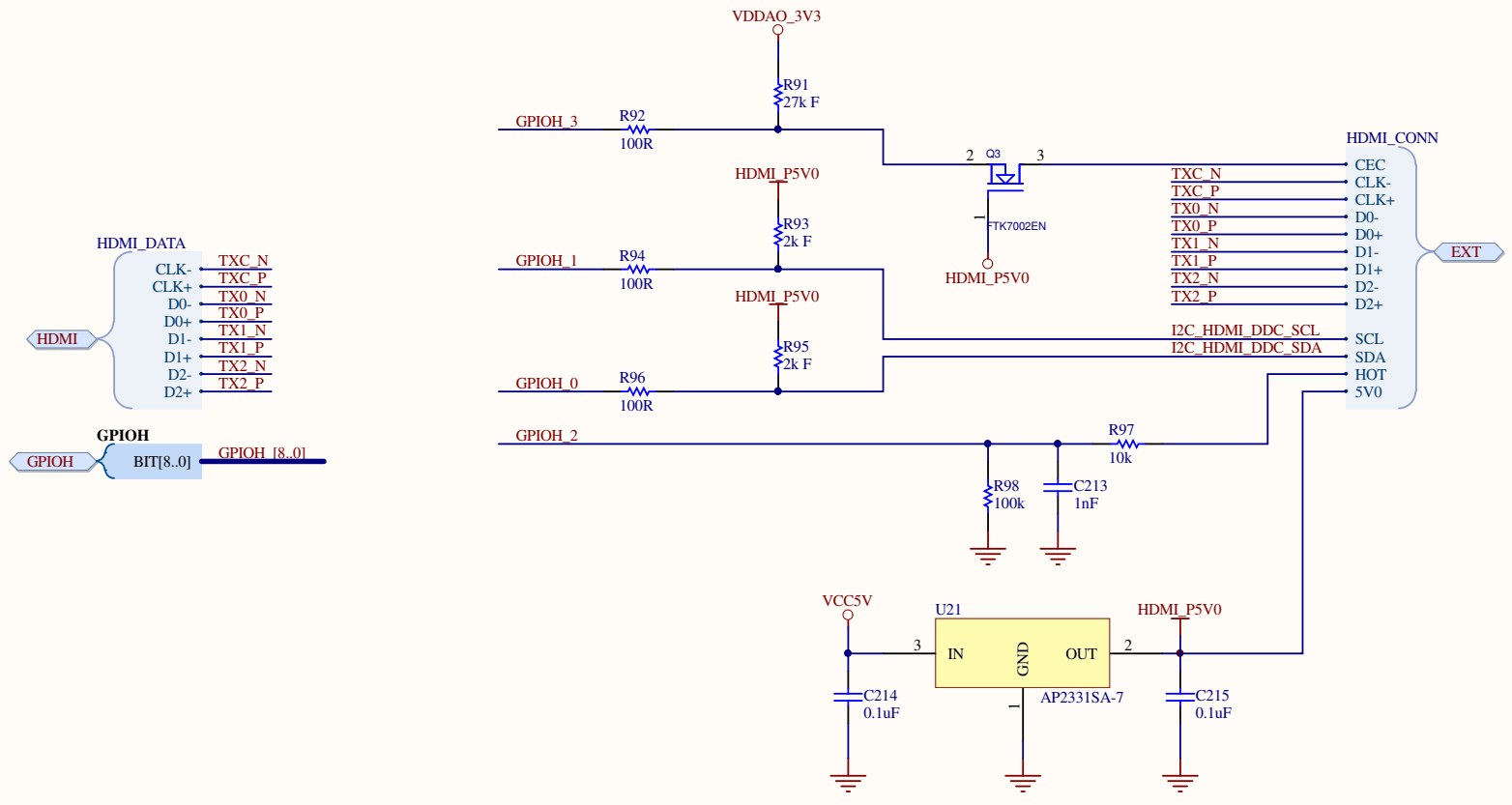
Title <b>PWR SYSTEM LEDs</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	<b>ODROID</b>
Size: A4	Number: 27	Revision: 0,4		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 27 of 33	Designed by: *@hardkernel.com	
File: C_LEDS.SchDoc				

1

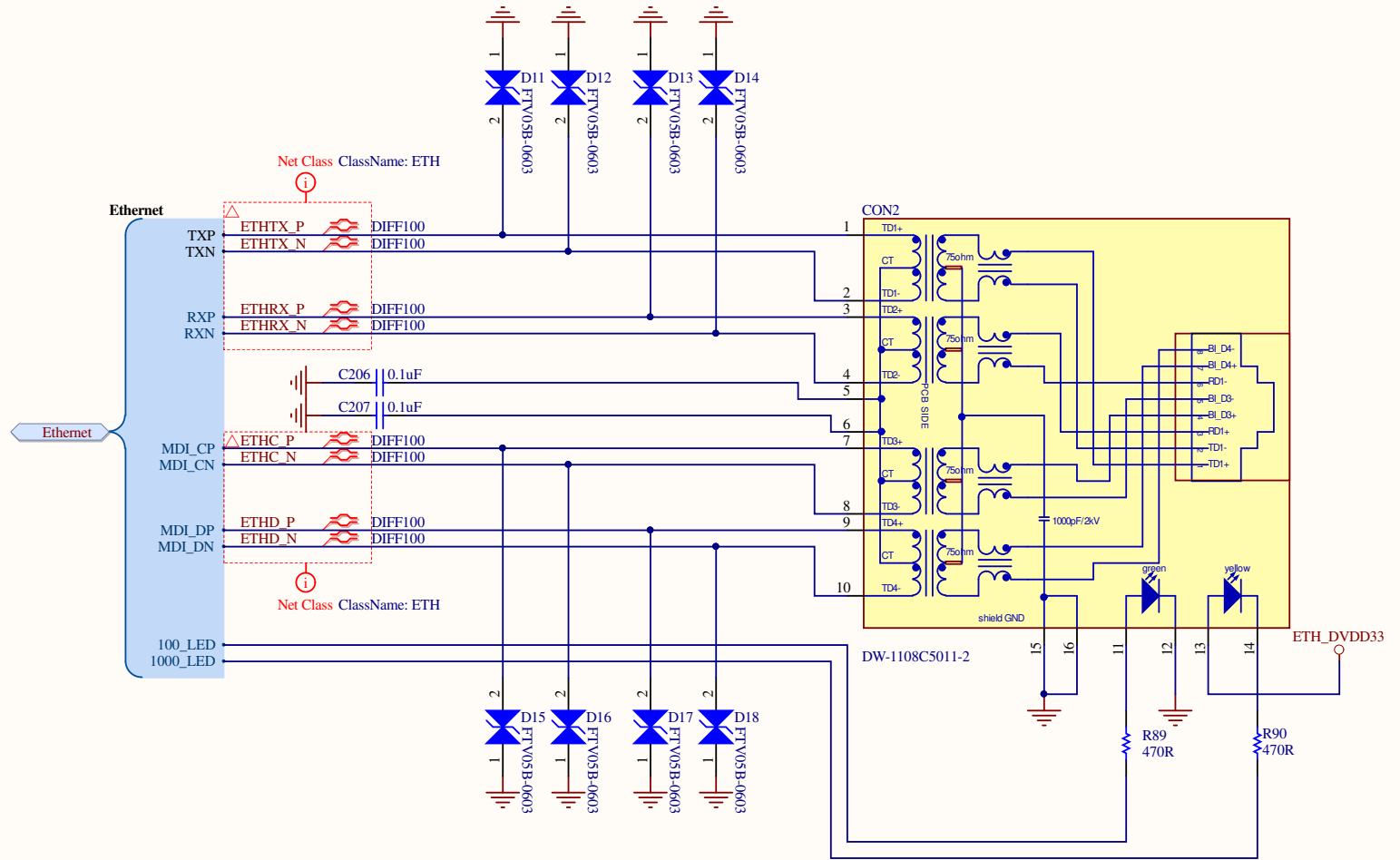
2

3

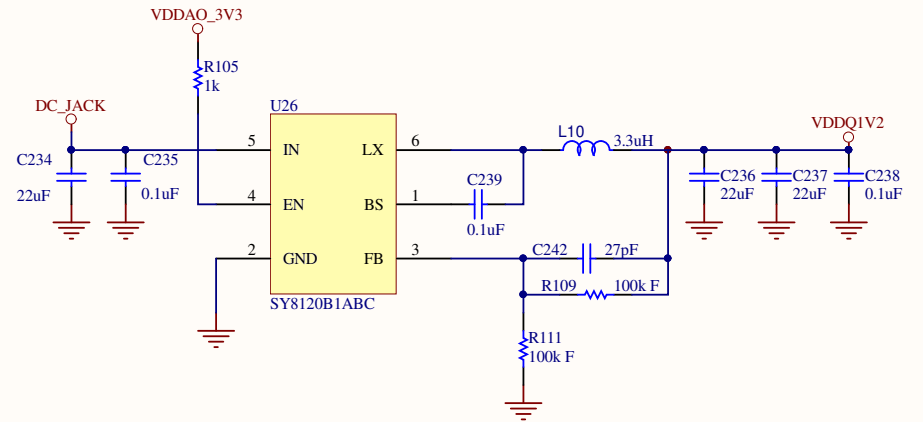
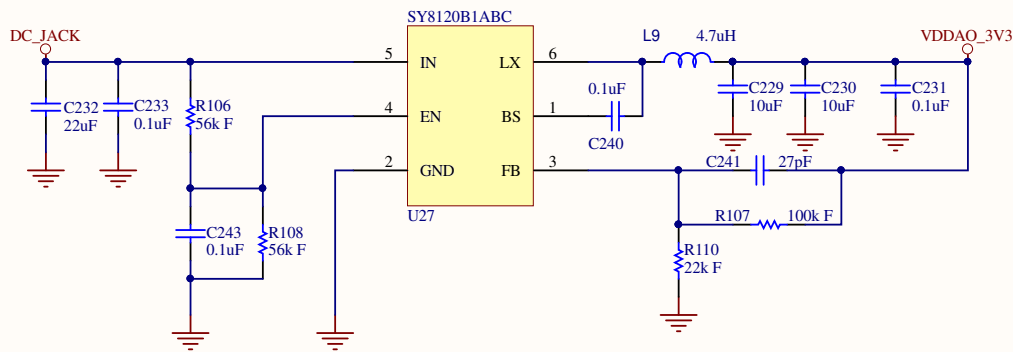
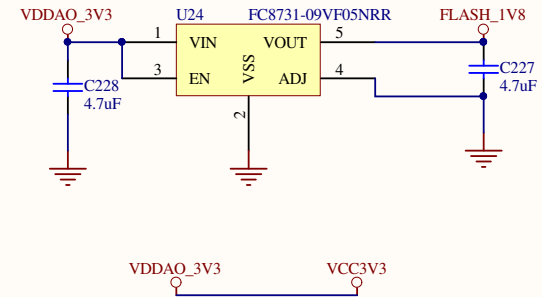
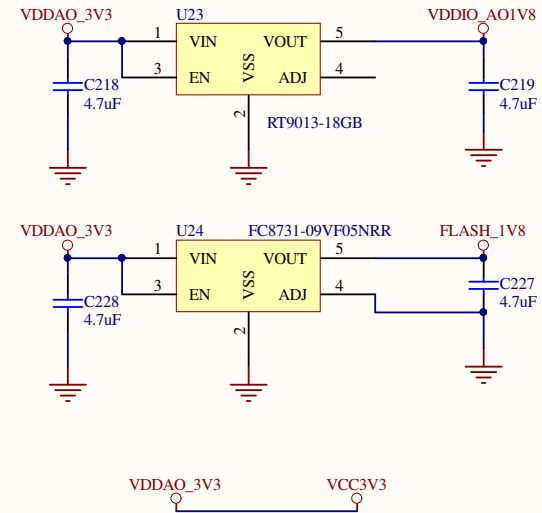
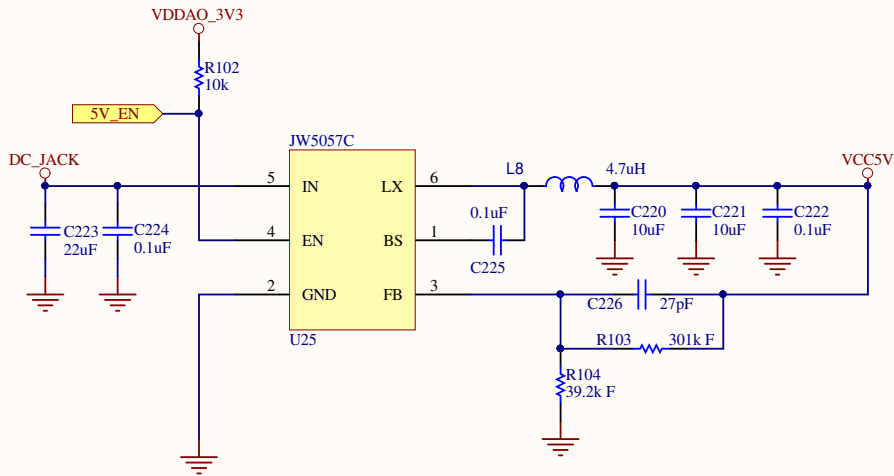
4



Title <b>HDMI I2C</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea Designed by: ruppi.kim@hardkernel.com	
Size: A4	Number: 28	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 28 of 33		
File: HDMI_I2C.SchDoc				



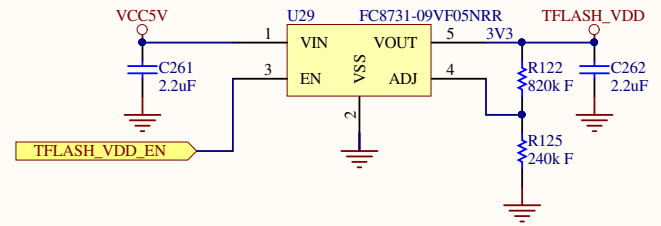
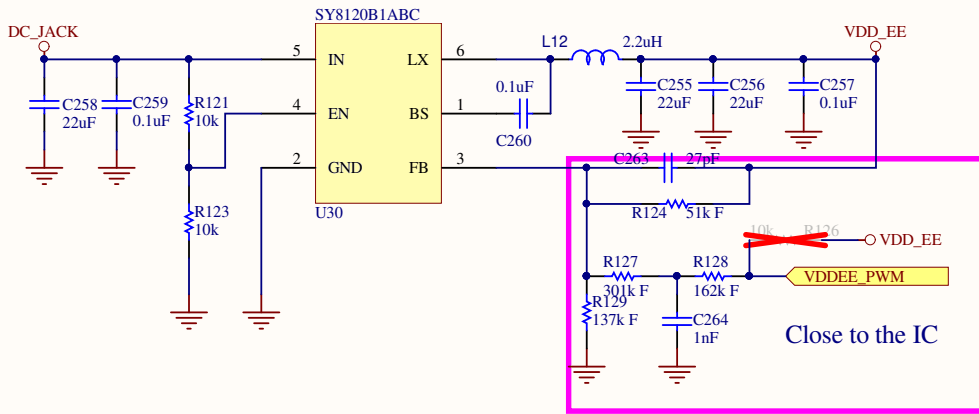
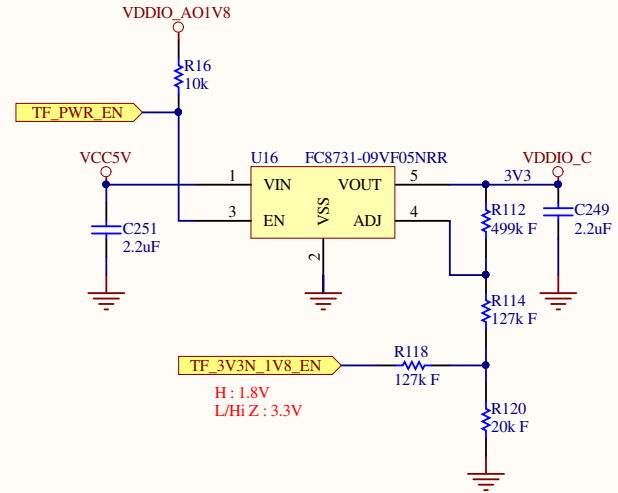
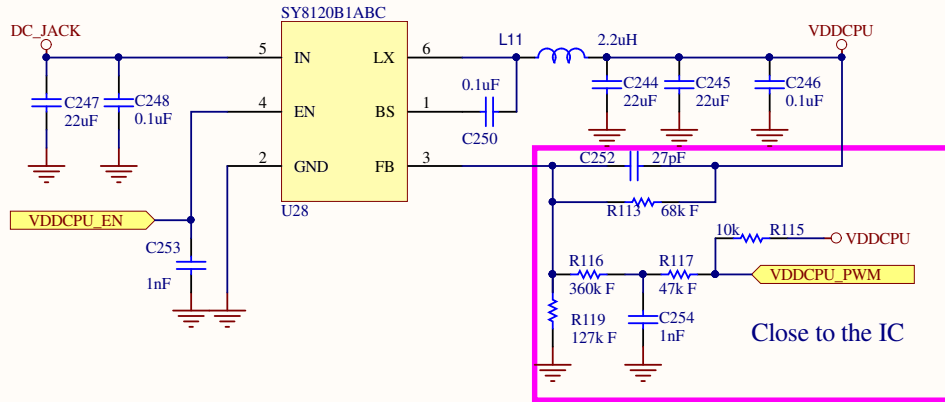
Title <b>Giga Ethernet Connector</b>			Hardkernel Co.,LTD. 475-1 Mananro Manangu, Anyang City Gyeonggido South Korea	<b>ODROID</b>
Size: A4	Number: 29	Revision: 0.4		
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 29 of 33	Designed by: ruppi.kim@hardkernel.com	
File: CON_GIGA_ETH.SchDoc				



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

**ODROID**

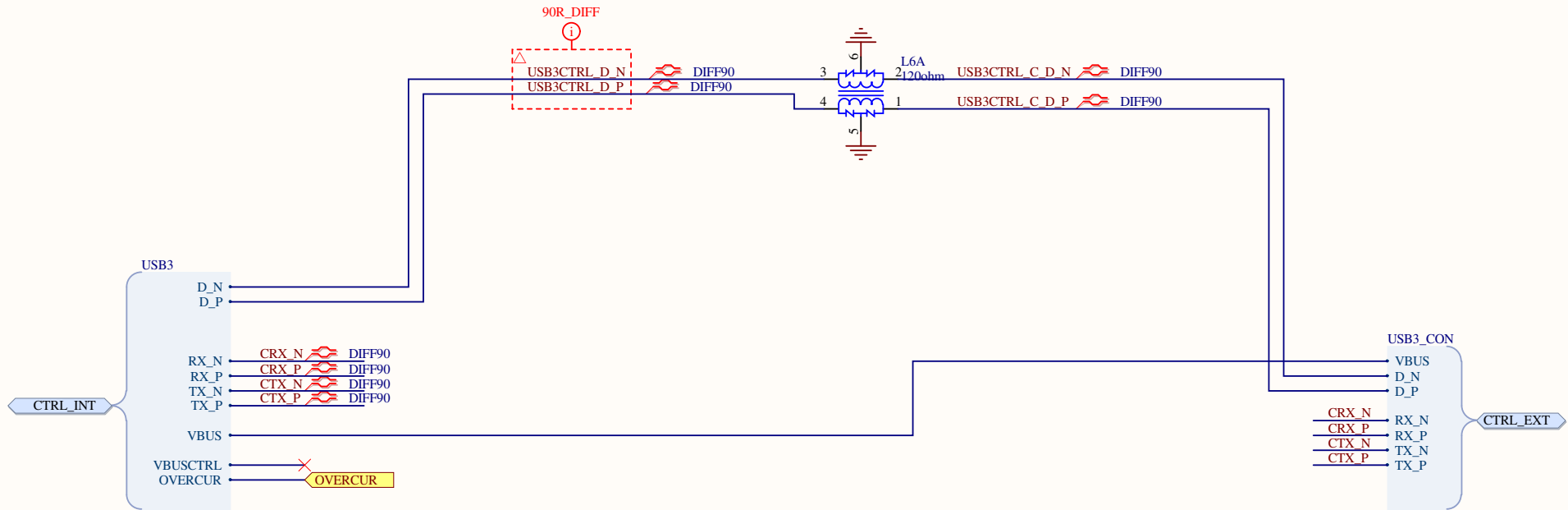




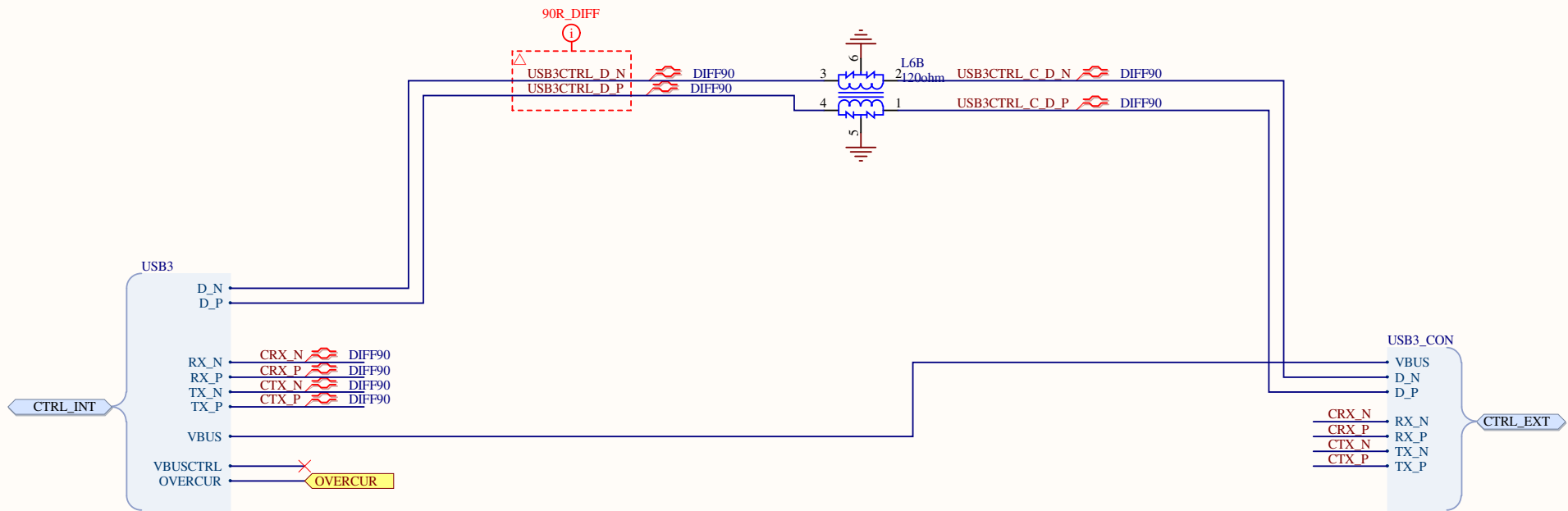
Title <b>PWR_DCDC_OTHERS</b>		
Size: A4	Number: 31	Revision: 0,4
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 31 of 33
File: PWR_DCDC_OTHERS.SchDoc		

Hardkernel Co.,LTD.  
475-1 Manango  
Manangu, Anyang City  
Gyeonggido  
South Korea  
Designed by: neal.kim@hardkernel.com

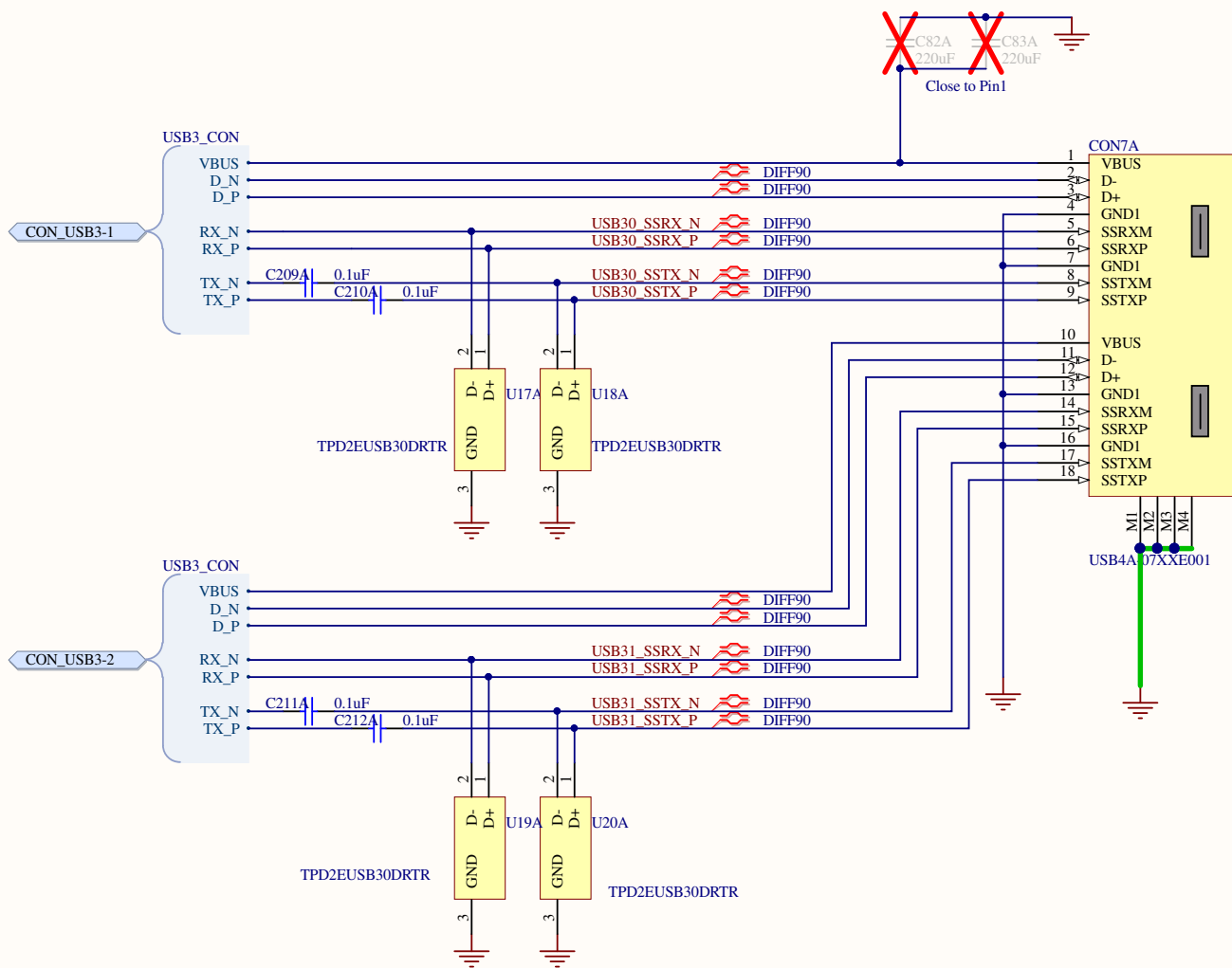




Title <b>USB3_BUS_CTRL</b>			Hardkernel Co.,LTD. 475-1 Manango Manangu, Anyang City Gyeonggido	<b>ODROID</b>
Size: A4	Number: 32	Revision: 0,4	South Korea	
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 32 of 33	Designed by: neal.kim@hardkernel.com	
File: USB3_BUS_CTRL.SchDoc				

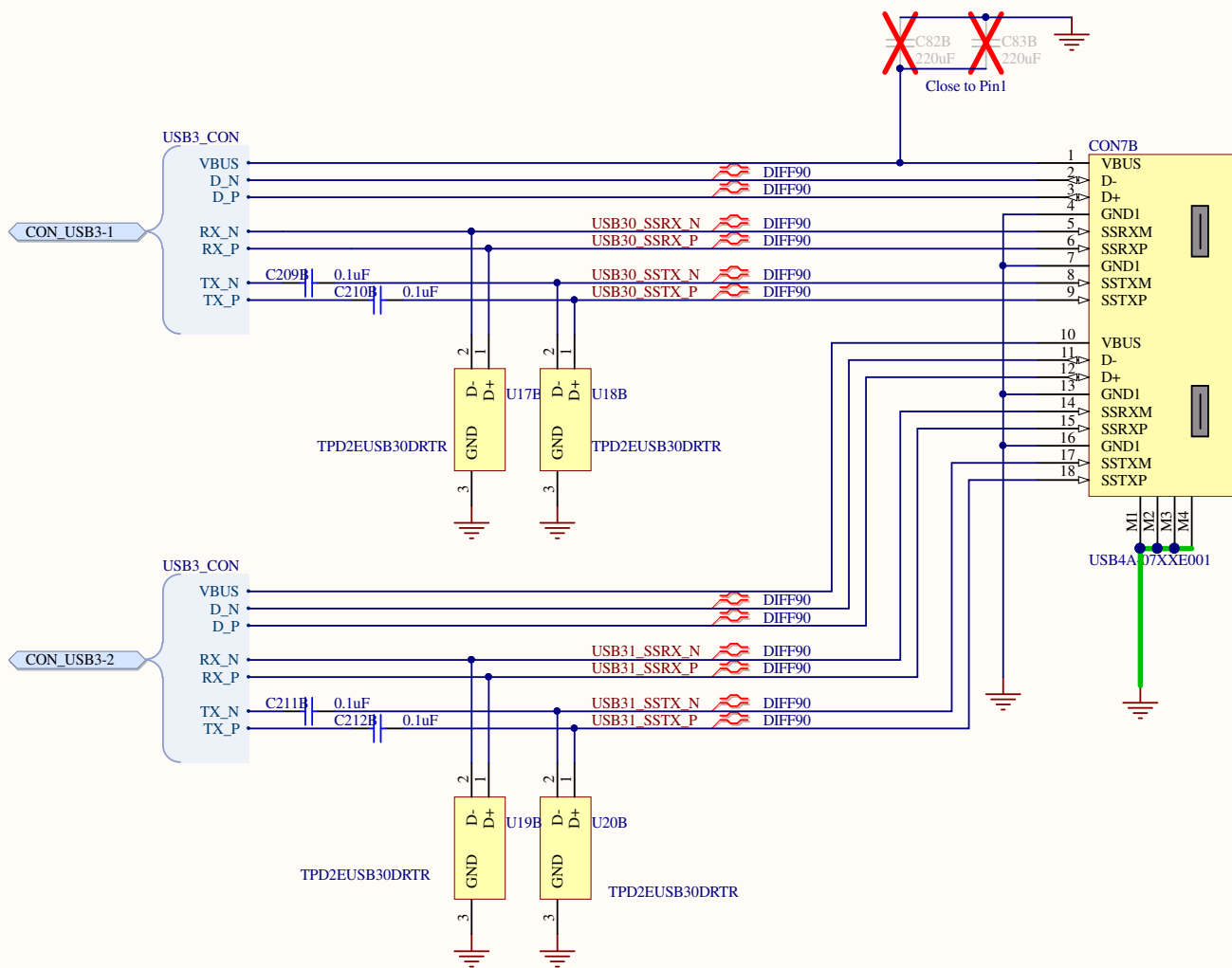


Title <b>USB3_BUS_CTRL</b>			Hardkernel Co.,LTD. 475-1 Manango Manangu, Anyang City Gyeonggido	<b>ODROID</b>
Size: A4	Number: 32	Revision: 0,4	South Korea	
Date: 2/17/2020	Time: 2:23:14 PM	Sheet 32 of 33	Designed by: neal.kim@hardkernel.com	
File: USB3_BUS_CTRL.SchDoc				



Title <b>USB 3.0 Type A Connector</b>			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			





Title <b>USB 3.0 Type A Connector</b>			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			

