

FELIX Prototype FLX-155

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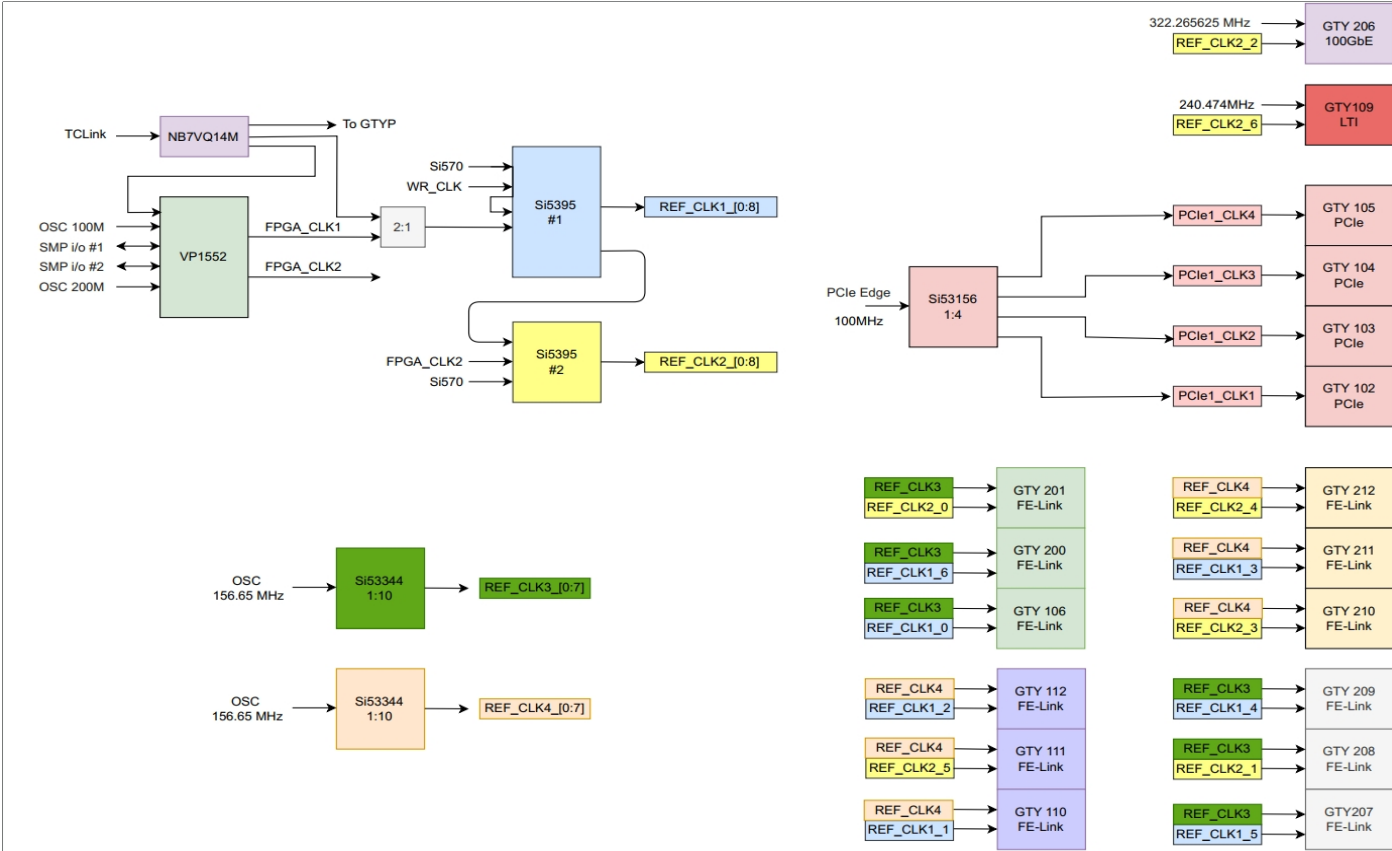
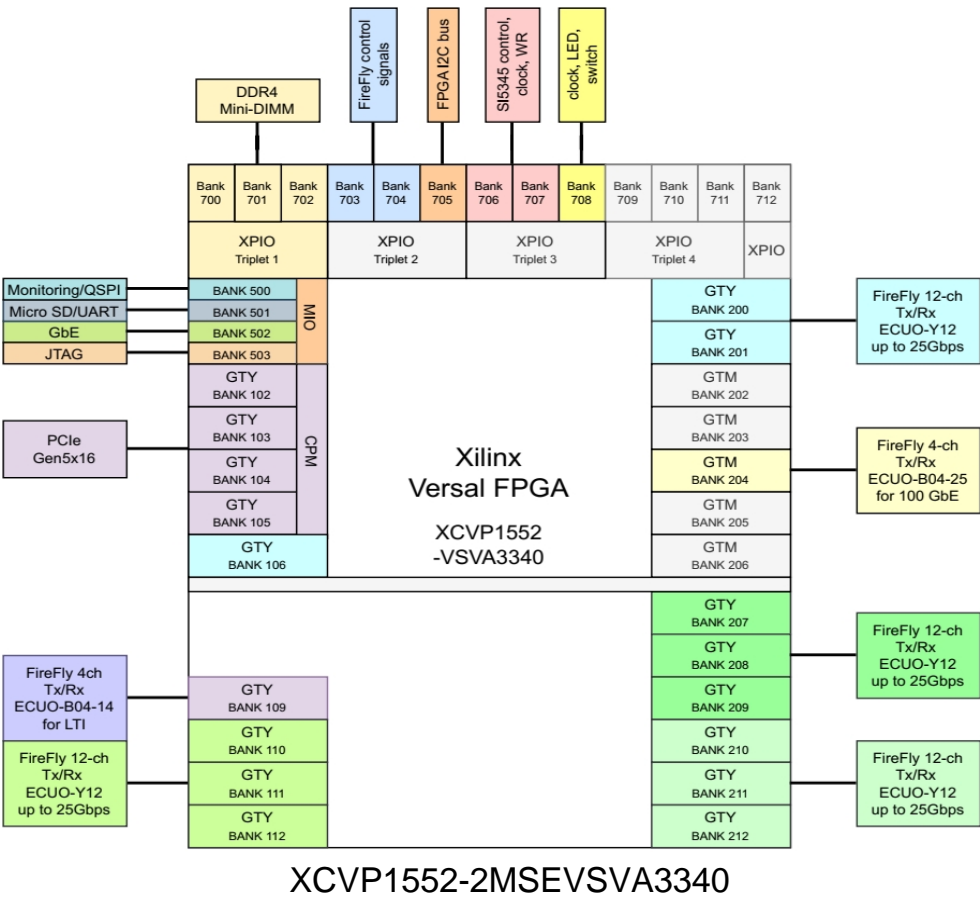
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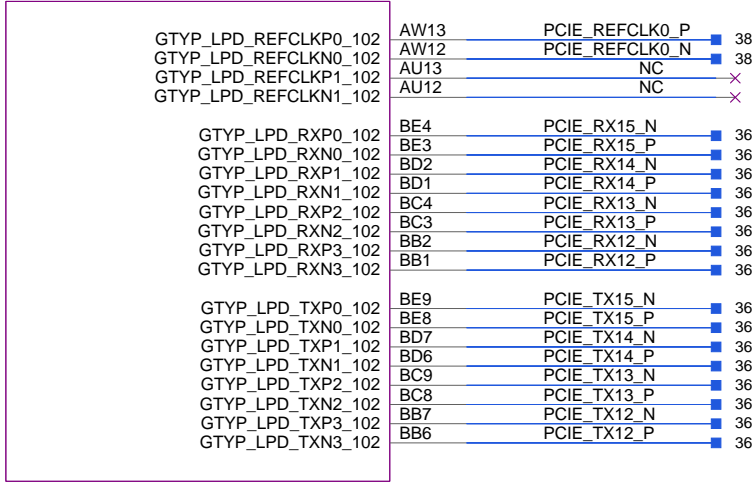
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Hao Xu (haoxu@bnl.gov)
Brookhaven National Laboratory
4/18/2024



Clock Distribution

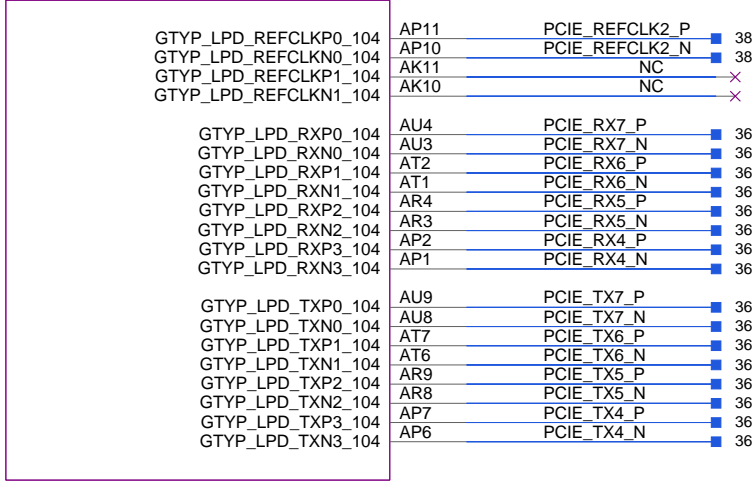
VP1552_Bank102
FPGA (1 OF 58)



TX/RX[15:12] polarity swapped

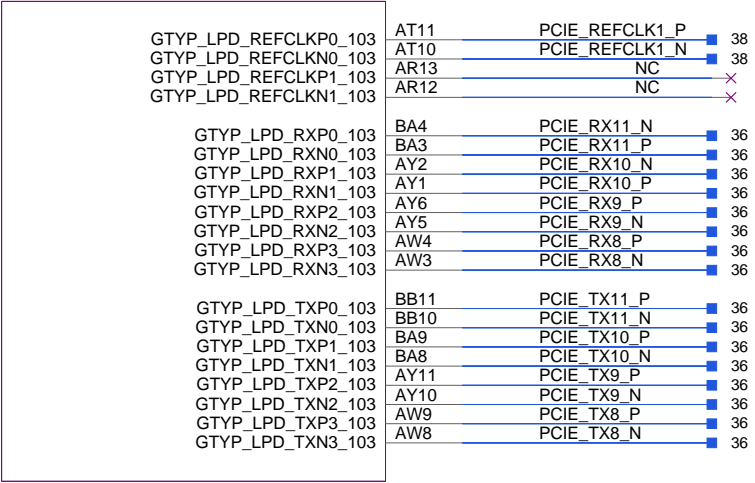
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VP1552_Bank104
FPGA (3 OF 58)



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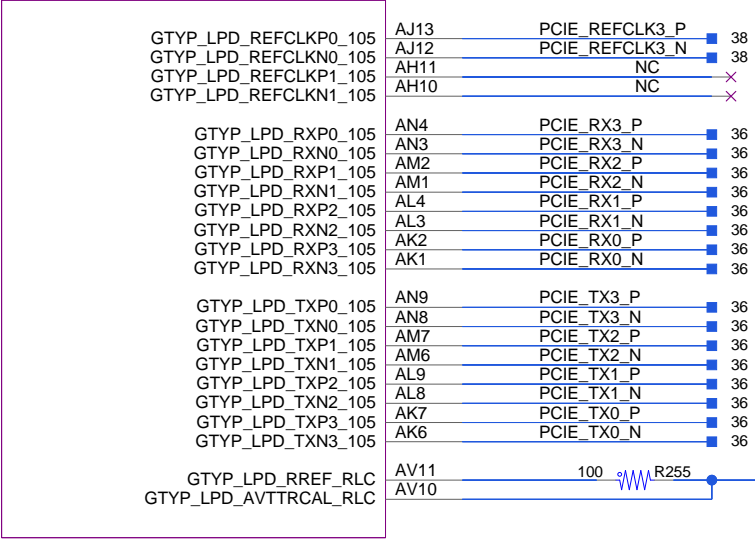
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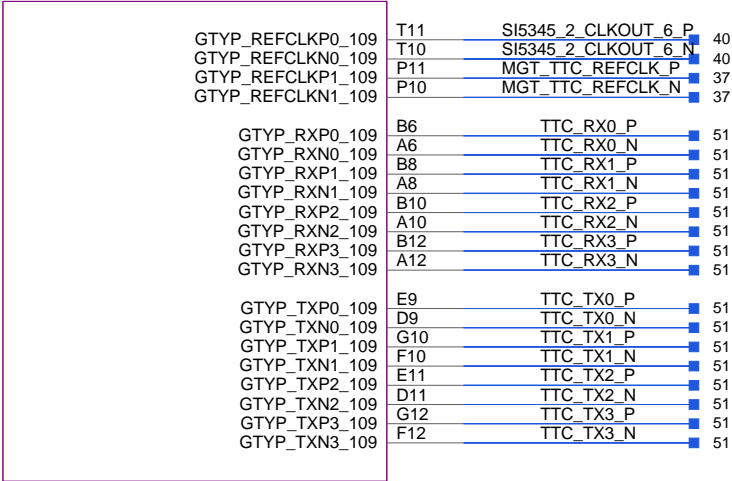
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MGTA VTTT

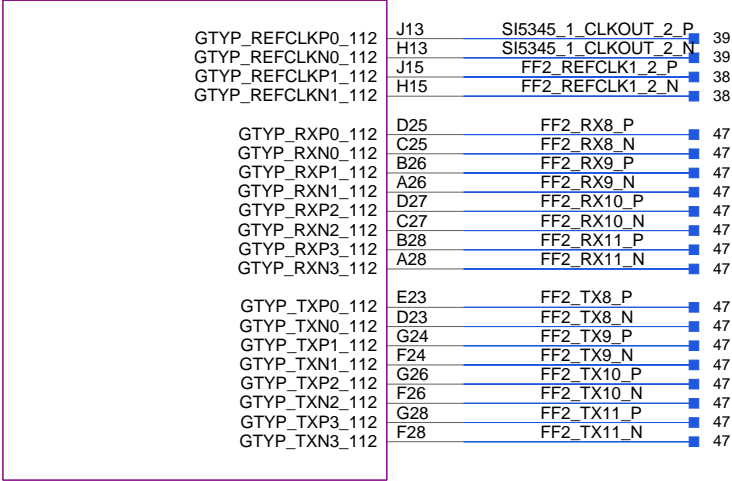
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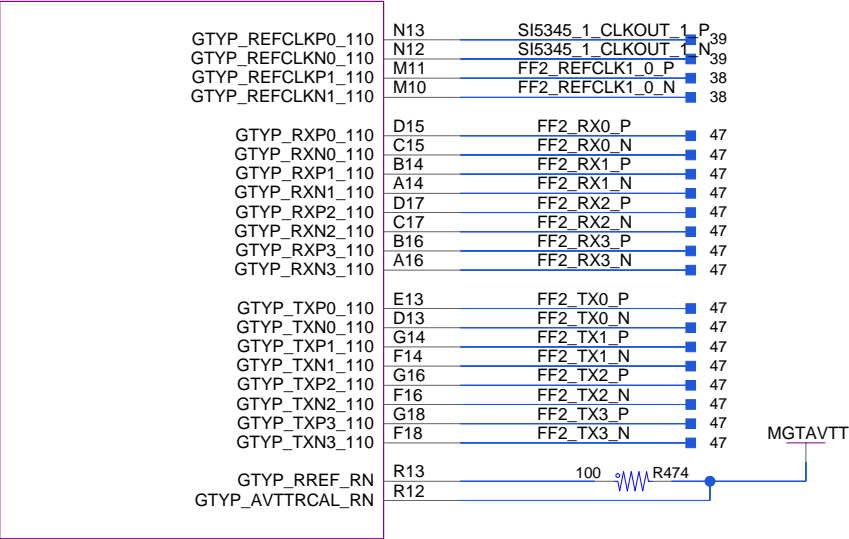
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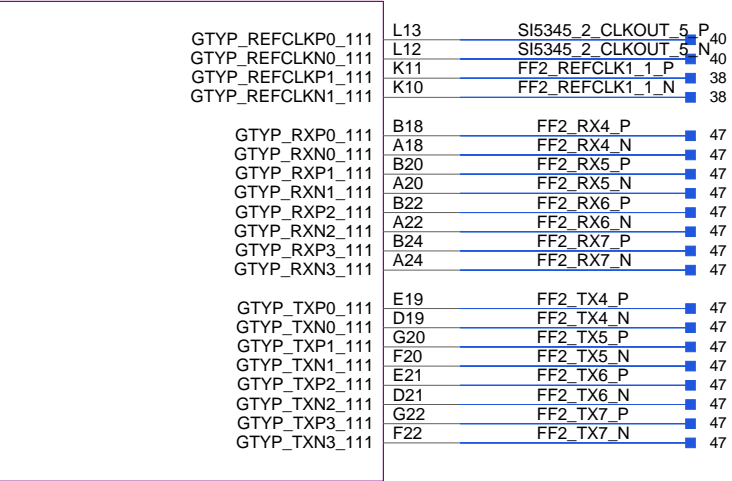
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VP1552_Bank110
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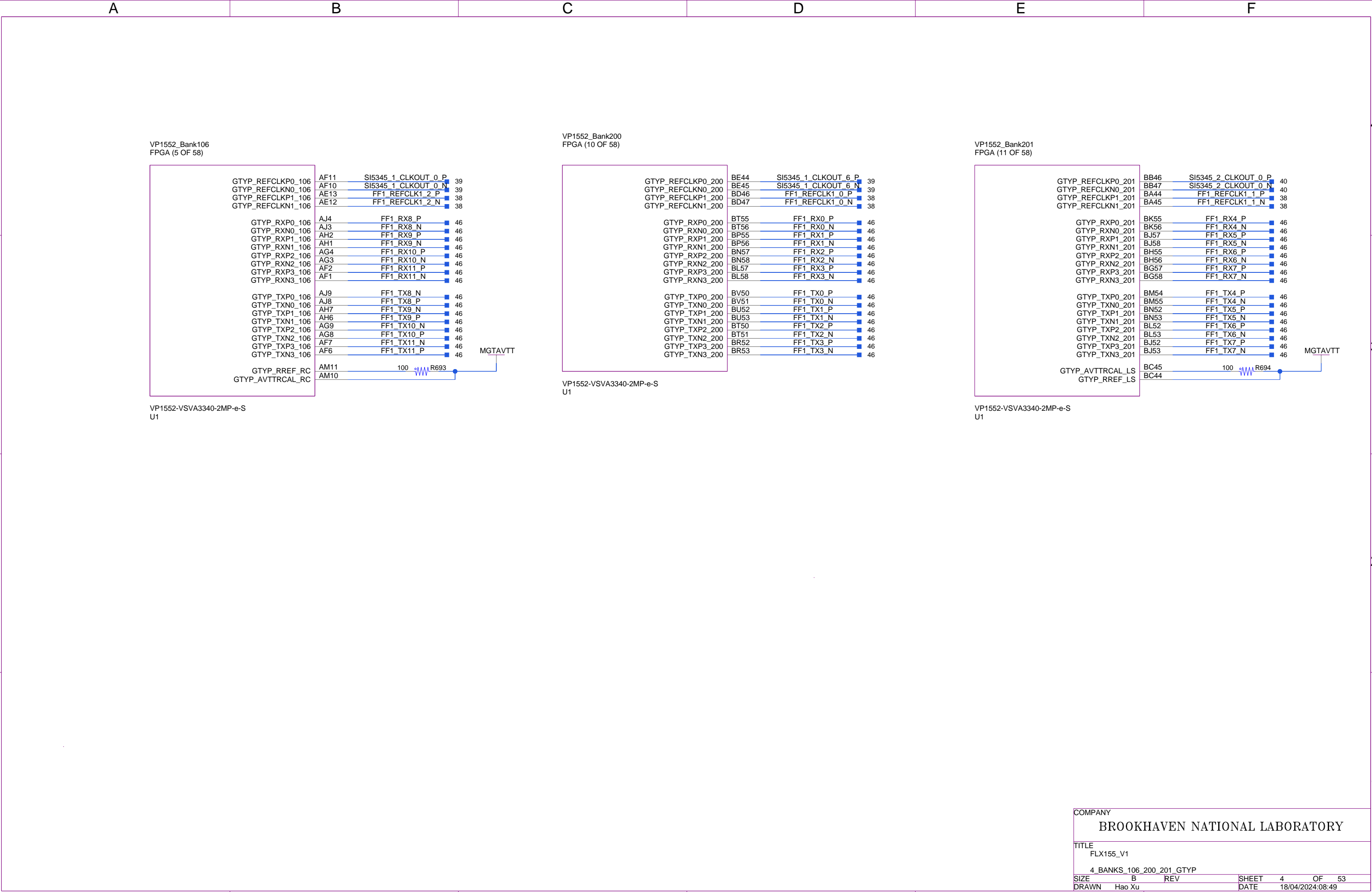


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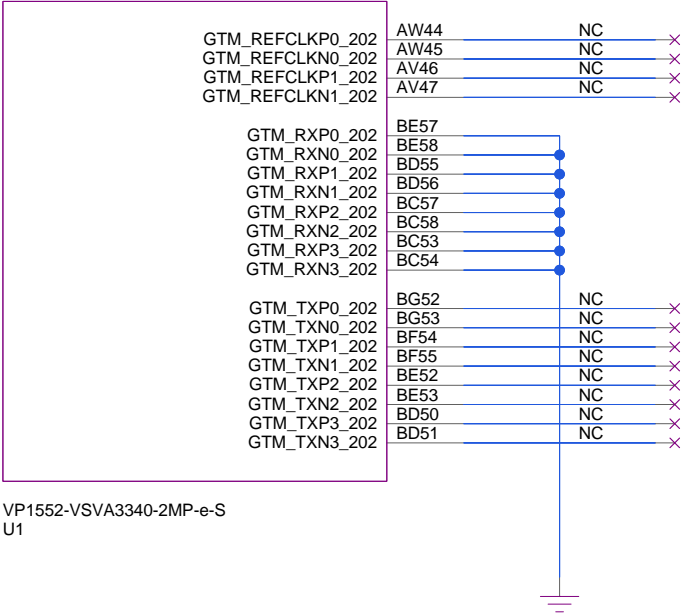
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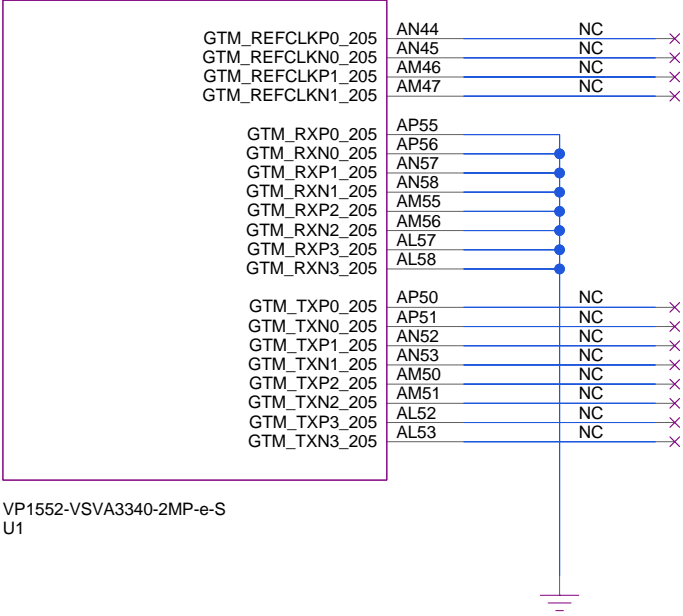
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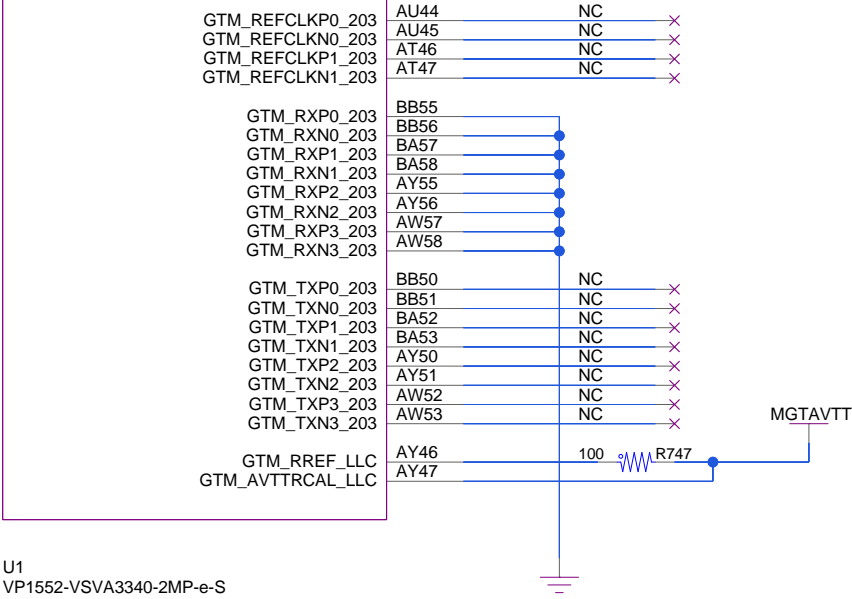
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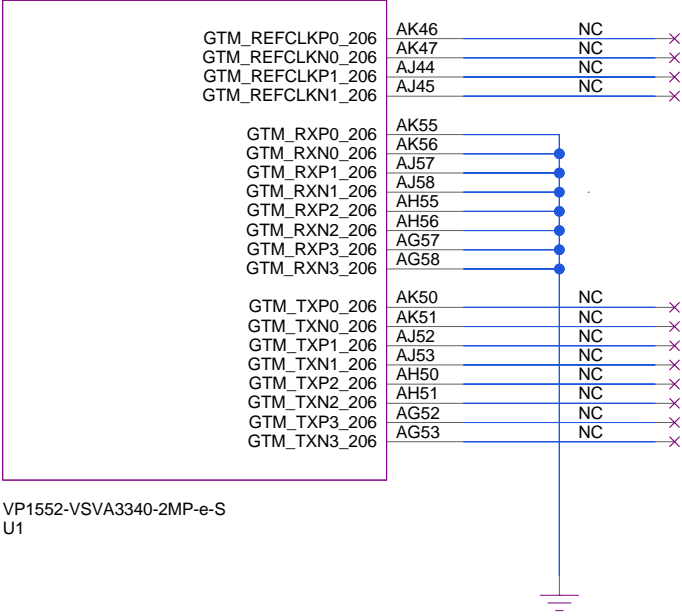
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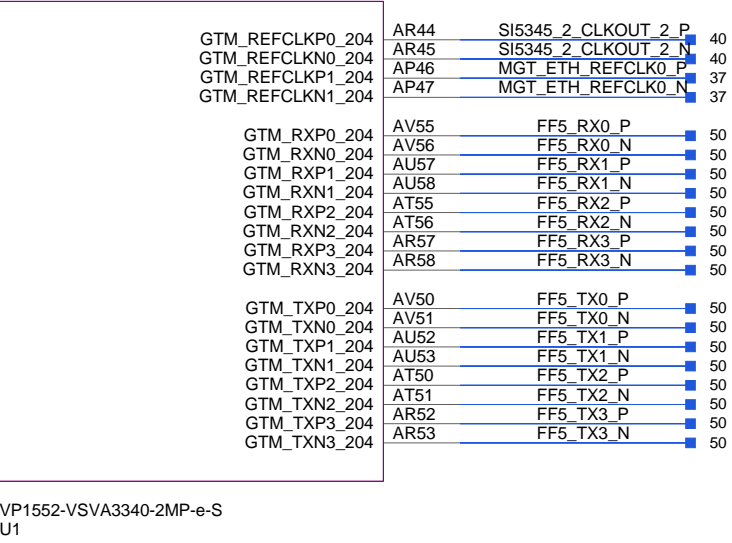
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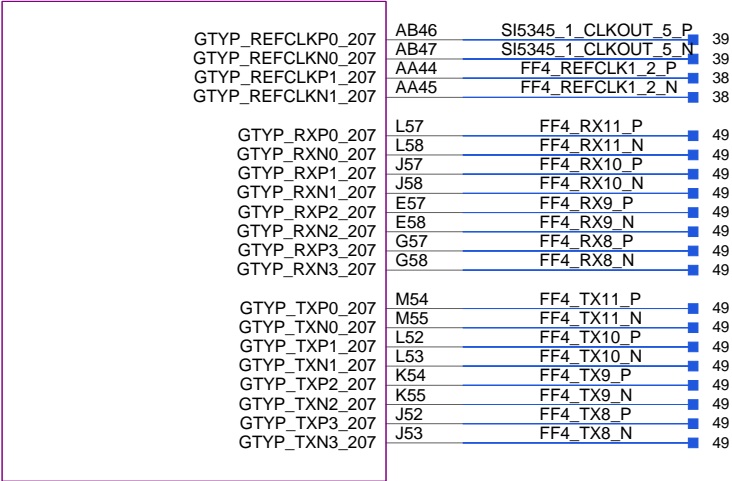
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VP1552_Bank204
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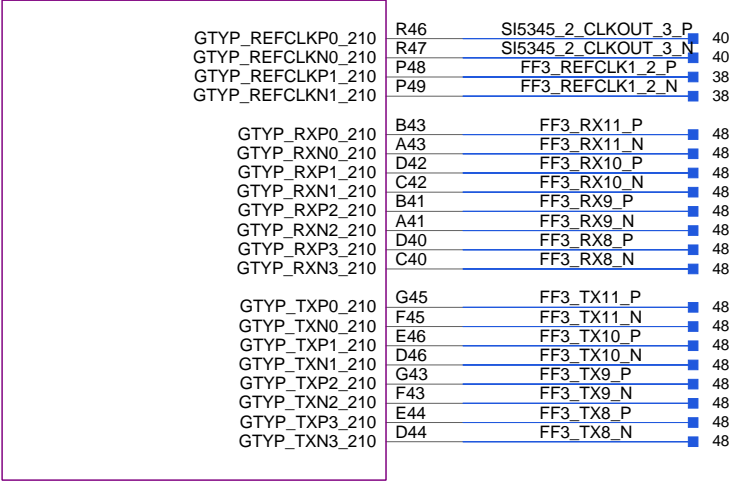


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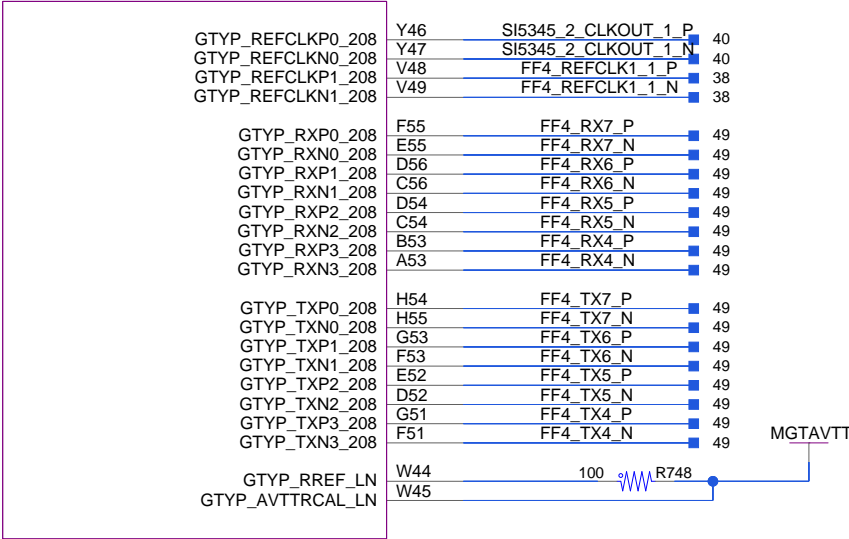
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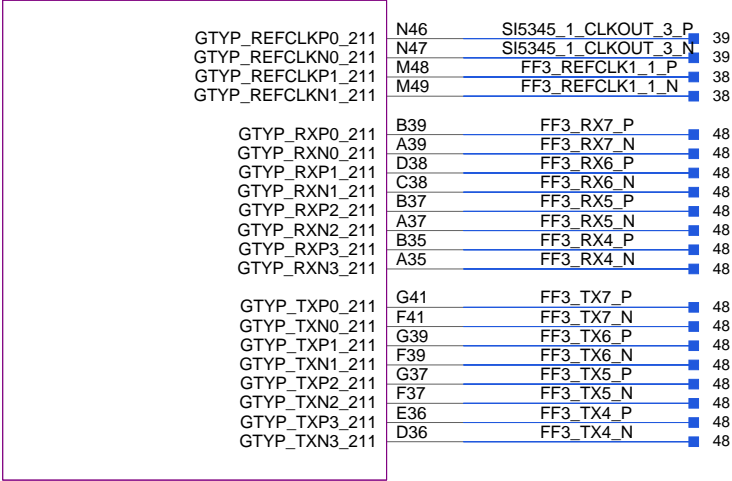
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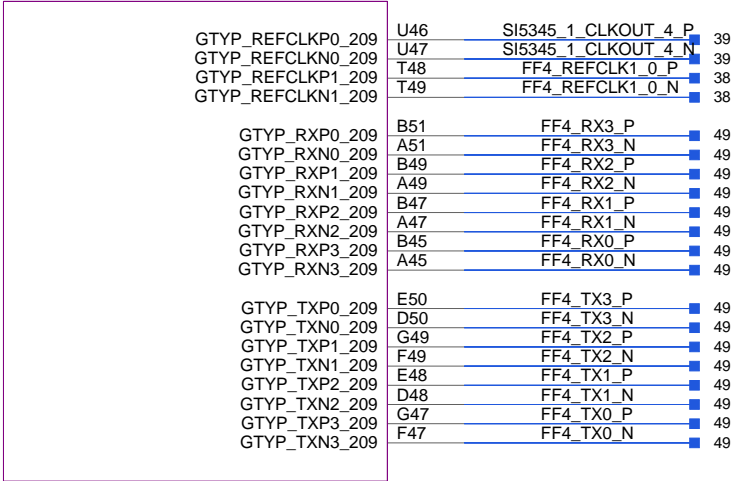
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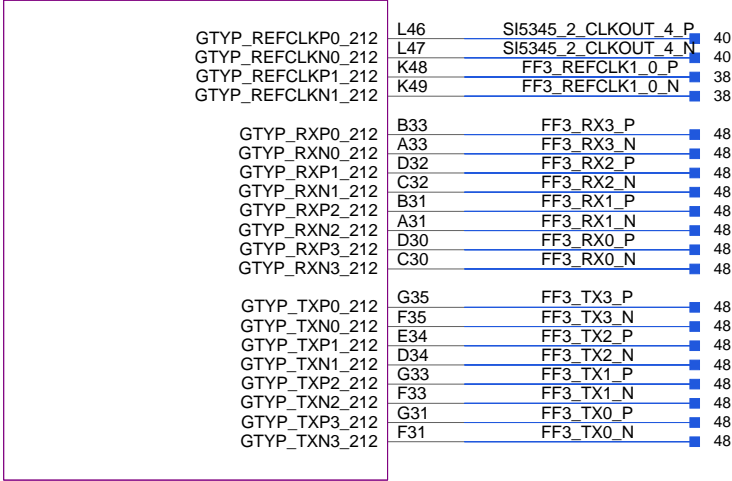
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VP1552_Bank209
FPGA (19 OF 58)



VP1552-VSVA3340-2MP-e-S
U1

VP1552_Bank212
FPGA (22 OF 58)



VP1552-VSVA3340-2MP-e-S
U1



COMPANY

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TITLE

FLX155_V1

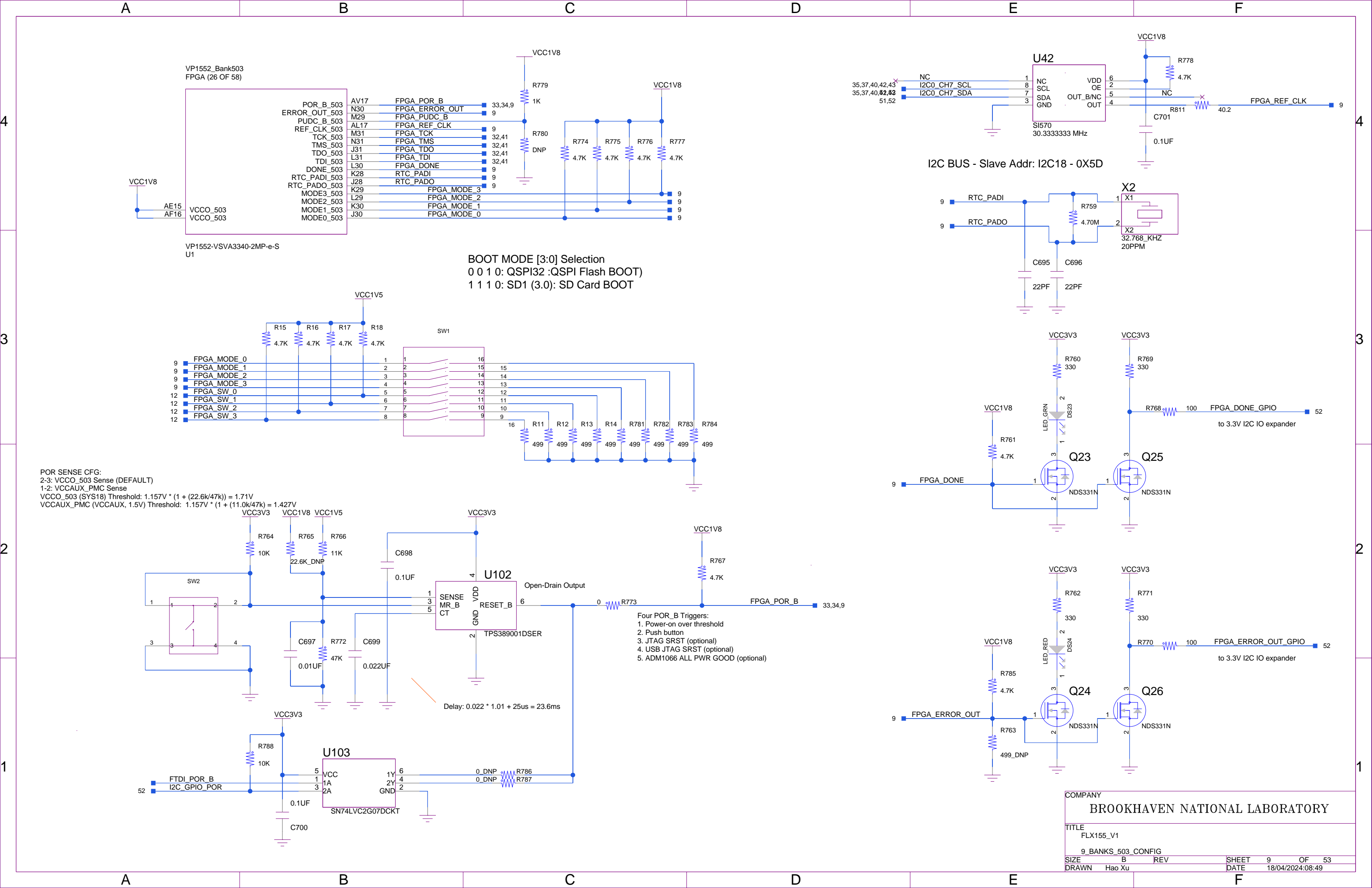
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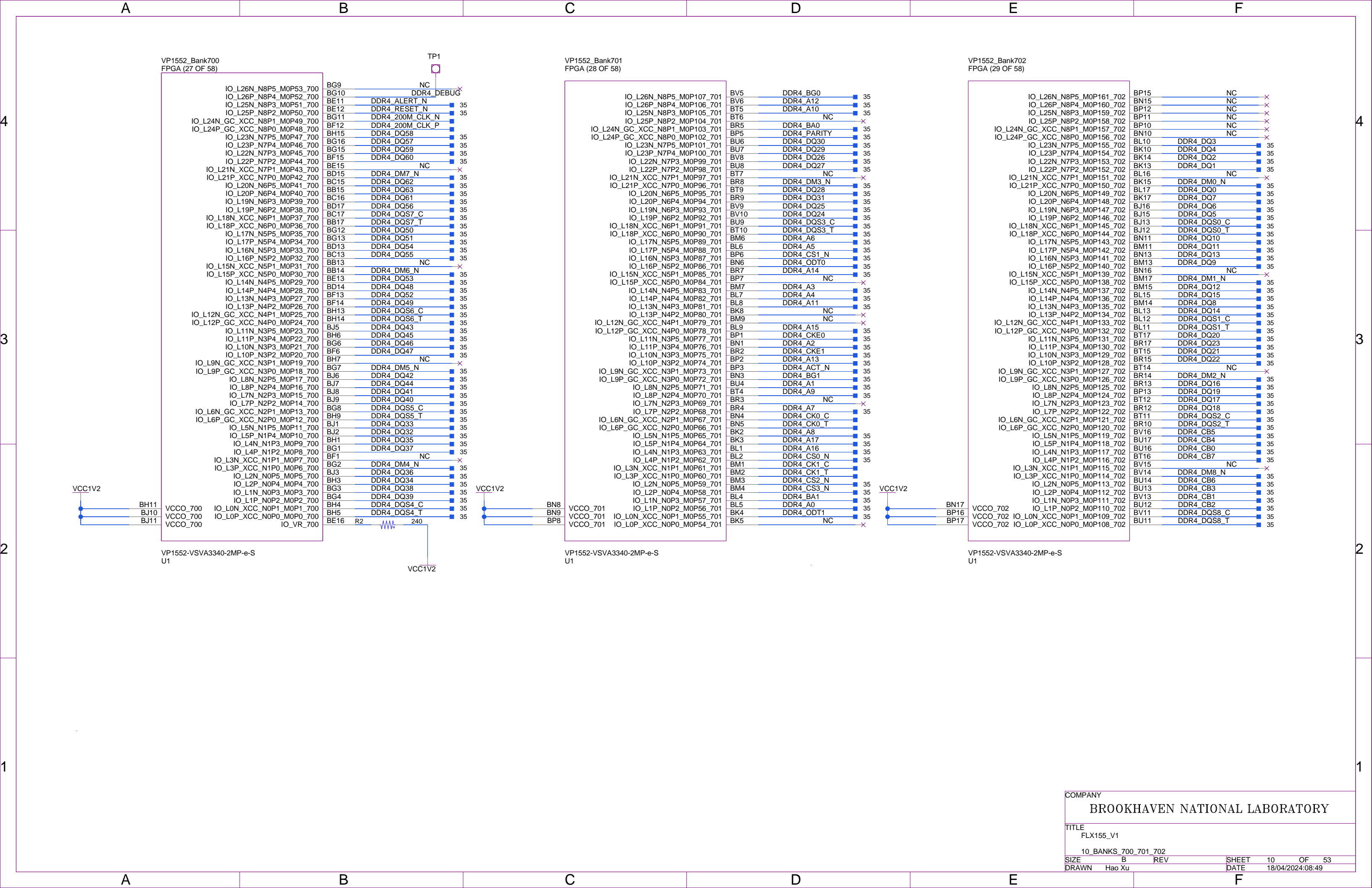
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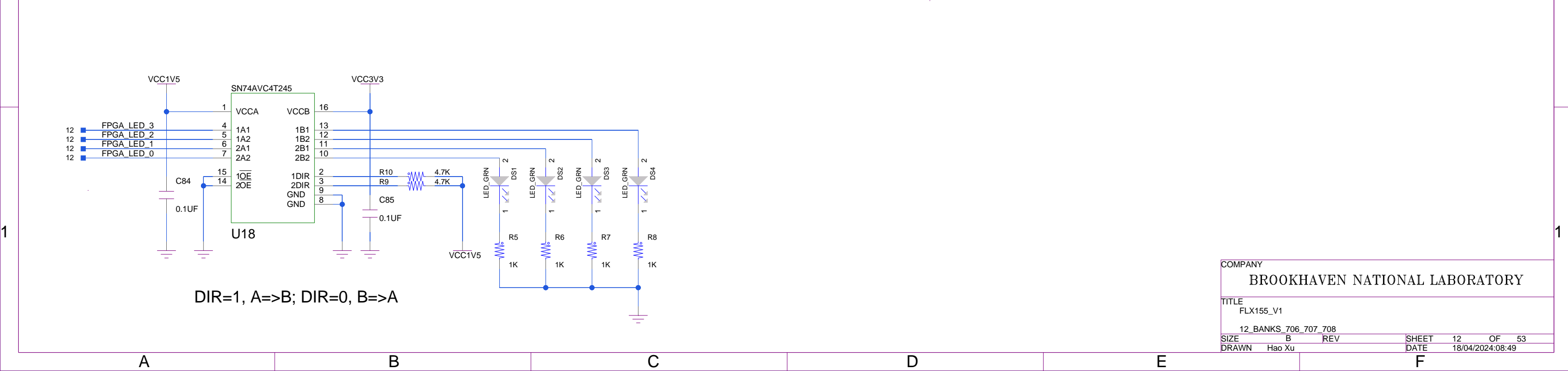
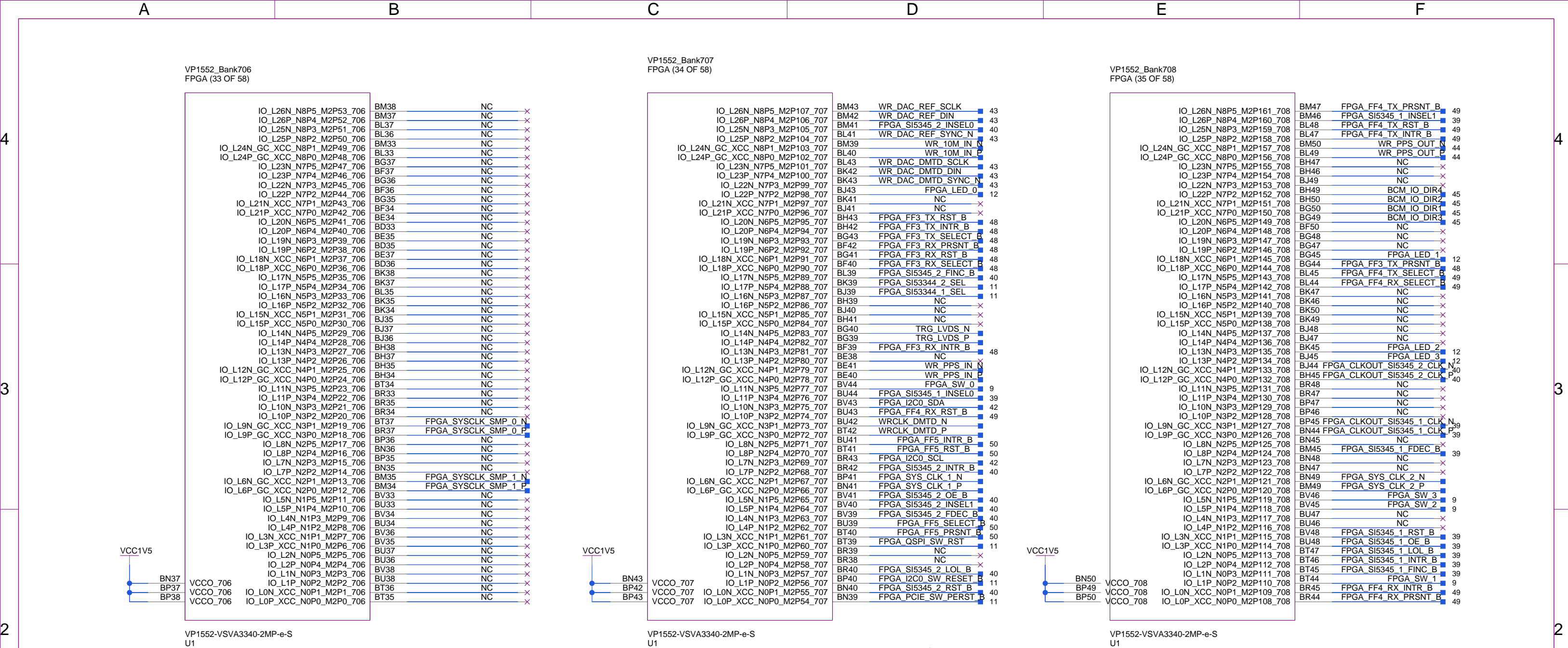
Hao Xu

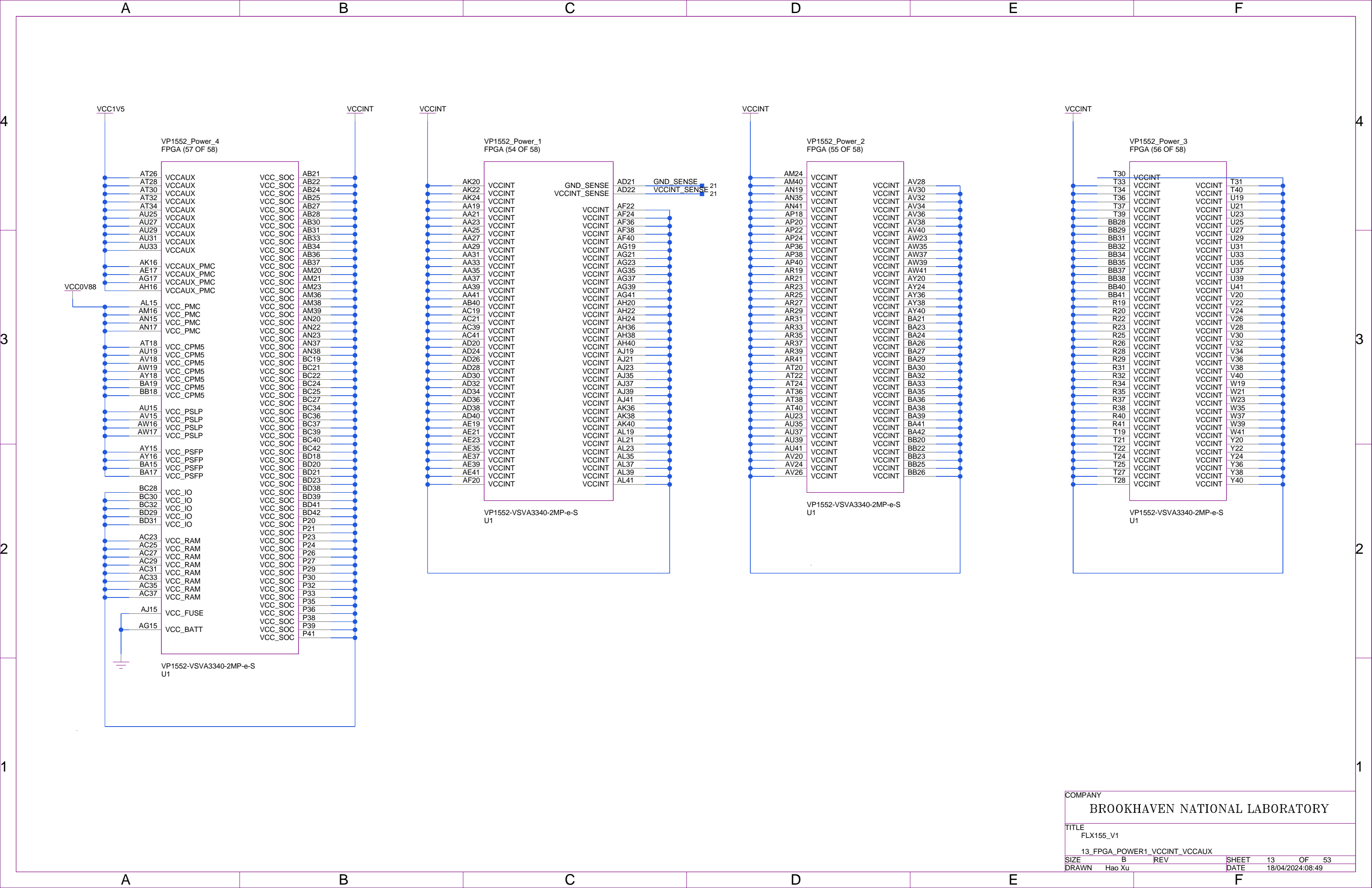
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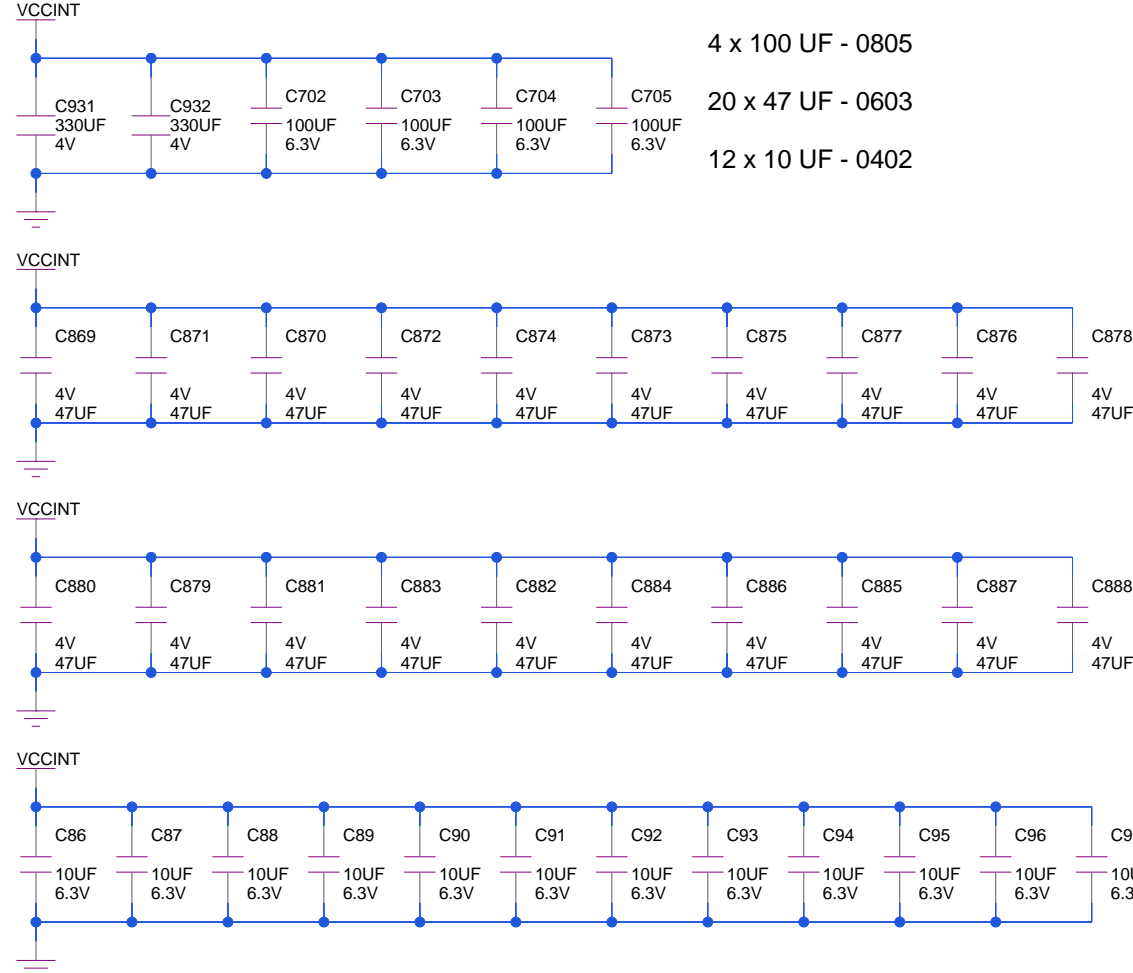




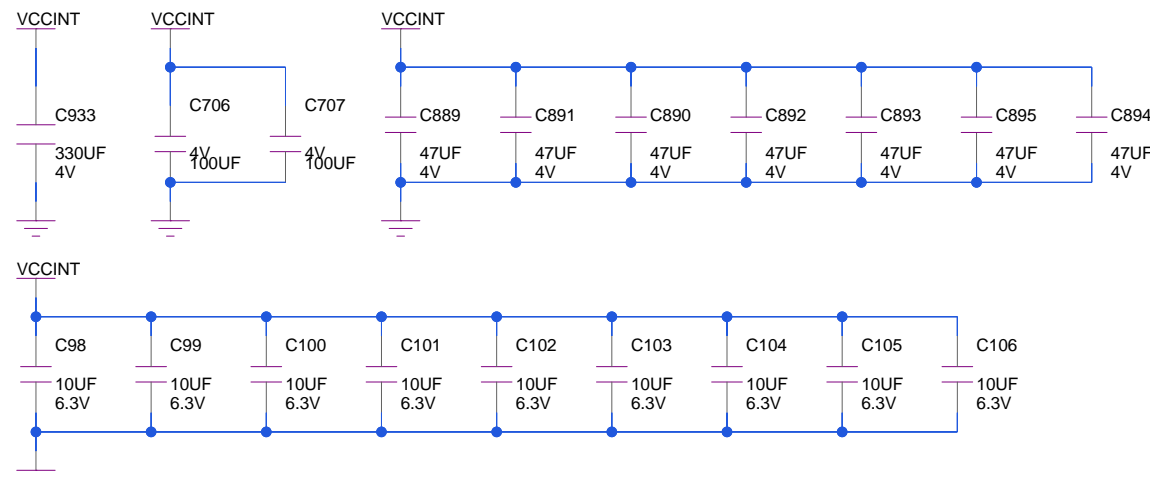




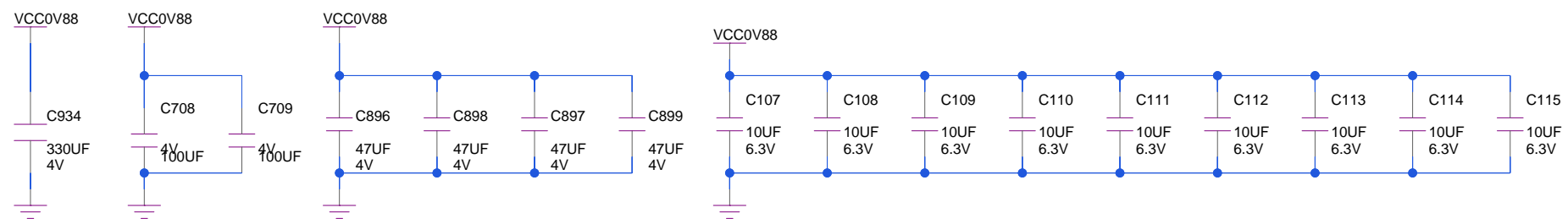
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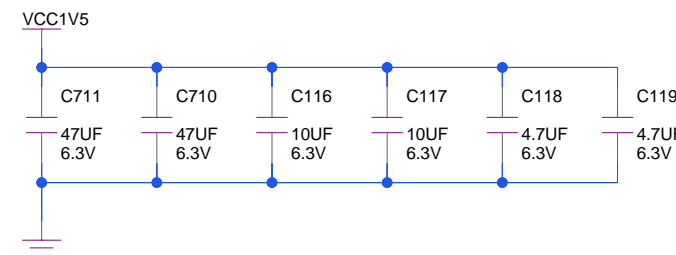
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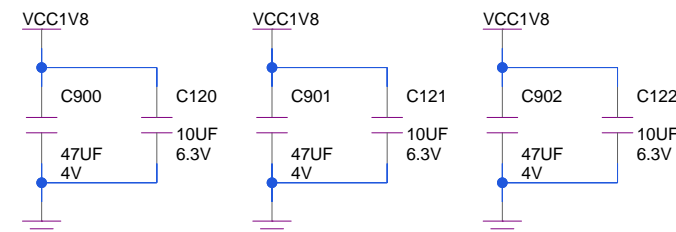
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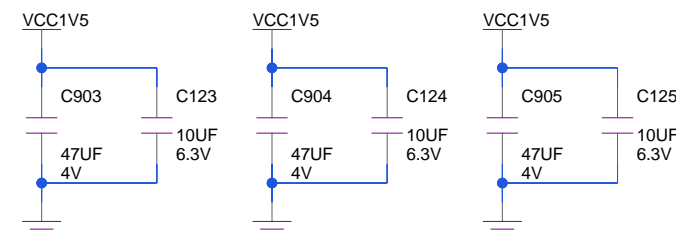
VCC_AUX, VCCAUX_PMC, VCCUAX_SMON



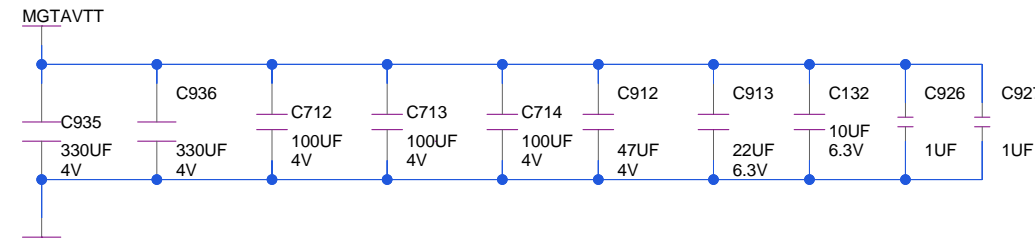
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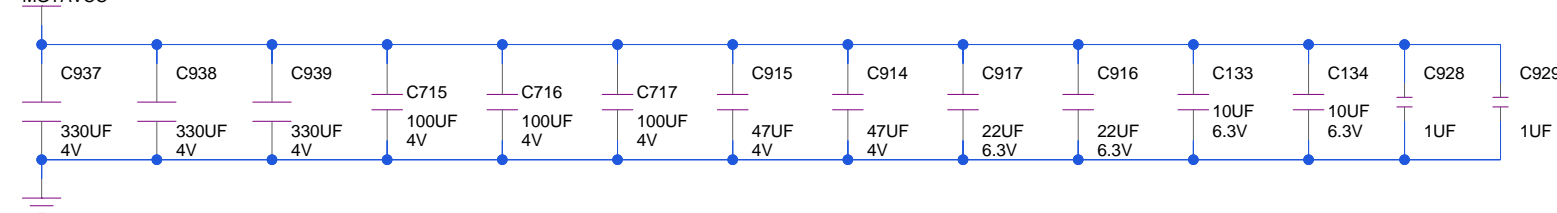
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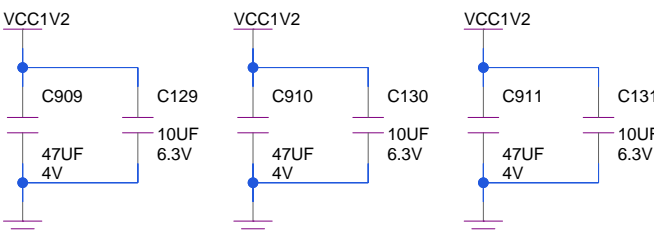
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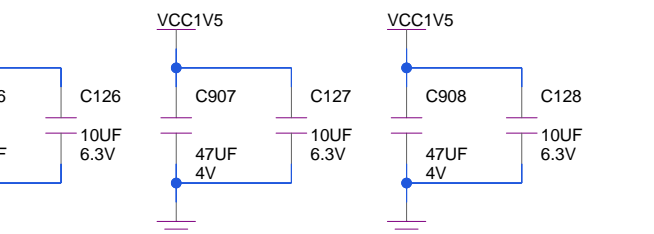
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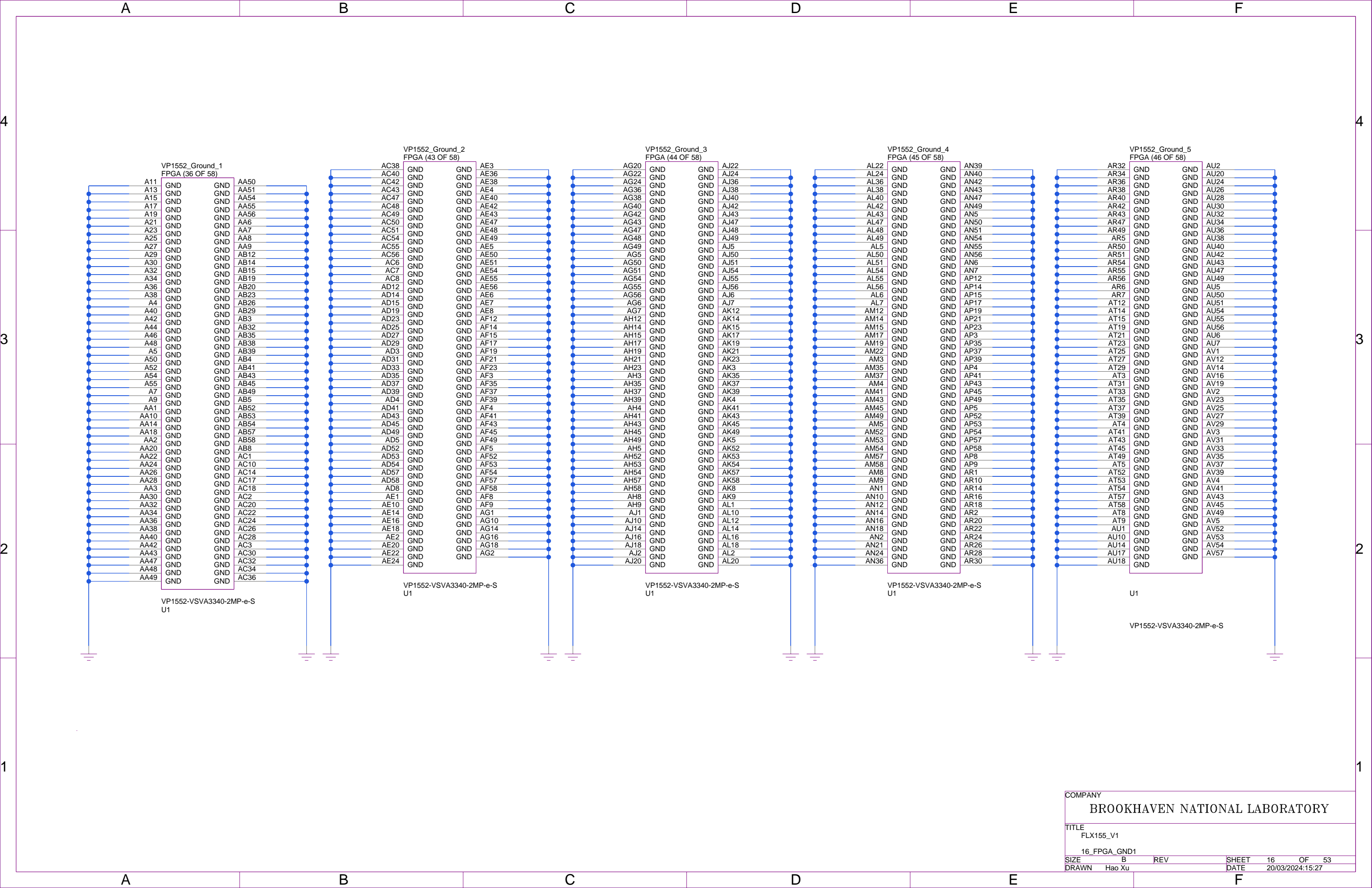


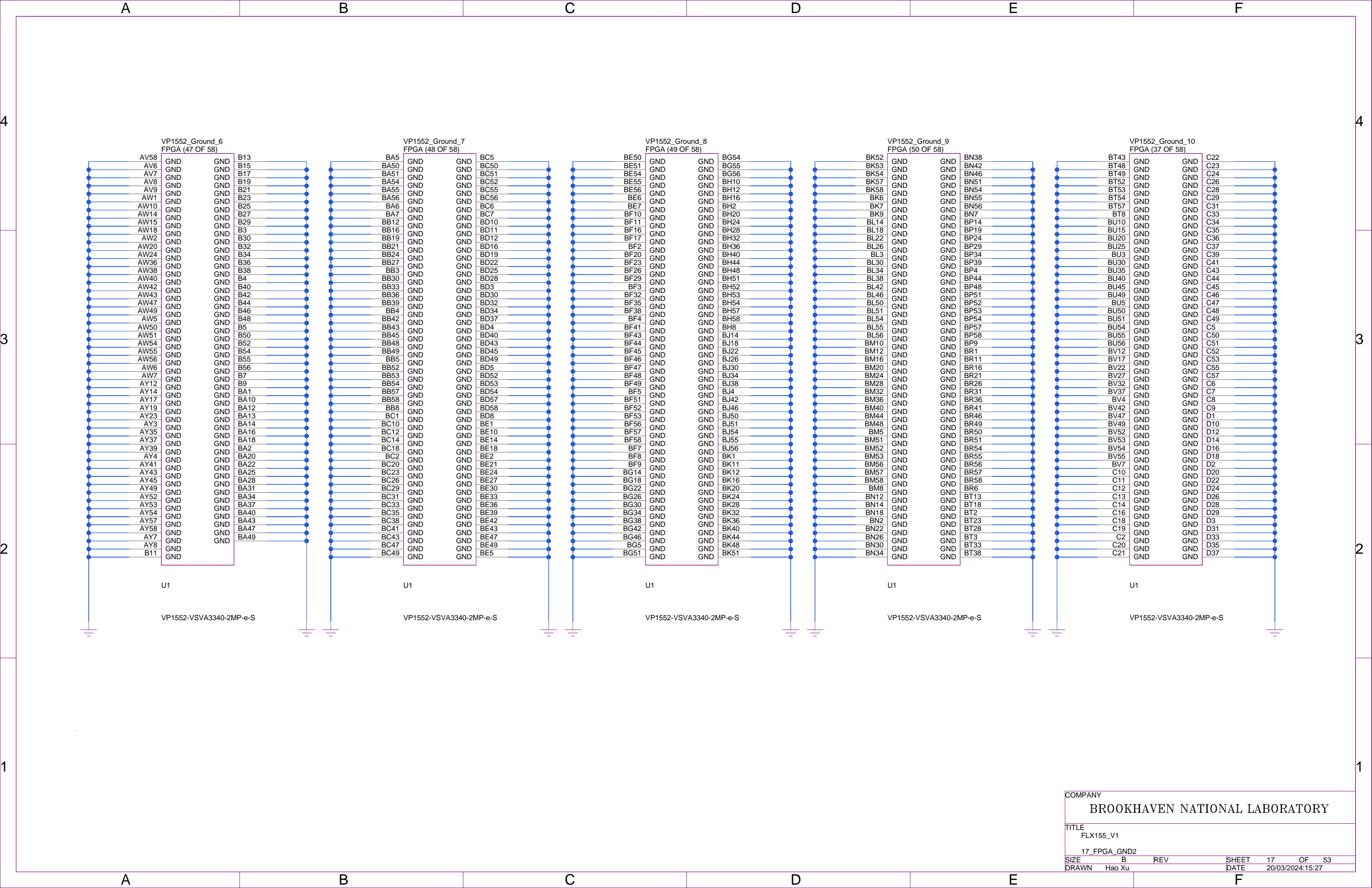
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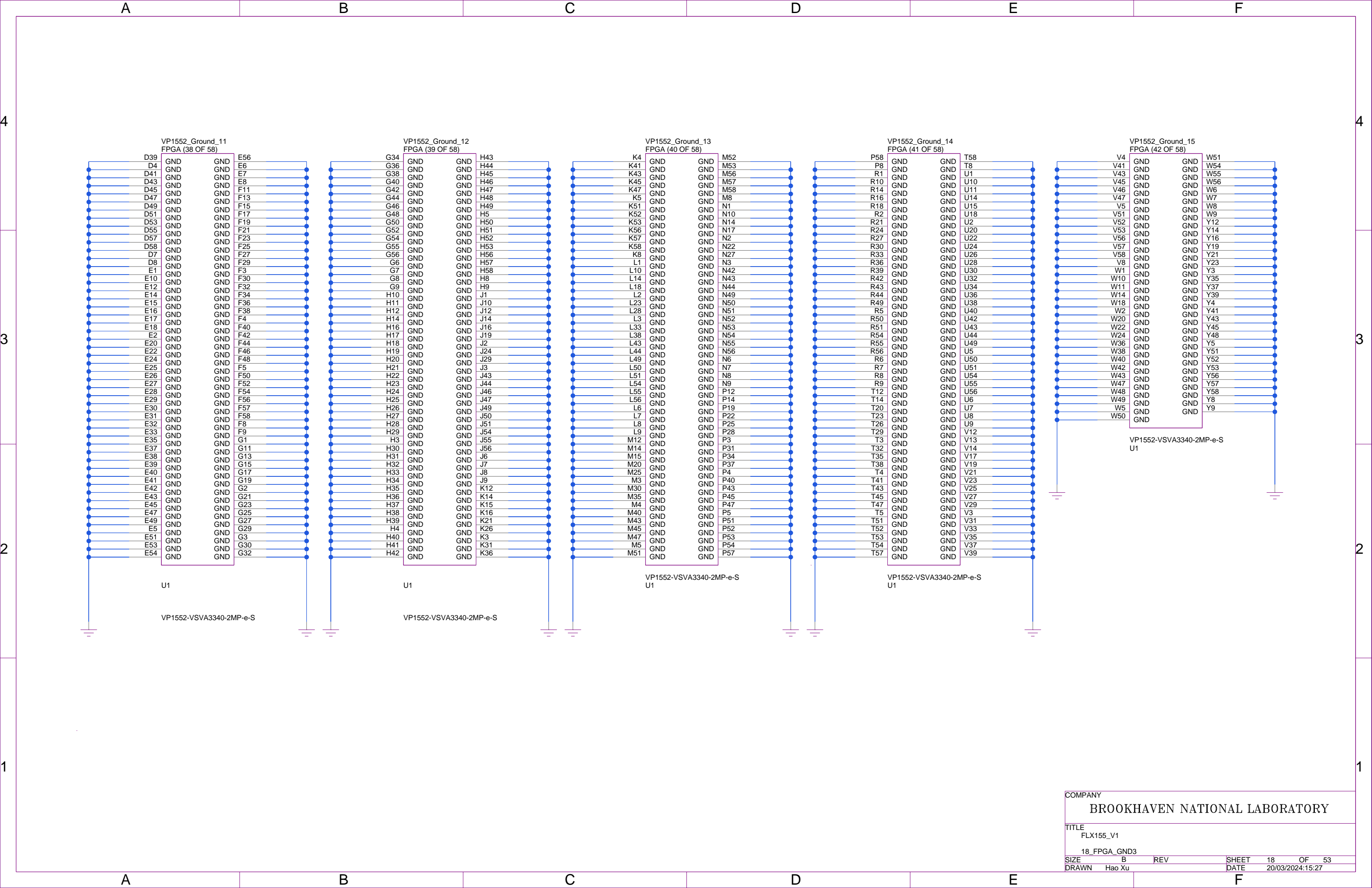


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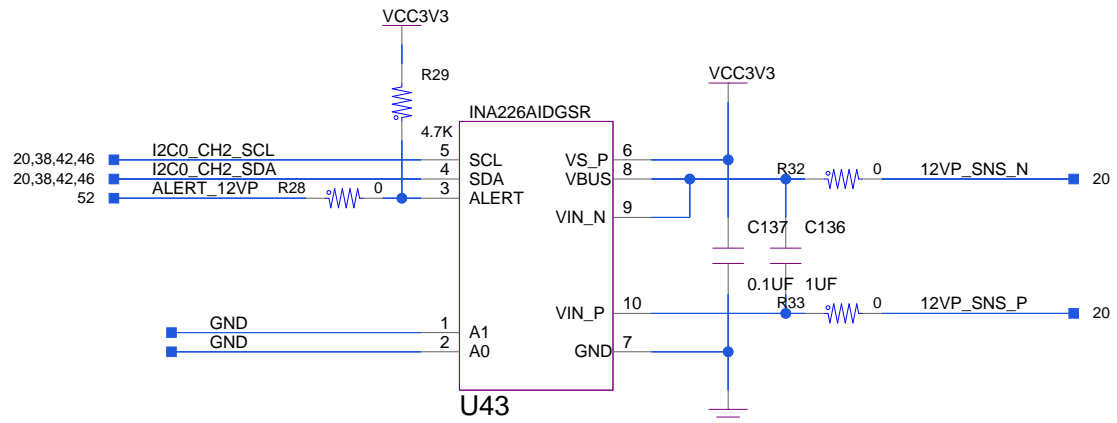
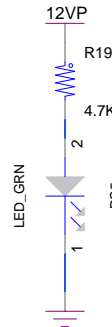
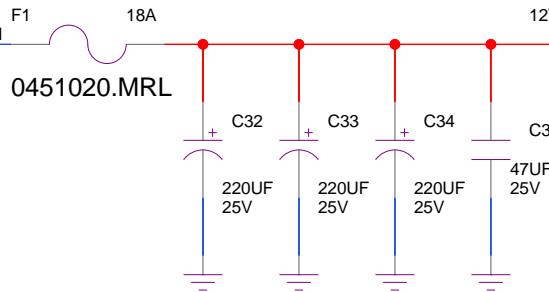
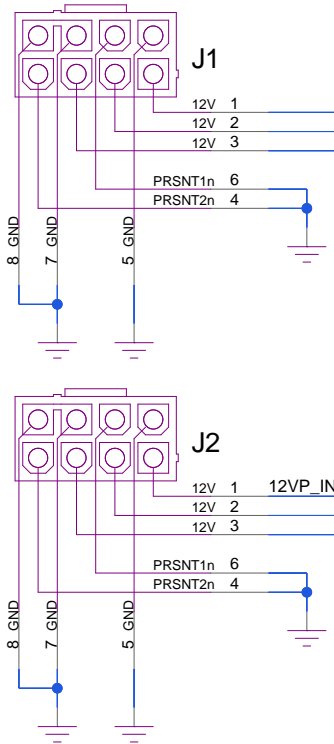
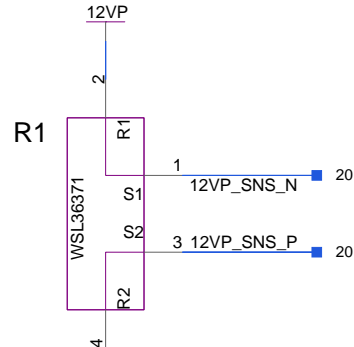
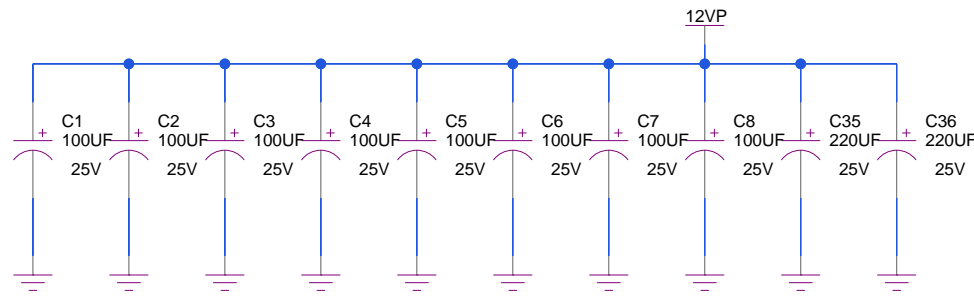




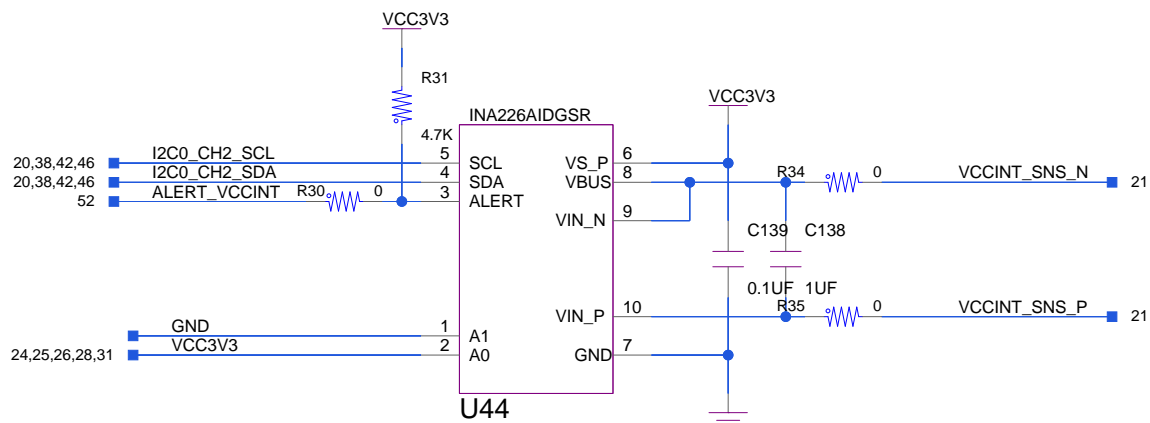




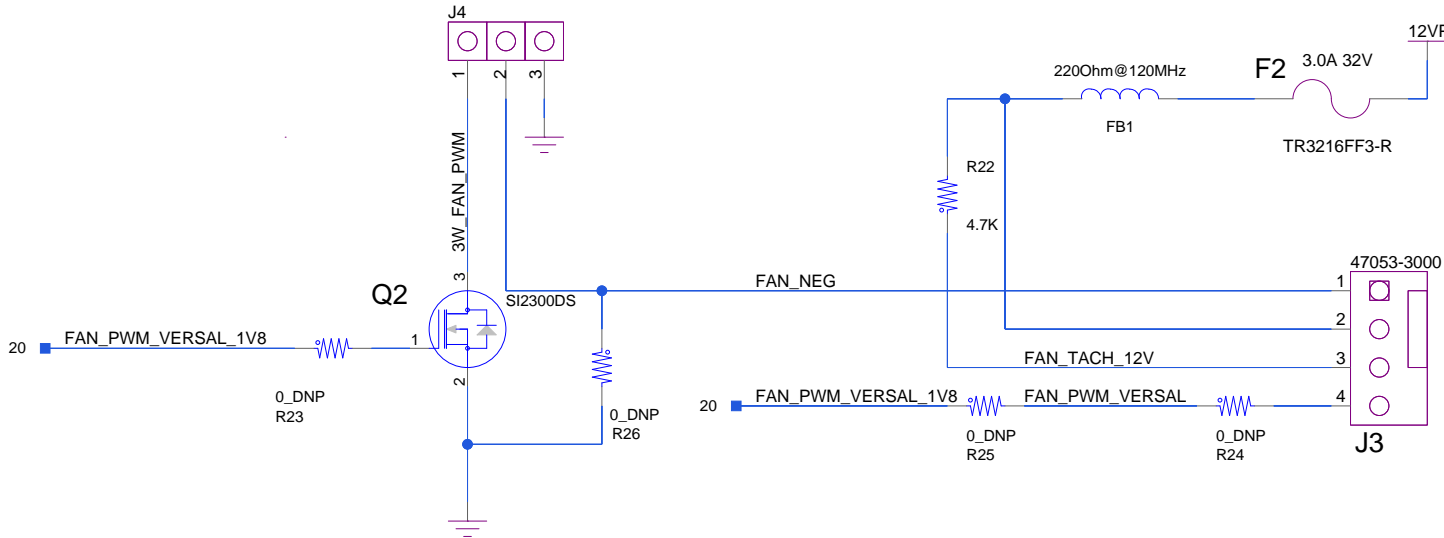
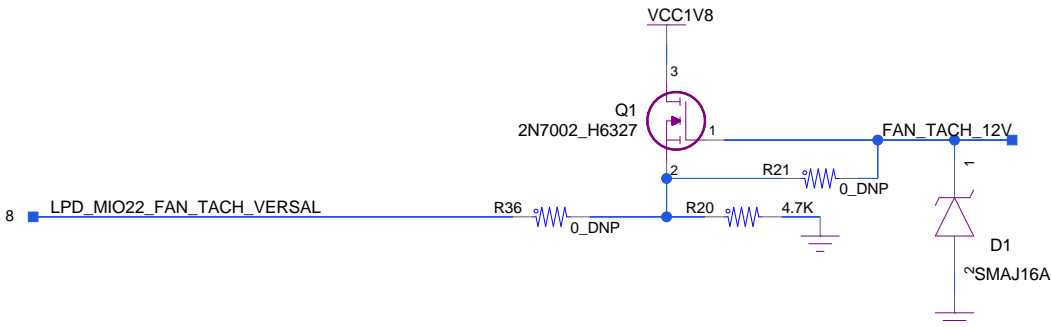
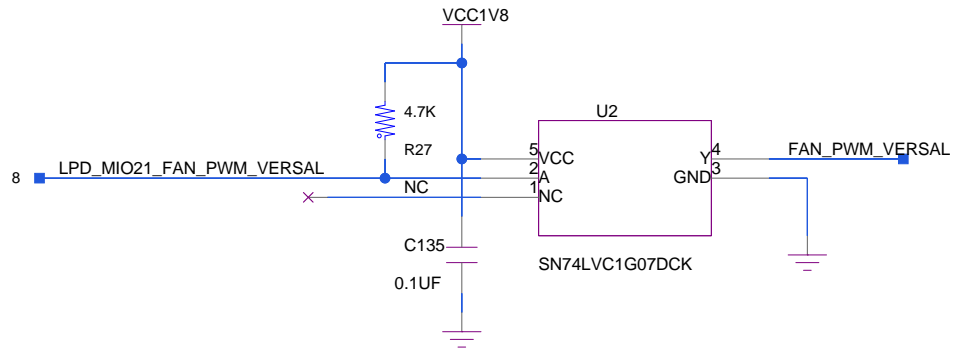
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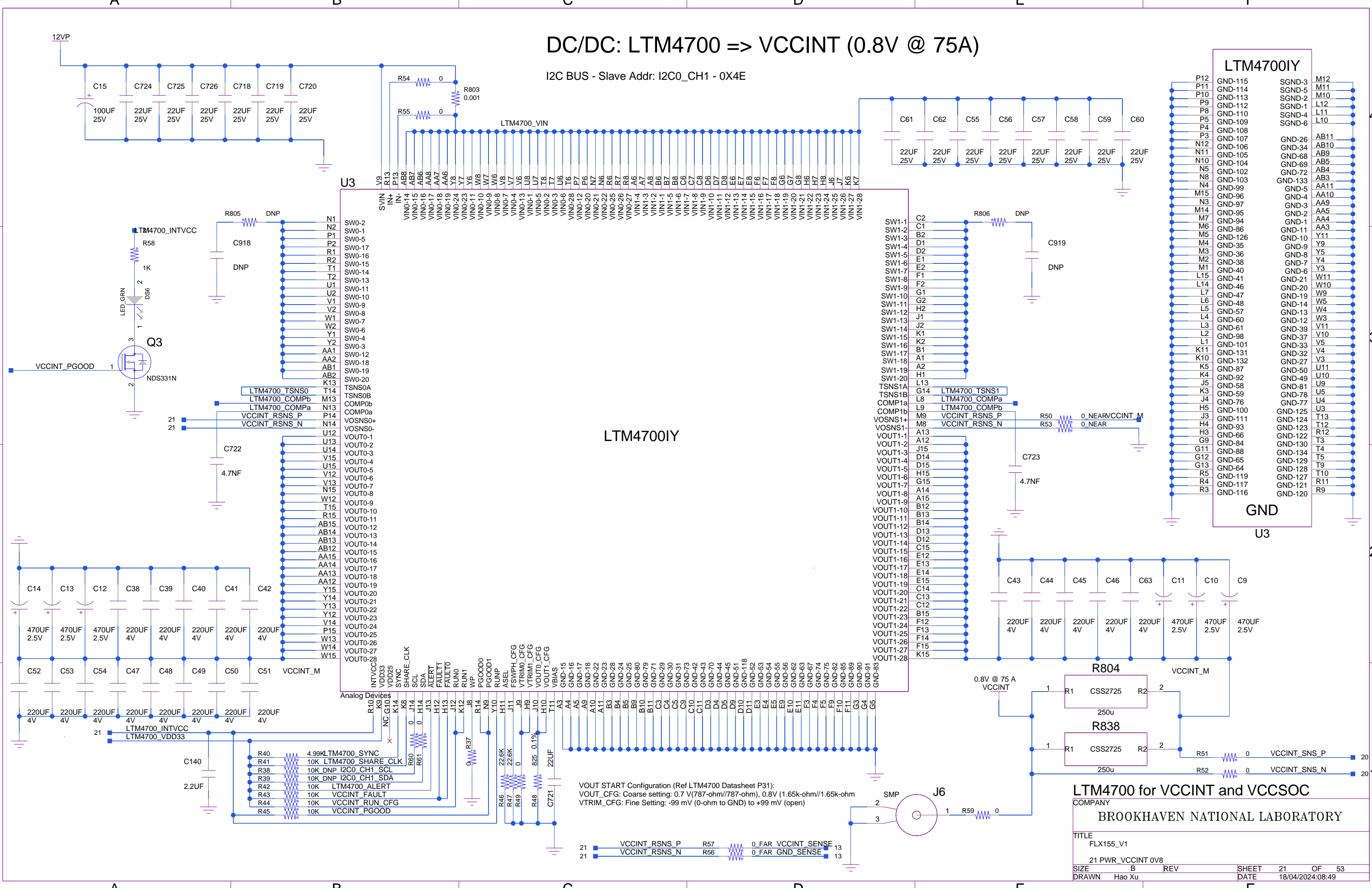


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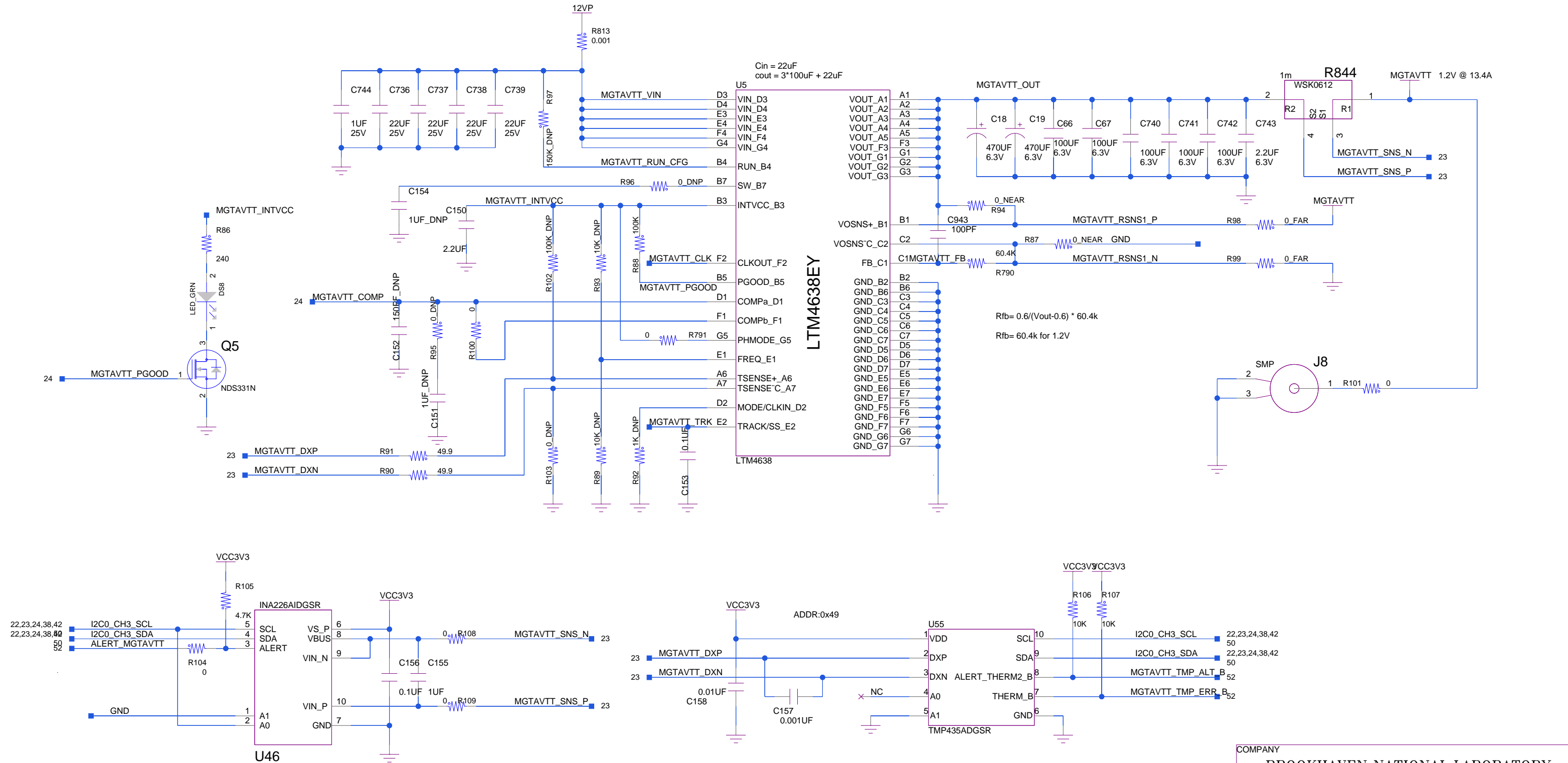
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4



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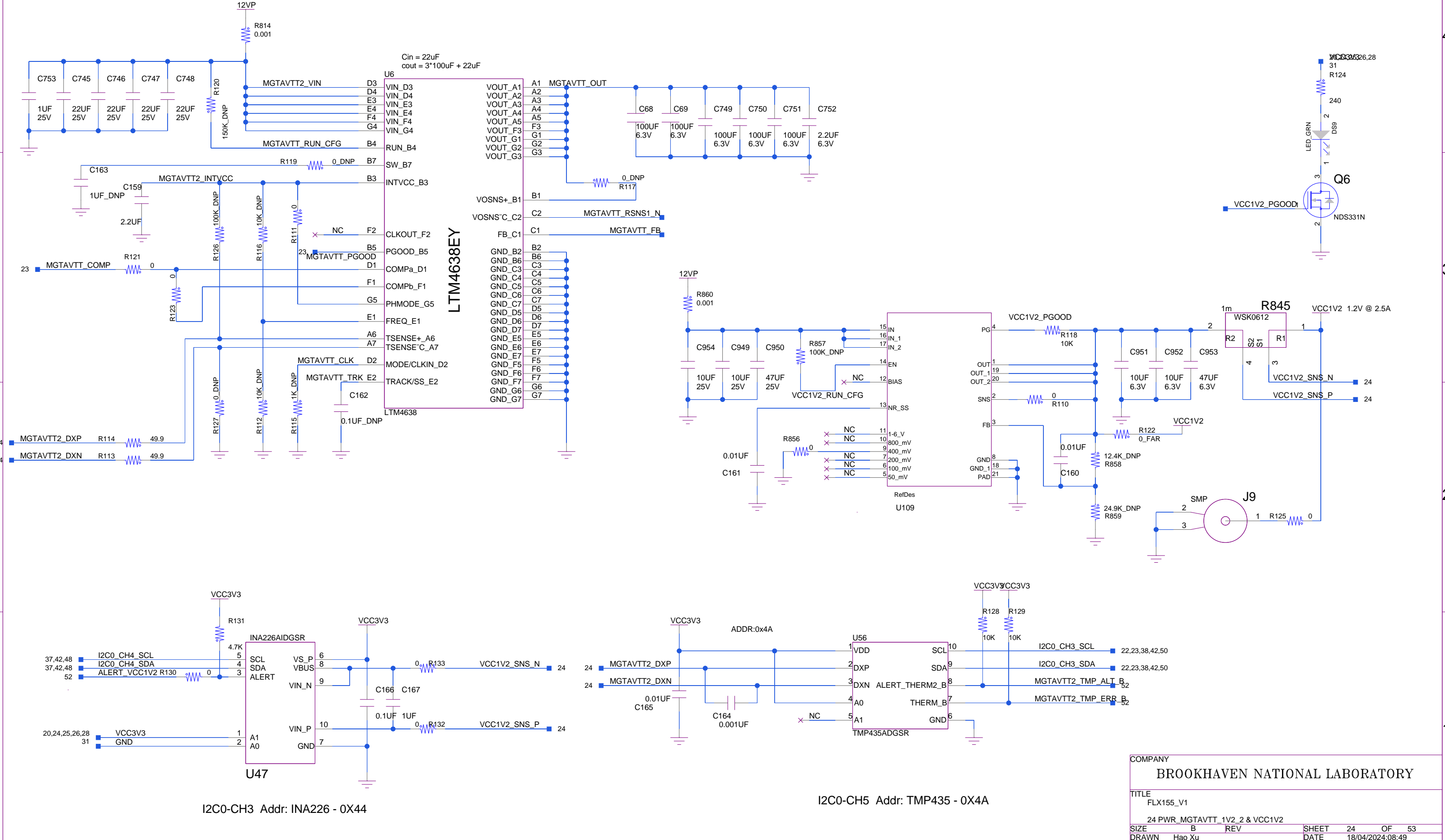


I2C0-CH2 Addr: INA226 - 0X43

I2C0-CH4 Addr: TMP435 - 0X49

DC/DC: LTM4638 => MGTAVTT 2 of 2 (Two for 1.20V @ 13.4A)

LDO: TPS7A85A => VCC1V2 @2.5A



I2C0-CH3 Addr: INA226 - 0X44

I2C0-CH5 Addr: TMP435 - 0X4A

COMPANY				
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TITLE				
FLX155_V1				
24 PWR_MGTAVTT_1V2_2 & VCC1V2				
SIZE	B	REV	SHEET	24 OF 53
DRAWN	Hao Xu	DATE	18/04/2024:08:49	

4

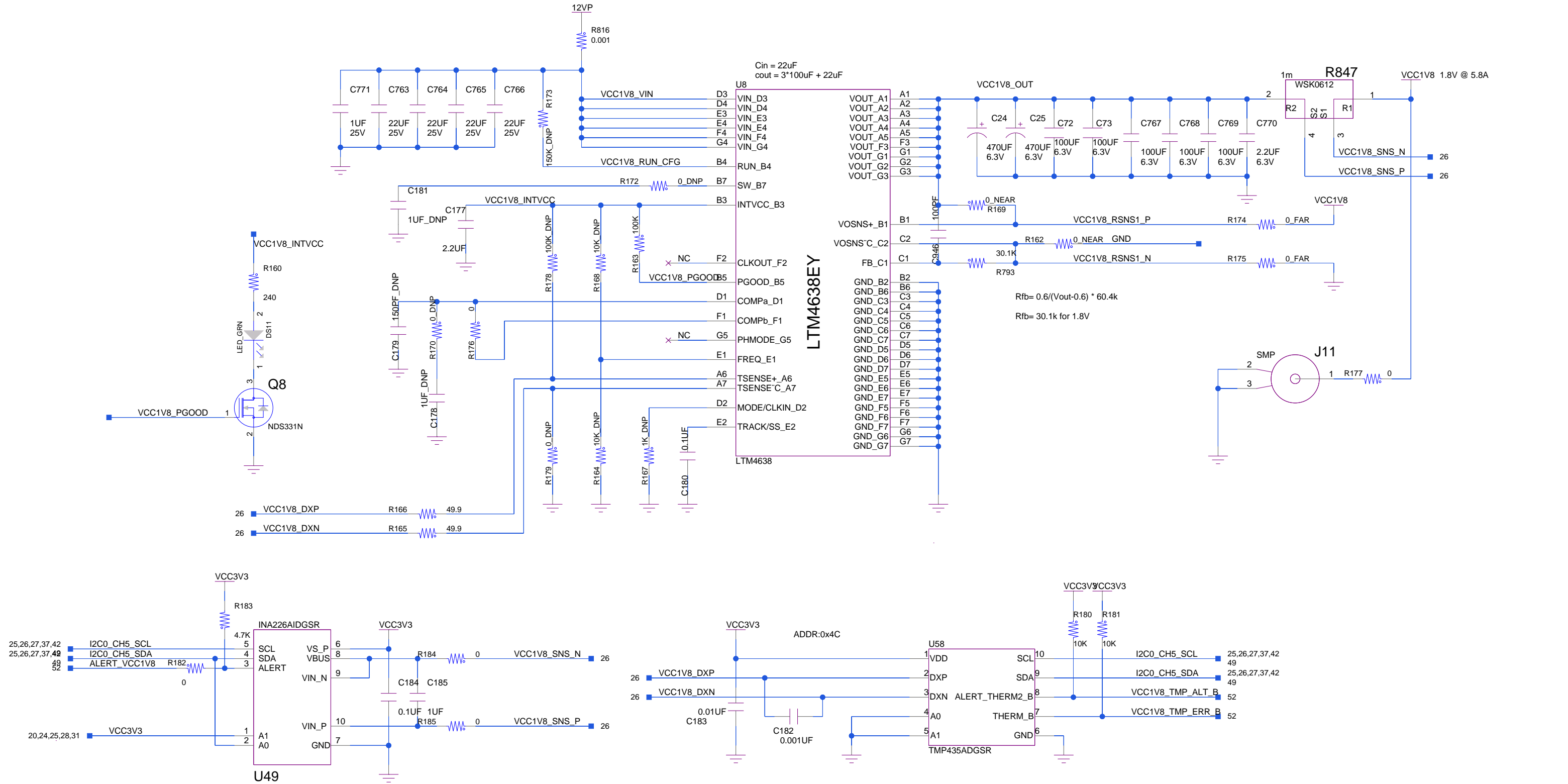


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2

1

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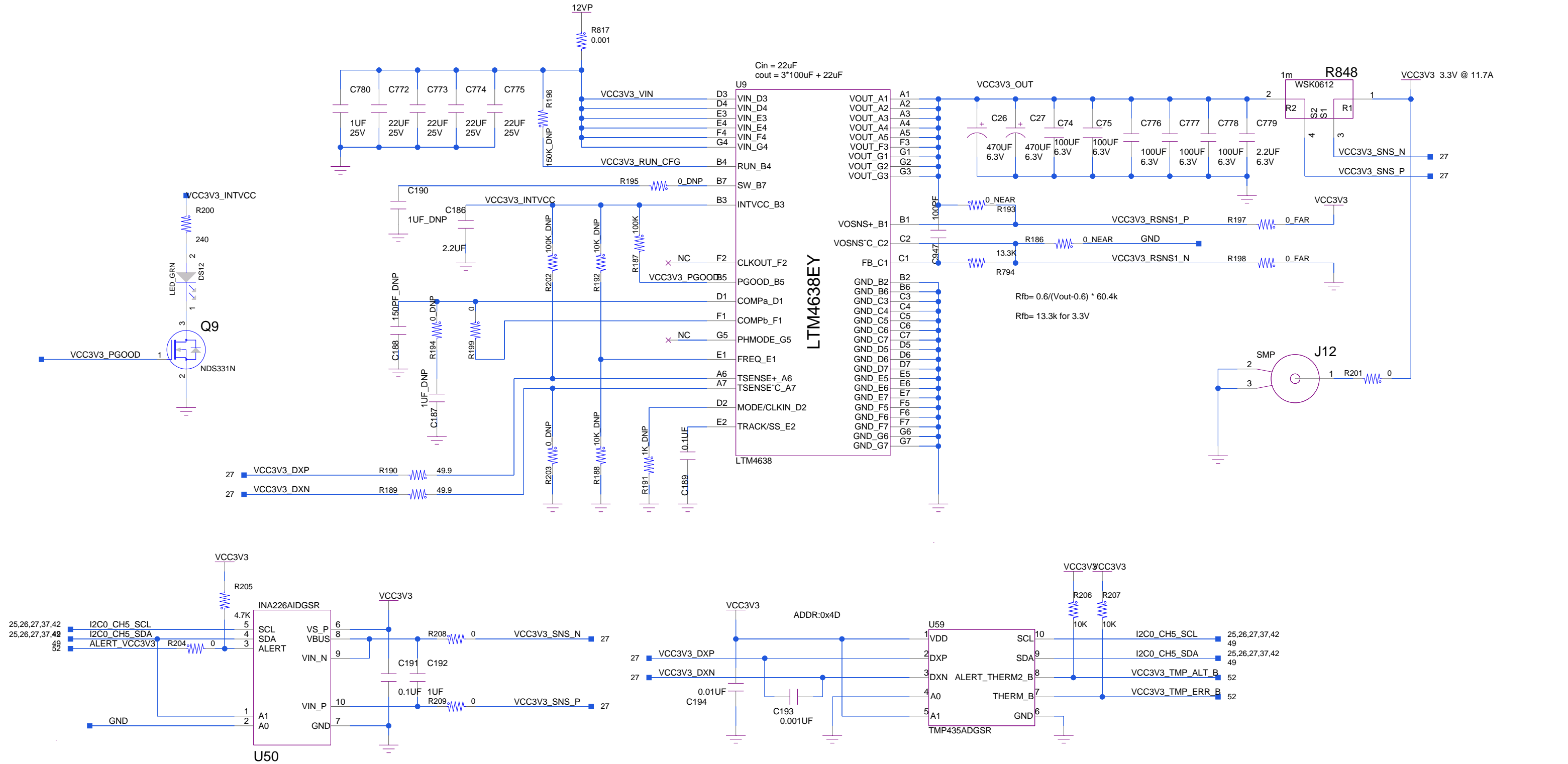


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I2C0-CH6 Addr: TMP435 - 0X4C

COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
FLX155_V1				
26_PWR_VCC1V8				
SIZE	B	REV	SHEET	26 OF 53
DRAWN	Hao Xu	DATE	18/04/2024:08:49	

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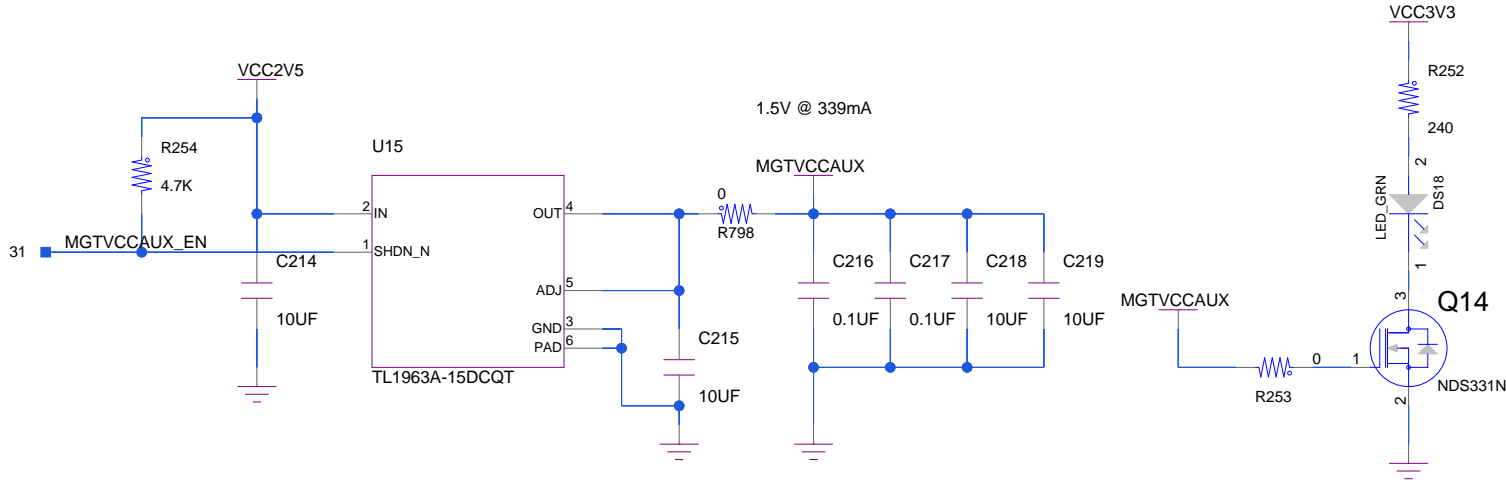
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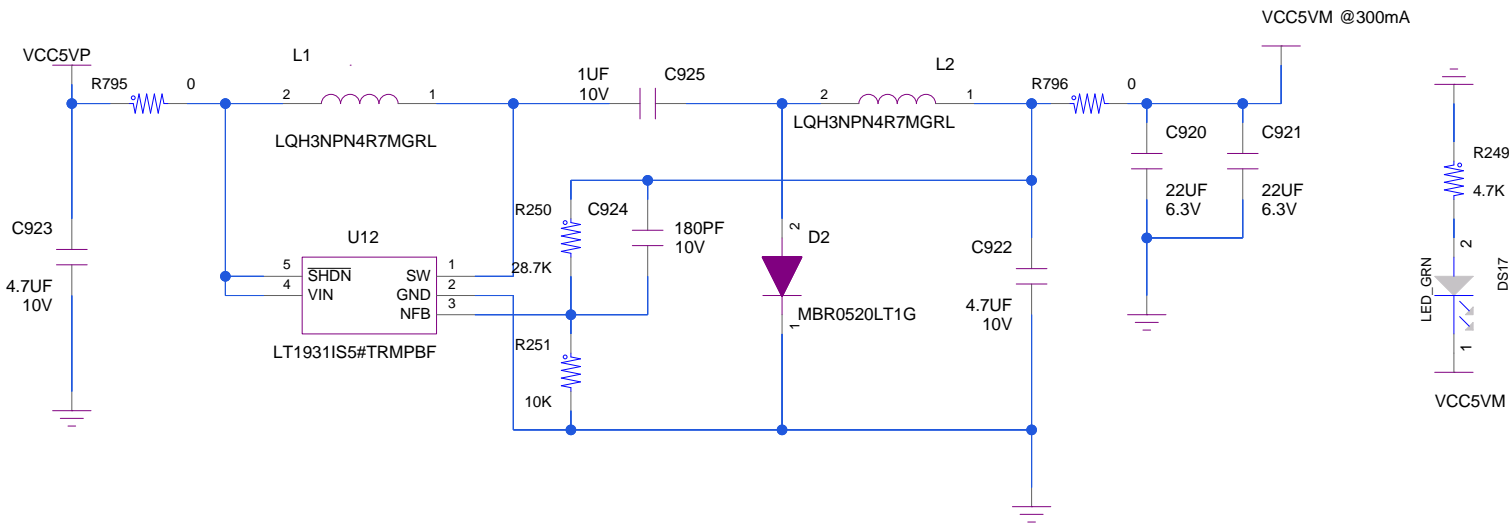
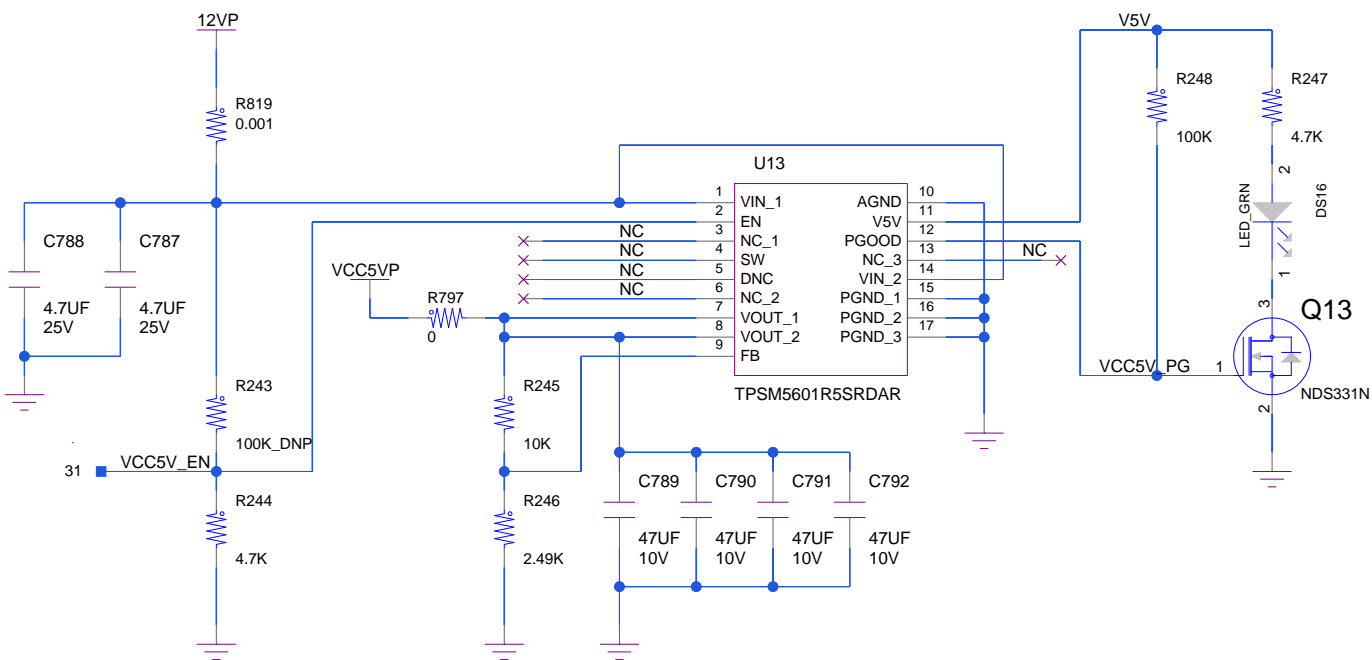
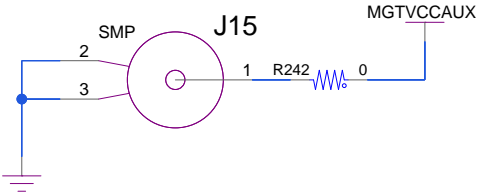
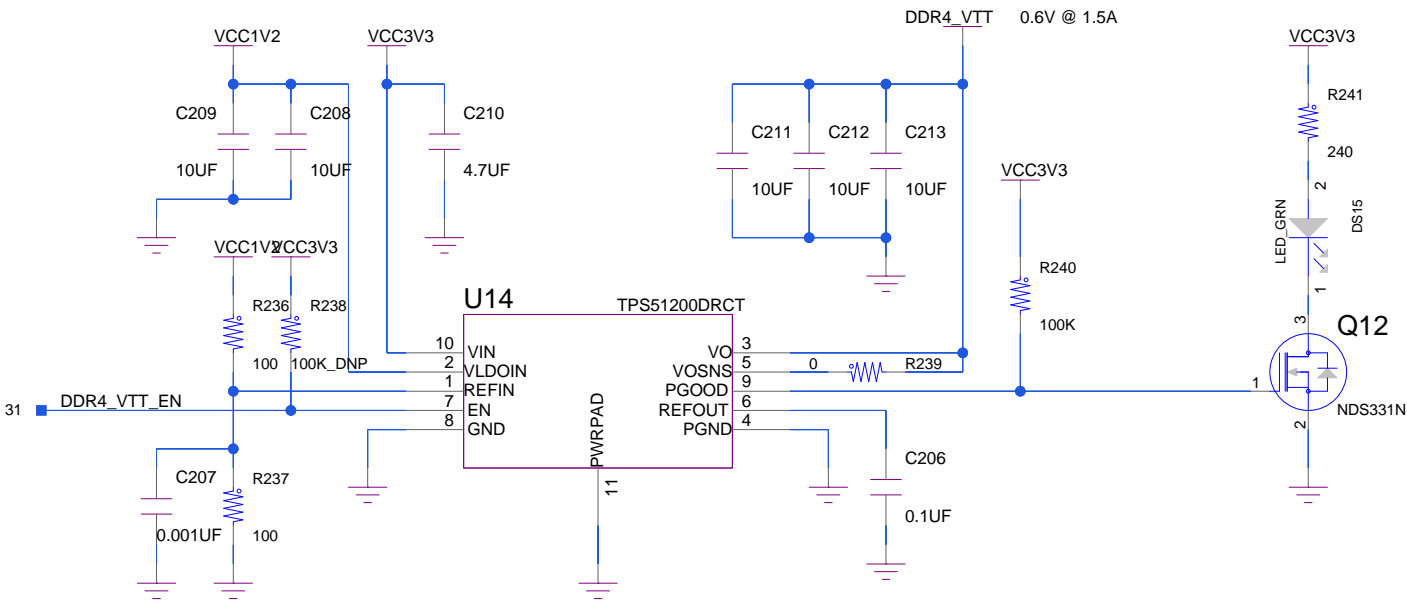
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BROOKHAVEN NATIONAL LABORATORY			
TITLE			
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DRAWN	Hao Xu	SHEET	27 OF 53
		DATE	18/04/2024:08:49

4

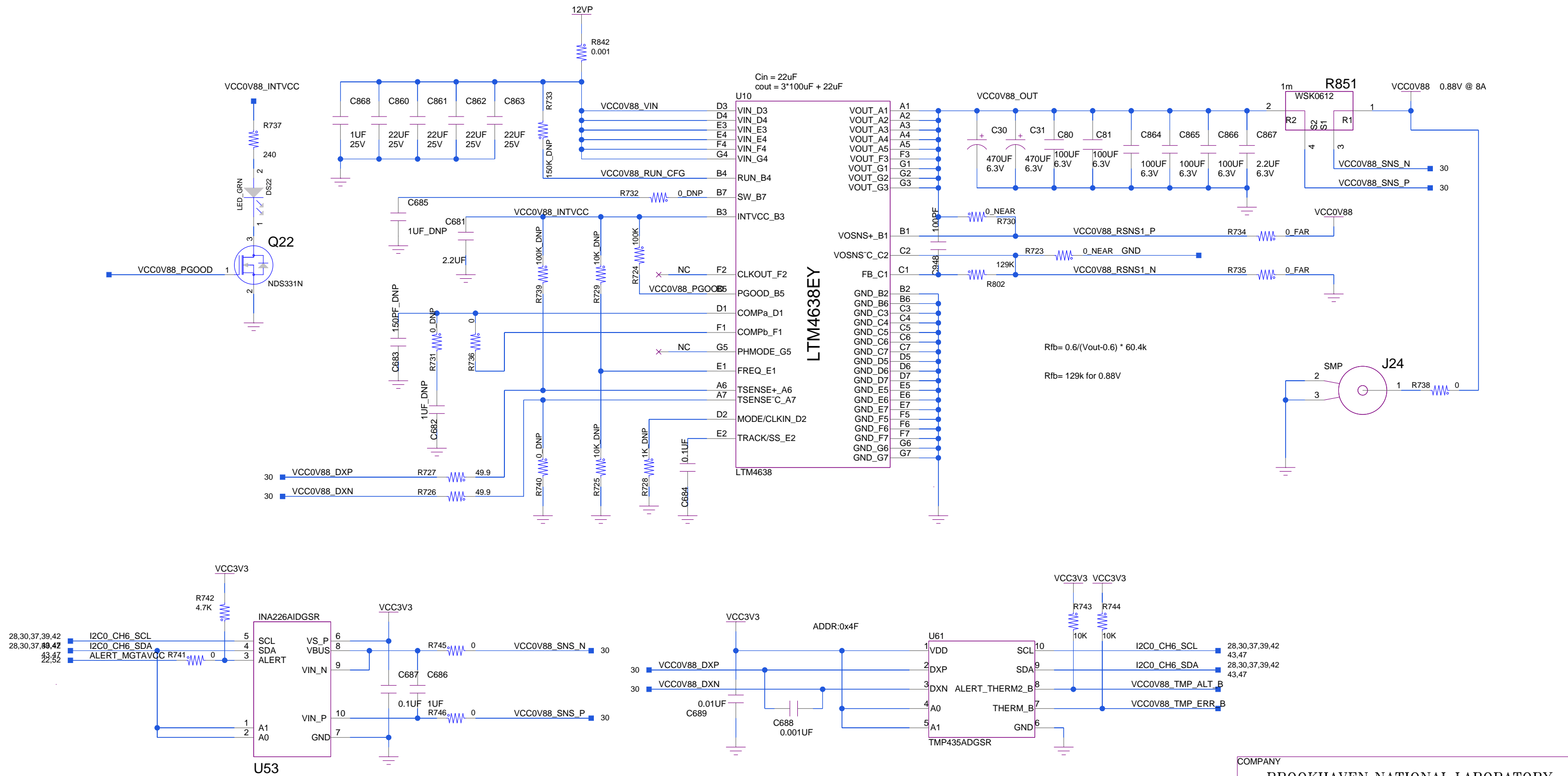




MGTVCCAUX (1.50V @ 0.4A)
DDR4_VTT (0.60V @ 1.5A)
VCC5VP (5.0V @ 0.5A)
VCC5VM (-5.0V @ 0.1A)



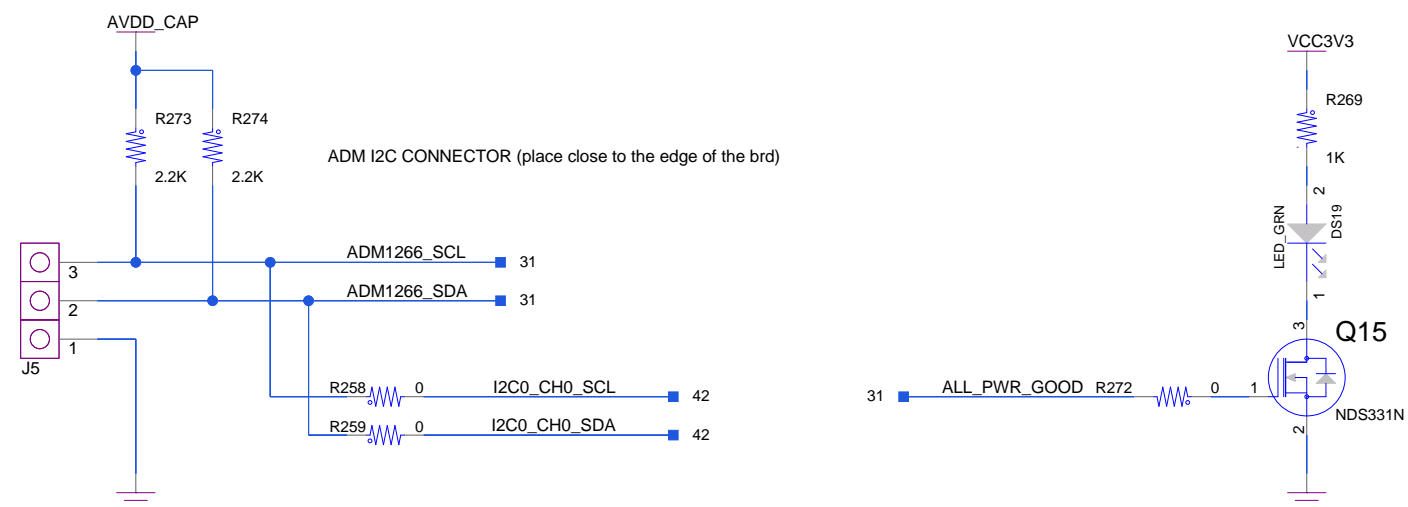
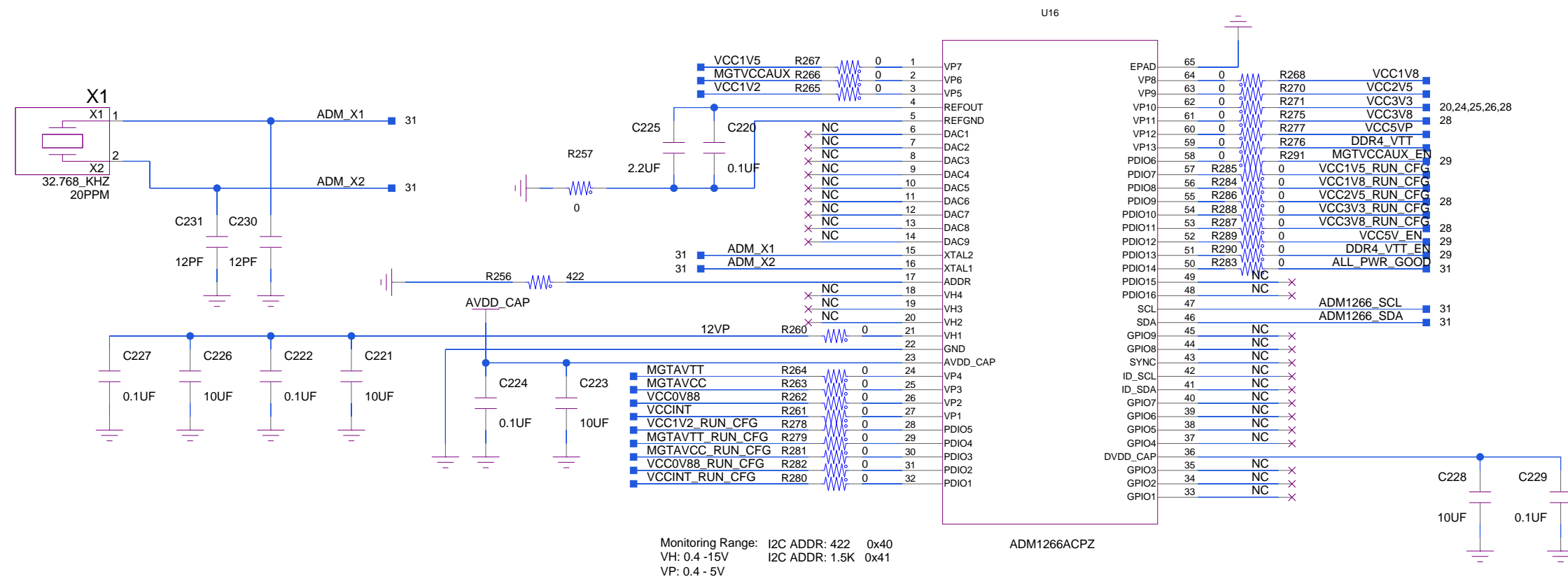
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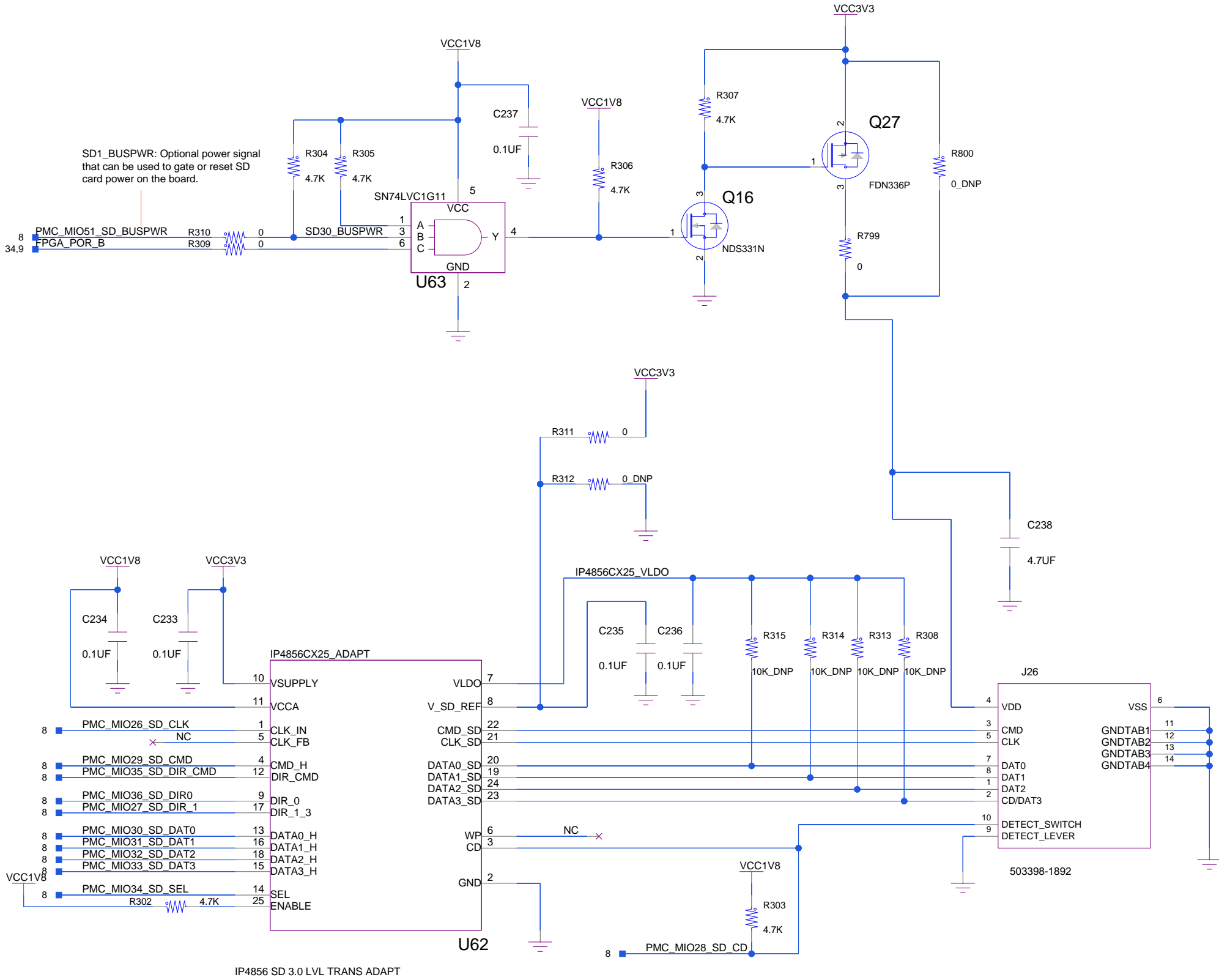
I2C0-CH6 Addr: TMP435 - 0X4F

COMPANY			
BROOKHAVEN NATIONAL LABORATORY			
TITLE			
FLX155_V1			
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DRAWN	Hao Xu	SHEET	30 OF 53
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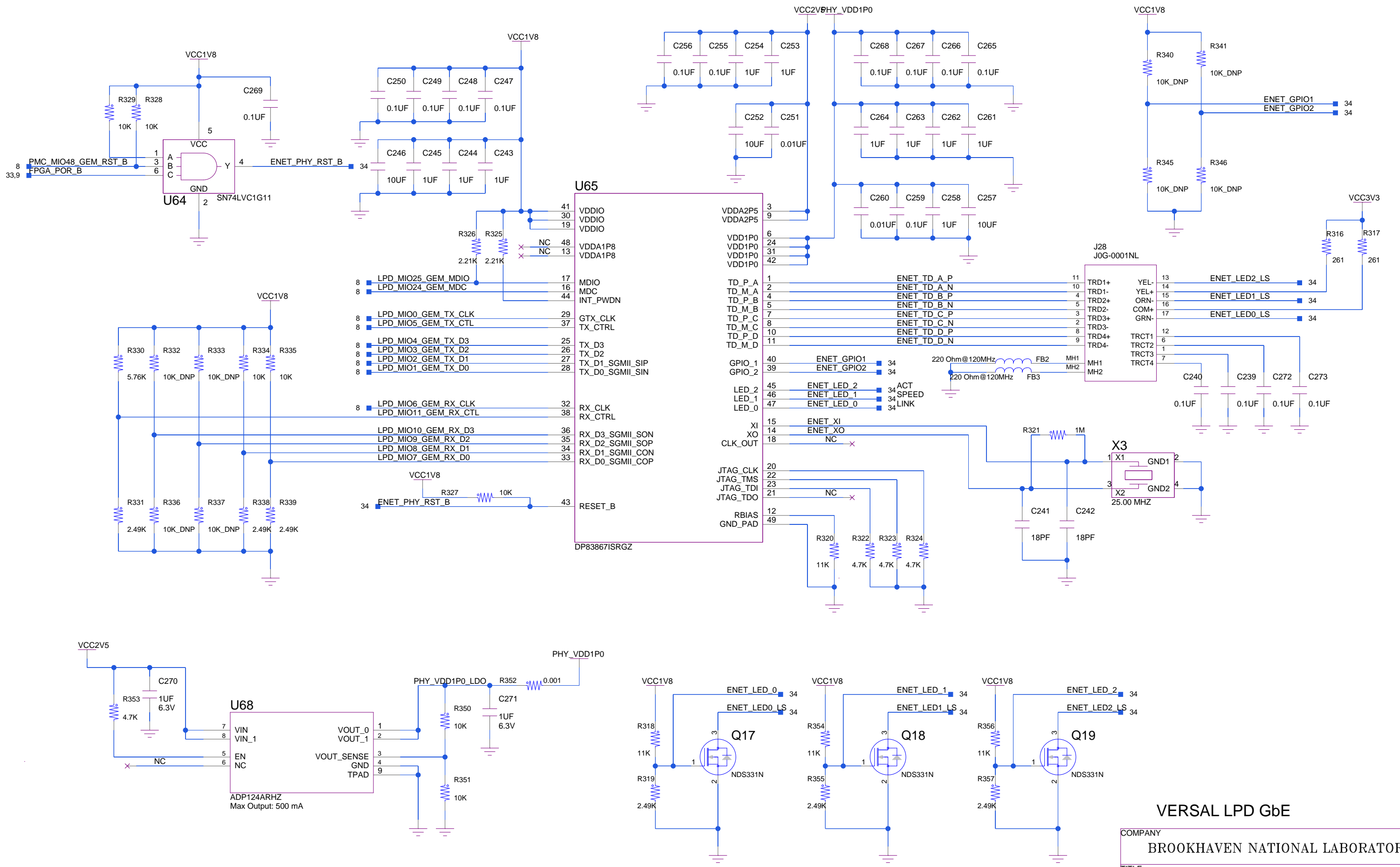


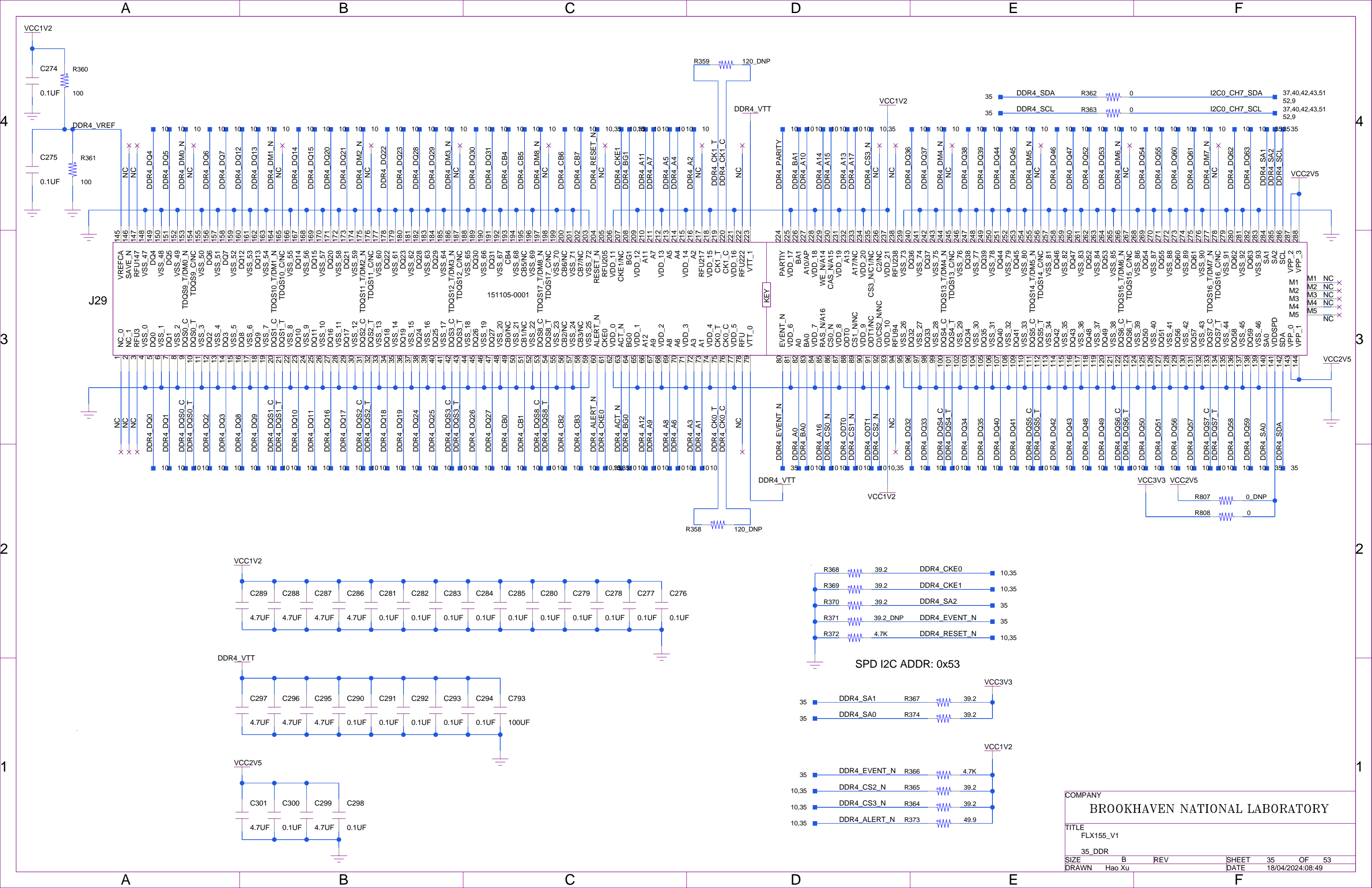
ADM1266 for Power Sequence and Monitoring

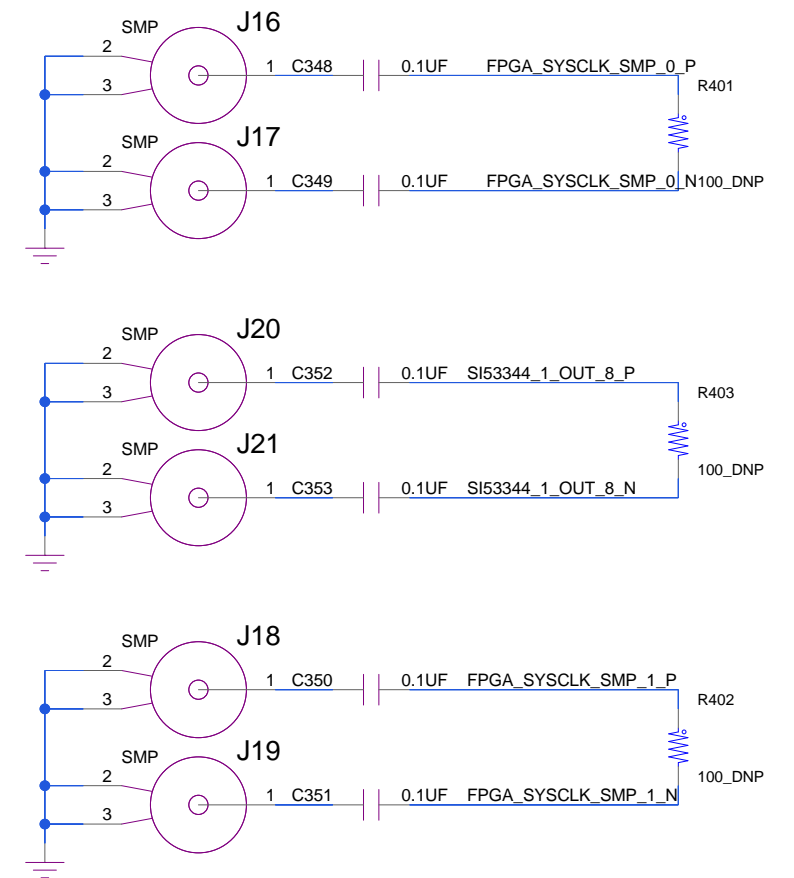
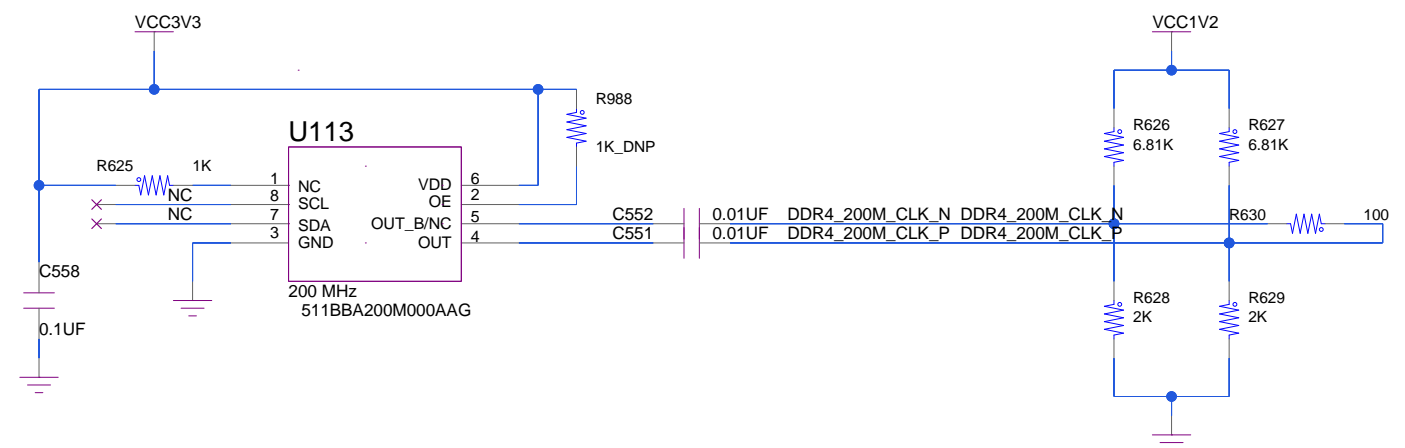
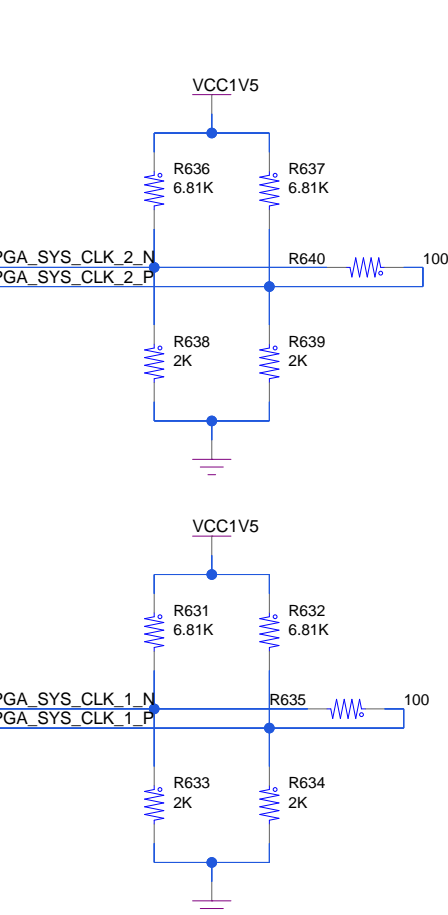
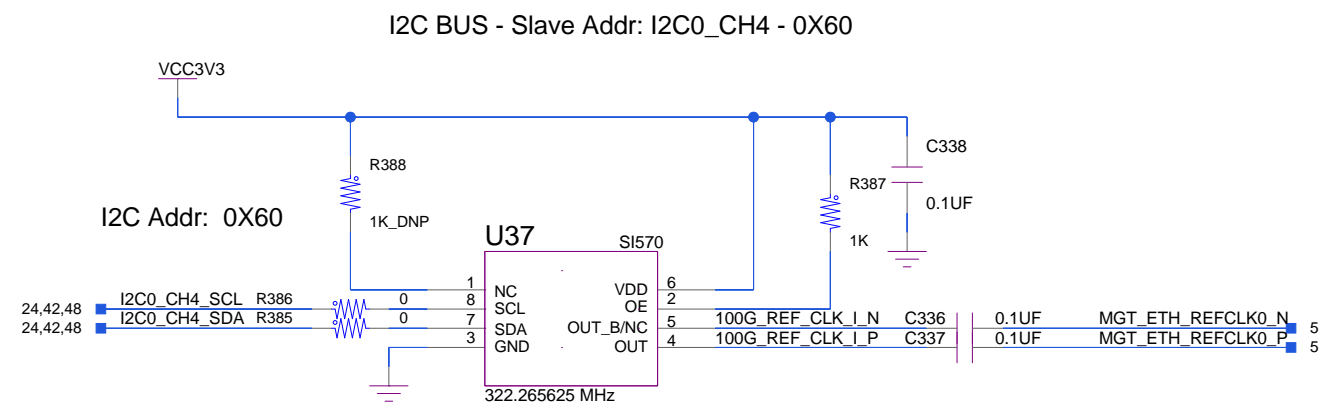
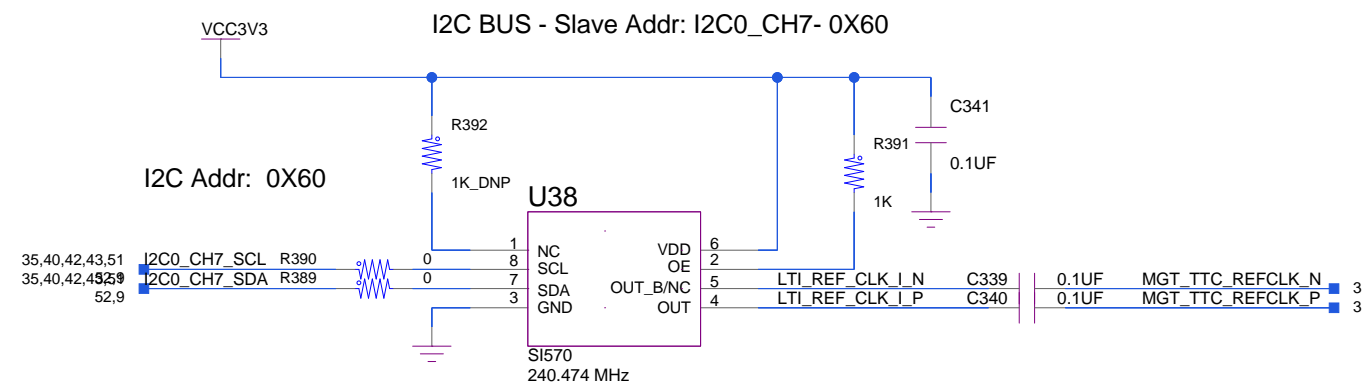
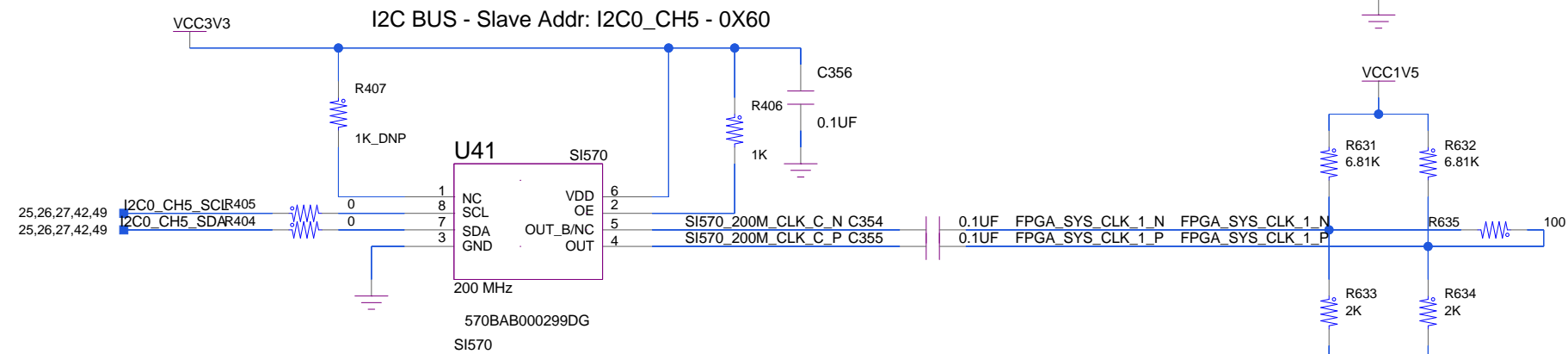
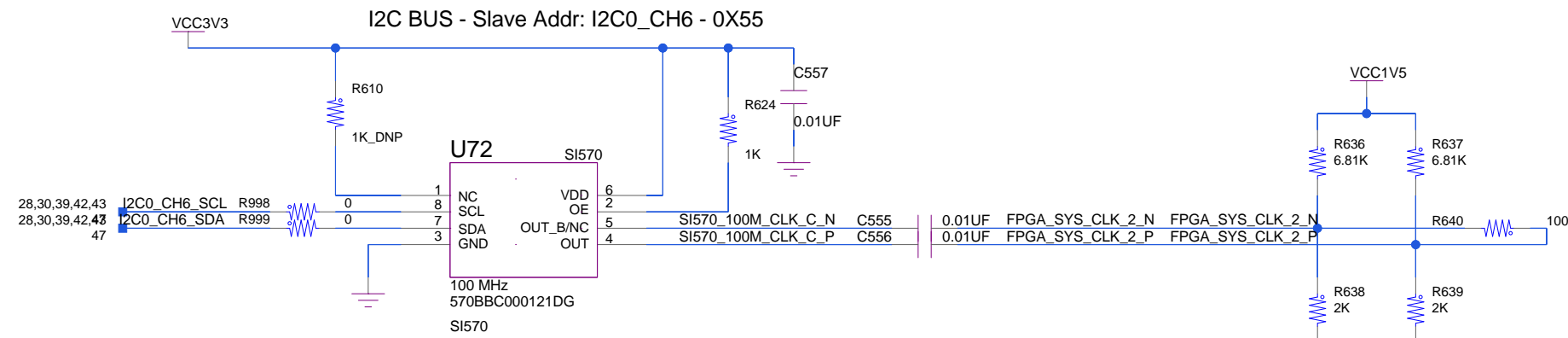
COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
FLX155_V1				
31_PWR_MANAGEMENT				
SHEET	B	REV	31	OF 53
DRAWN	Hao Xu	DATE	18/04/2024:08:49	



SD1_BUSPWR: Optional power signal that can be used to gate or reset SD card power on the board.







4

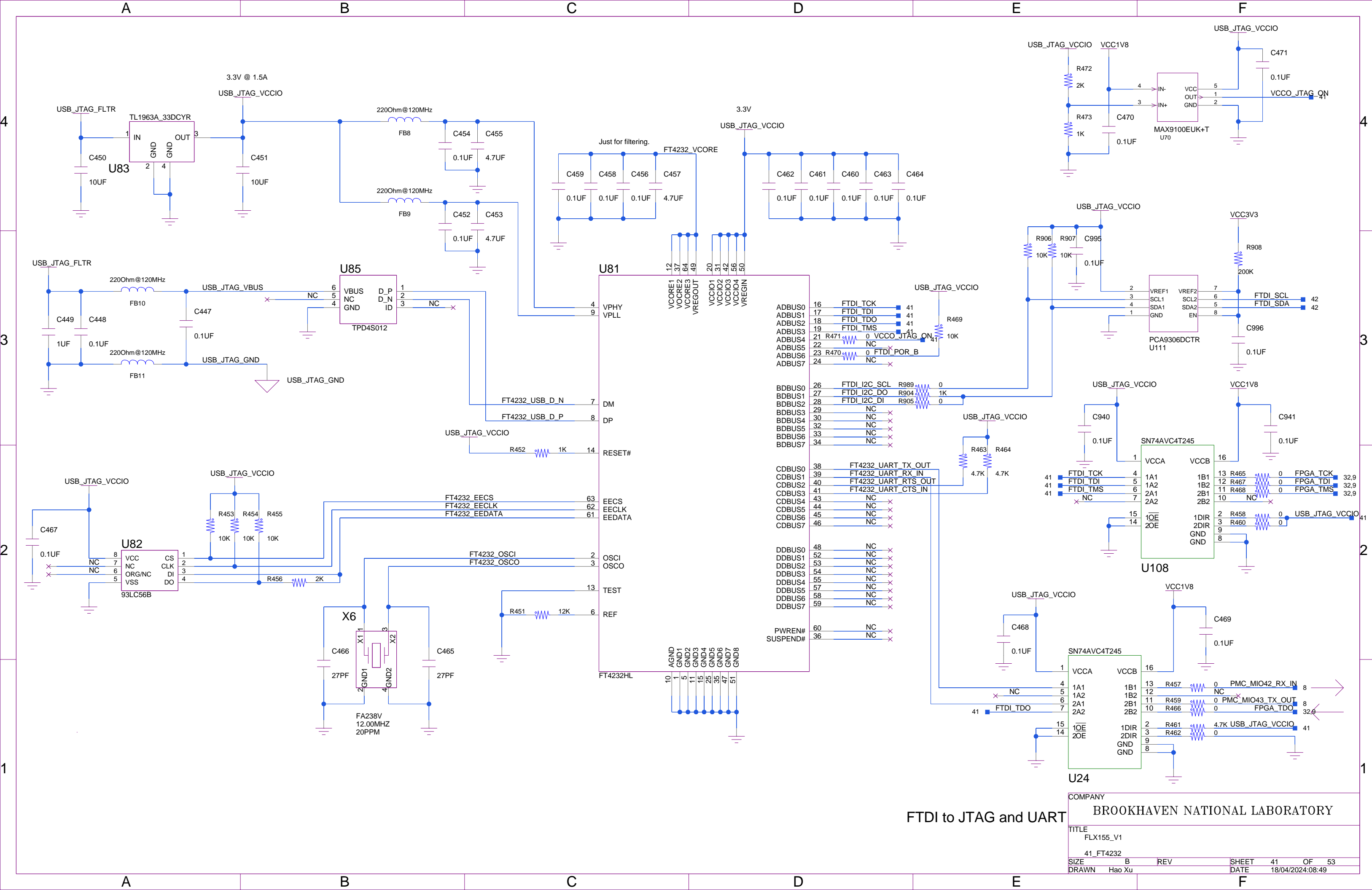


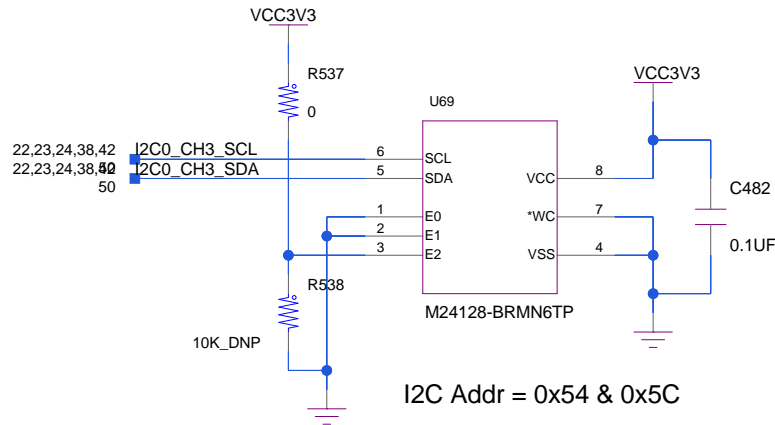
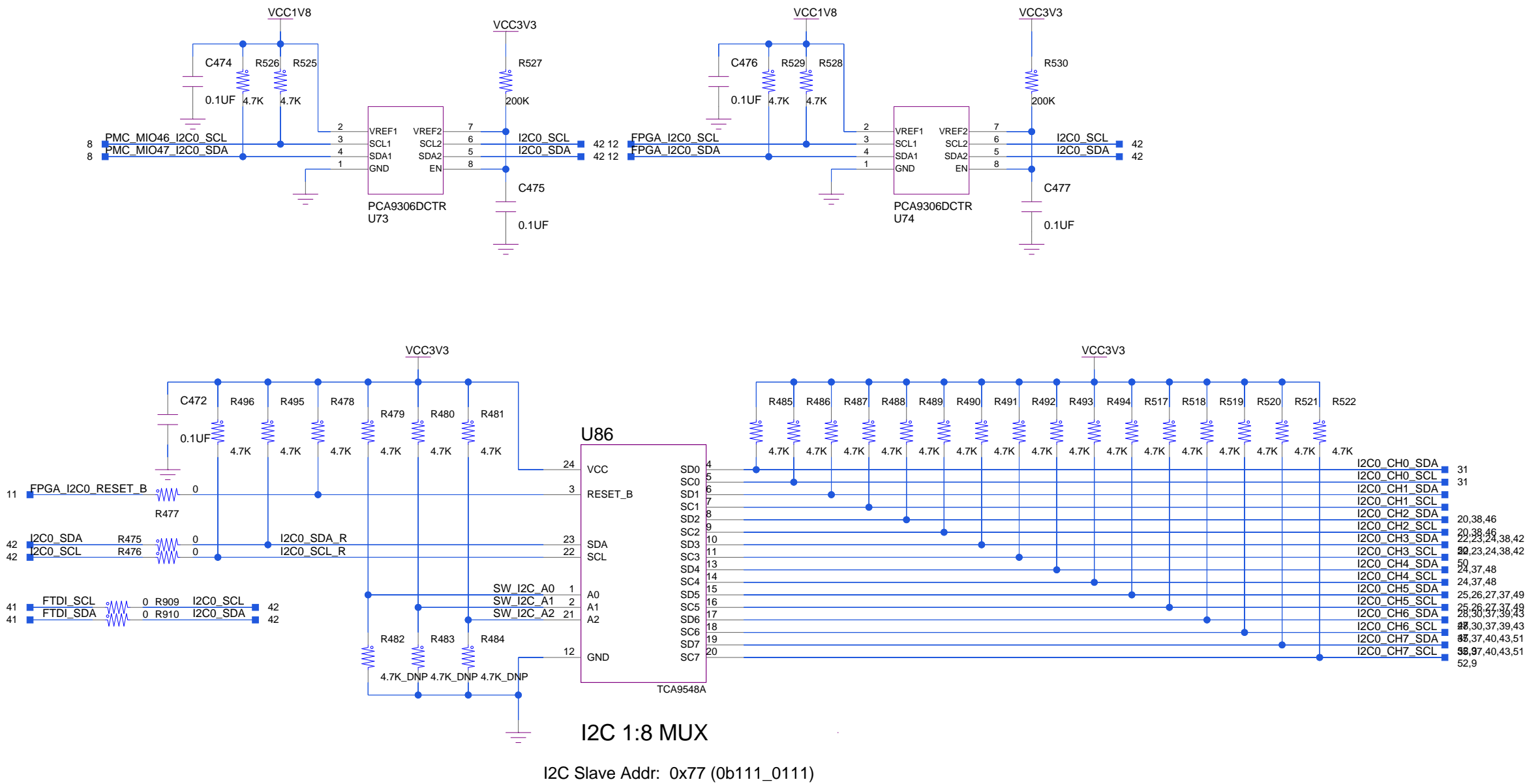
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1

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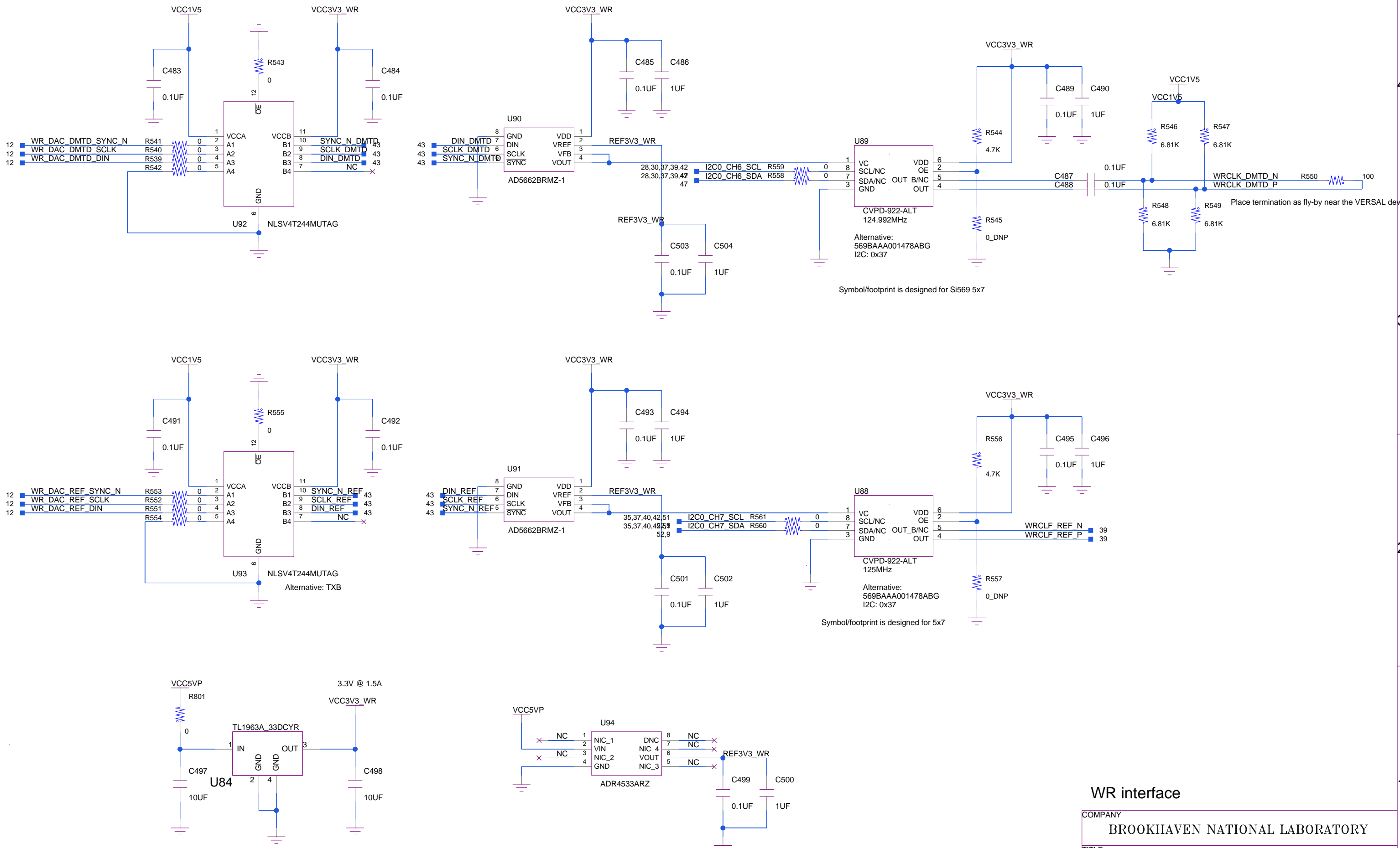


I2C MUX

COMPANY
BROOKHAVEN NATIONAL LABORATORY

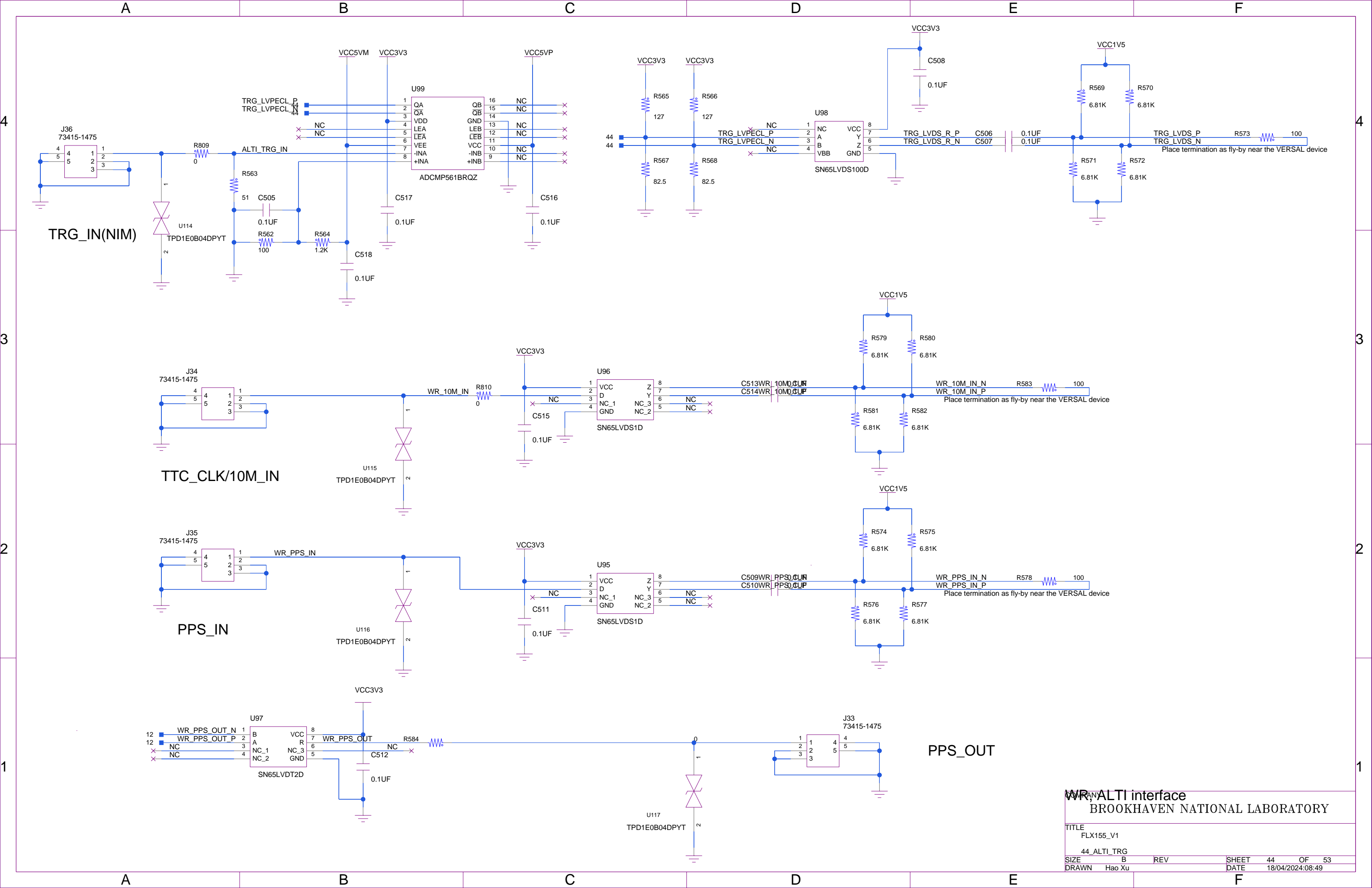
TITLE
FLX155_V1

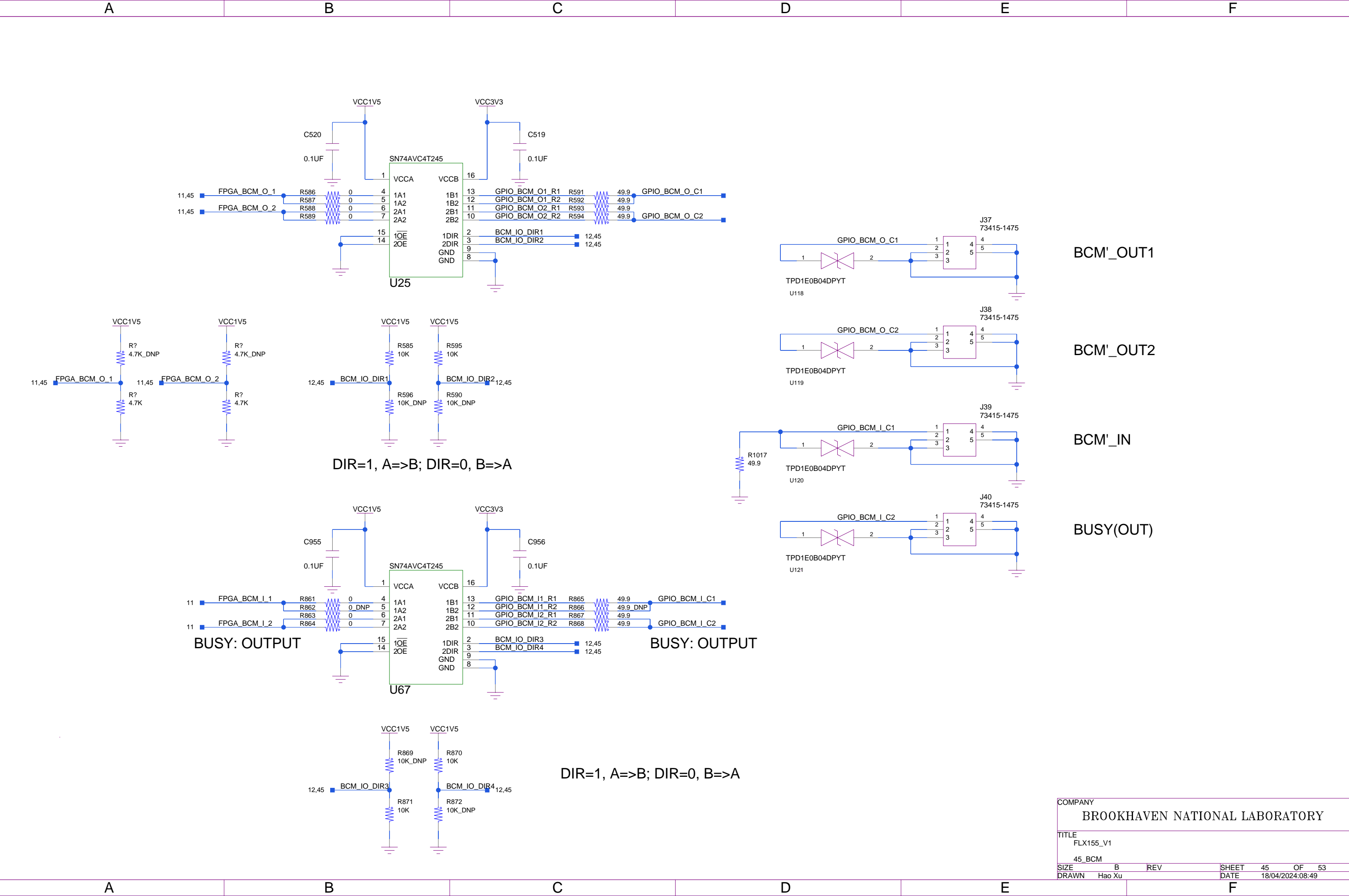
42_I2C_BUS_SWITCH	REV	SHEET	42	OF	53
SIZE	B	DATE	18/04/2024:08:49		
DRAWN	Hao Xu				

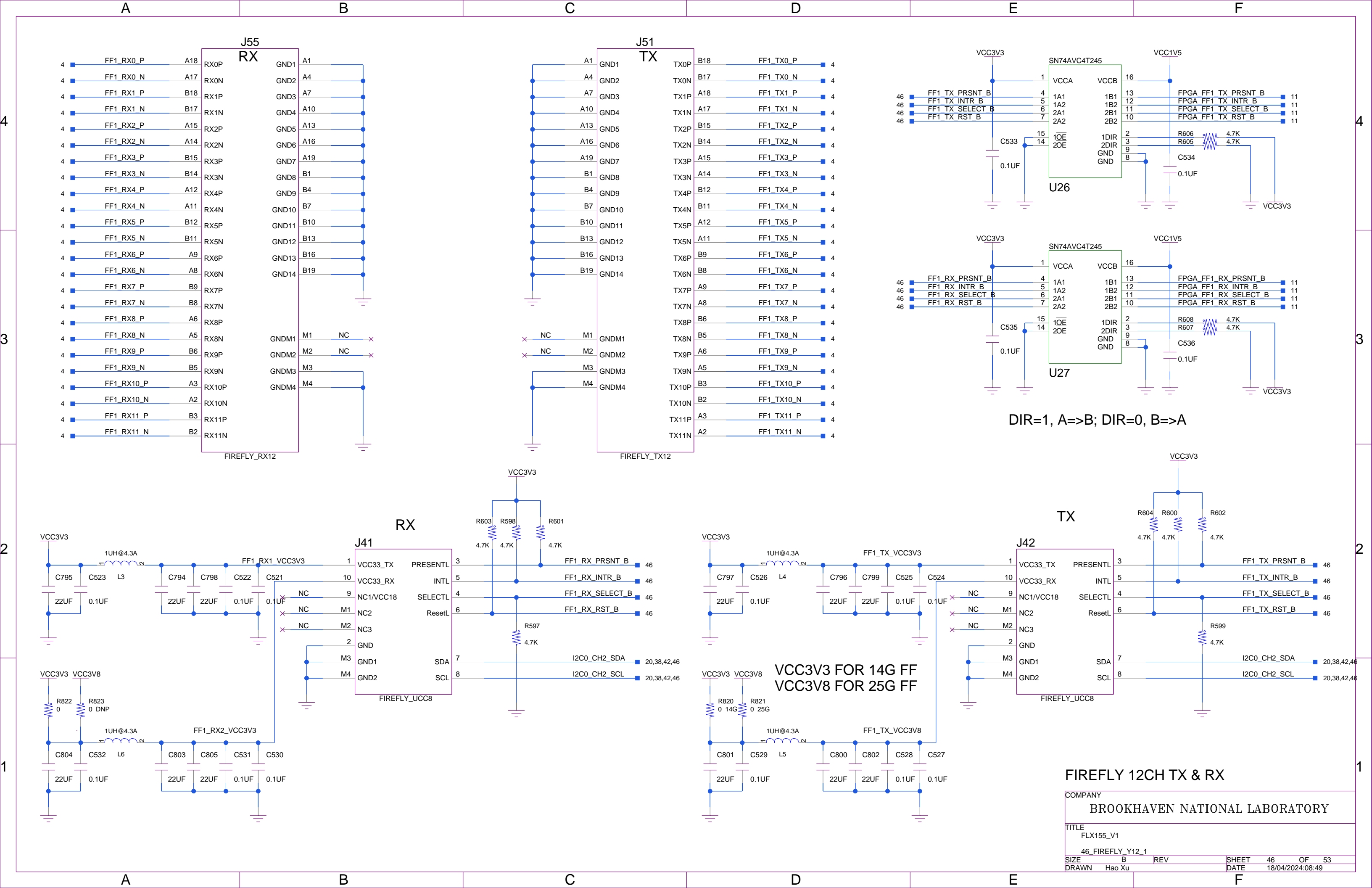


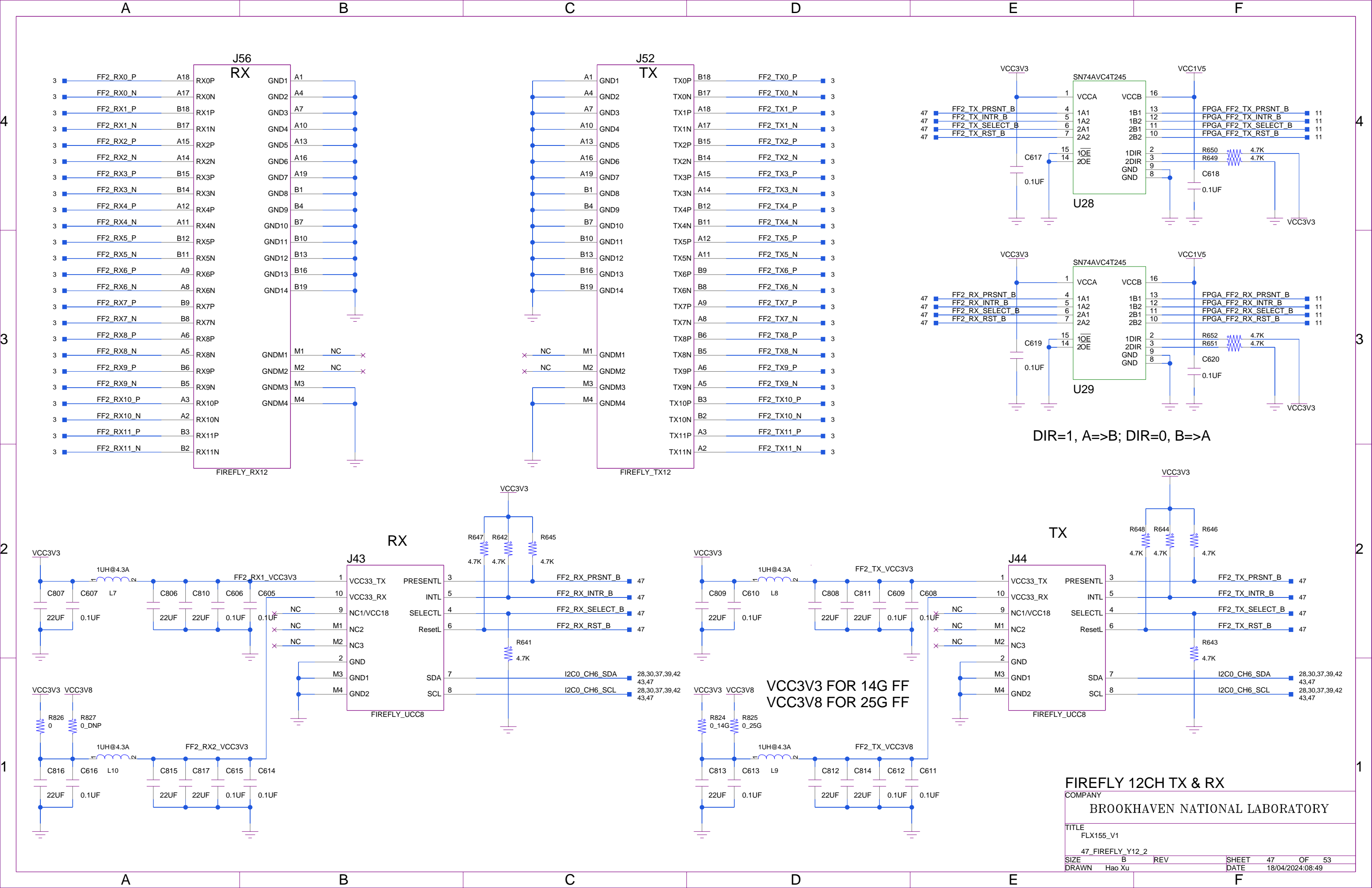
WR interface

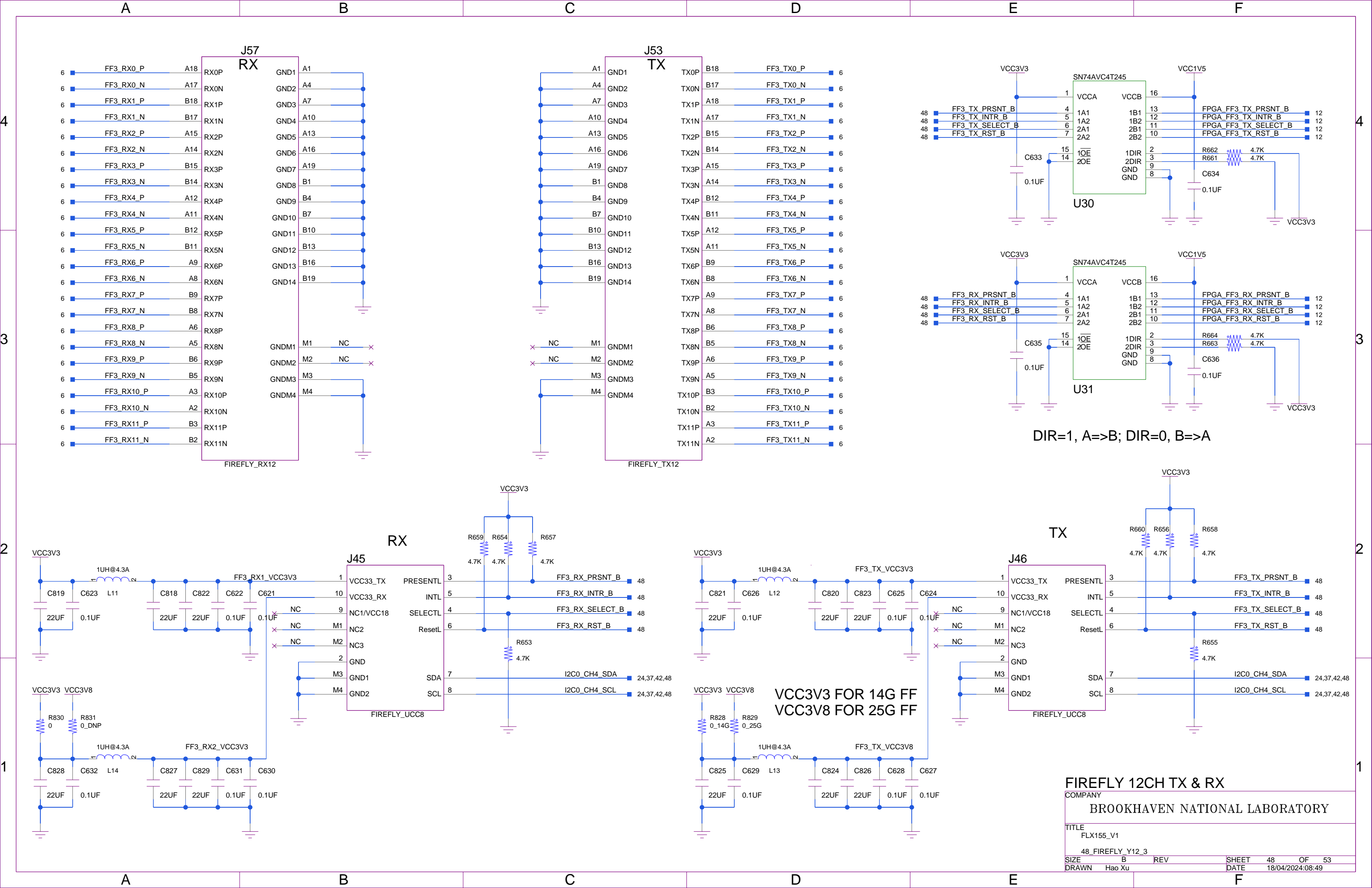
COMPANY									
BROOKHAVEN NATIONAL LABORATORY									
TITLE									
FLX155_V1									
43_WR_CLK									
SIZE	B	REV	SHEET	43	OF	53			
DRAWN	Hao Xu		DATE	18/04/2024:08:49					

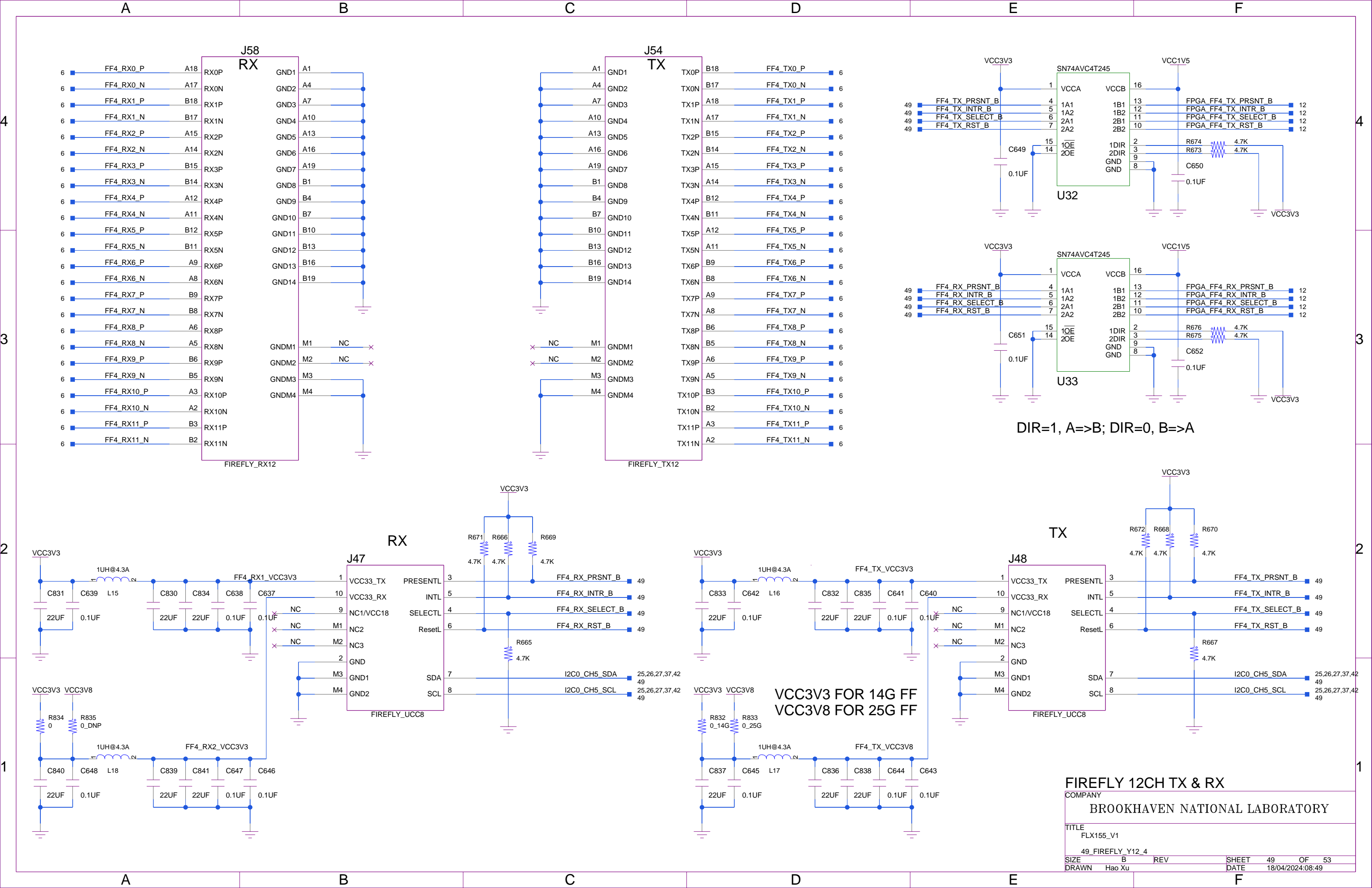


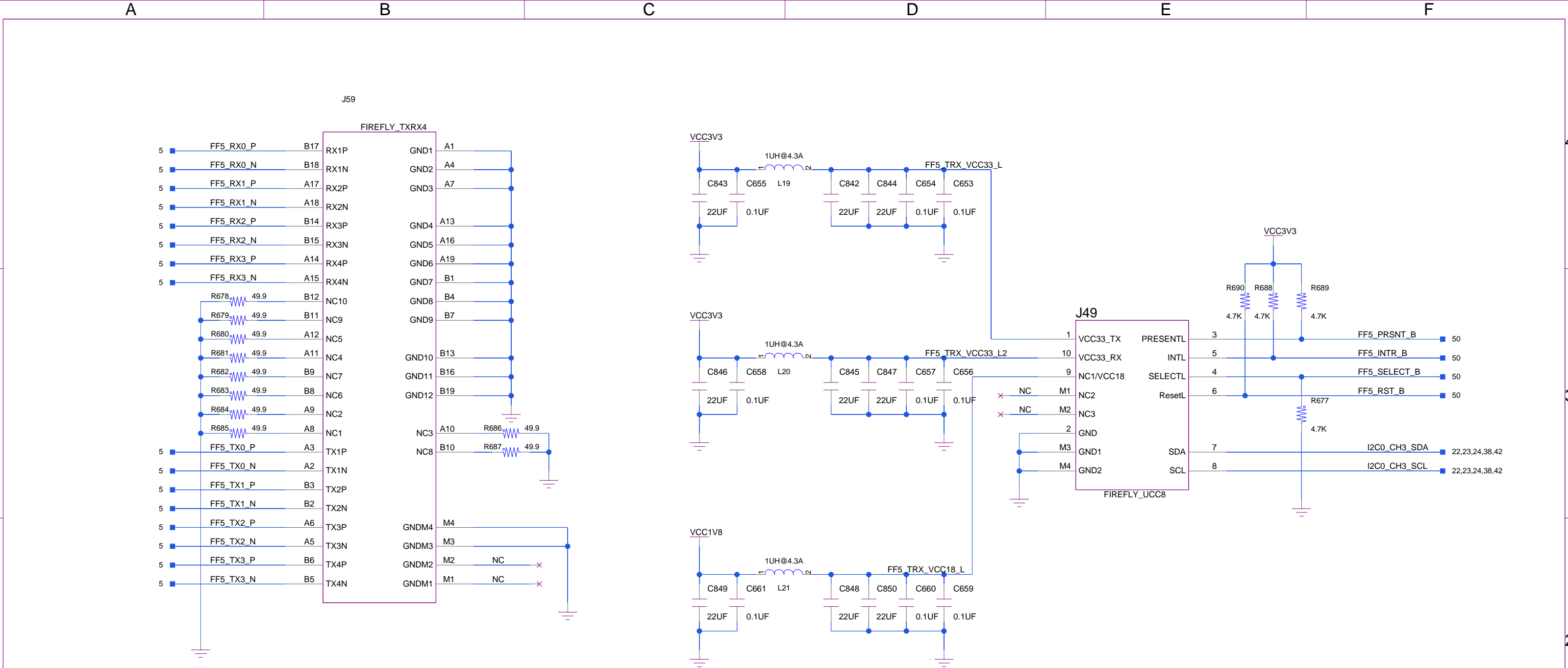




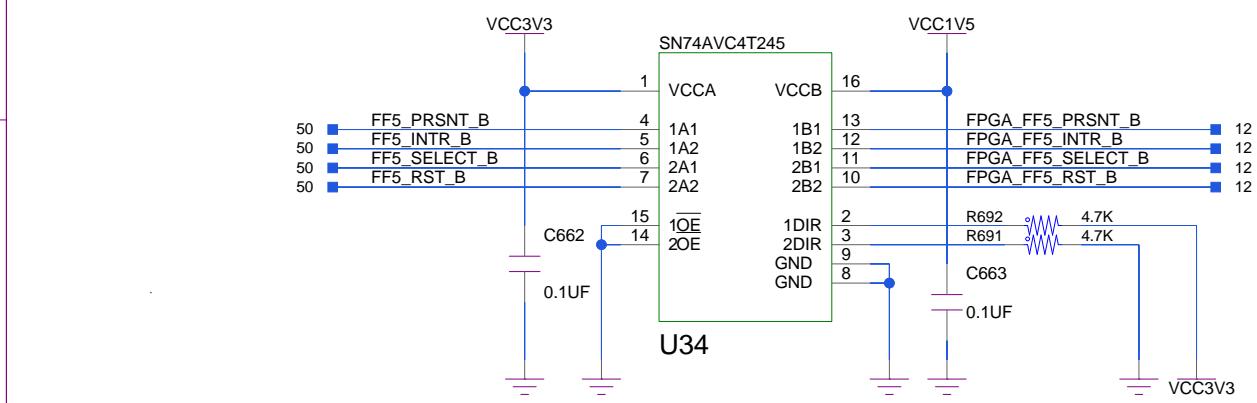




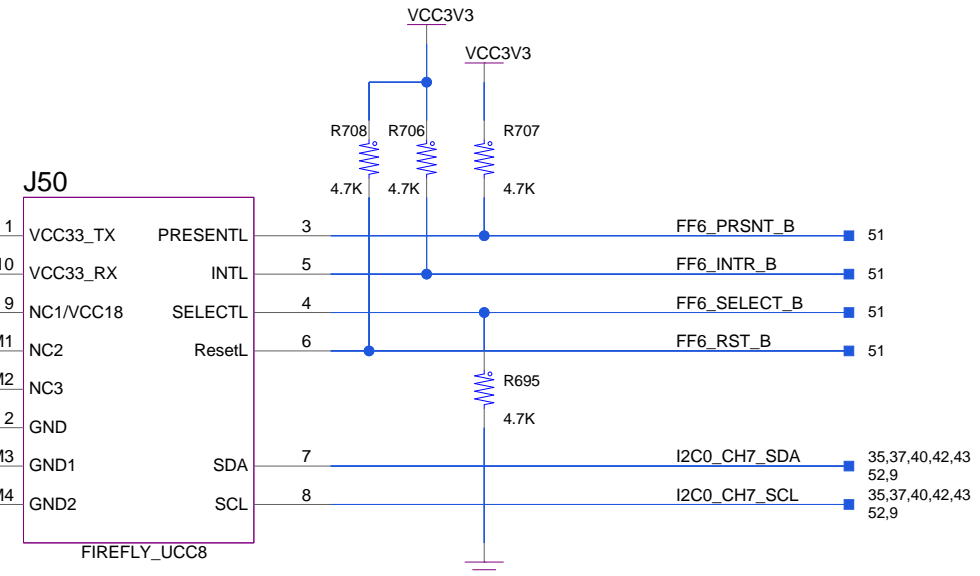
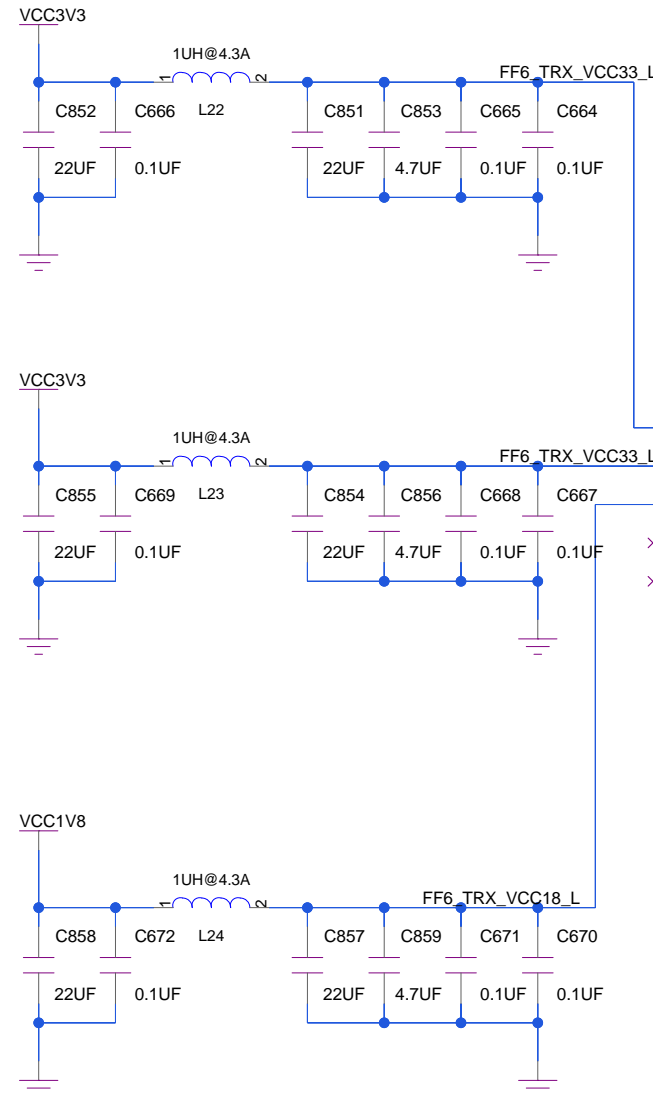
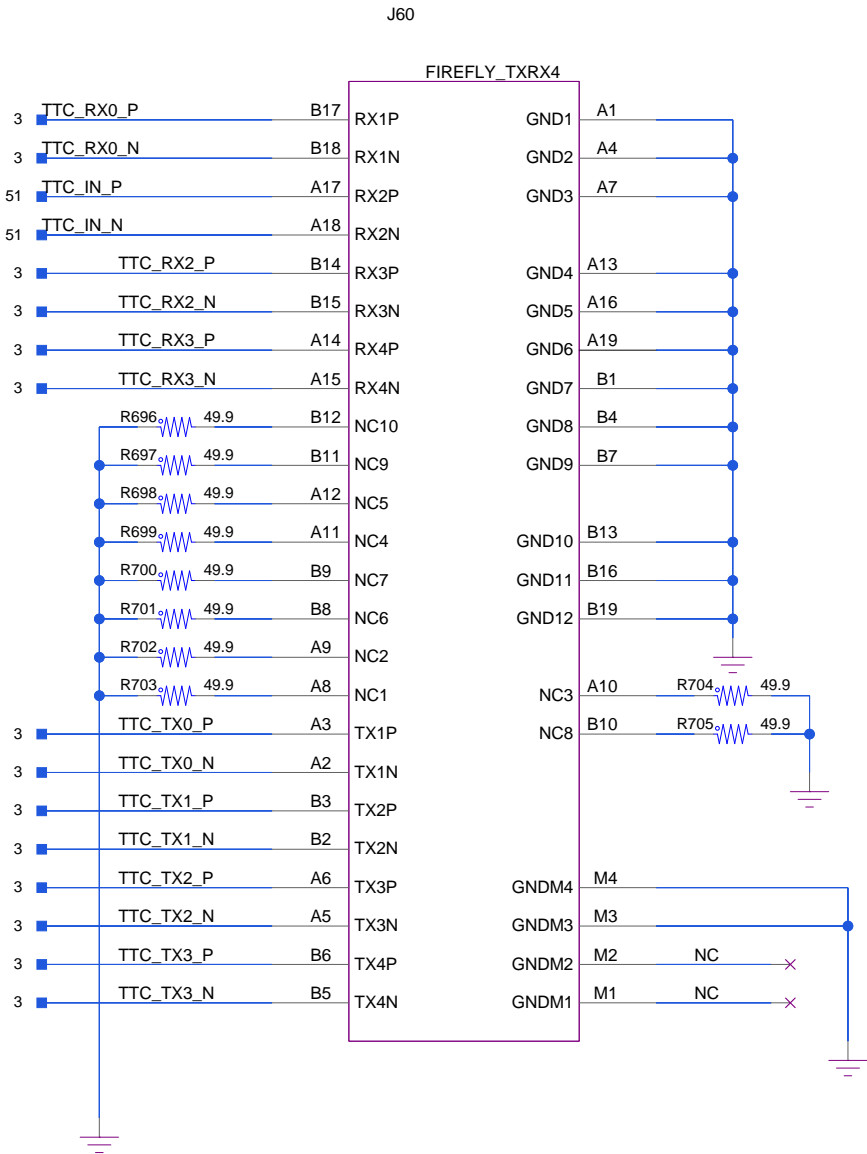




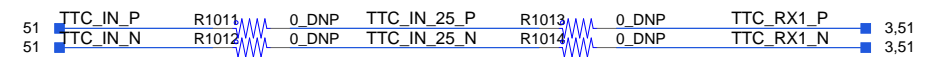
1V8 doesn't need for 14G FF



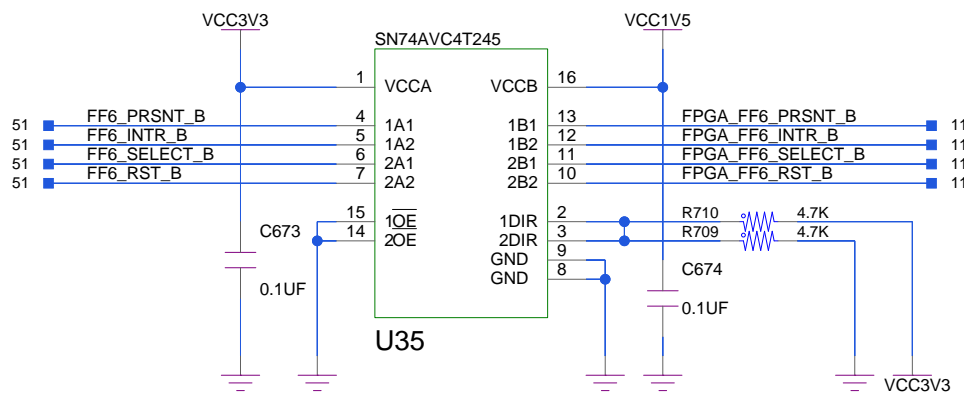
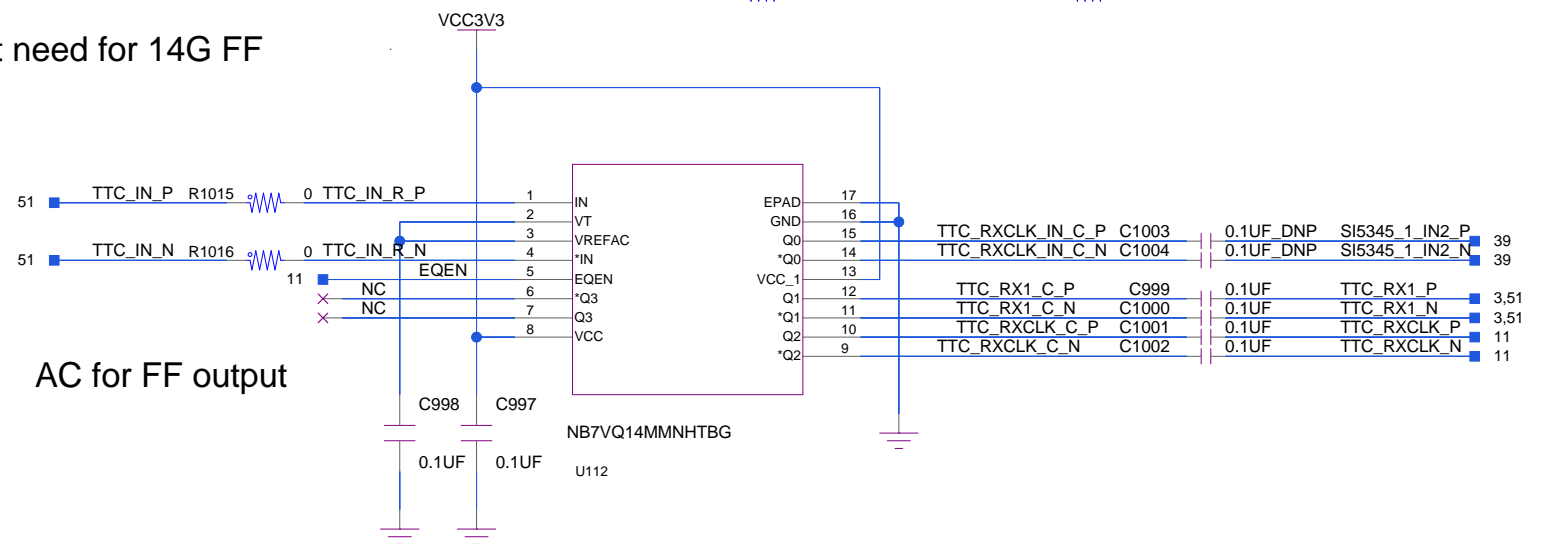
DIR=1, A=>B; DIR=0, B=>A



Below 14G: USE NB7VQ14M
25G: USE JUMPER RESISTORS



1V8 doesn't need for 14G FF



DIR=1, A=>B; DIR=0, B=>A

FIREFLY 4CH TX & RX

COMPANY

BROOKHAVEN NATIONAL LABORATORY

TITLE

FLX155_V1

51_FIREFLY_B04_TTC

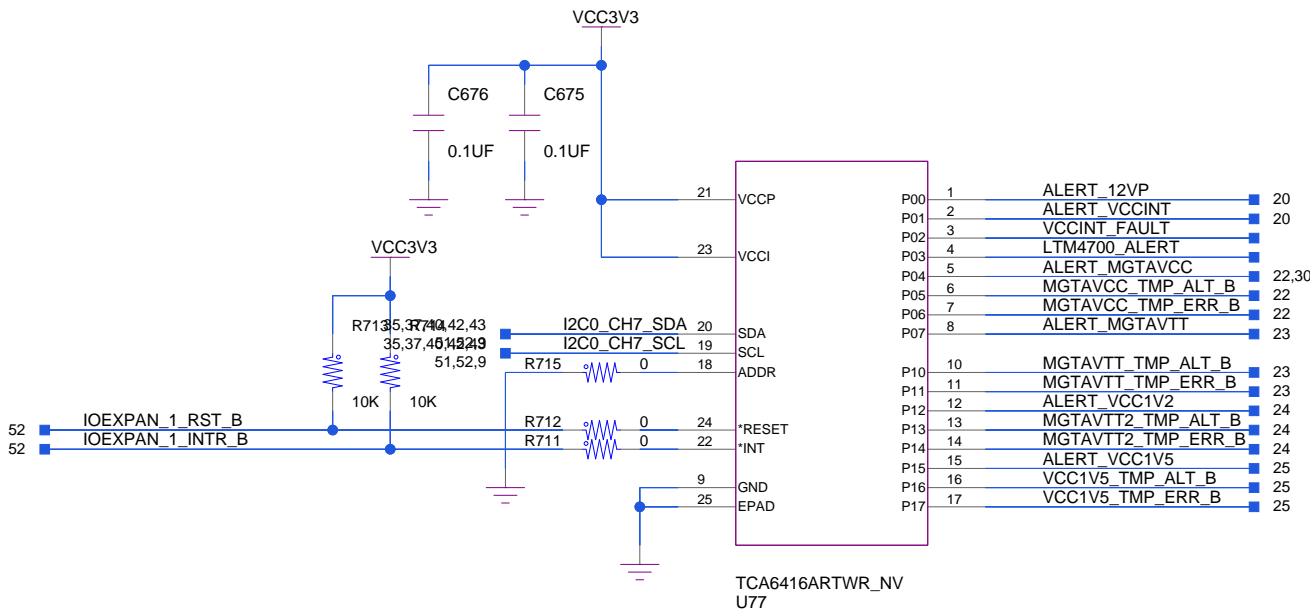
SIZE B REV

DRAWN Hao Xu

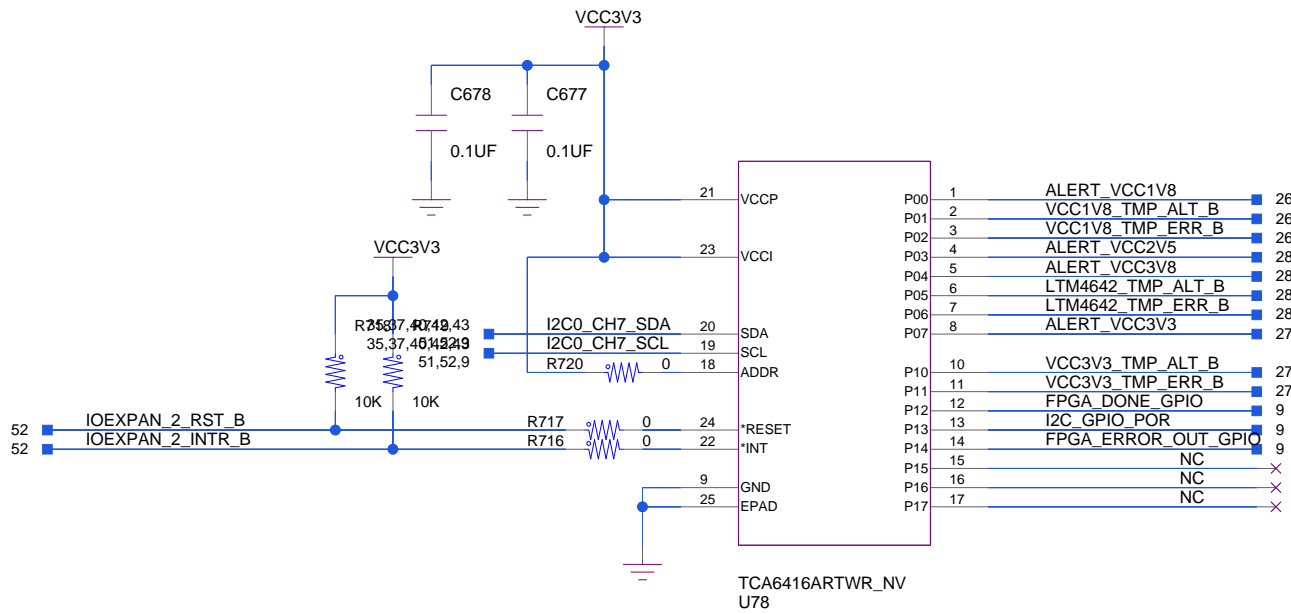
SHEET 51 OF 53

DATE 18/04/2024:08:49

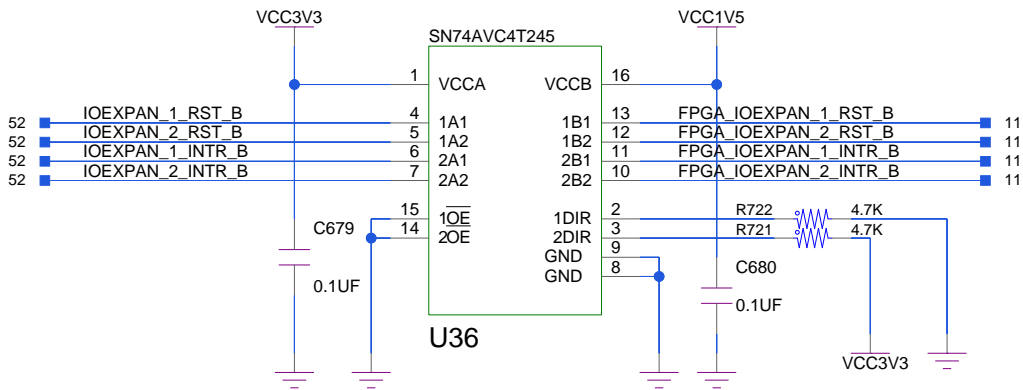
I2C IO EXPANDERS



I2C BUS - Slave Addr: I2C0_CH7 - 0X20 (0b010_0000)



I2C BUS - Slave Addr: I2C0_CH7 - 0X21 (0b010_0001)



DIR=1, A=>B; DIR=0, B=>A

IO EXPANDERS

COMPANY			
BROOKHAVEN NATIONAL LABORATORY			
TITLE			
FLX155_V1			
52_IO_EXPANDER			
SIZE	B	REV	
DRAWN	Hao Xu	SHEET	52 OF 53
		DATE	18/04/2024:08:49

StandOff Components



STANDOFF_0P375



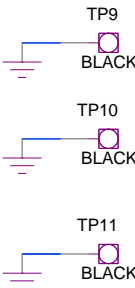
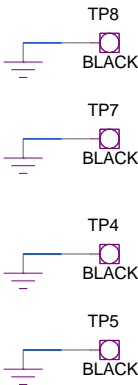
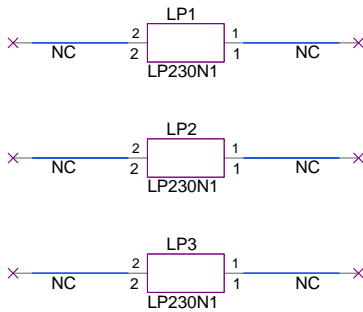
WASHER_FLAT_4



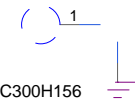
RUBBER BUMPER



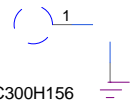
MACHINE_SCREW_4-40



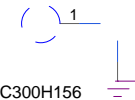
U110



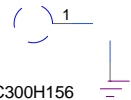
U111



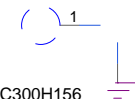
U113



U114



U115



U116

