

Design guidelines

CHIP Power Consumption Table (Max)		
Name	Voltage	Max Current
Vcore- Leakage	VCORE	20A
Vcore	VCORE	25.5A
VDDHS	1.2V	16.8A
VDDHSPX	1.2V	0.38A
VDDO	1.8V	5.2A
VDDOPX	1.8V	0.1A
VDDIO	3.3V	0.03A
VDDA	3.3V	0.56A
VDDPLL VDDPLLX	3.3V	0.38A

Total Consumption per Level (Max) For Trace Width Calc	
VCORE	45.8A
1.2V	17.2A
1.8V	5.3A
3.3V_SX	40A
12V	19A
3.3V_AUX	1A

Via Structure Requirements
IB
CLK
PCIE

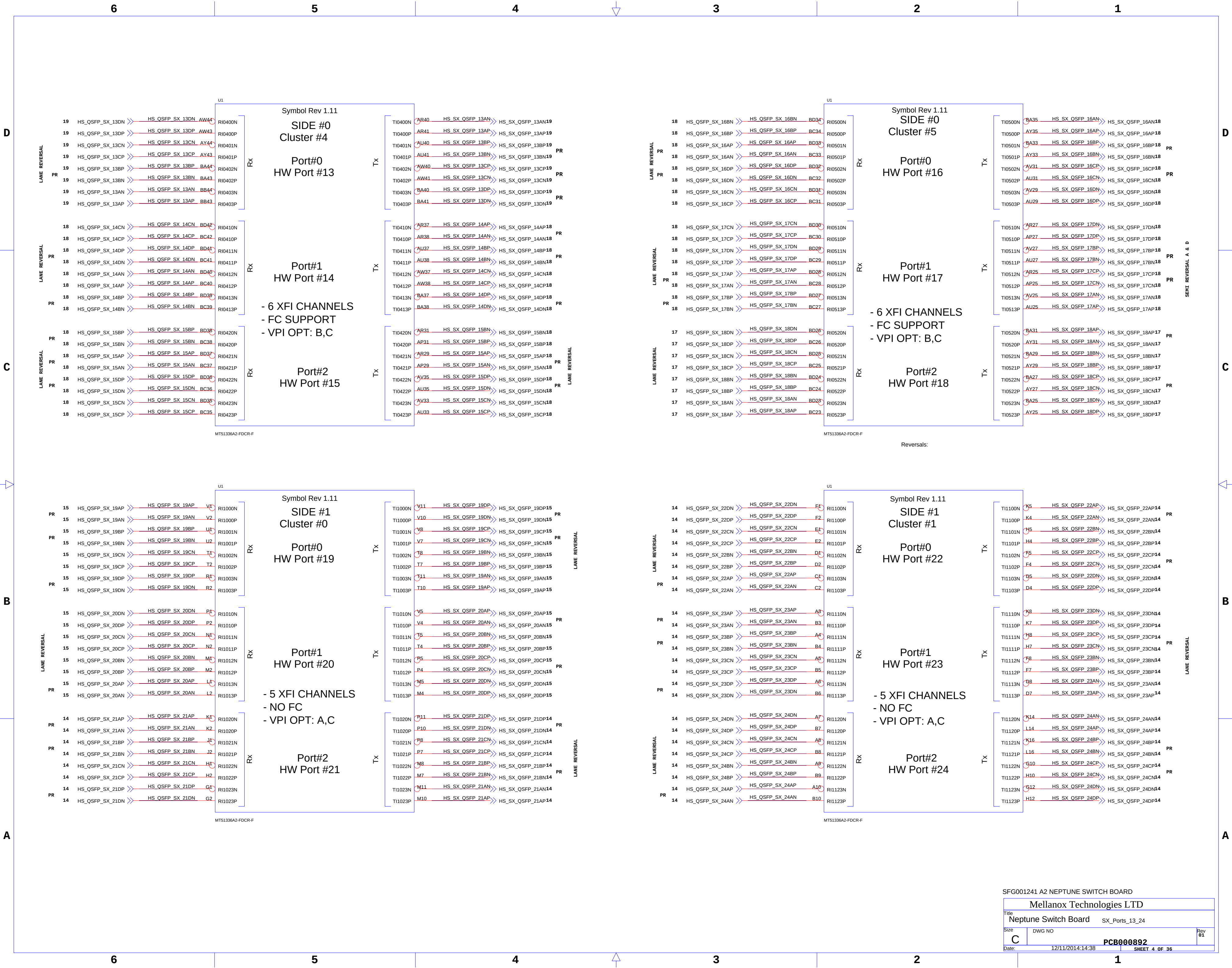
Maximal Skew Requirements	
Type	Max Skew
PCIE, ETH, USB, CLK	5 mil
IB	10 mil

Port Mapping

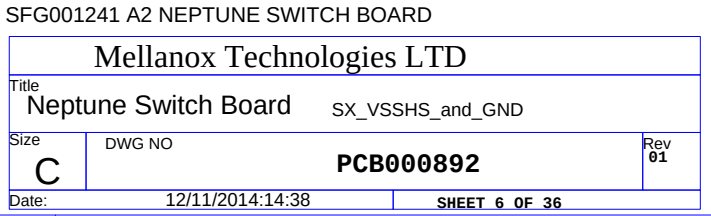
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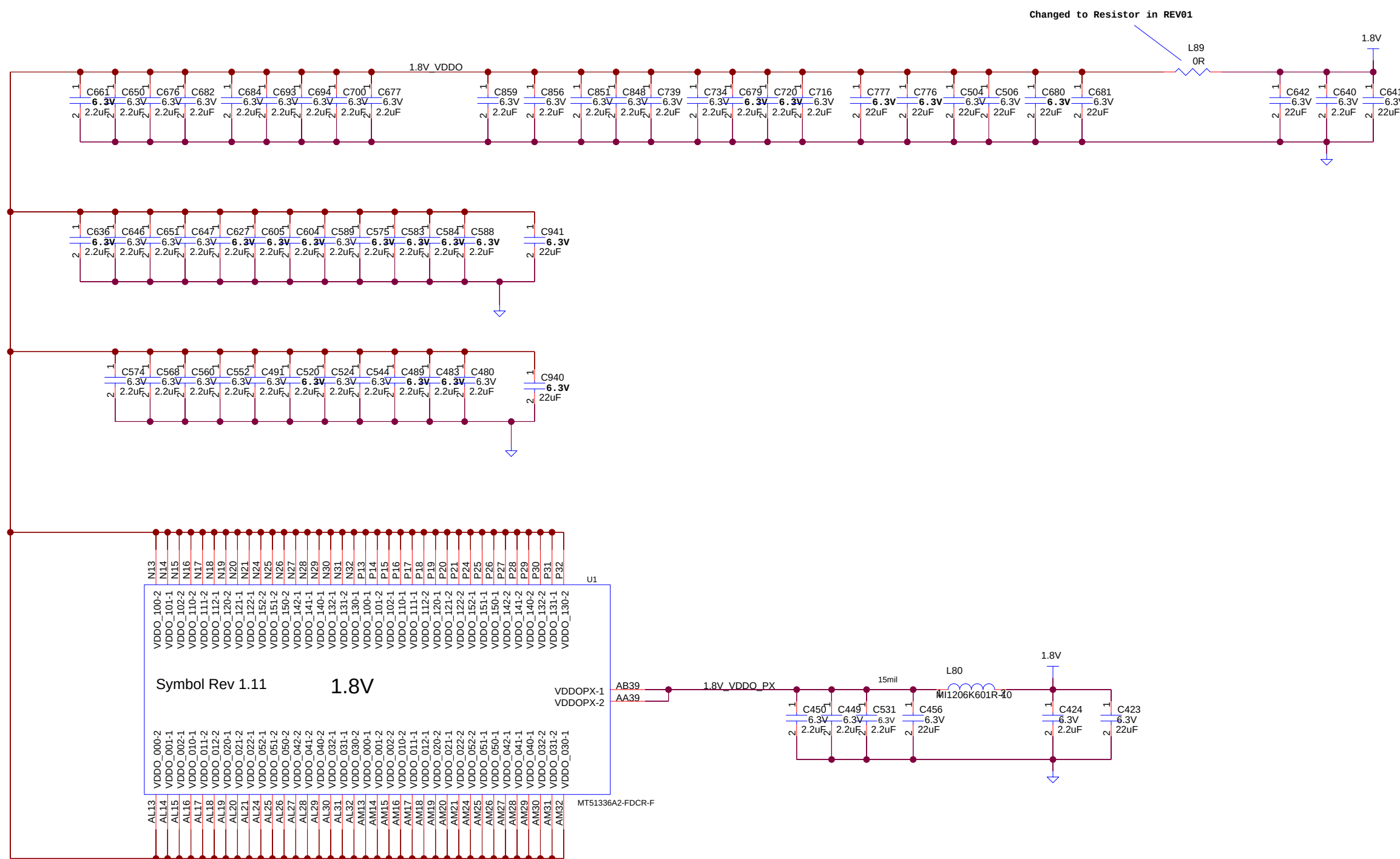
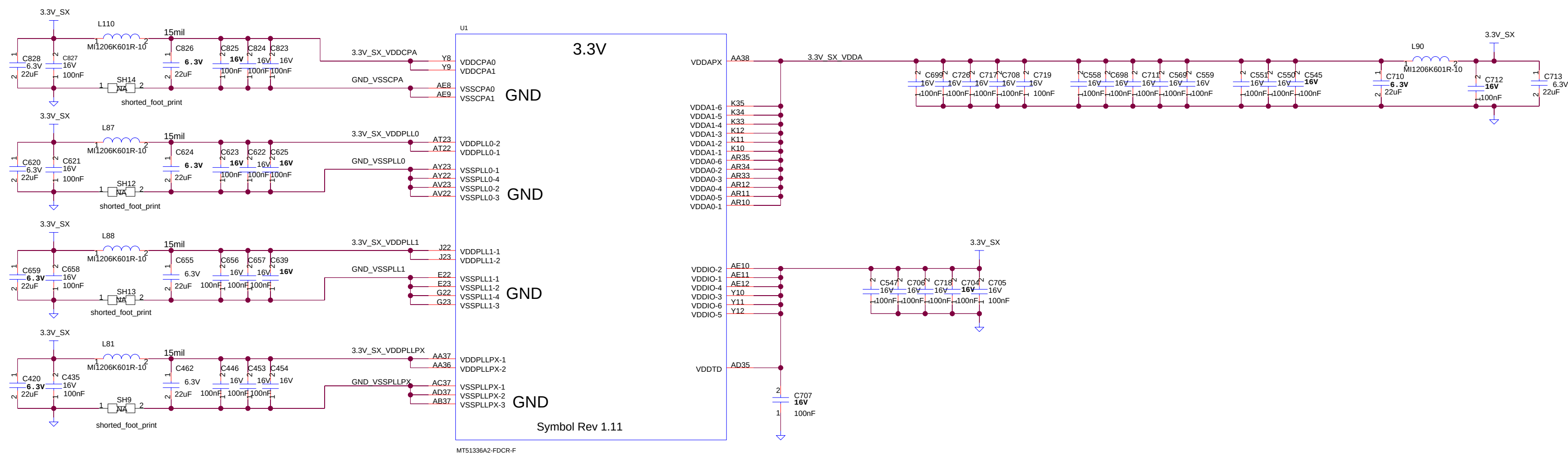
SFG001241 A2 NEPTUNE SWITCH BOARD			
Mellanox Technologies LTD			
Title		Neptune Switch Board Desgin Guidelines	
Size	DWG NO		Rev
C	PCB000892		01
Date:		12/11/2014:14:38	SHEET 2 OF 36



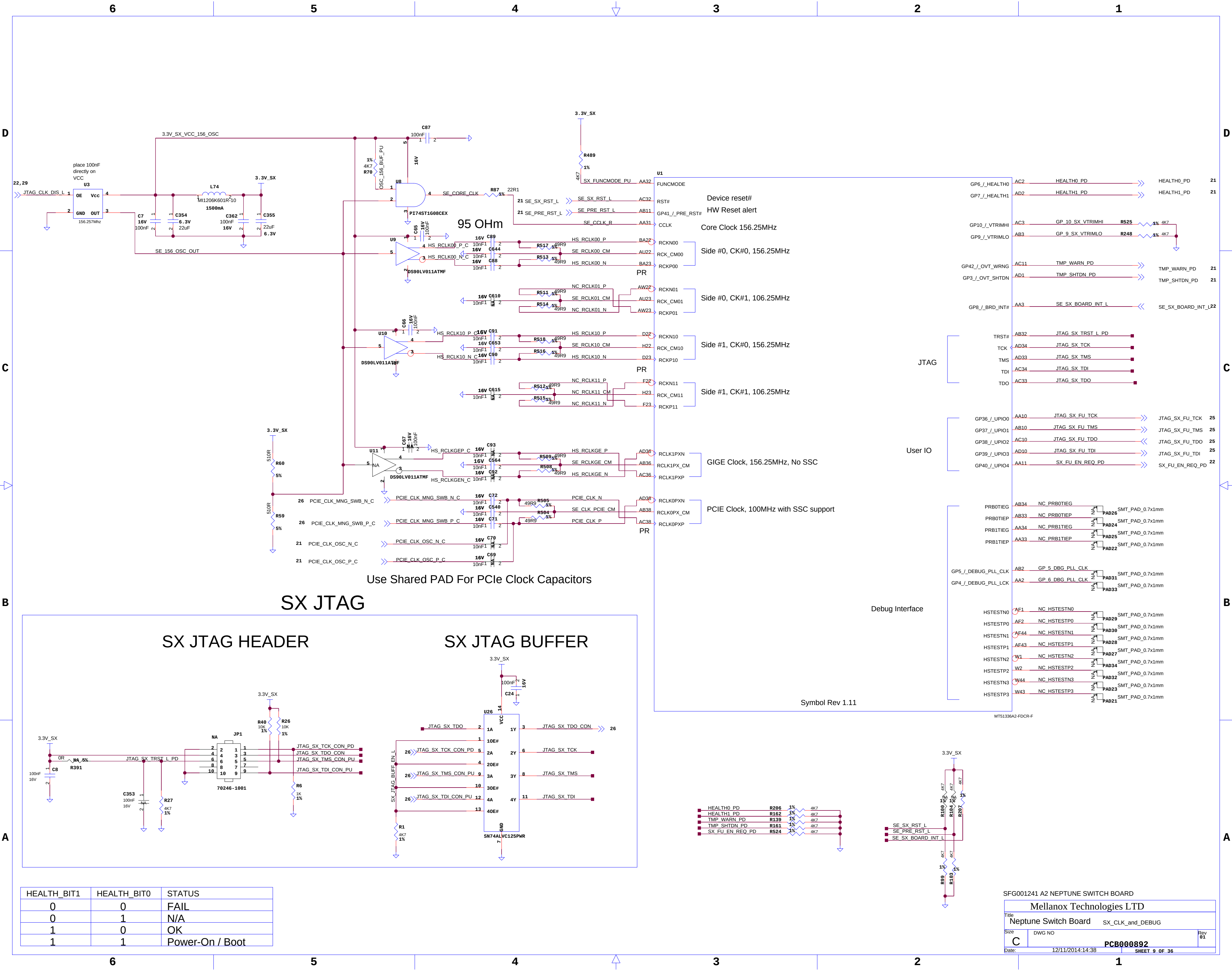








74 +2 = 76 pins
2.2uF X5R 20% 6.3V 0402 (CAP000057) - 48 units
22uF 6.5V 0805 (CAP000020) - 12 units
0R08 DCR 600 OHM 1500MA 1206 (IND000004) - 1 unit
48 OHM 10A 25% 0.75MOHM 2012 (IND000012) - 1 unit



STRAPPING

FLASH_PRESENT_STRAP

LED_DATA_IN state at reset:
LOW (J? Shorted) - no boot from FLASH
HIGH (J? Open) - Boot from Flash

PCIE_PRSNT_STRAP

LED_CLK_IN state at reset:
LOW - PCIE present
HIGH - PCIE NOT present

SHARE1_STRAP

SX SPI interface

Traces length shall not exceed 6"

LED Interface

I2C <- I/F -> MDIO

SPI Interface

SPI#1 (Optional)

SPI#0

PWM Interface

PCI-E Interface

Symbol Rev 1.11

MT51338A2-FDCR-F

SFG001241 A2 NEPTUNE SWITCH BOARD

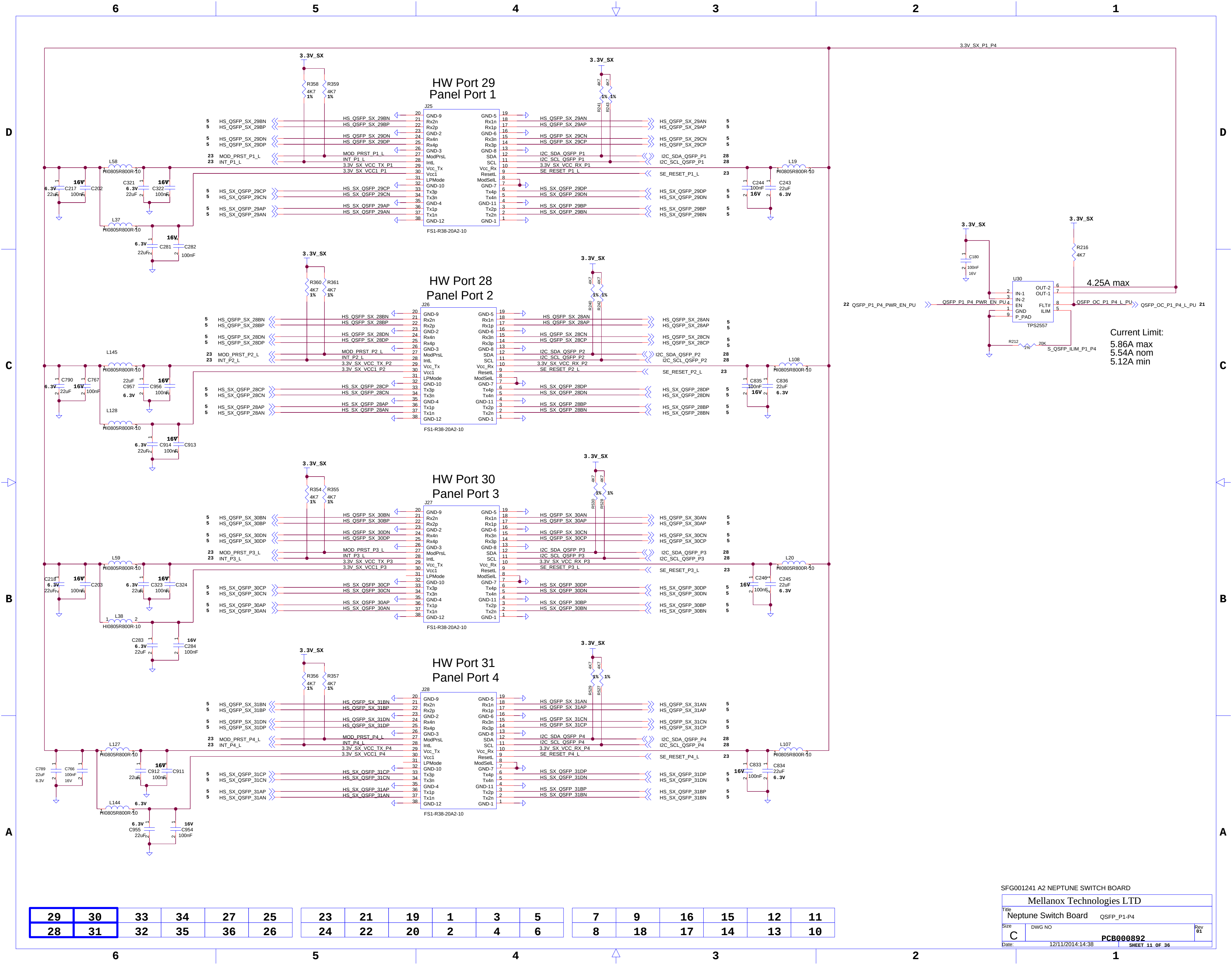
Mellanox Technologies LTD

Title
Neptune Switch Board SX_Interfaces

Size
C DWG NO
PCB000892

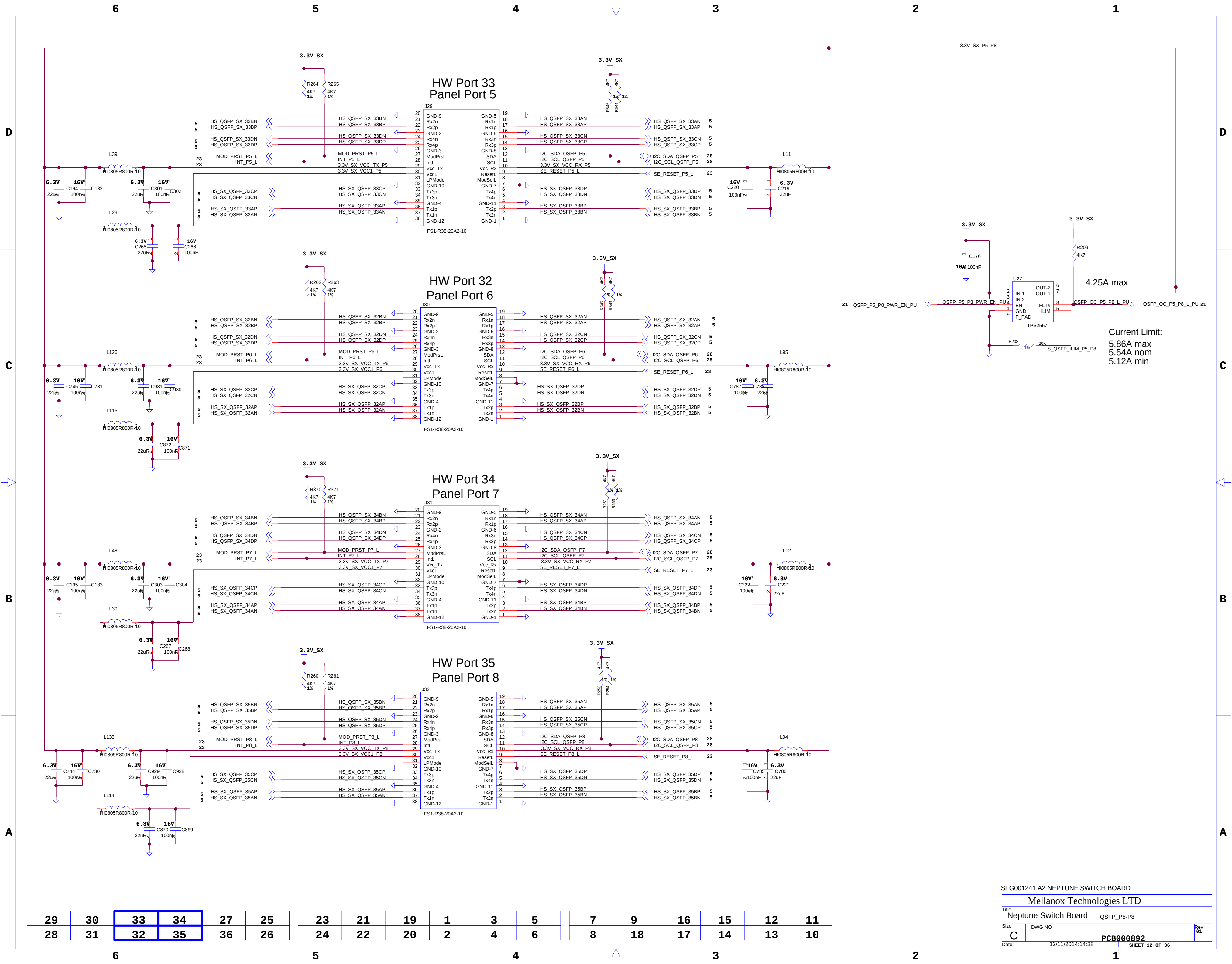
Date: 12/11/2014:14:38 SHEET 10 OF 36

Rev
01



SFG001241 A2 NEPTUNE SWITCH BOARD

Mellanox Technologies LTD	
Title	Neptune Switch Board
Size	DWG NO
Date	12/11/2014:14:38
Rev	01
PCB000892	SHEET 11 OF 36



D

C

B

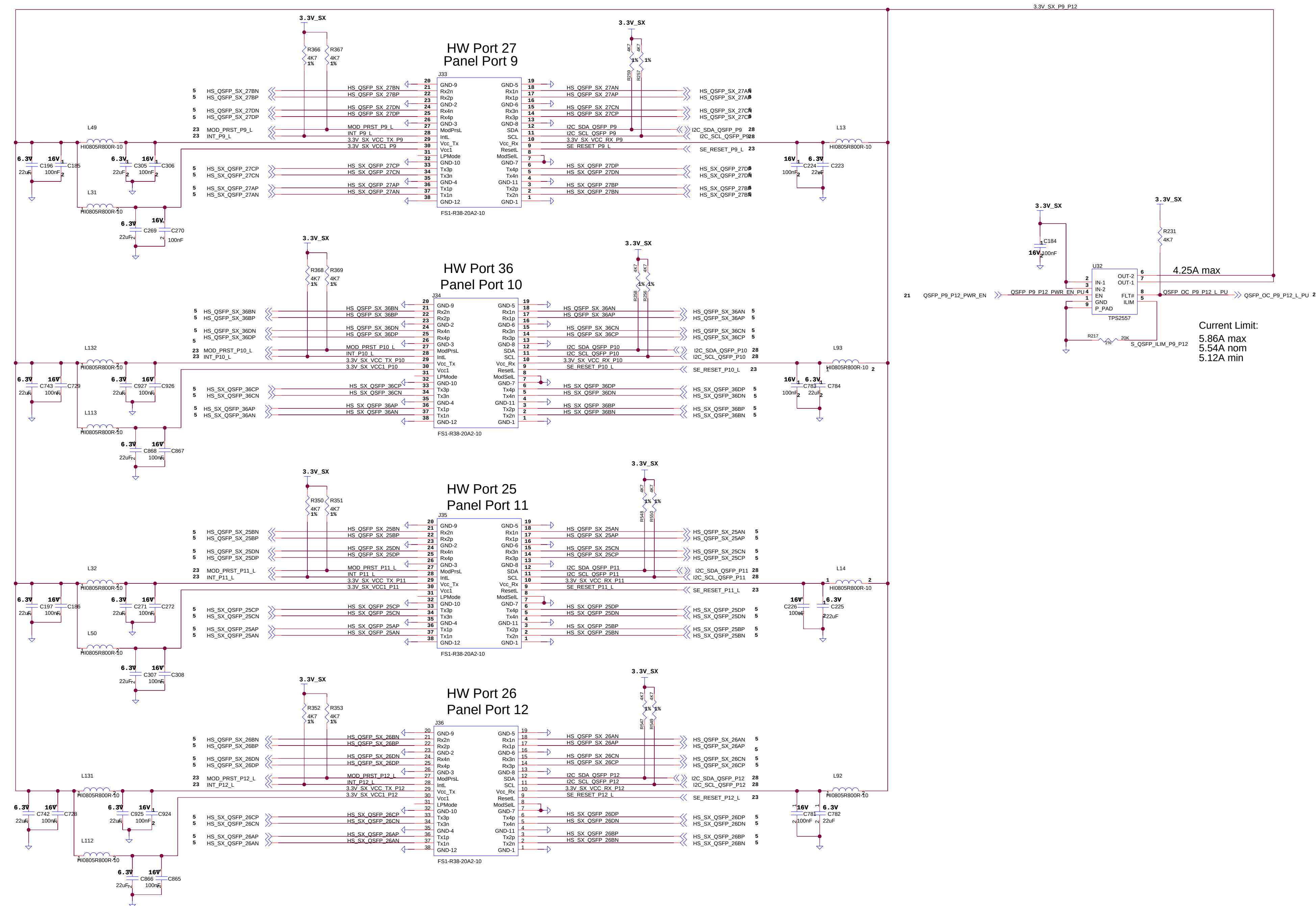
A

D

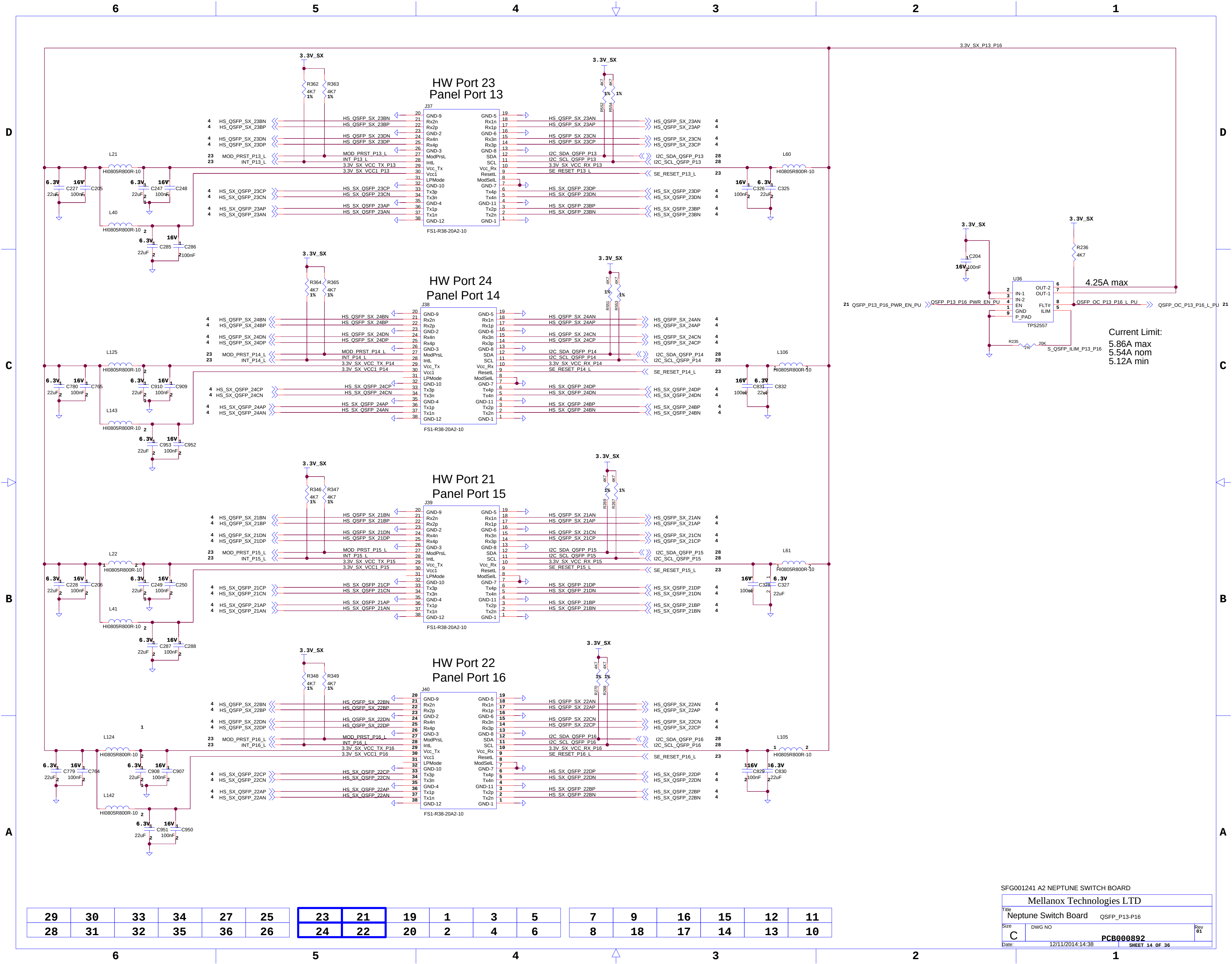
C

B

A

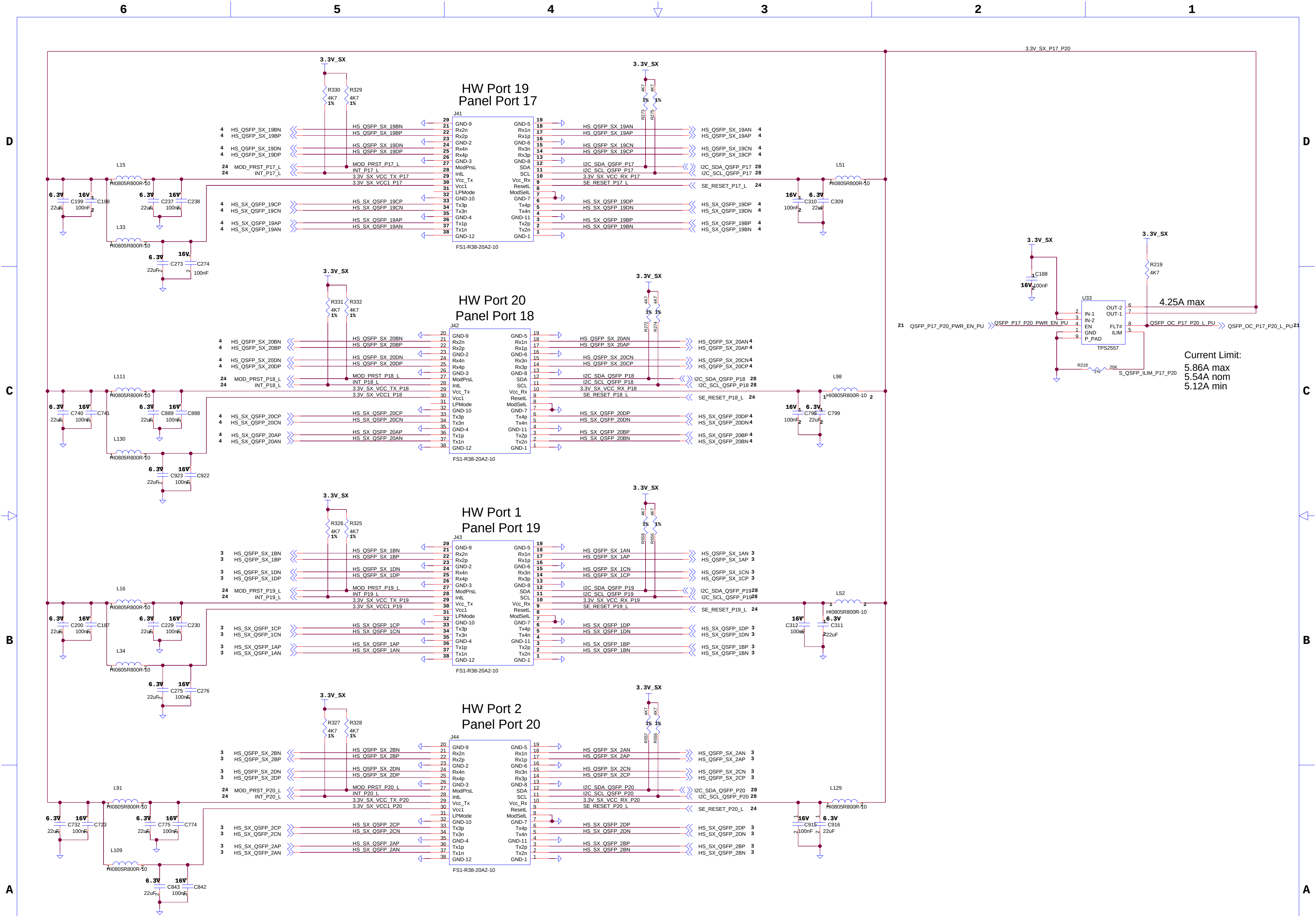


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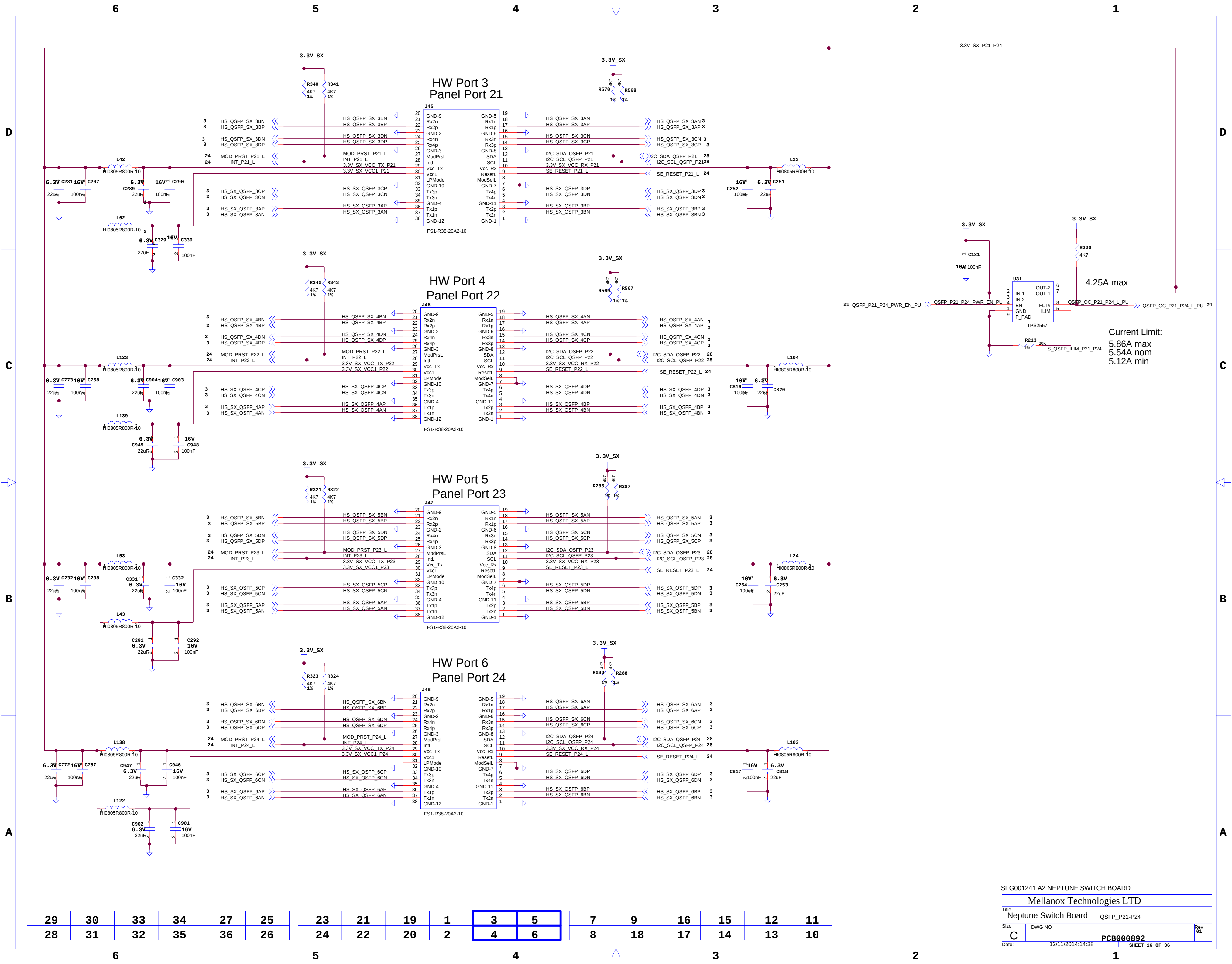


SFG001241 A2 NEPTUNE SWITCH BOARD

Mellanox Technologies LTD	
Title	Neptune Switch Board
Size	QSPF_P13-P16
Rev	01
C	PCB000892
Date:	12/11/2014:14:38
SHEET	14 OF 36

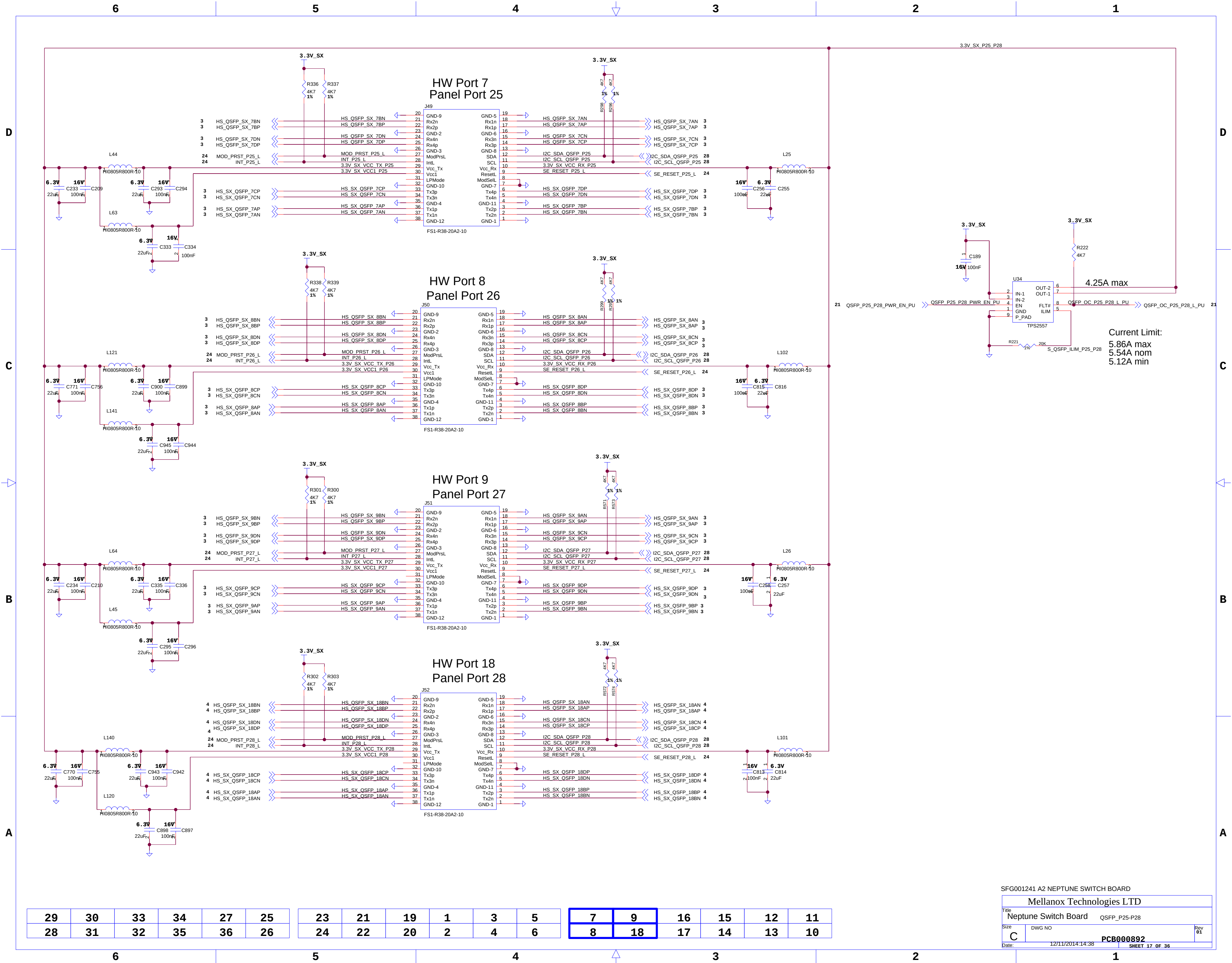


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SFG001241 A2 NEPTUNE SWITCH BOARD

Mellanox Technologies LTD			
Title	Neptune Switch Board		
Size	DWG NO	Rev	01
C	PCB000892	12/11/2014:14:38	SHEET 16 OF 36

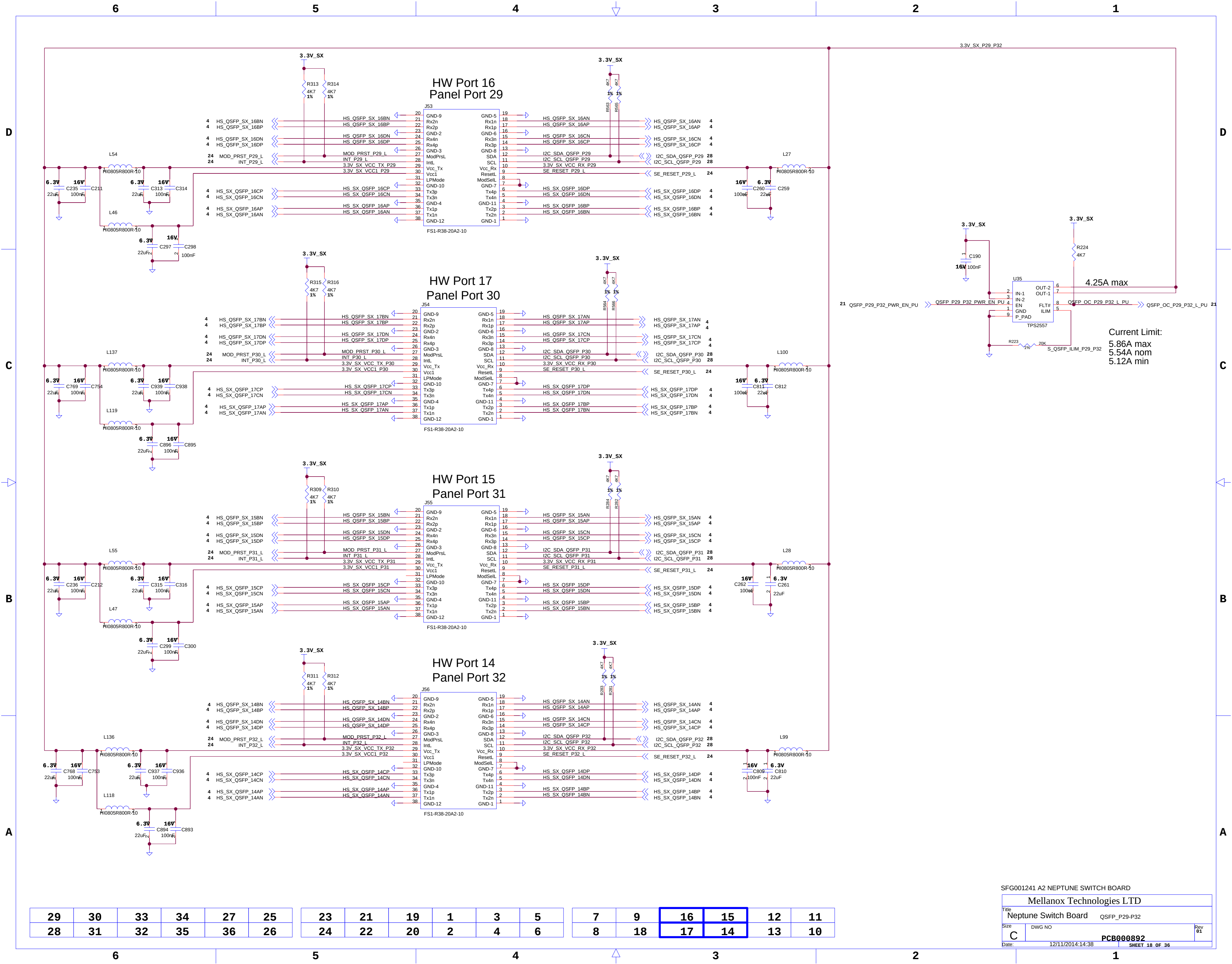


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28	31	32	35	36	26

23	21	19	1	3	5
24	22	20	2	4	6

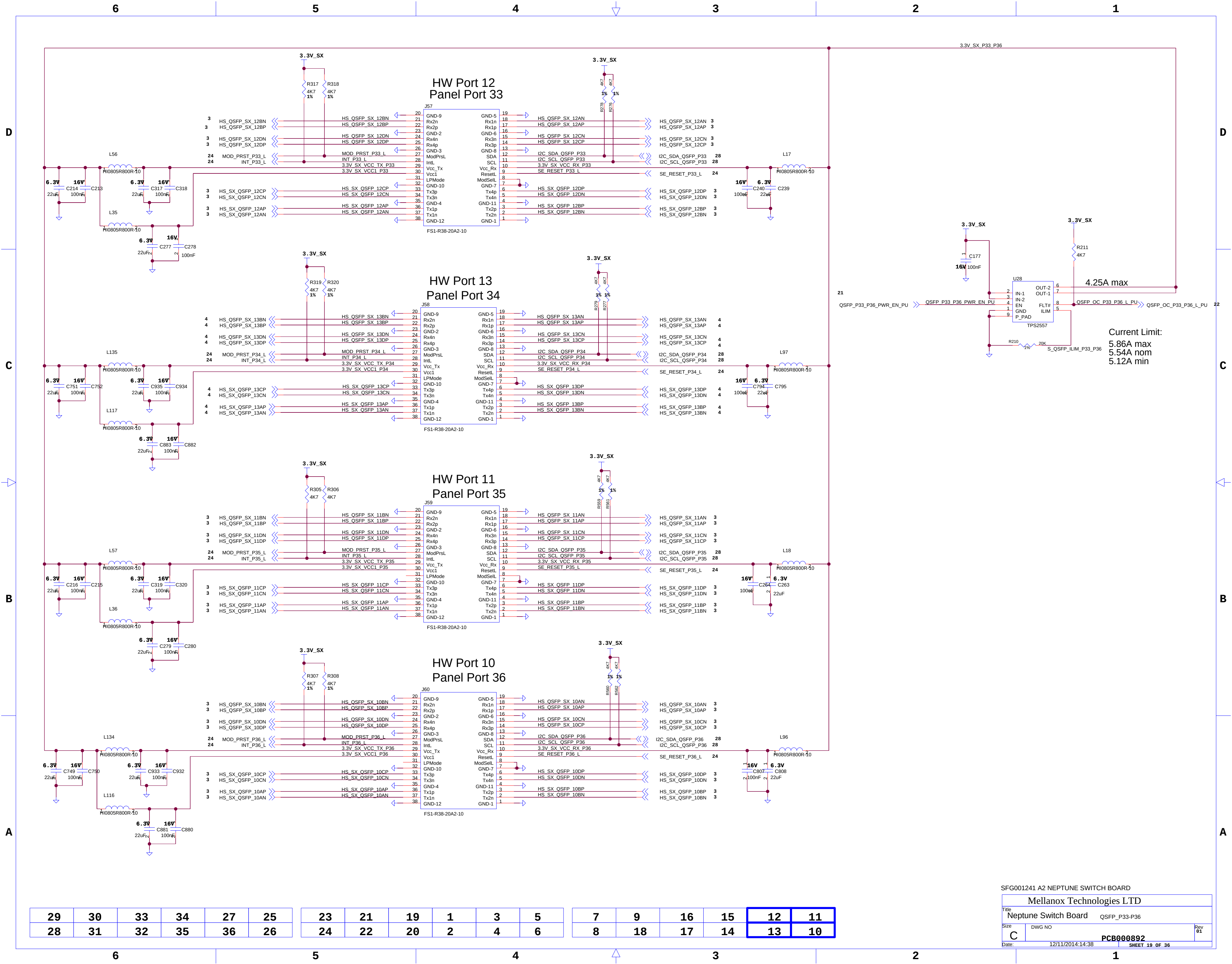
7	9	16	15	12	11
8	18	17	14	13	10

SFG001241 A2 NEPTUNE SWITCH BOARD	
Mellanox Technologies LTD	
Title	Neptune Switch Board
Size	QSF_P25-P28
DWG NO	Rev 01
C	PCB000892
Date:	12/11/2014:14:38
SHEET 17 OF 36	

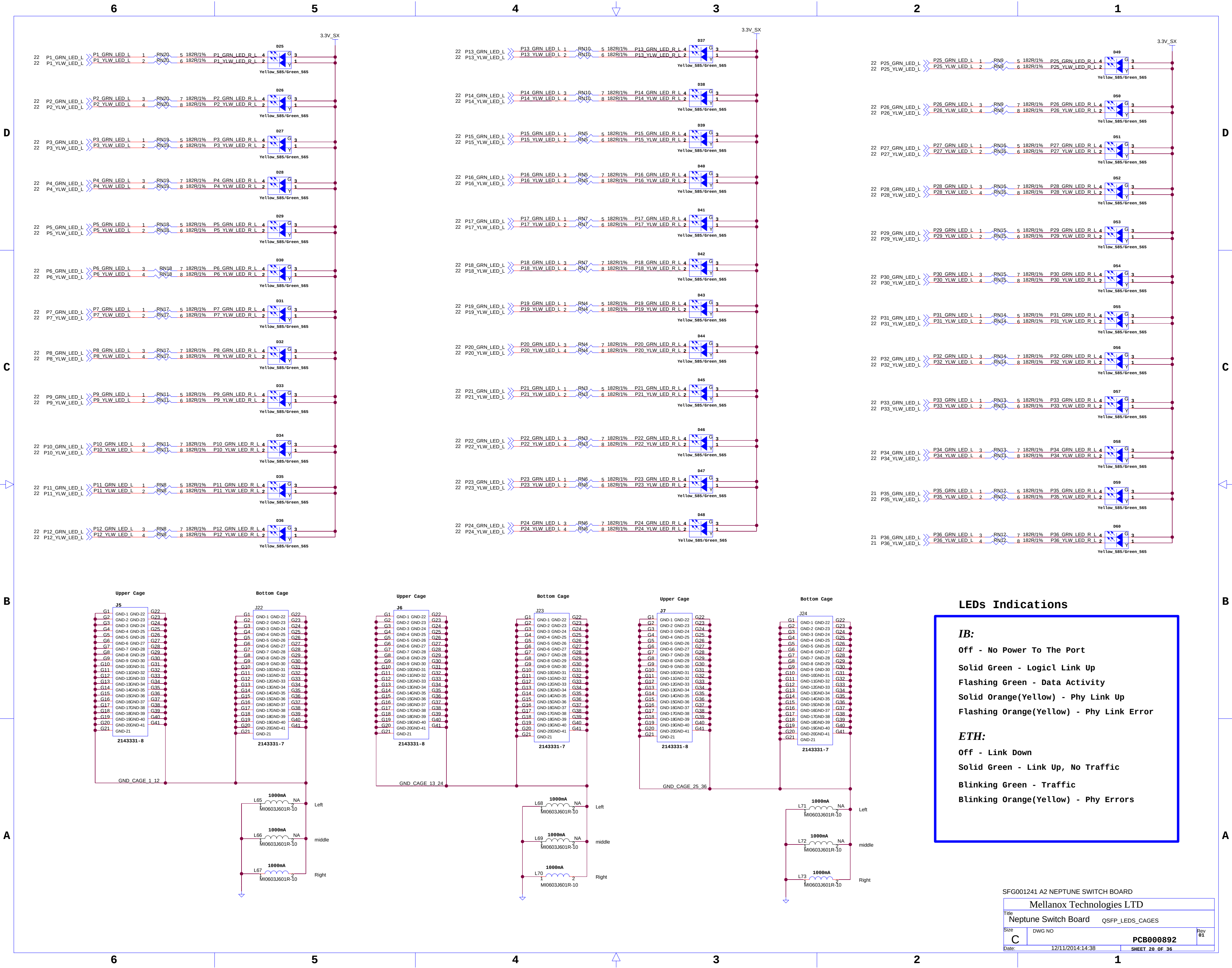


SFG001241 A2 NEPTUNE SWITCH BOARD

Mellanox Technologies LTD			
Title	Neptune Switch Board		
Size	DWG NO	PCB000892	Rev 01
Date:	12/11/2014:14:38	SHEET 18 OF 36	



29	30	33	34	27	25	23	21	19	1	3	5	7	9	16	15	12	11
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SFG001241 A2 NEPTUNE SWITCH BOARD

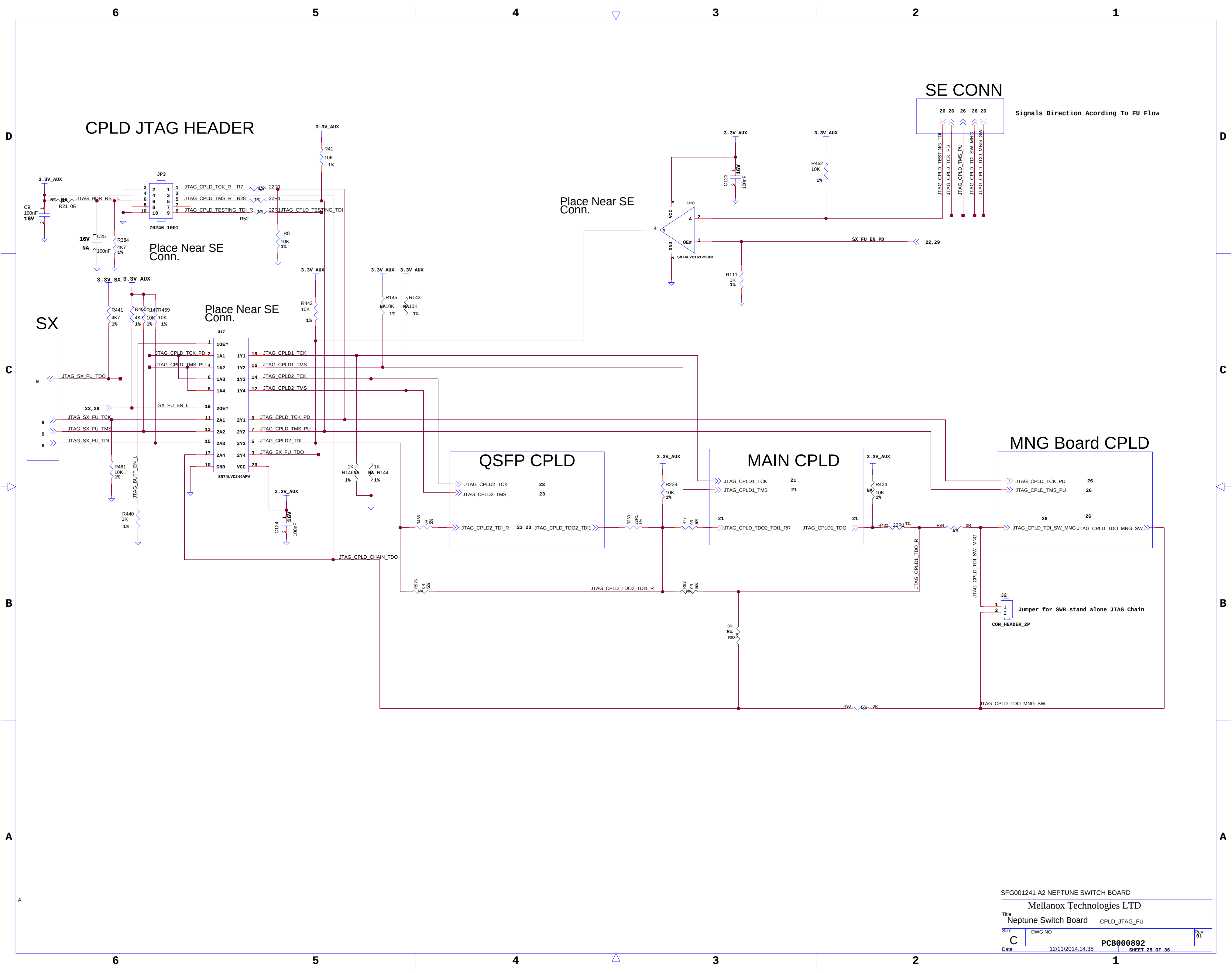
Mellanox Technologies LTD			
Title	Neptune Switch Board		QSFP_LEDS_CAGES
Size	DWG NO	PCB000892	Rev 01
C	Date:	12/11/2014:14:38	SHEET 20 OF 36

A diagram showing a horizontal line with a downward-pointing triangle centered on it. A vertical line segment extends upwards from the top vertex of the triangle.

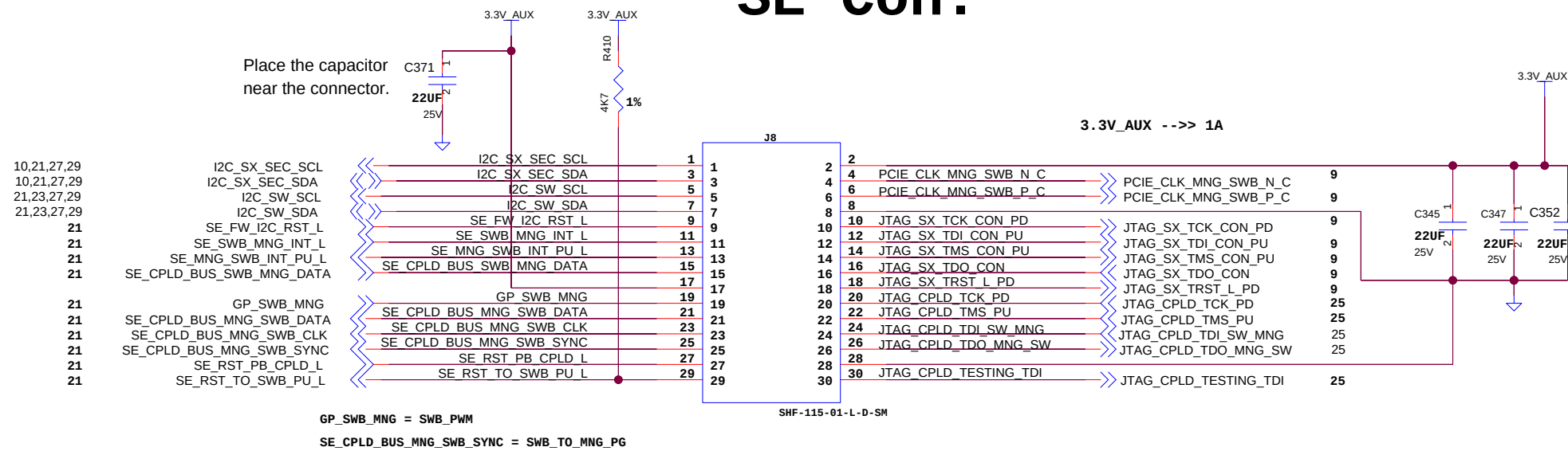


	2
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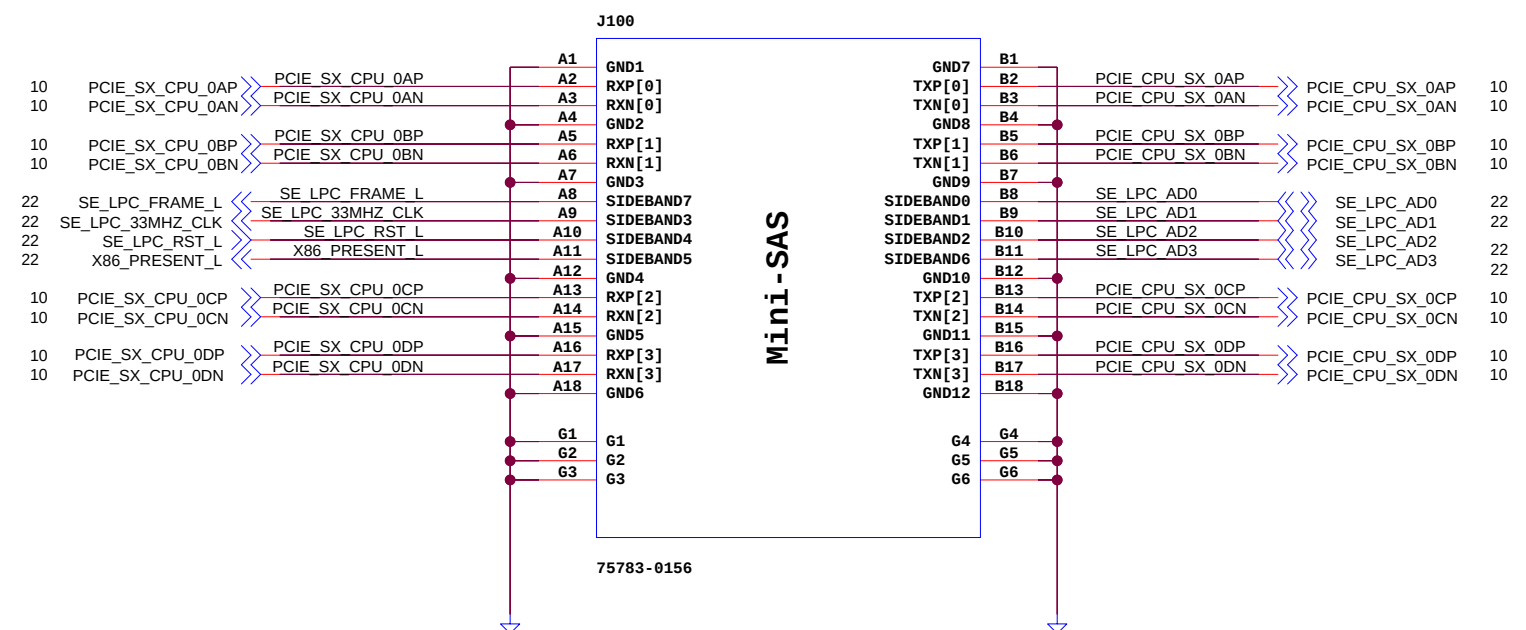




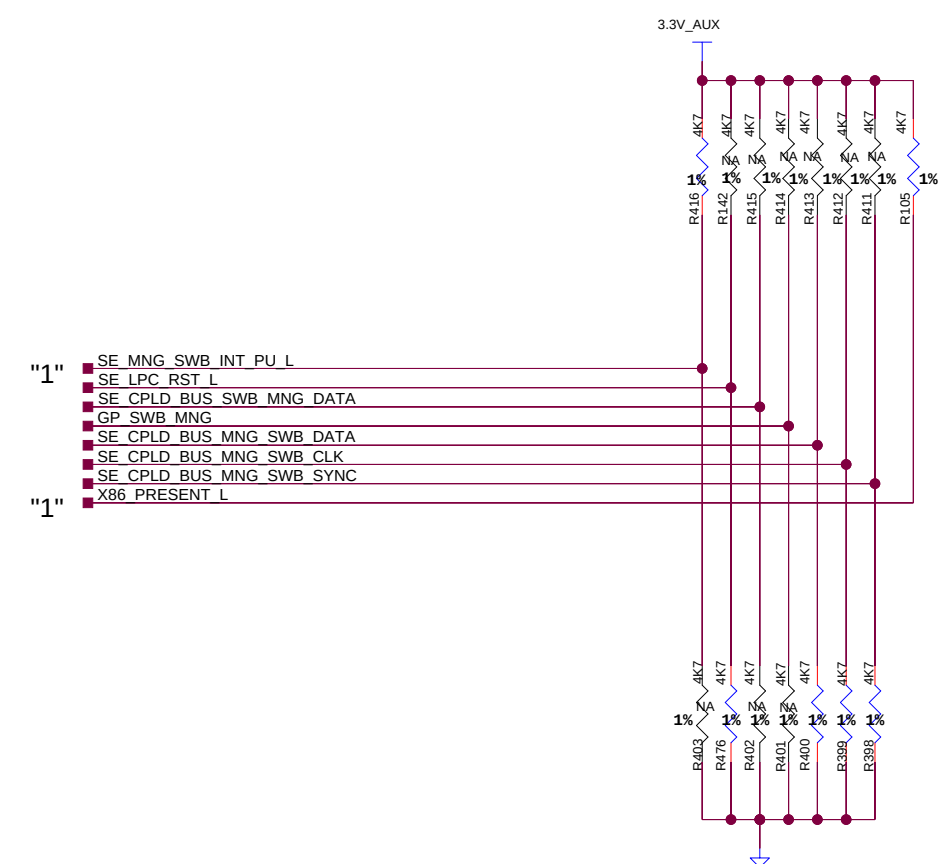
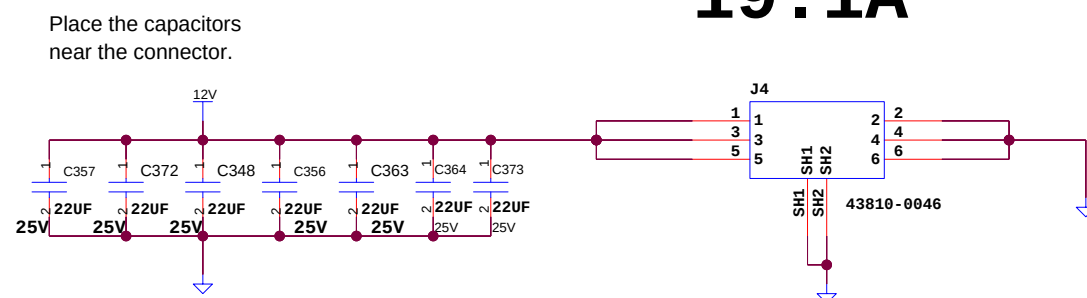
SE Con.



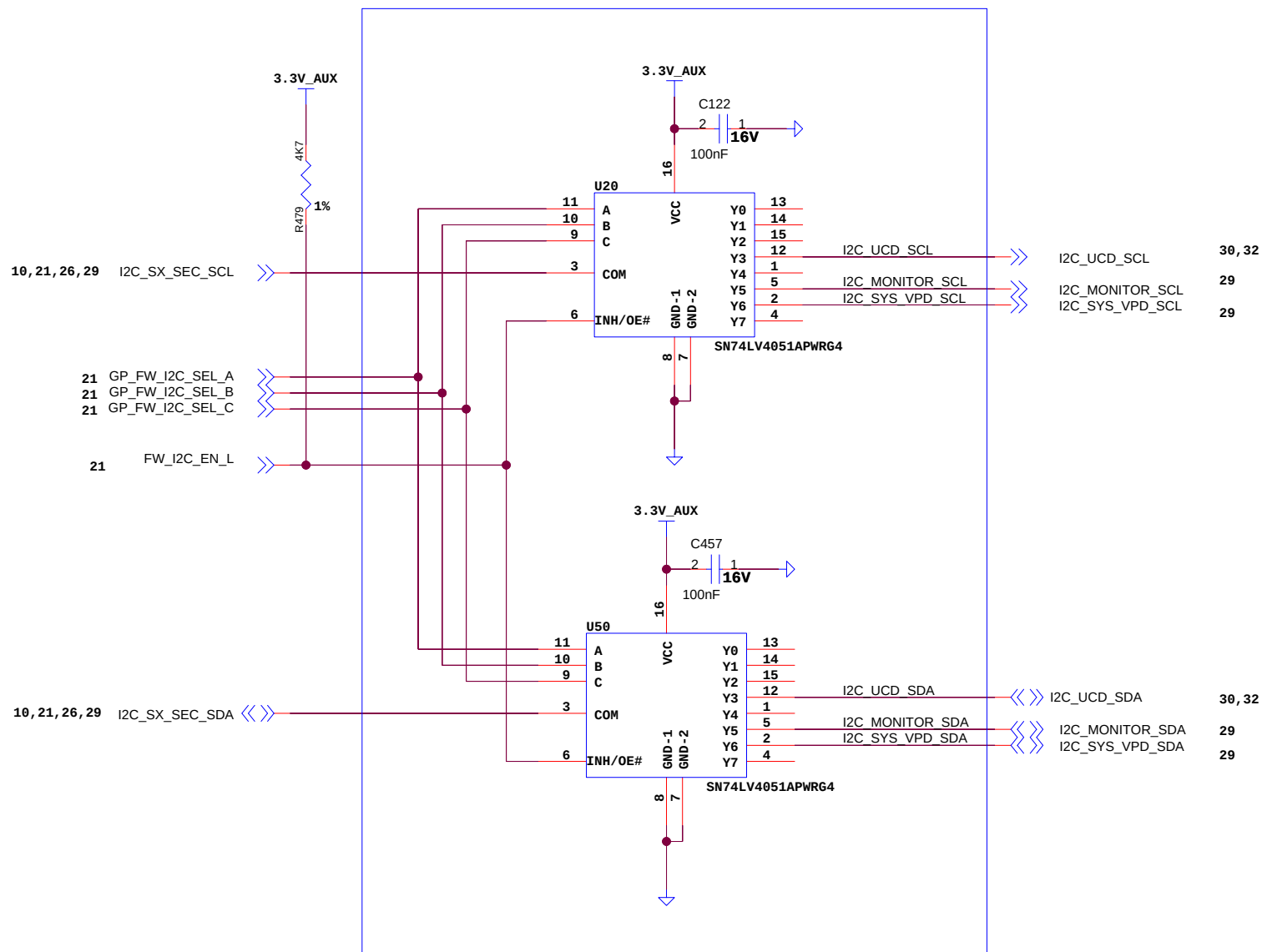
HS Con.



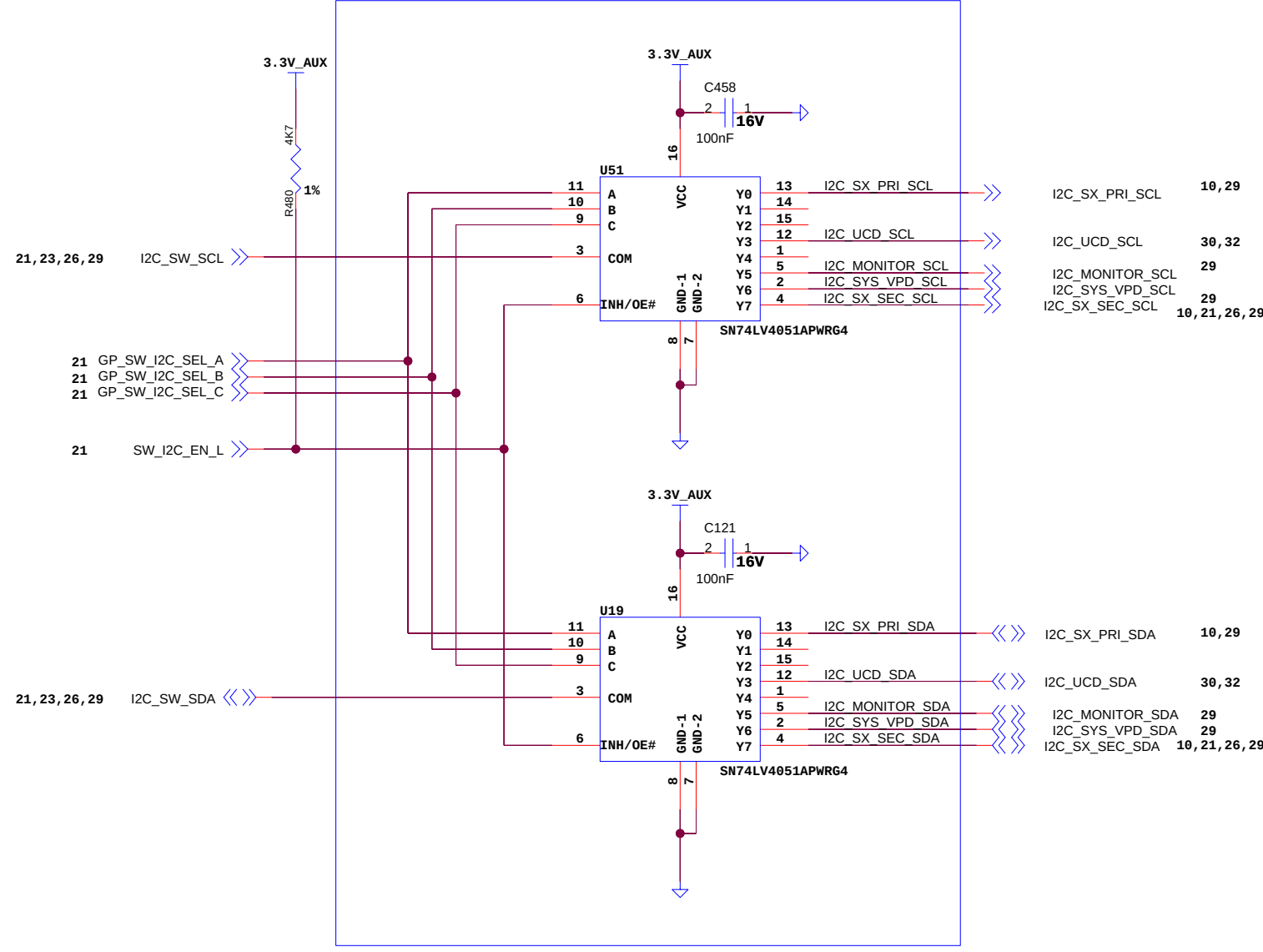
Power Con. 19.1A



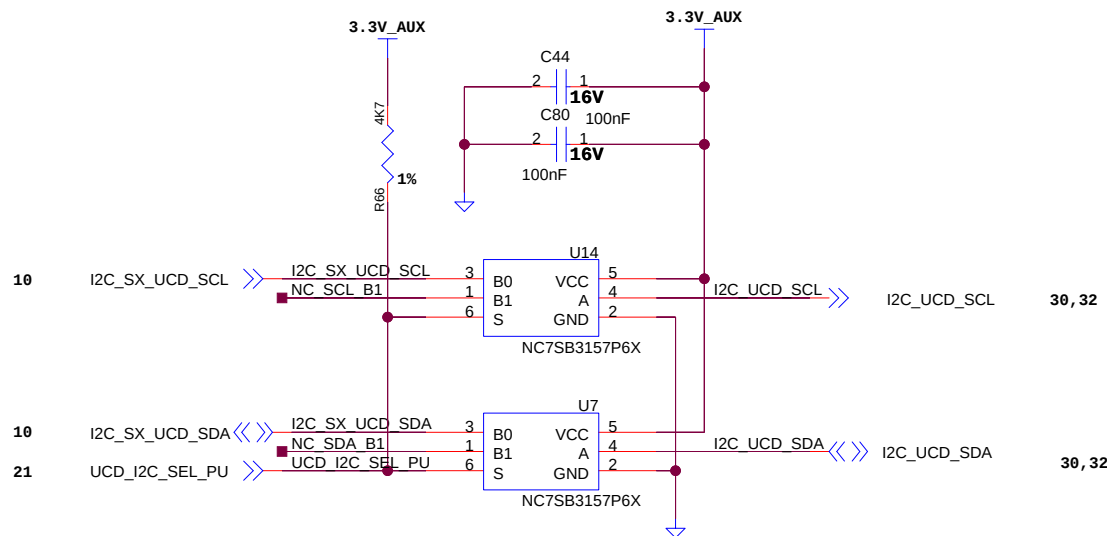
FW I2C MUXs



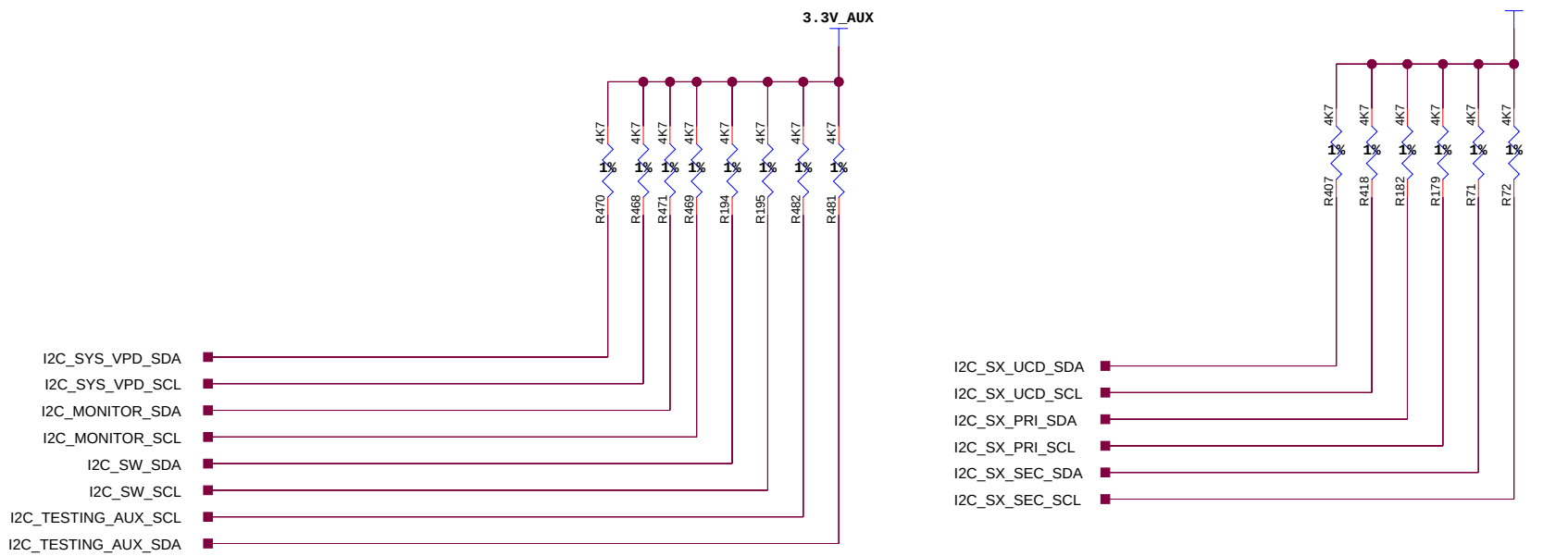
SW I2C MUXs



UCD Switch



I2C PUs

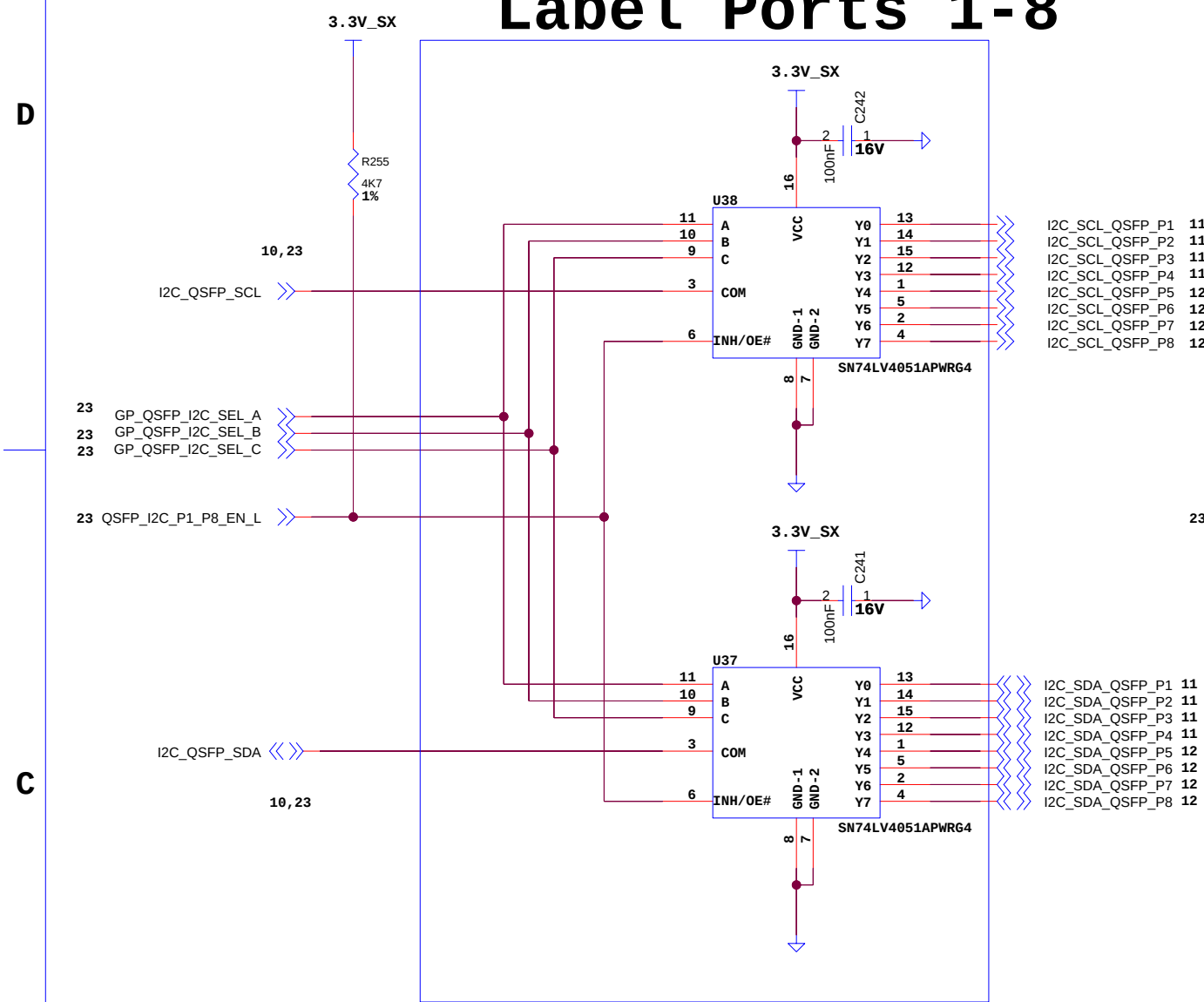


SFG001241 A2 NEPTUNE SWITCH BOARD

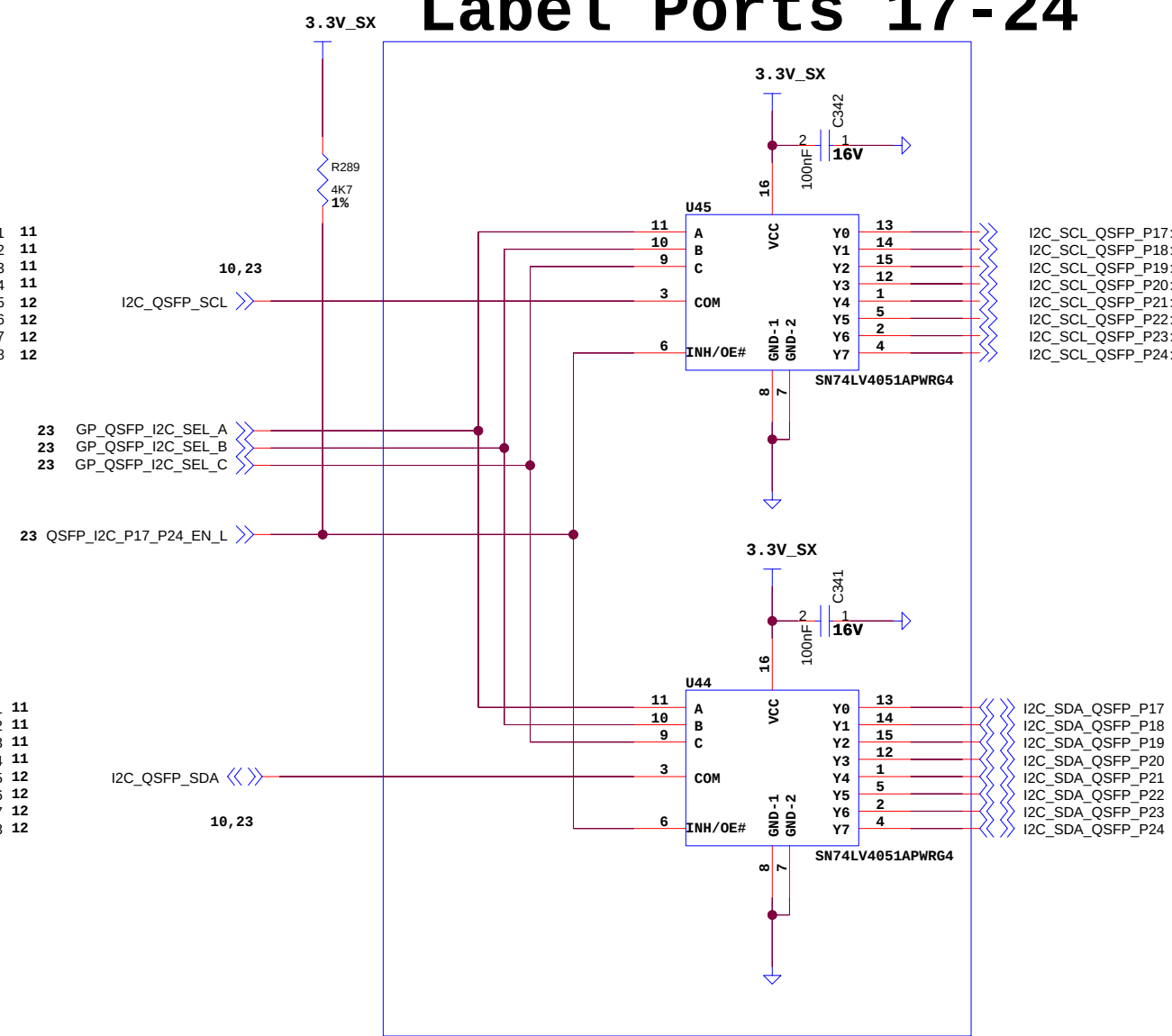
Mellanox Technologies LTD			
Title	Neptune Switch Board		
Size	DWG NO	PCB000892	Rev 01
Date:	12/11/2014:14:38	SHEET 27 OF 36	

PORTS I2C MUXs

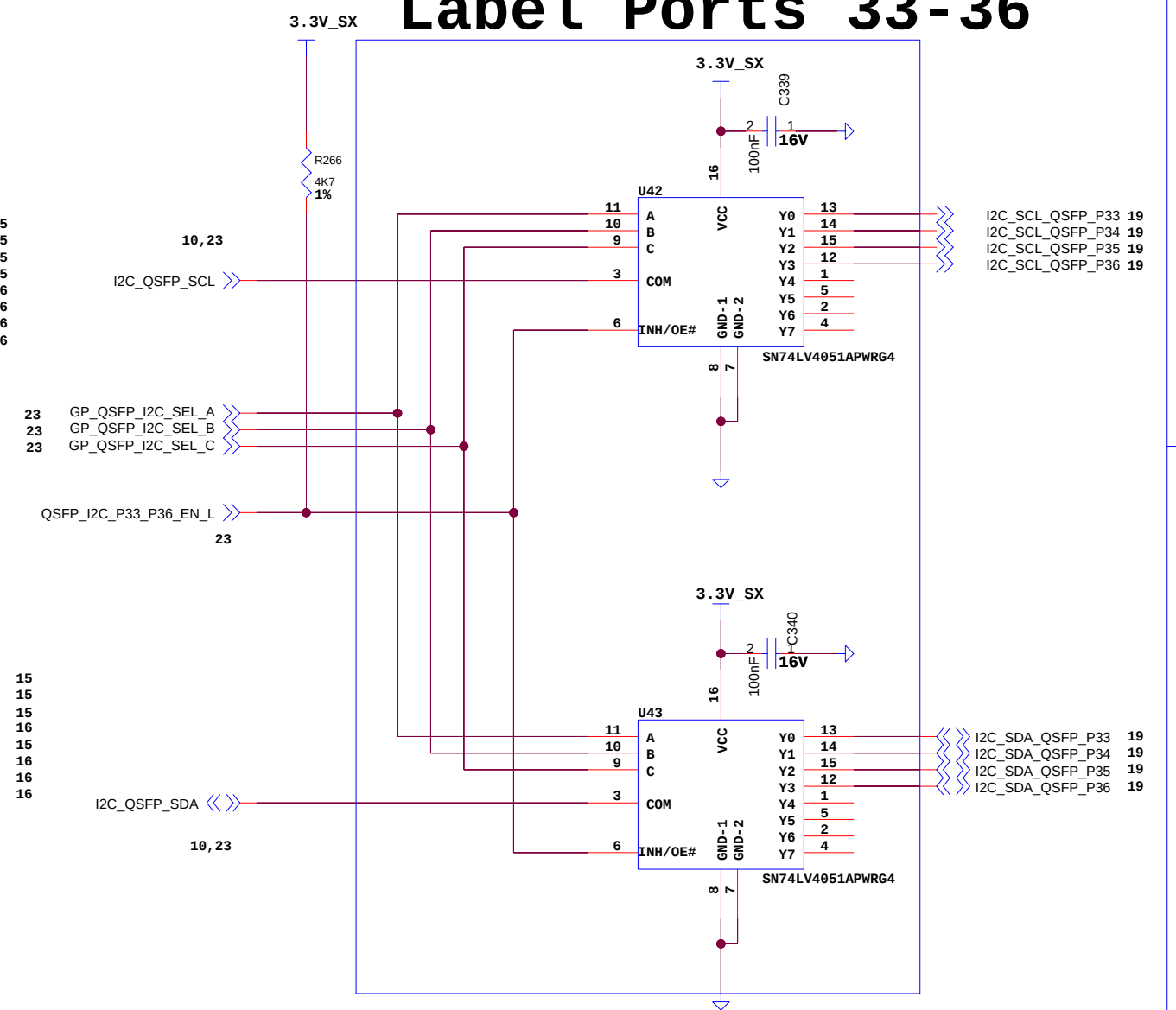
Label Ports 1-8



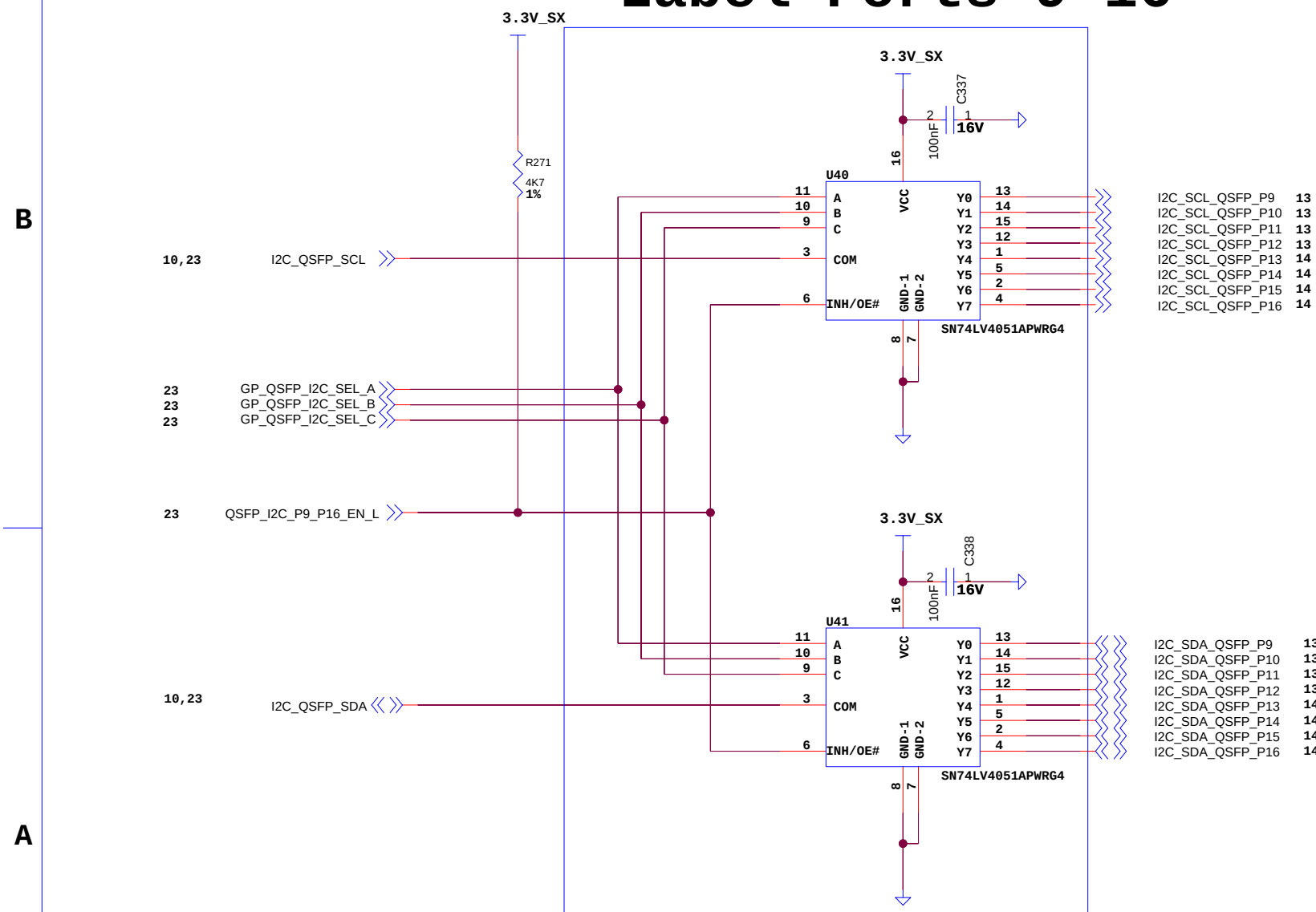
Label Ports 17-24



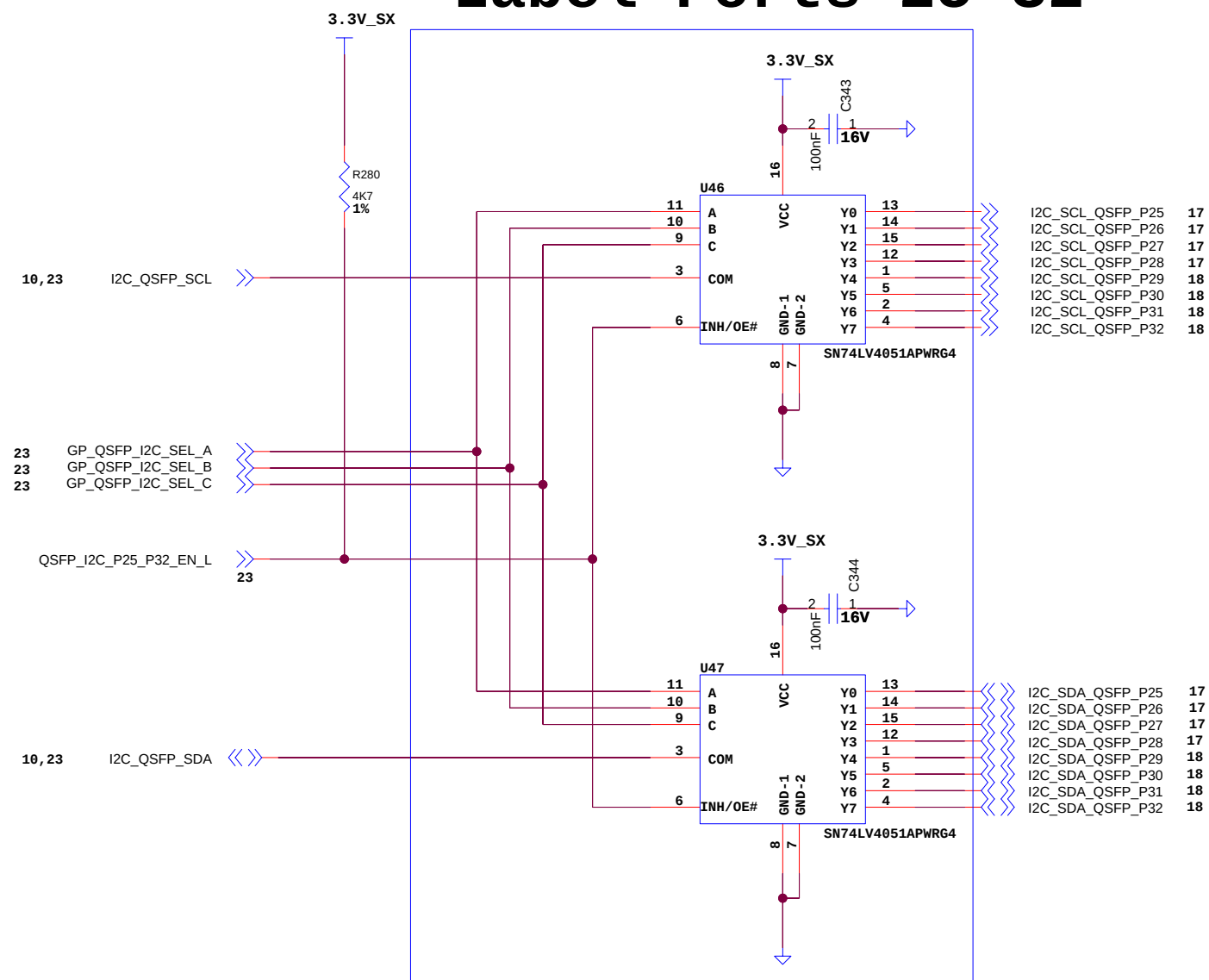
Label Ports 33-36



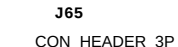
Label Ports 9-16



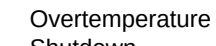
Label Ports 25-32



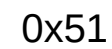
SX SEC I2C



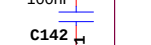
0X4A



FRU EEPROM 0x51



0x20



Vcore / 45A

Controller 0x41 - Phases 1A, 1B & 3A

0x41
65d

VCORE & 1.8V

PMBUS CON

JTAG

Route differentially
10MIL trace width

Current Limitation = 26.51A

Current Limitation = 26.51A

Route pin1 directly to thermal pad using a short trace

Route pin1 directly to thermal pad using a short trace

Route pin1 directly to thermal pad using a short trace

Place Near The Single Phase

SFG001241 A2 NEPTUNE SWITCH BOARD

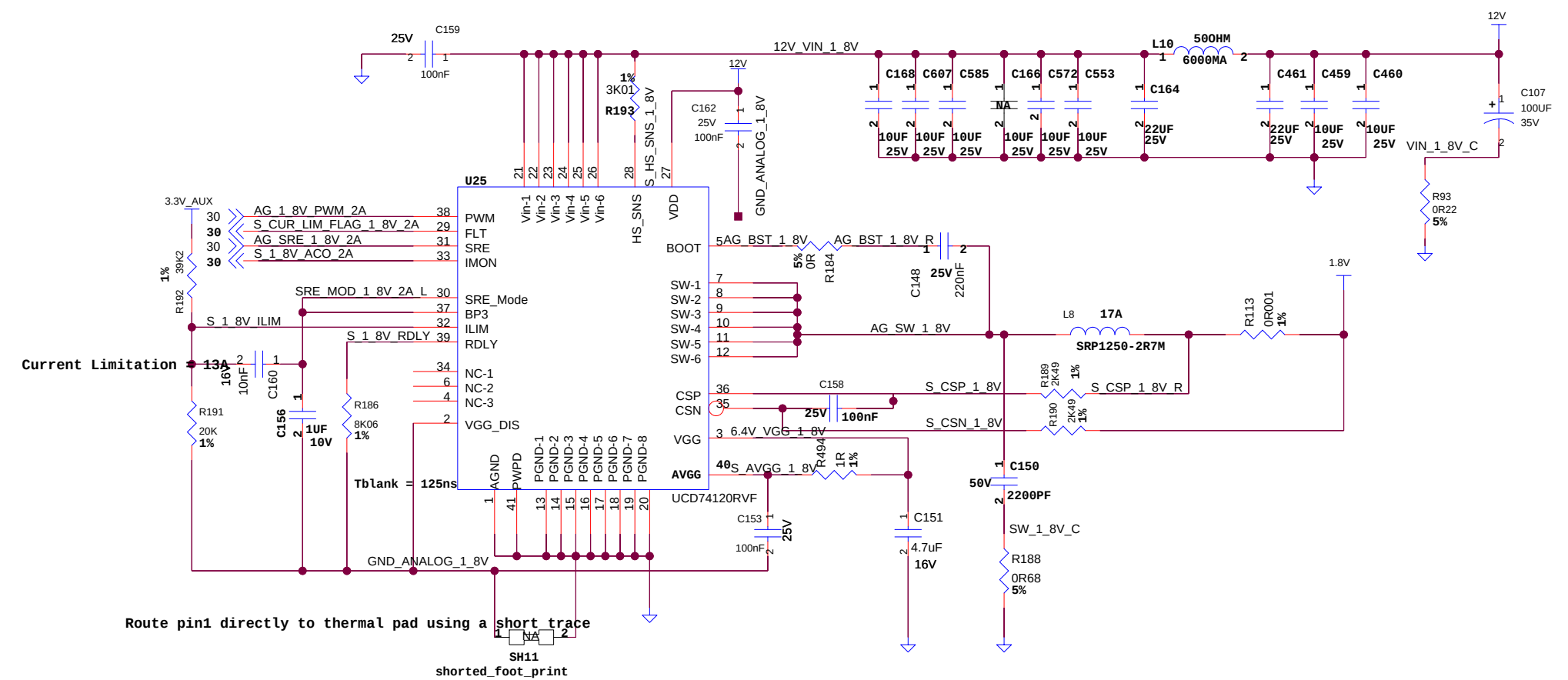
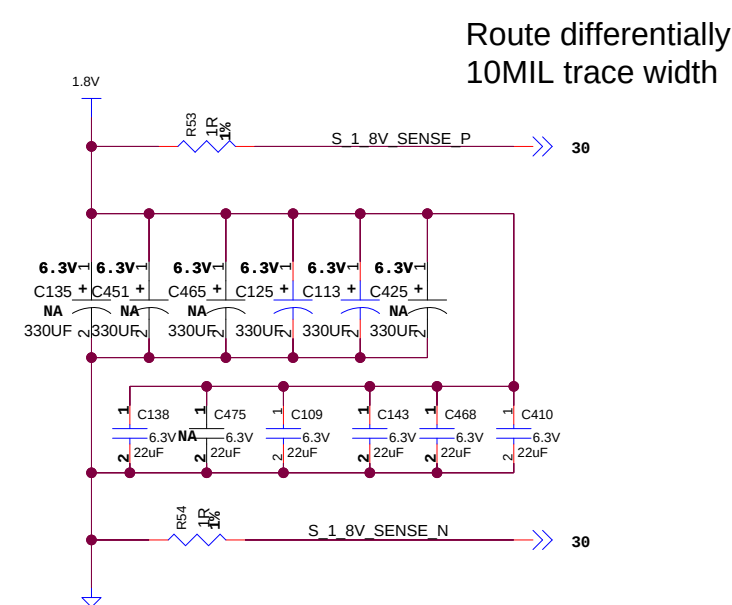
Mellanox Technologies LTD

Title Neptune Switch Board PWR_SX_Vcore

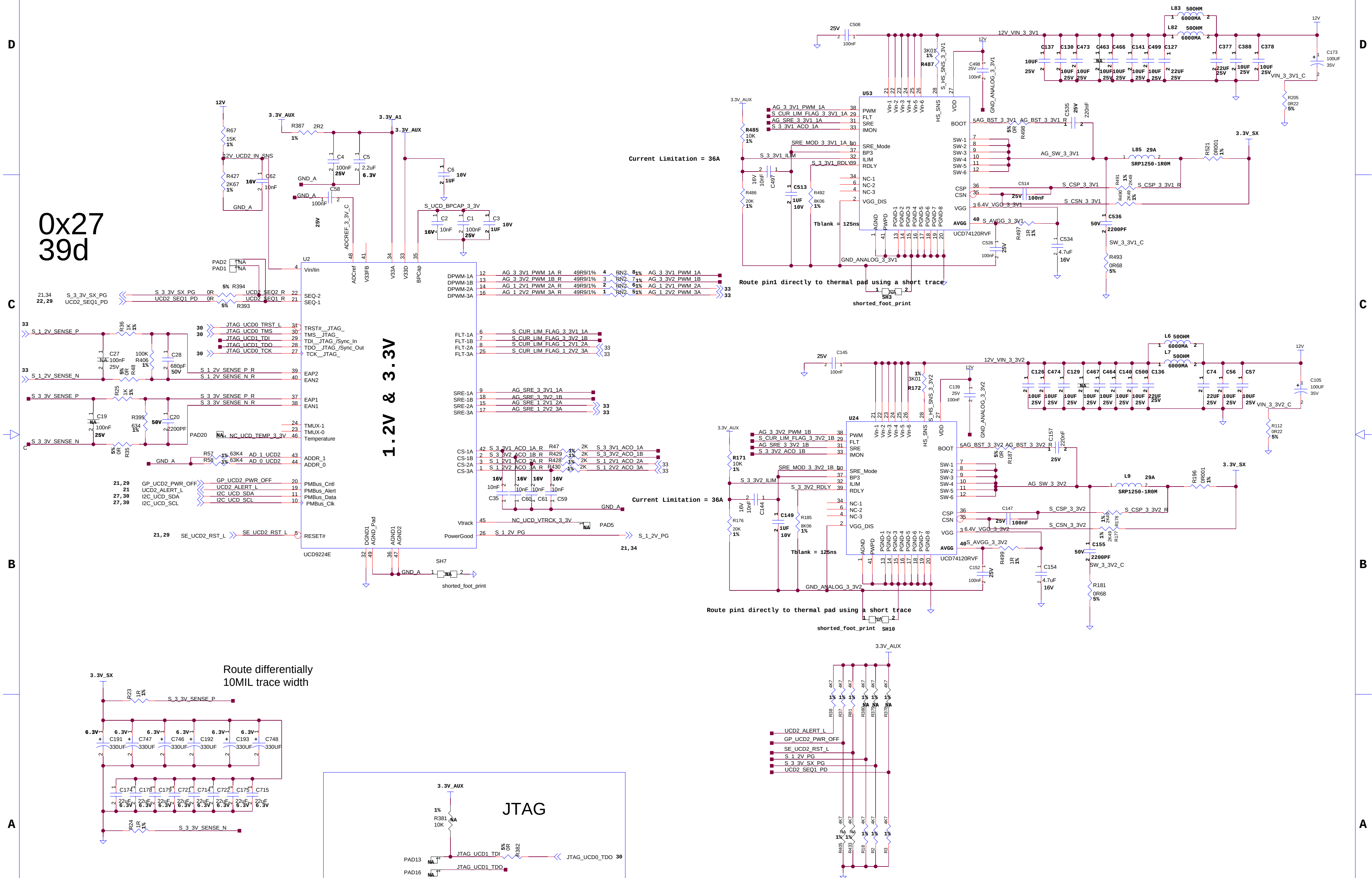
Size C DWG NO PCB000892 Rev 01

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12V to 1.8V 6A
Controller 0x41 - Phase 2A

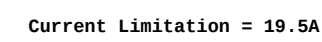
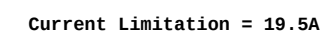
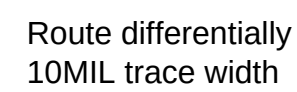


3_3V_SX / 40A
Controller 0x27 - Phase 1A & 1B

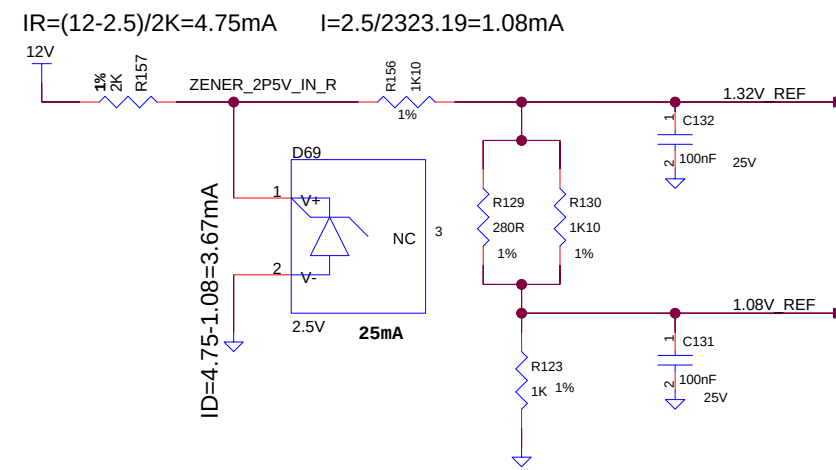


0R - ASSY; 10K -NA - UCD#1 / #2 chained
0R - NA; 10K -ASSY - UCD#1 / #2 ind chain

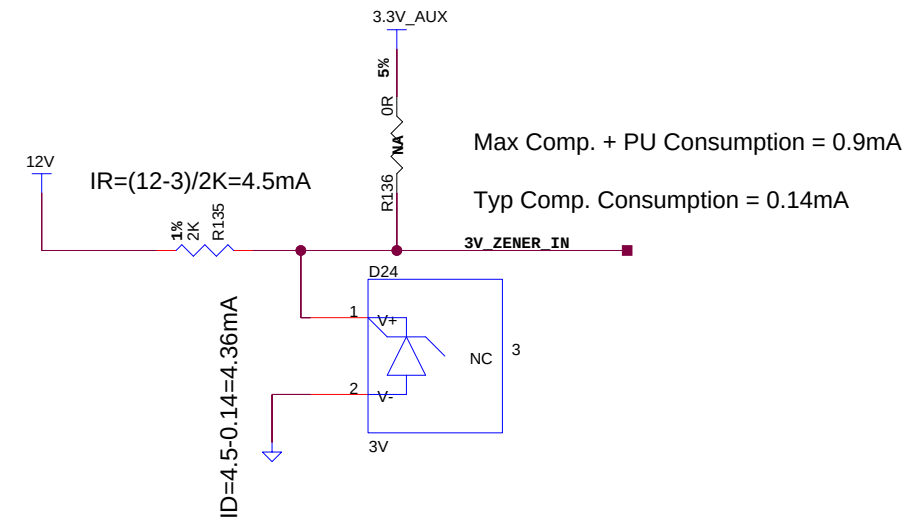
Controller 0x41 - Phase 2A & 3A



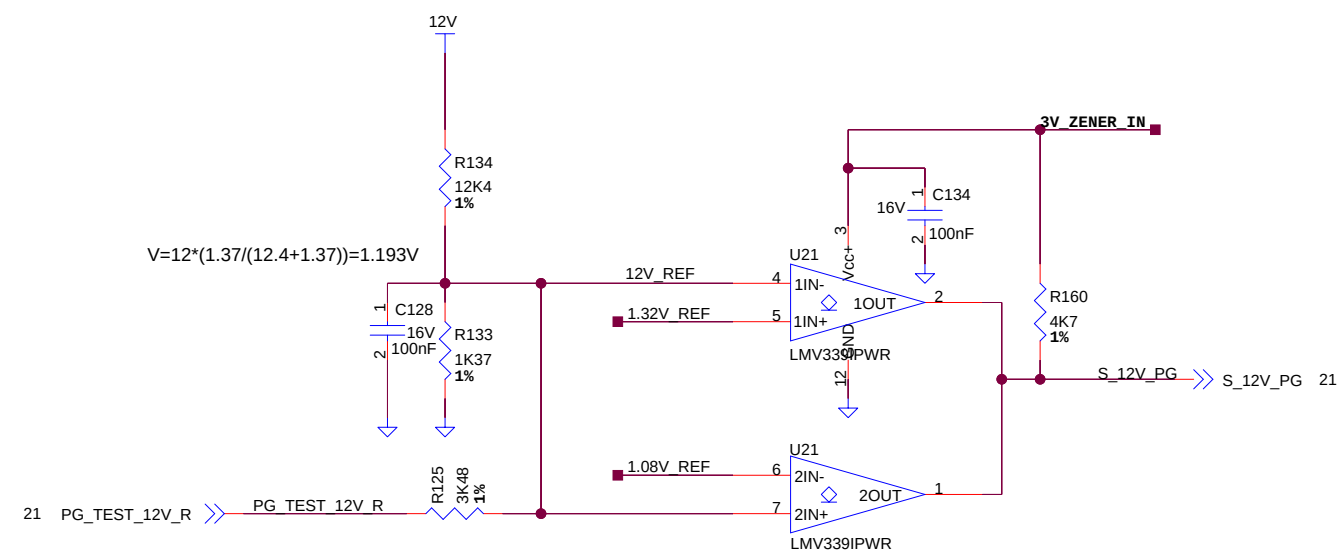
PG Vref CIRCUIT



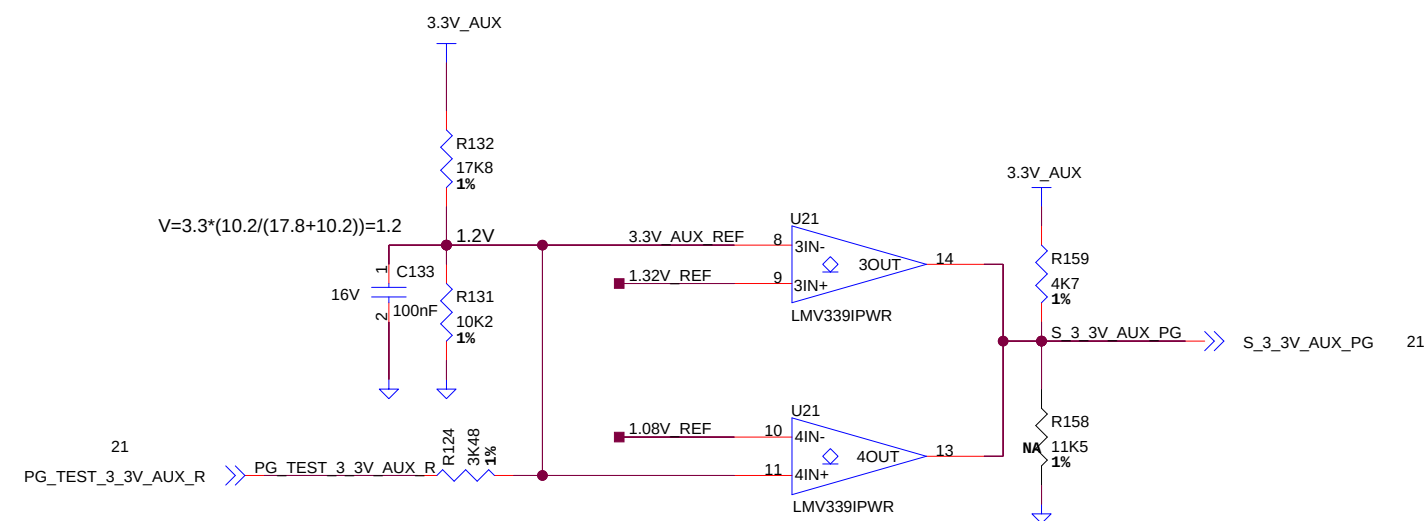
PG Comperators Supply Circuit



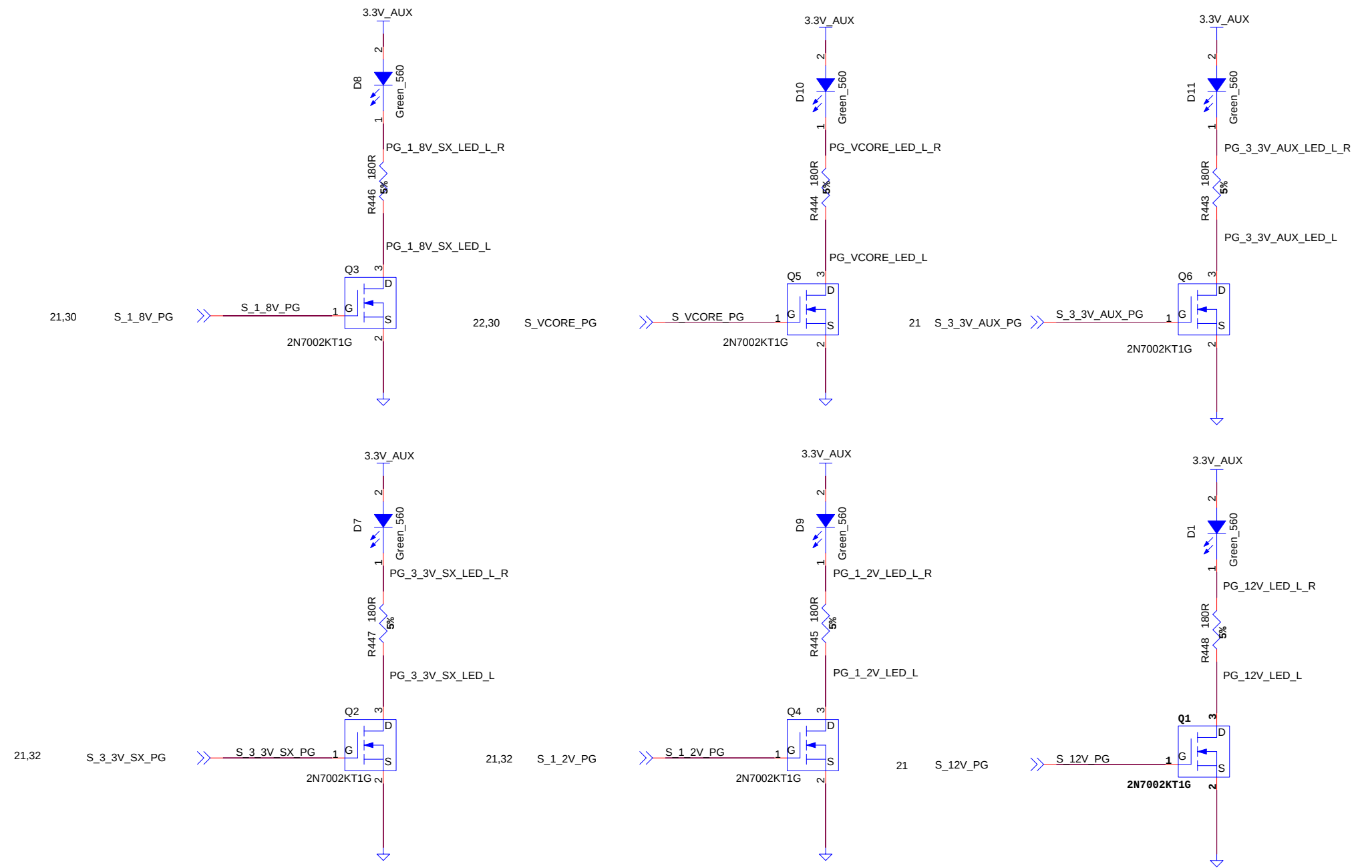
12V FROM MNG BRD PG

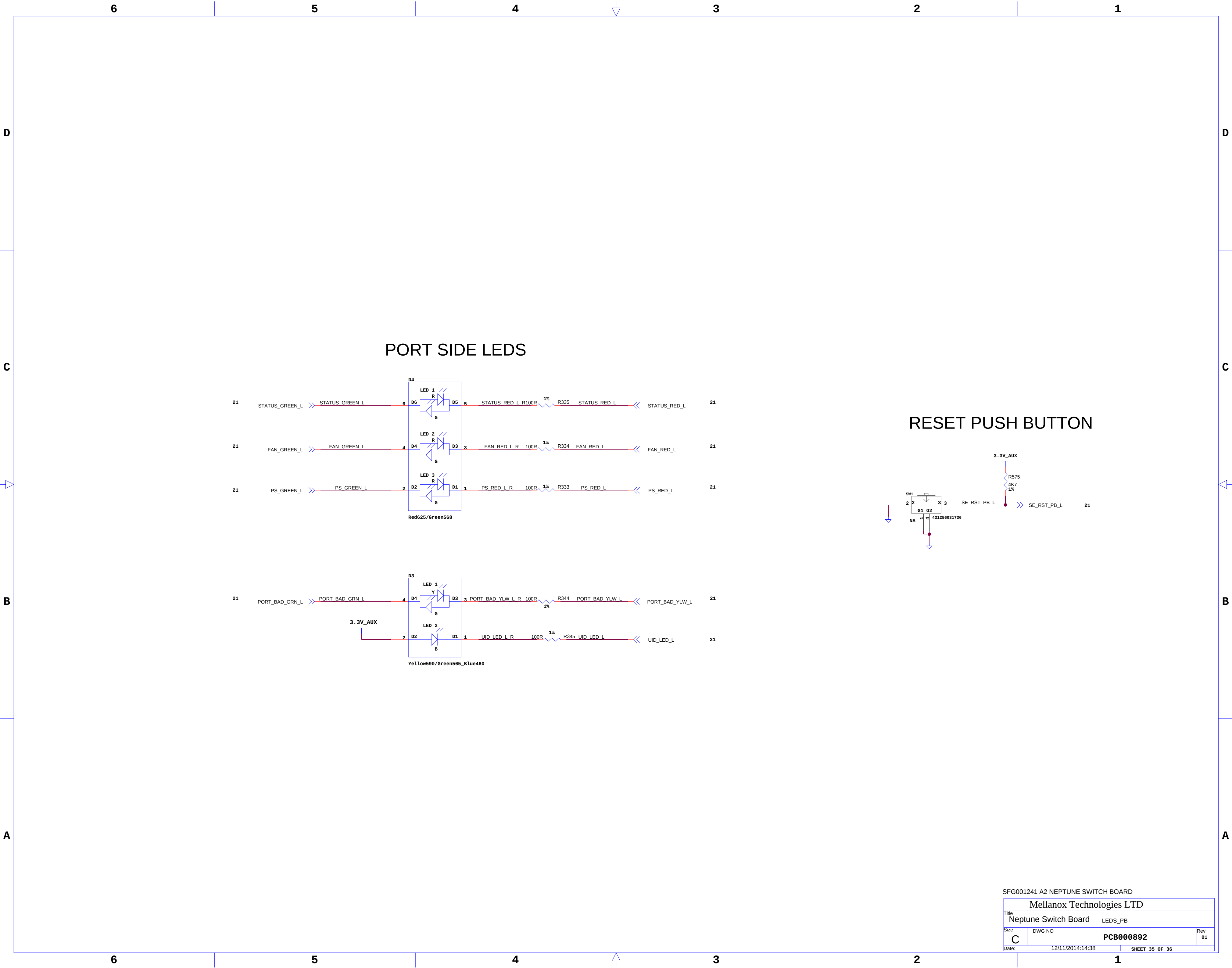


3.3V_Aux From MNG BRD PG



PG LEDS





6

5

4

3

2

1

D

D

C

C

B

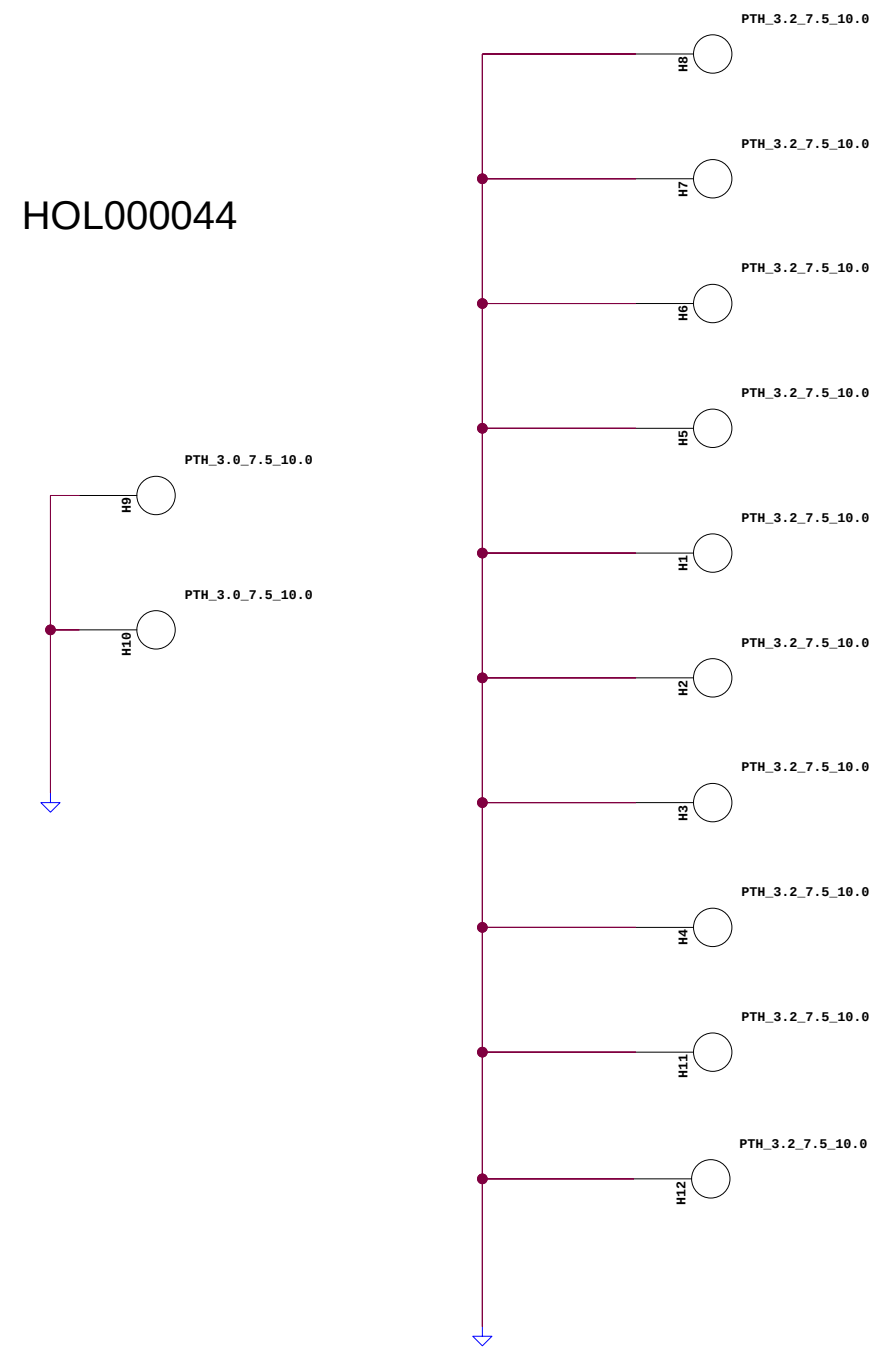
B

A

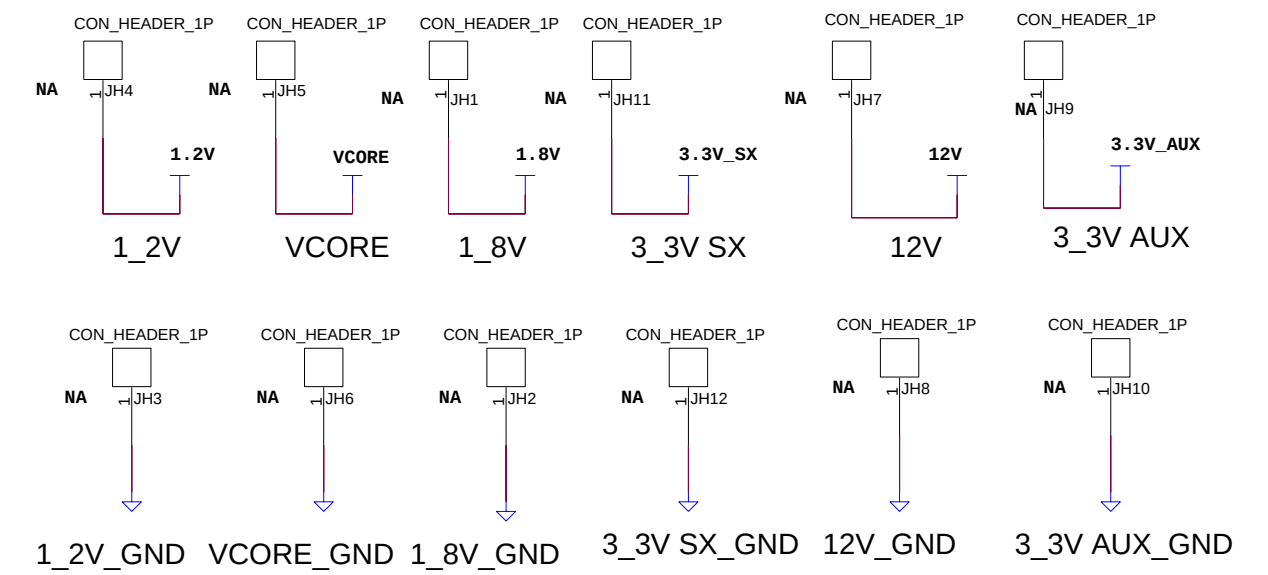
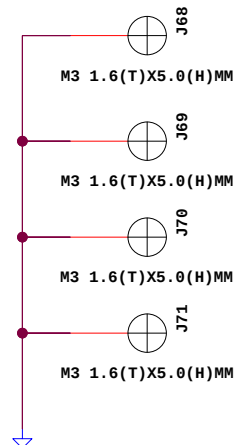
A

DRILL HOLES

HOL000045



ELE000037 - HS Spacers



Place Near Main Power Load

Kepp GND PAD and power PAD cclose

Kepp GND PAD and power PAD close