

Symphony-Board



CONTENT

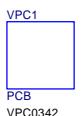
PAGE NO.	SCHEMATIC PAGE
1	Cover
2	Block Diagram
3	SOM
4	VAR-SOM-MXxx Connector
5	Power, Reset, Boot, RTC, EEPROM
6	uSD, Audio,CAN
7	Camera, HDMI, DP
8	Ethernet
9	PCIe
10	Debug UART, LEDs, SWs
11	LVDS, DSI, Touch
12	USB2 Host
13	USB3, uSATA
14	Headers

Disclaimer:

Schematics are for reference only.
Variscite LTD provides no warranty for the use of
these schematics.
Schematics are subject to change without notice.

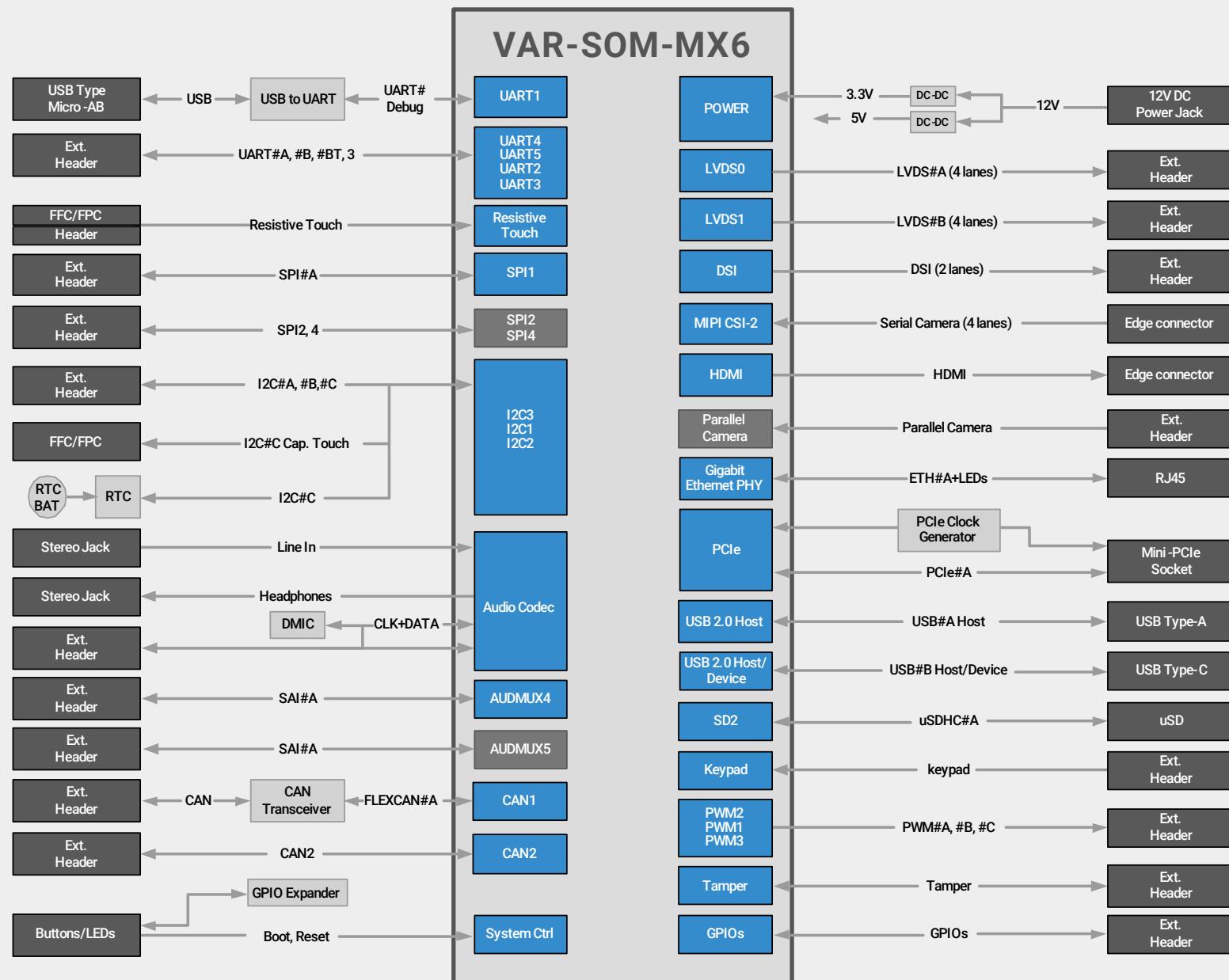
Revision History

Document	Carrier	
1.0	1.0	Initial
1.1	1.1	Released
1.2	1.1	Updated Block Diagrams Added SH1 wire short symbol Updated Compatability value for SOM pins 68,69,176 Updated SOM pin 22 net name Fixed U22.B1, C113.1 net name Fixed R1-R2,R35-R38 net name
1.3	1.2	Removed SH1 wire short, J1.68 routed to capacitive touch Changed R29 to C185 Changed R123,R127 to N.C. Added resistors R130-132 Removed ADC_INxx alternate function from VAR-SOM-MX8 Symbol Updated PCIe resistor assembly note
1.4	1.2	Updated Parallel Camera/HDMI/DP Note Fixed ETH pin names VAR-SOM-MX8X Symbol
1.5	1.2A	Disconnected R129
1.6	1.2A	Added VAR-SOM-MX8M-MINI Block Diagram and Symbol PRE-RELEASE VERSION !!!! Subject to change without notice
1.7	1.2B	Fixed VAR-SOM-MX8M-MINI Symbol Changed U29,U30,U31 to P/N: FPF2193 Changed R60 to 47K



Symphony-Board

Doc rev 1.1



Pin2pin with additional VAR -SOM products.
Please check pin -list document for details

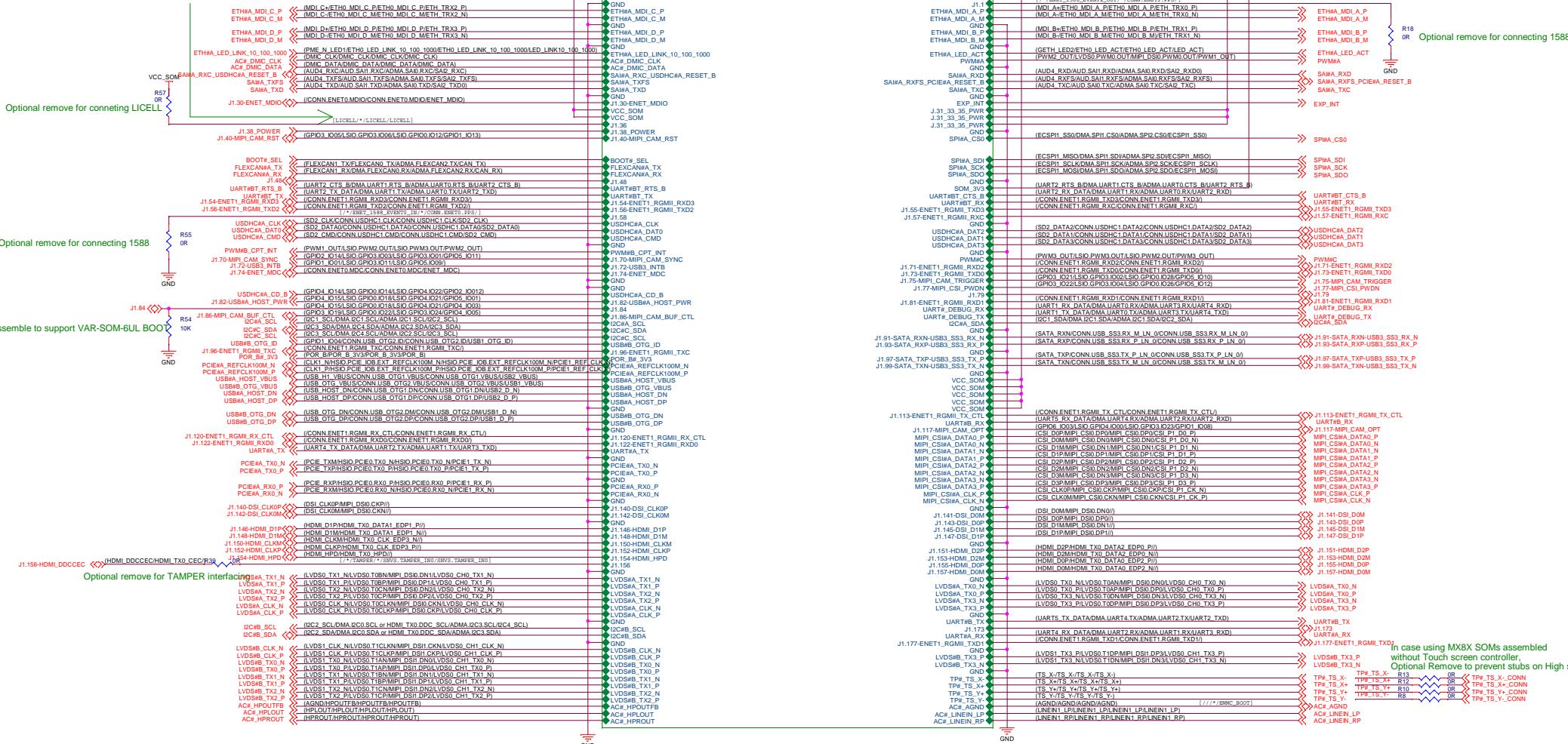
Not Compatible

OFF Page connector index:

1. Function# - Interface common to ALL SOMs
2. J1.xxx-Function: Interface common to certains SOMs or Used for carrier board common function
3. J1.xxx - No common interface

Compatibility list
Describes the ALT per SOM for compatibility.
Order of names: (MX6/MX8/MX8X/MX8MM)

CustomBoard ALT
Describes ALT which can be demonstrated on CustomBoard.
'/* - denotes special SOM assembly option
Order of names: [MX6/MX8/MX8X/MX8MM]



Variscite

Title: 03.SOM

Size: A2 Document Number: Symphony-Board Project: Symphony-Board Rev: 1.2B

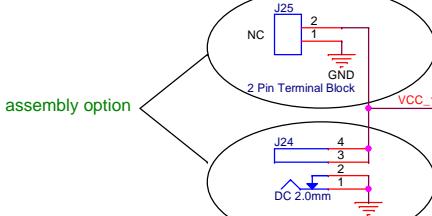
Designer: Aviad H. Approved By: Sheet 3 of 14

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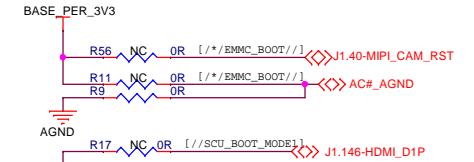
05. Power,Reset,Boot,RTC,EEPROM

DC-IN - 12V



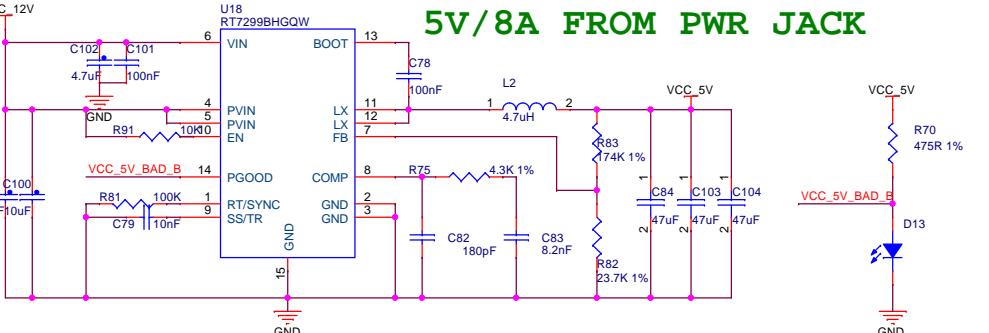
SOM BOOTSTRP

Boot Options:
OFF : MX8/MX8X-eMMC ; MX6-NAND
ON : SD

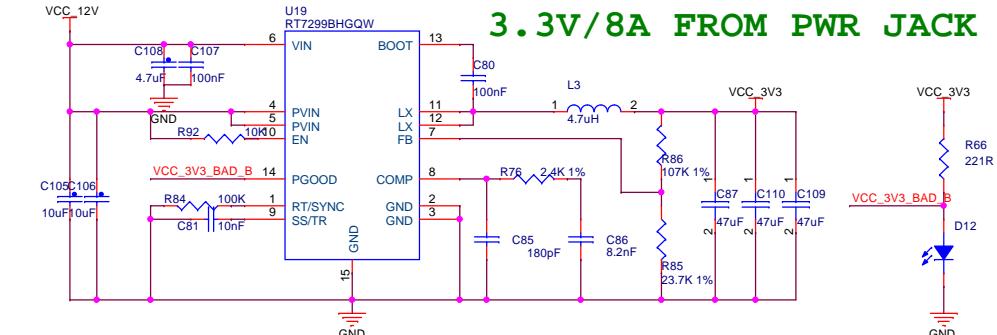


For supporting MX6 SOMs with eMMC boot option:
Remove R9
Place R56,R11

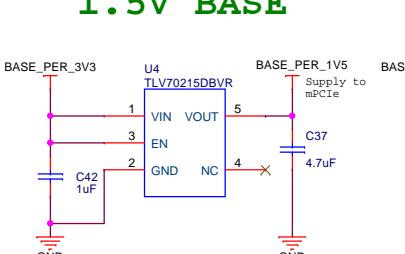
5V/8A FROM PWR JACK



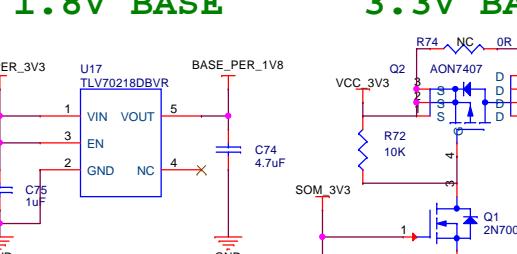
3.3V/8A FROM PWR JACK



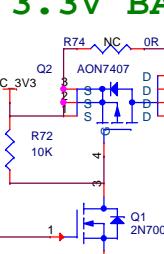
1.5V BASE



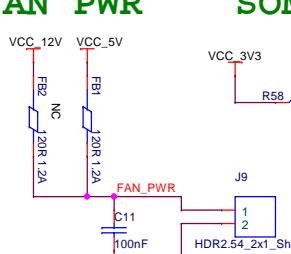
1.8V BASE



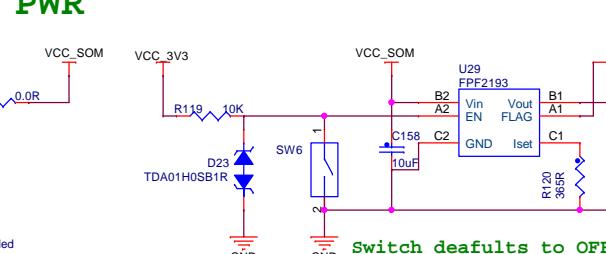
3.3V BASE



FAN PWR

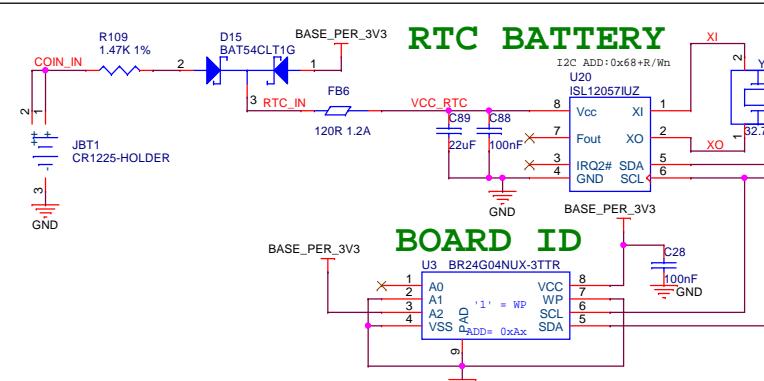


SOM PWR

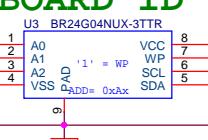


Switch defaults to OFF,
Must be set to ON when connecting
MX6 based SOMs

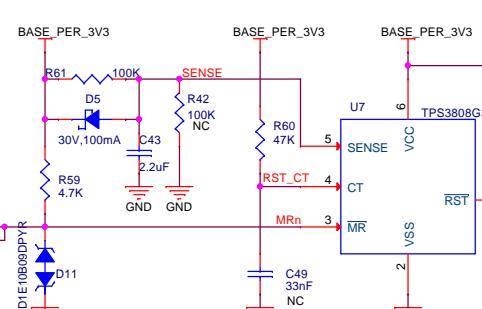
RTC BATTERY



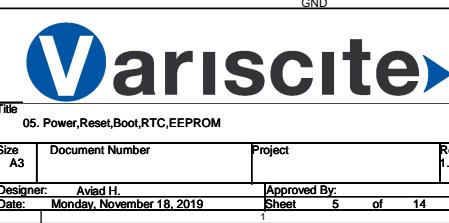
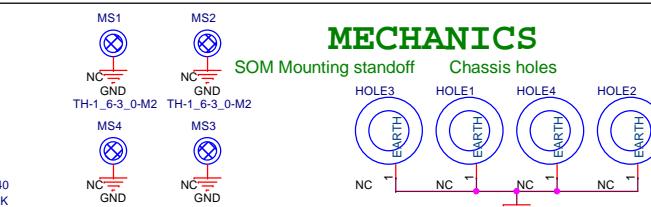
BOARD ID



RESET

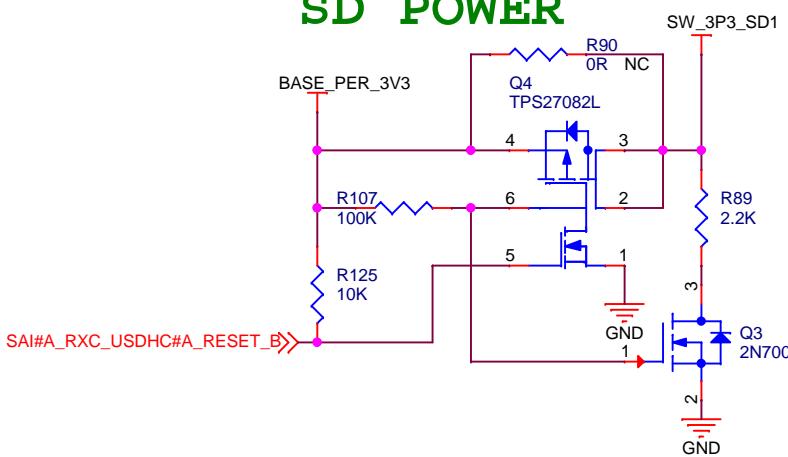


MECHANICS

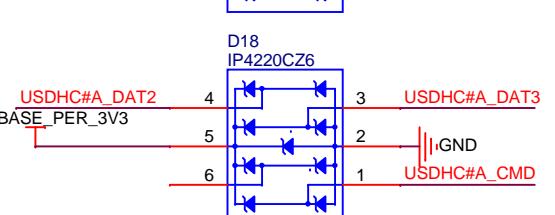
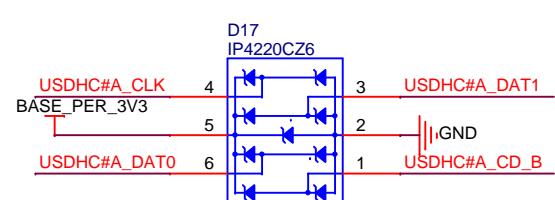
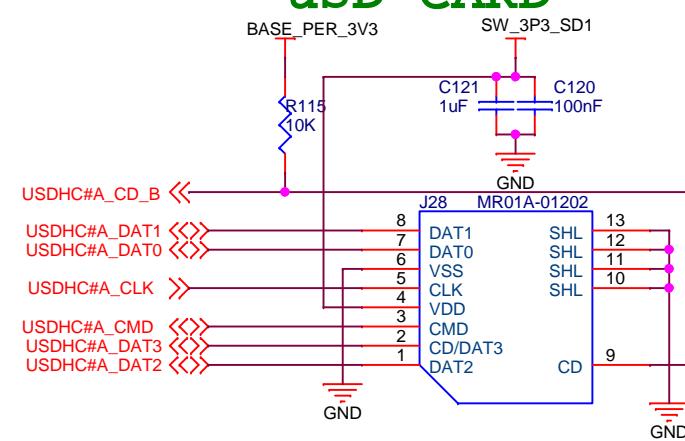


06. uSD, Audio, CAN

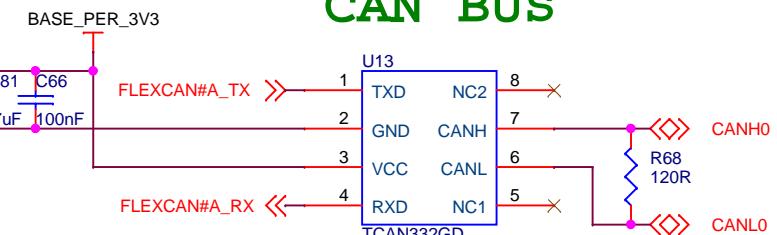
SD POWER



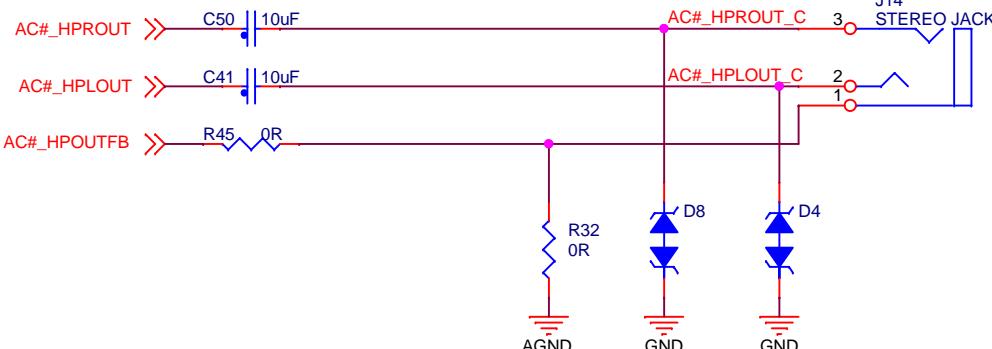
uSD CARD



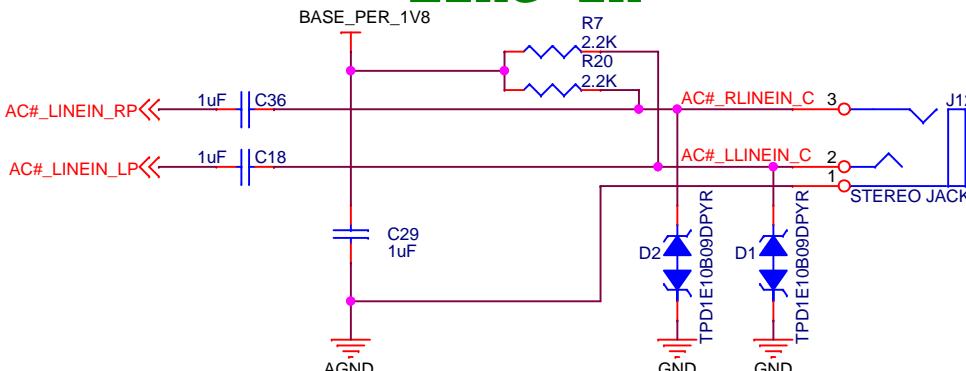
CAN BUS



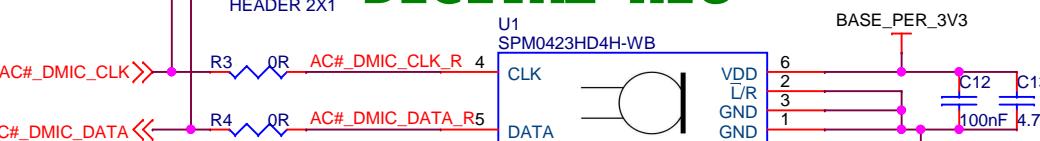
Headphones



Line In



DIGITAL MIC



Variscite

Title

06. uSD, Audio, CAN

Size

A4

Document Number

Symphony-Board

Project

Symphony-Board

Rev

1.2B

Designer:

Aviad H.

Date:

Monday, November 18, 2019

Approved By:

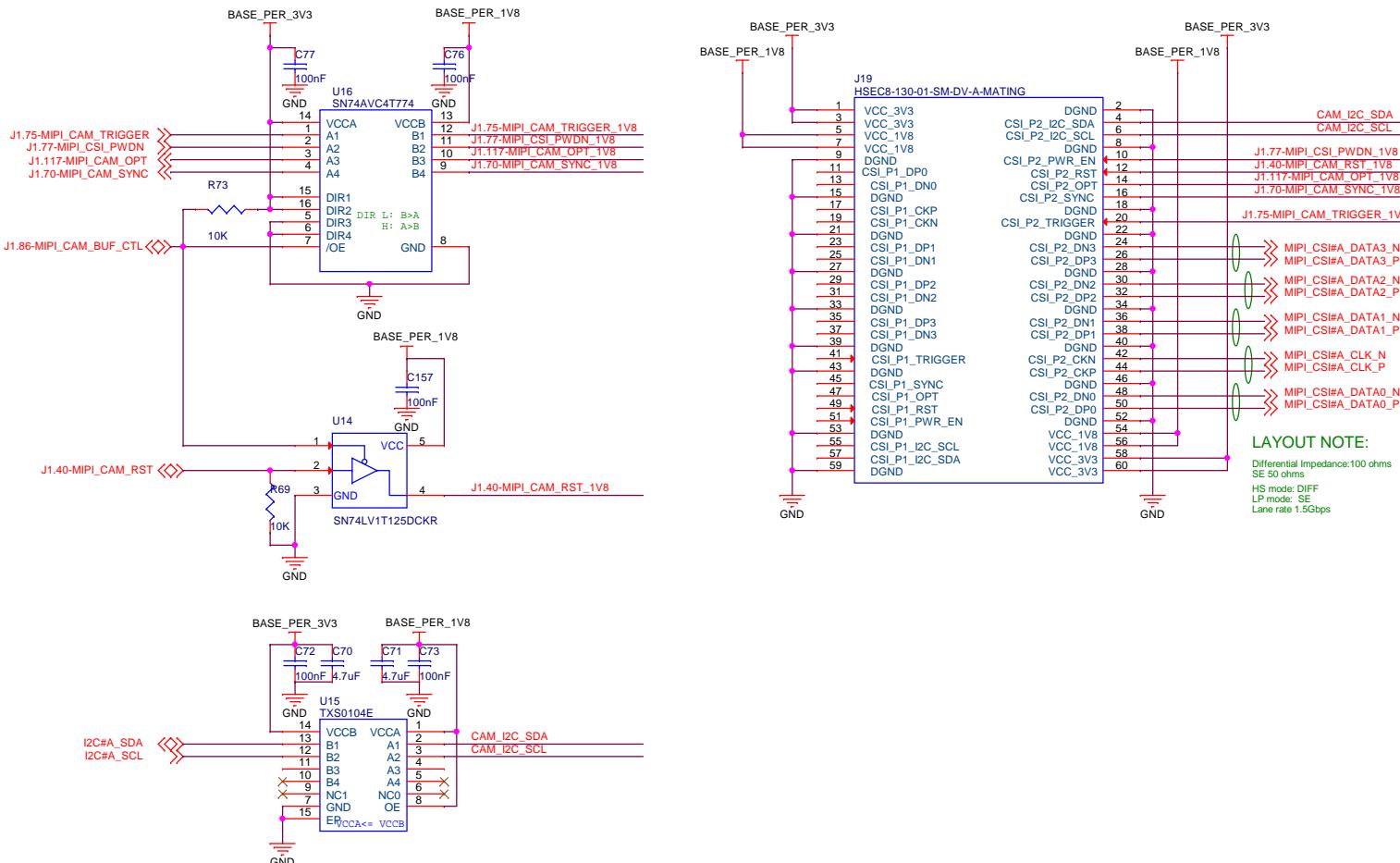
Sheet

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of

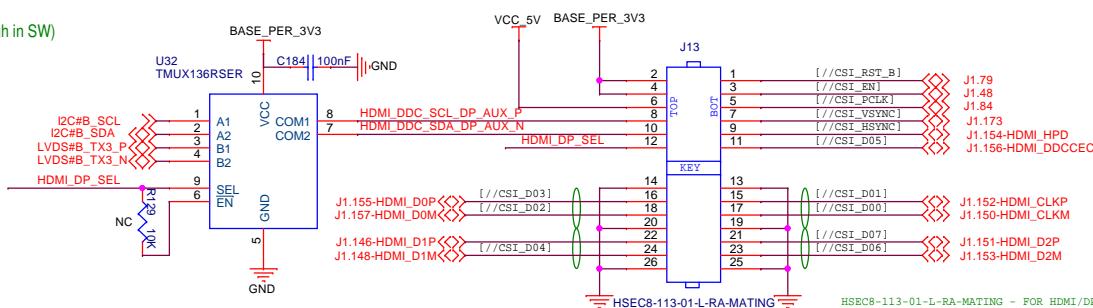
14

MIPI-CSI



LAYOUT NOTE:
Differential Impedance:100 ohms
SE 50 ohms
HS mode: DIFF
LP mode: SE
Lane rate 1.5Gbps

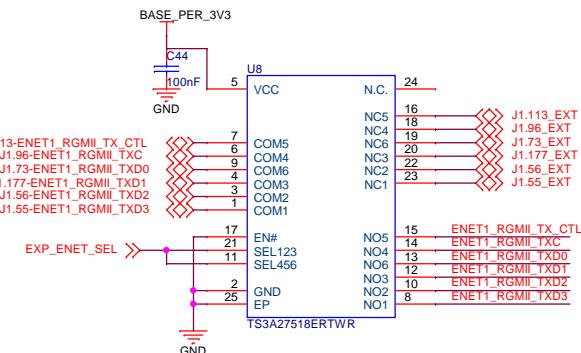
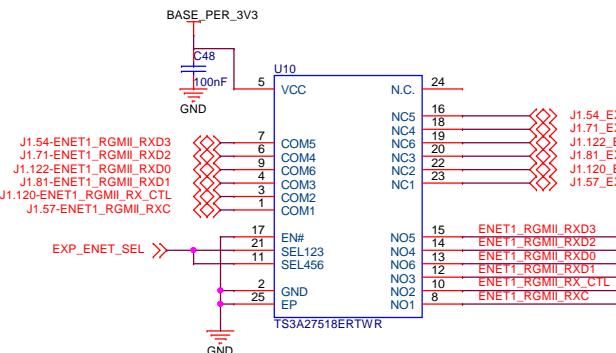
MX6 / MX8 - HDMI, MX8-DP, MX8X-CSI



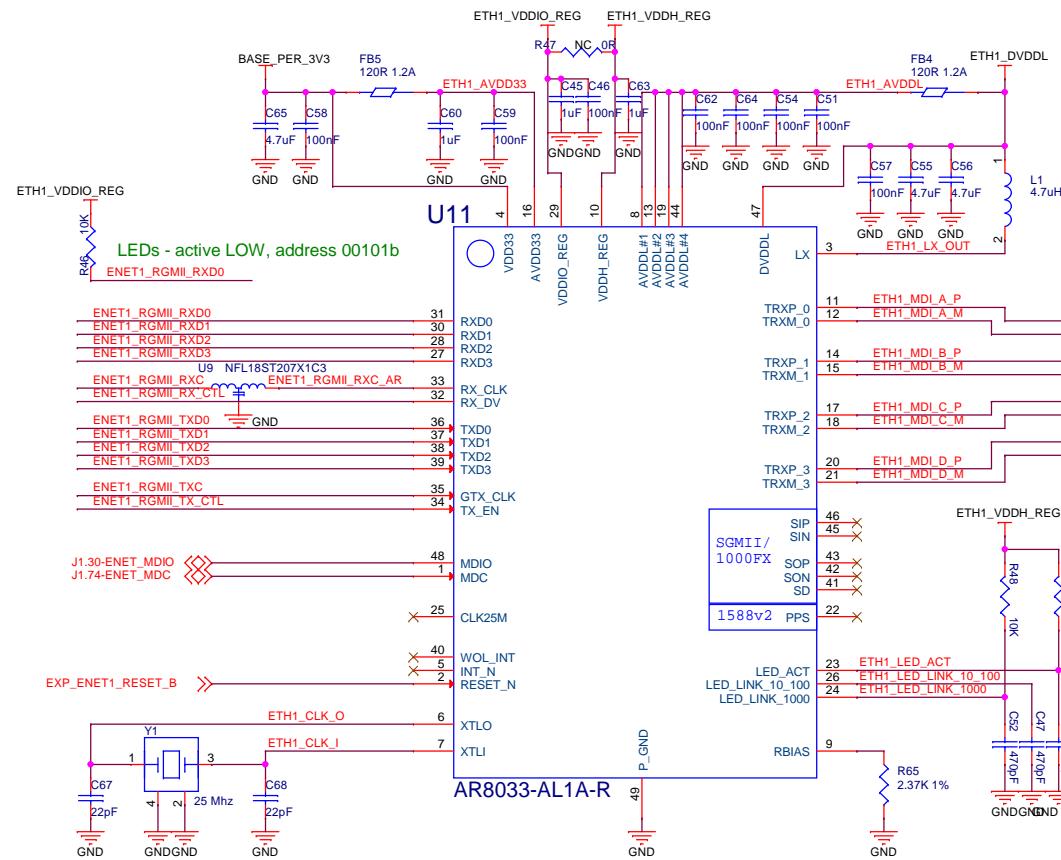
Variscite			
Title: 07. Camera, HDMI, DP			
Size: A3	Document Number: Symphony-Board	Project: Symphony-Board	Rev: 1.2B
Designer: Aviad H.	Approved By: <Approved By>		
Date: Monday, November 18, 2019	Sheet 7 of 14		

08. Ethernet

Gigabit Ethernet (External) / Header selection



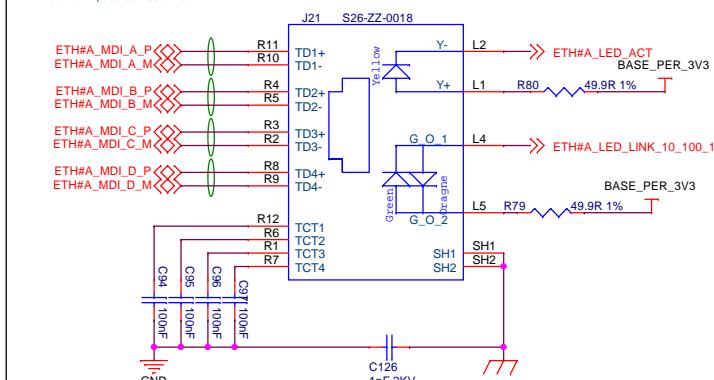
MX8/MX8X- Gigabit Ethernet (External)



Gigabit Ethernet (Internal)

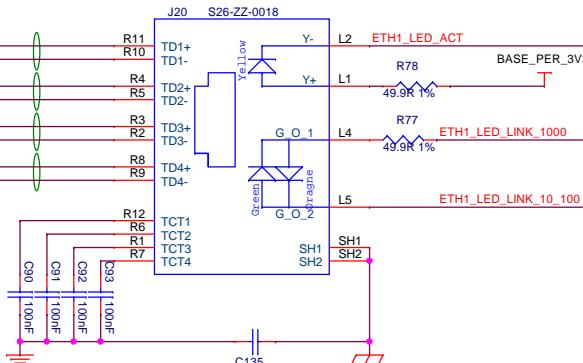
LAYOUT NOTE:

Giga Ethernet Differential Pair,
Follow Giga Ethernet routing
guidelines.
Differential Impedance: 100 ohms

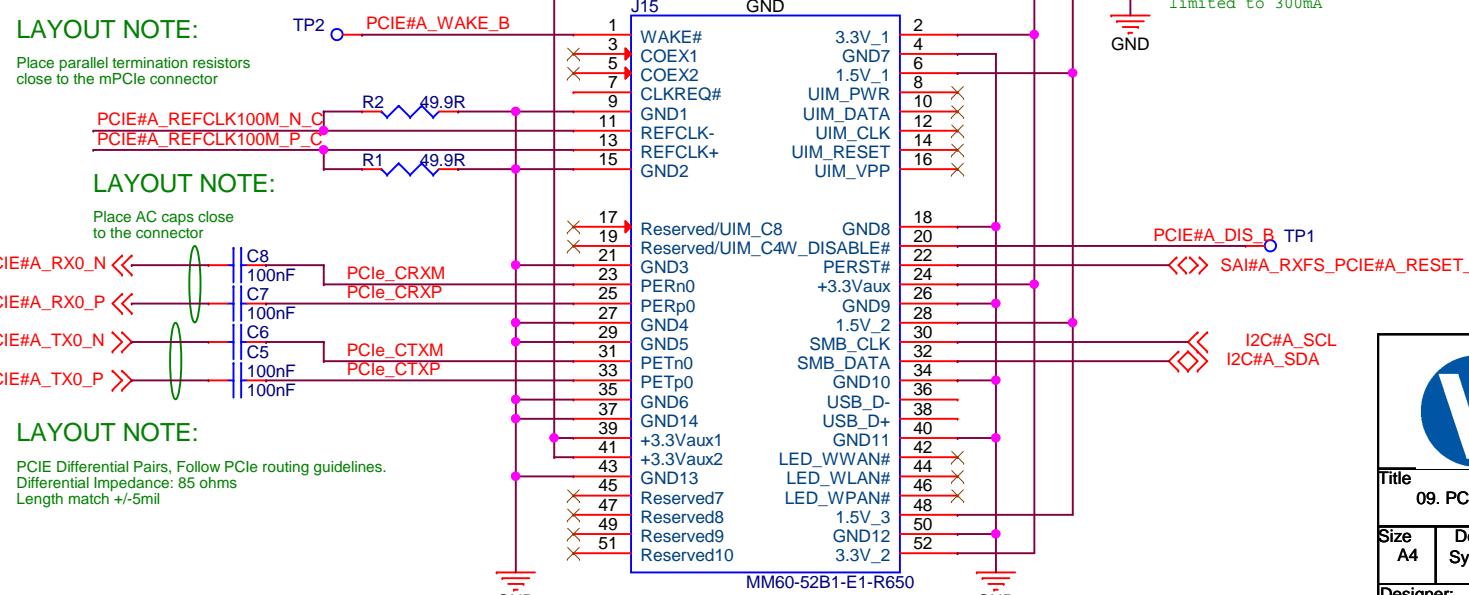
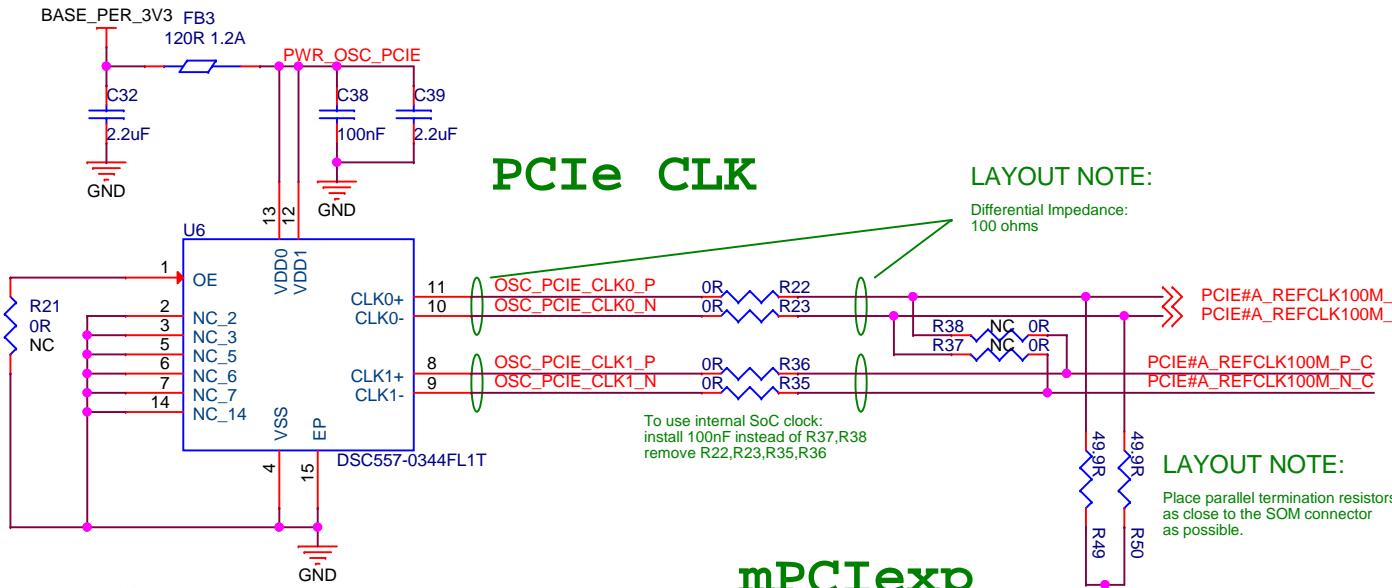


LAYOUT NOTE:

Giga Ethernet Differential Pair,
Follow Giga Ethernet routing
guidelines.
Differential Impedance: 100 ohms



09. PCIe



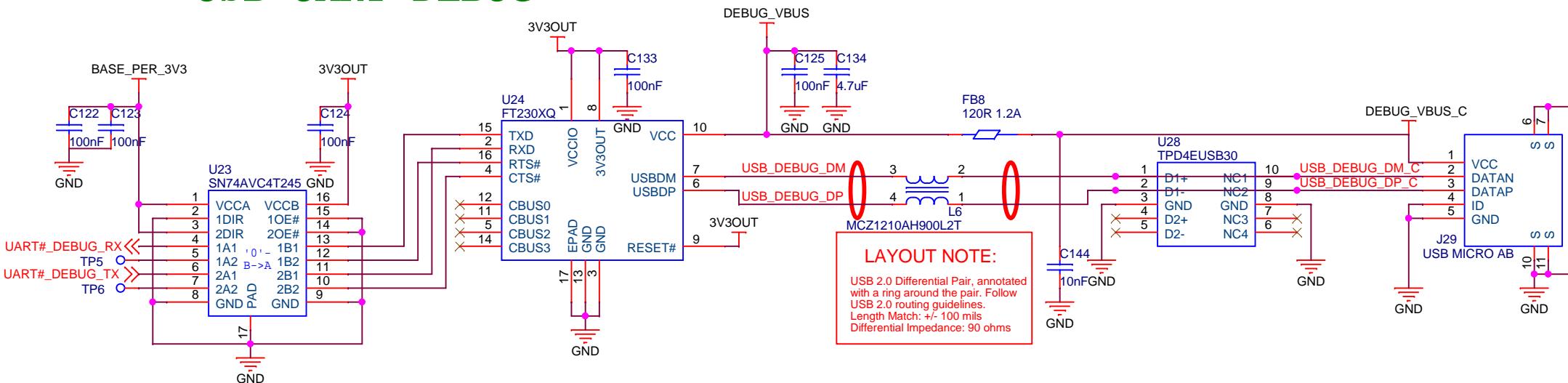
Variscite

Title
09. PCIe

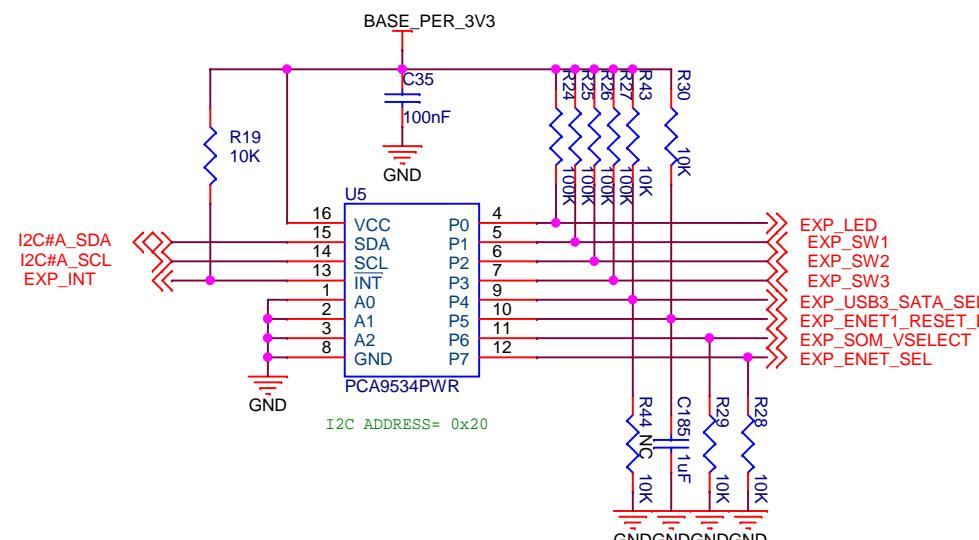
Size	Document Number	Project	Rev
A4	Symphony-Board		1.2B
Designer:	Aviad H.	Approved By:	<Approved By>
Date:	Monday, November 18, 2019	Sheet	9 of 14

10. Debug, GPIO Exp, Buttons, LED

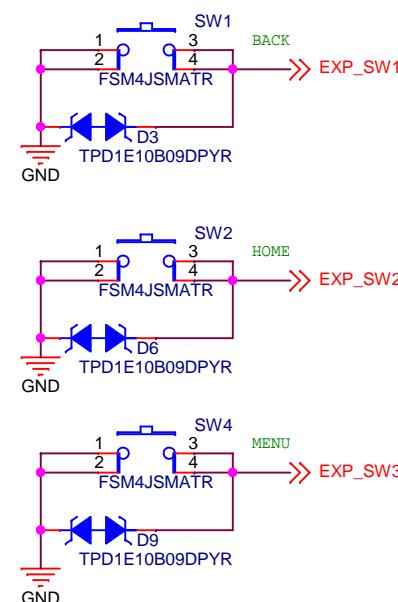
USB UART DEBUG



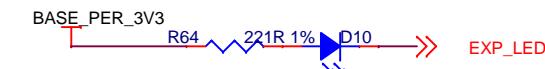
GPIO EXPANDER



GP BUTTON



GP LED



Variscite

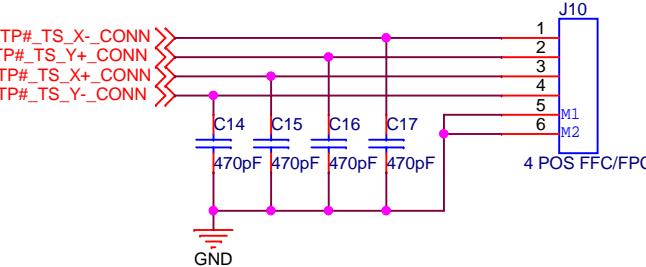
Title: 10. Debug, GPIO Exp, Buttons, LED

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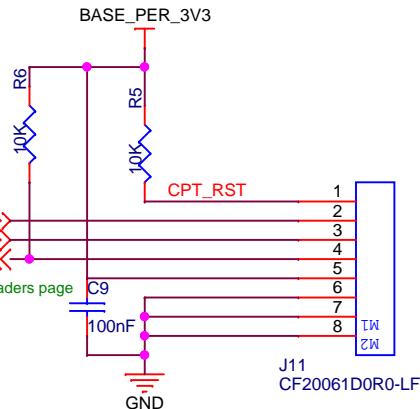
Designer: Aviad H.	Approved By: <Approved By>
Date: Monday, November 18, 2019	Sheet 10 of 14

11. LVDS, DSI, Touch

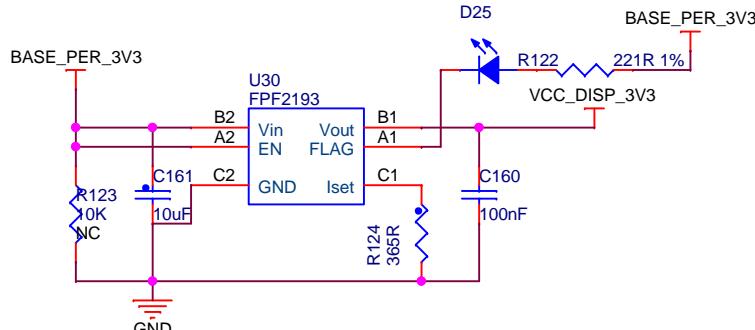
RESISTIVE TOUCH



CAPACITIVE TOUCH



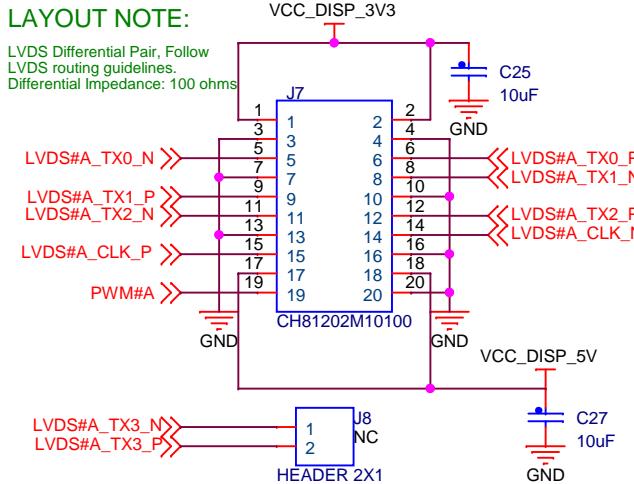
Short circuit protection



LVDS DISPLAY A

LAYOUT NOTE:

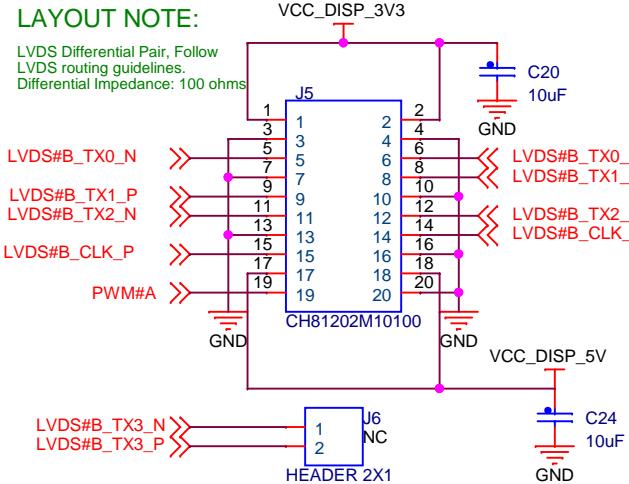
LVDS Differential Pair, Follow LVDS routing guidelines.
Differential Impedance: 100 ohms



LVDS DISPLAY B

LAYOUT NOTE:

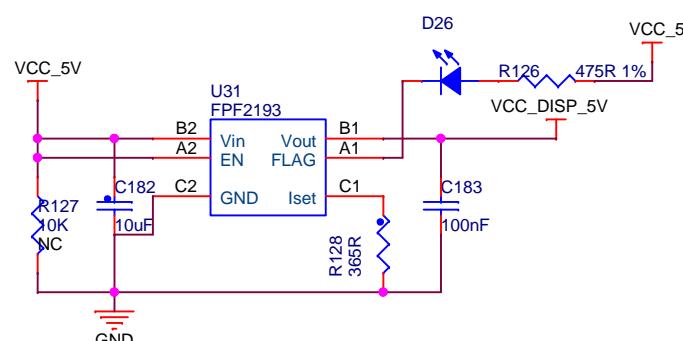
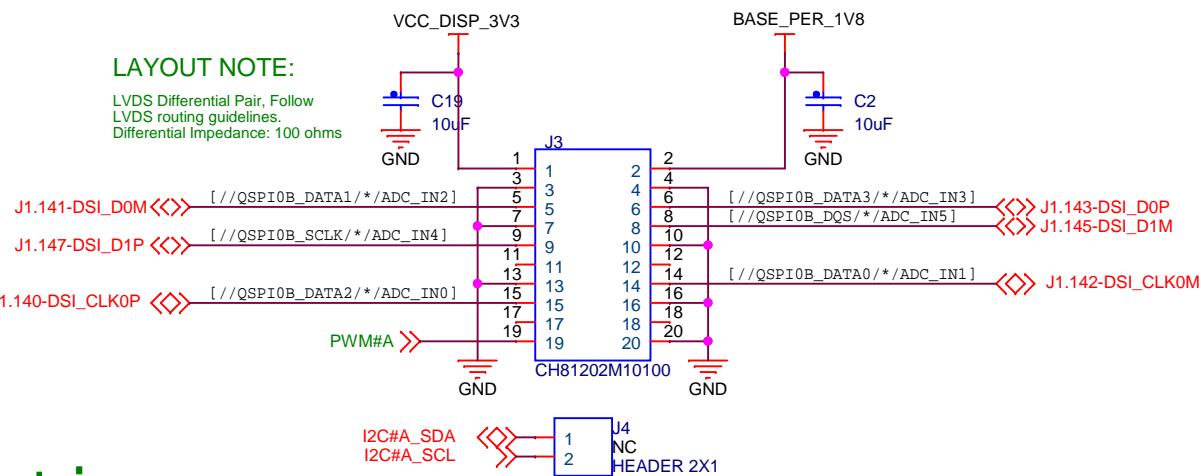
LVDS Differential Pair, Follow LVDS routing guidelines.
Differential Impedance: 100 ohms



MIPI DSI DISPLAY

LAYOUT NOTE:

LVDS Differential Pair, Follow LVDS routing guidelines.
Differential Impedance: 100 ohms

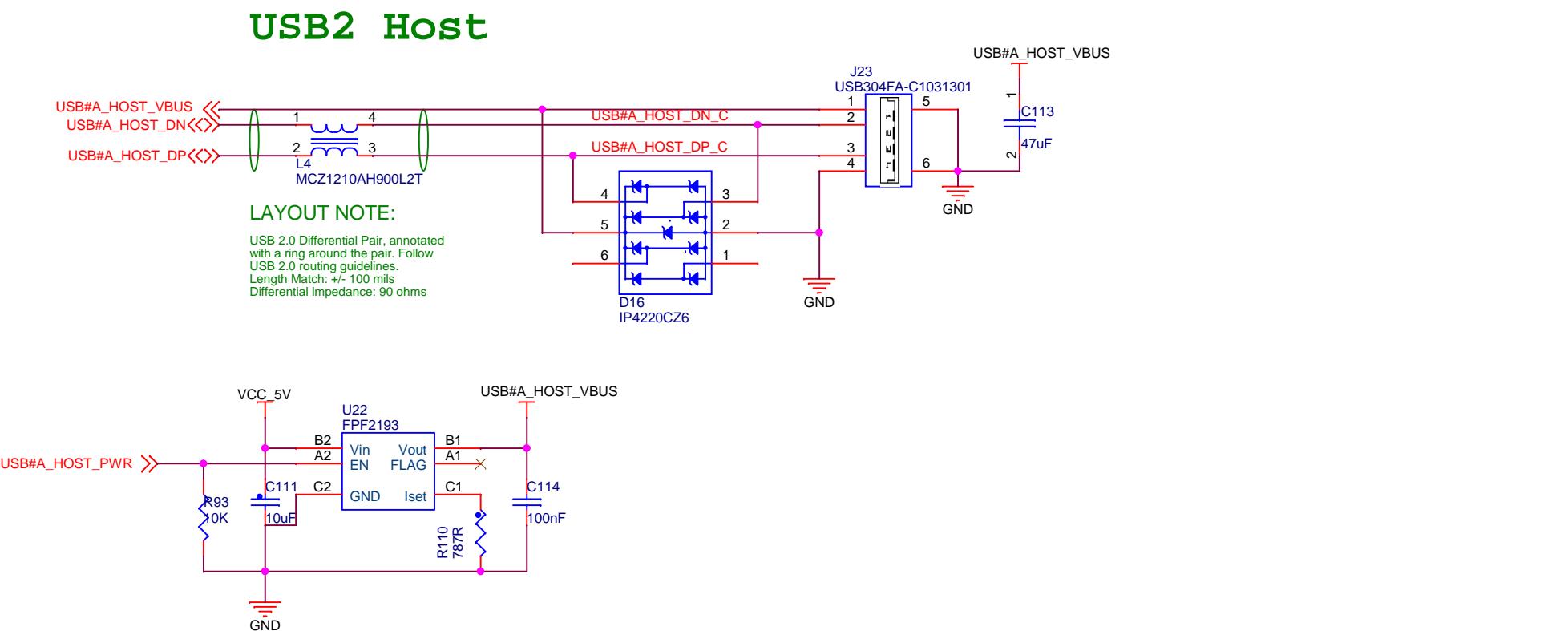


Title
11. LVDS, DSI, Touch

Size
A4 Document Number
Project
Symphony-Board
Rev
1.2B

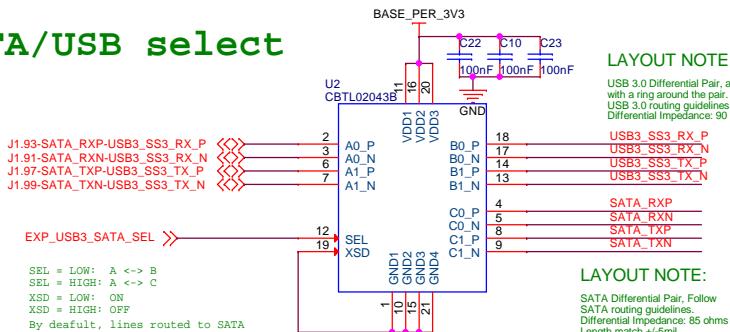
Designer: Aviad H.
Date: Monday, November 18, 2019

Approved By:
Sheet 11 of 14

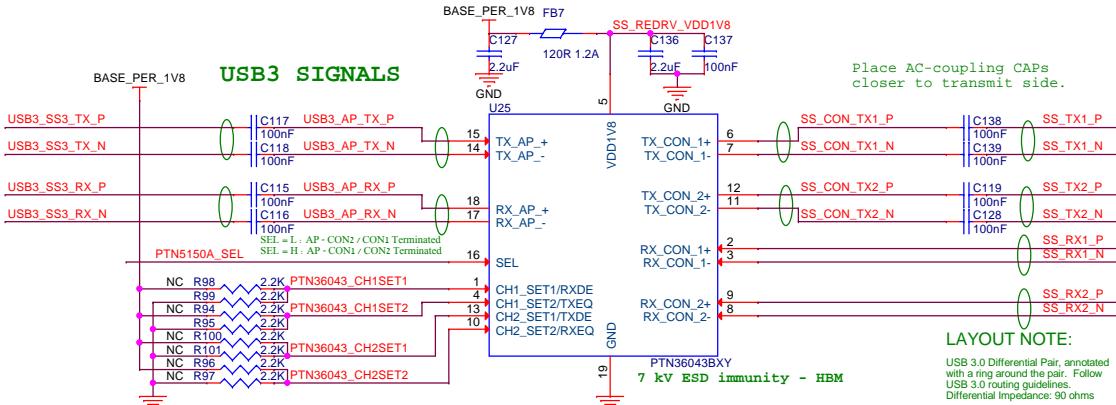


13. USB3, uSATA

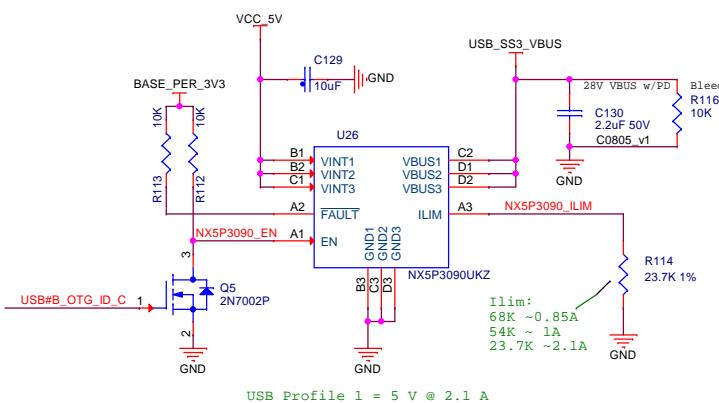
SATA/USB select



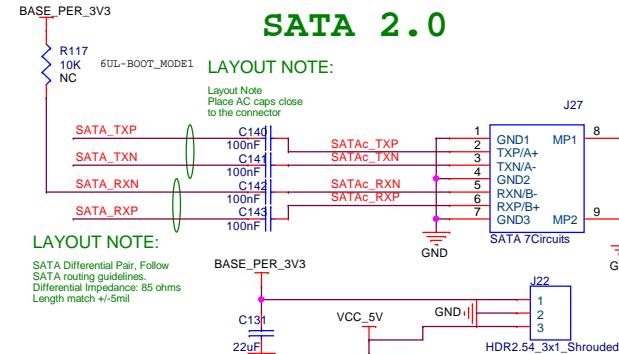
USB TYPE C Circuitry



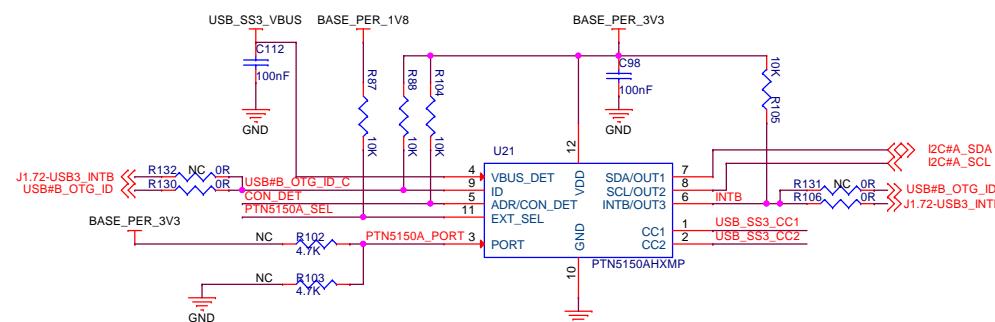
5V Source Load Switch



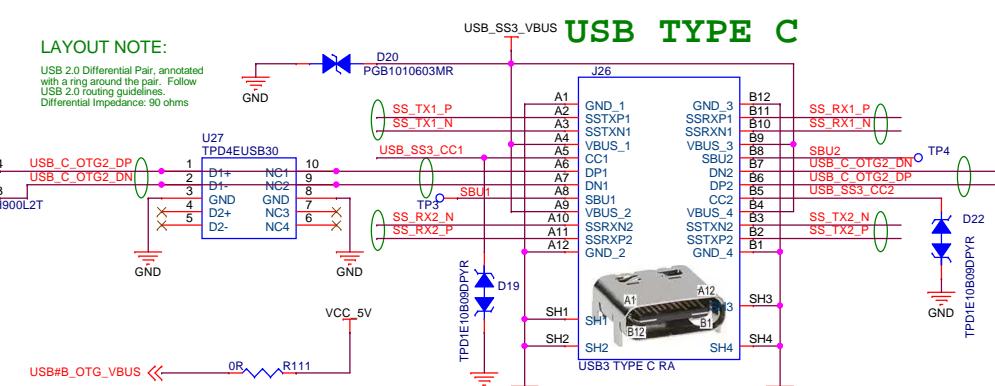
SATA 2.0



Config Channel Logic Detection & Indication of Plug Orientation



USB TYPE C



Variscite

Title

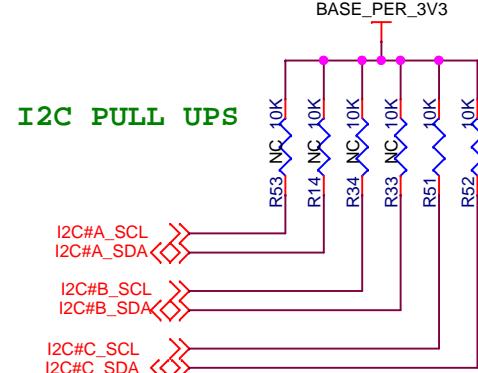
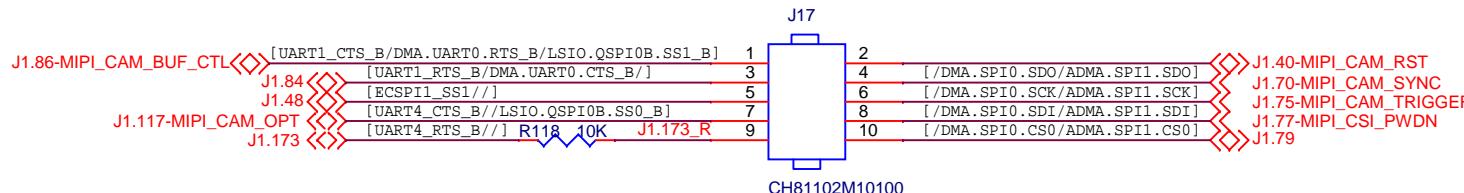
13. USB3, uSATA

Size A3	Document Number Symphony-Board	Project Symphony-Board	Rev 1.2B
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Designer: Avid H.	Approved By:		
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Date: Monday, November 18, 2019	Sheet 13 of 14		
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14. Headers



I2C_A has internal pulls in Camera buffer
I2C_B has internal pulls in som

