# VAR-MX7CustomBoard

## CONTENT



## 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 | Production |
| 1.2 | 1.1 | Replaced C84,C87 with 0R Ohm resistors R89,R90<br>Added note for external PCIe clock |
| 1.3 | 1.2 | Added serial resistors on LCD lines:<br>RN1,RN2,RN3,RN4,R91 |
| 1.4 | 1.3 | USB Hub - added resistor R92, removed I2C4 connection |
| 1.5 | 1.3 | Removed PCIe clock note |
| 1.6 | 1.3 | Q1 note added |

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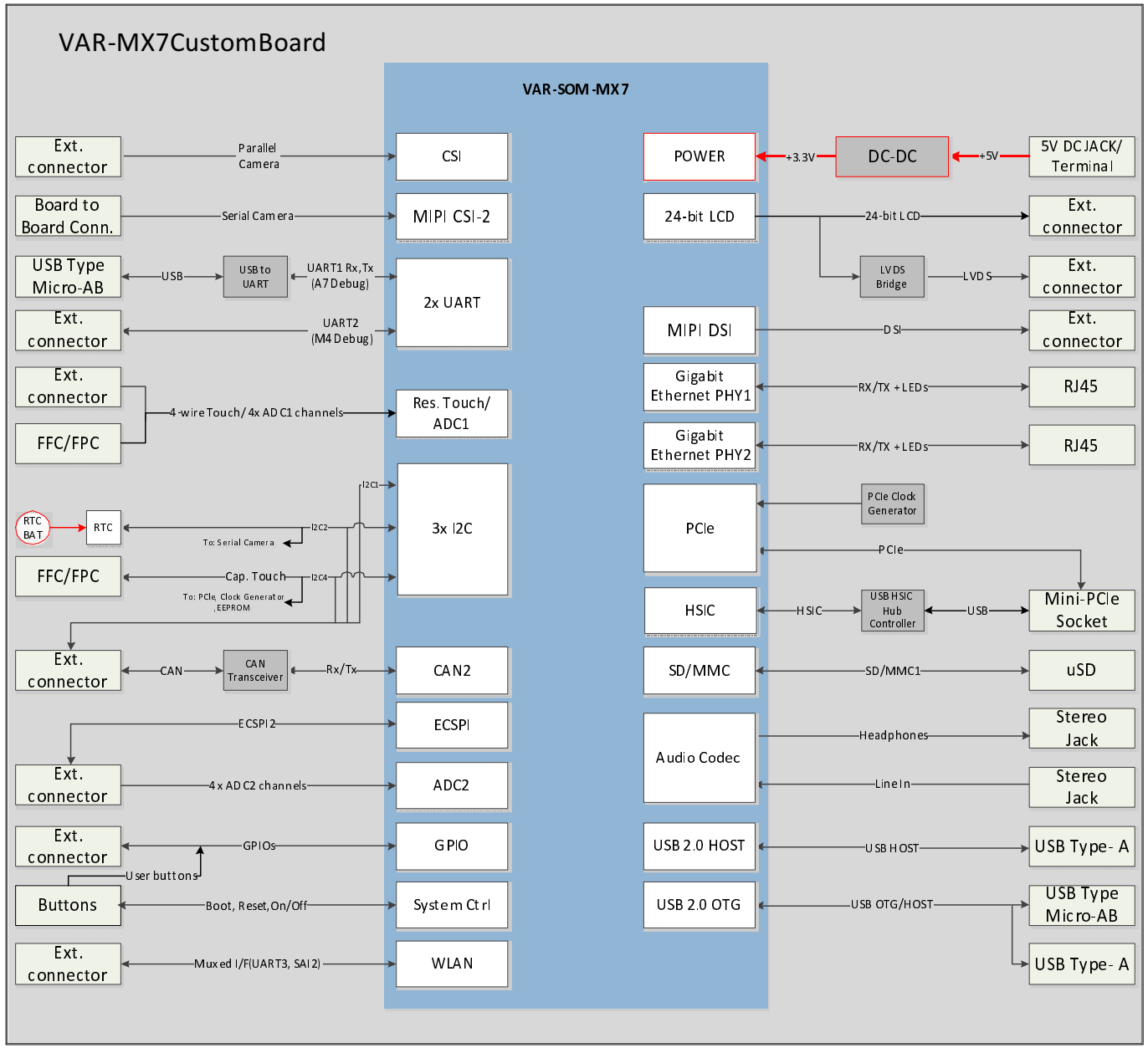
| | | | |
|---|---|---|---|
| Title: 01. Cover | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Wednesday, November 25, 2020 | | Sheet 1 of 8 | |

# 02. Block Diagram

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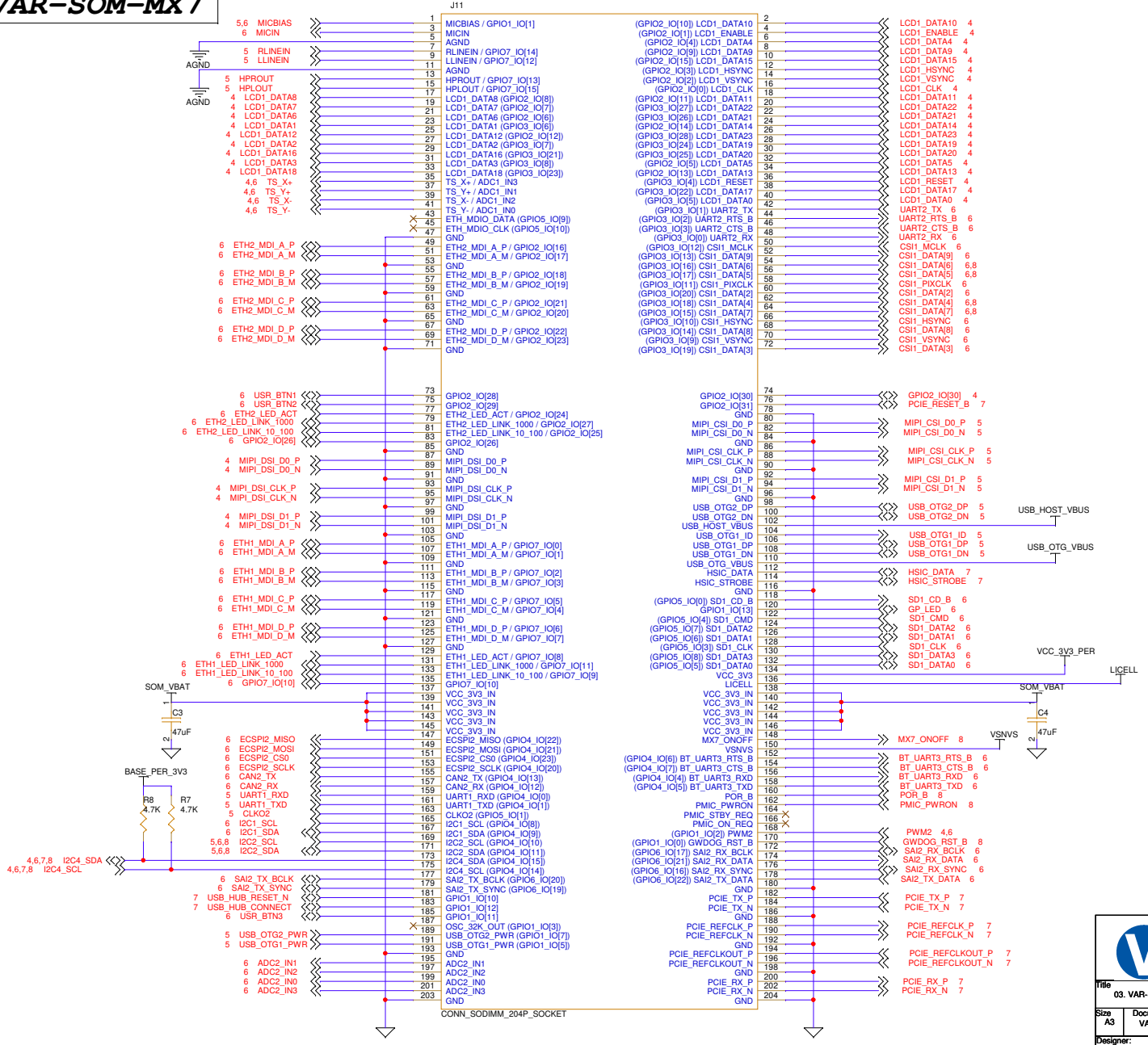
| | | | |
|---|---|---|---|
| Title: 02. Block Diagram | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 2 of 8 | |

# 0.3 VAR-SOM-MX7

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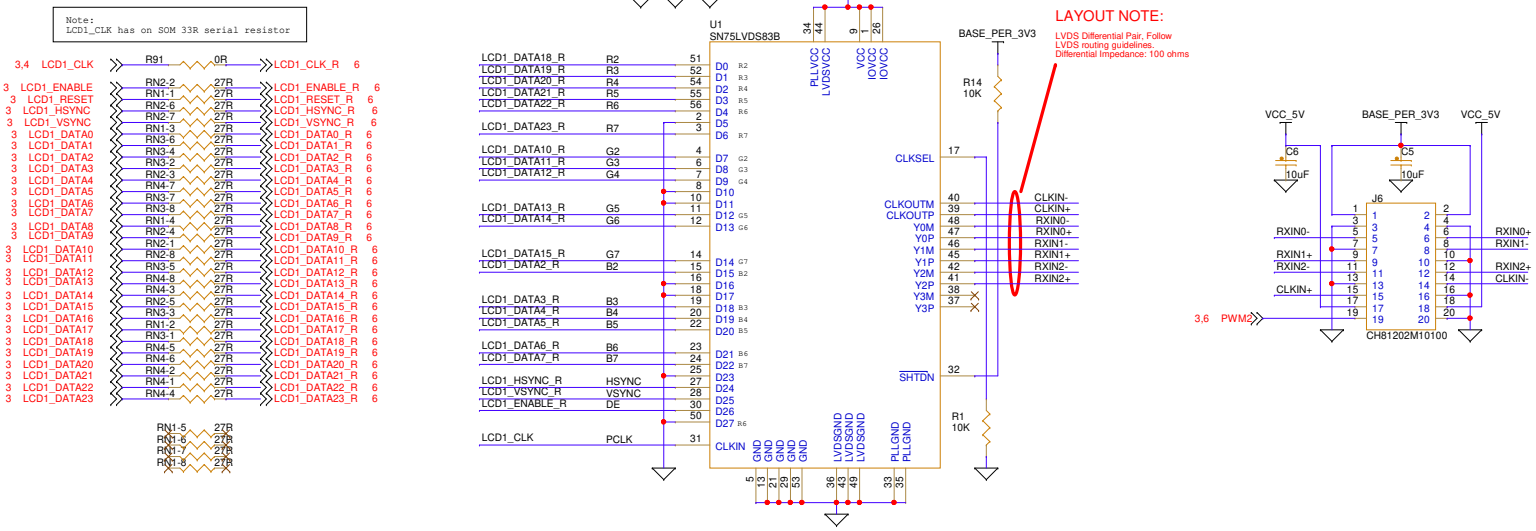
| | | | |
|---|---|---|---|
| Title: 03. VAR-SOM-MX7 | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 3 of 8 | |

# 04. DSI,LVDS,Touch

## LVDS




## DSI

LAYOUT NOTE:
Differential Pair, annotated with a ring around the pair. Follow USB 2.0 routing guidelines. Length Match: +/- 50 mils Differential Impedance: 100 ohms

LAYOUT NOTE:
Differential Pair, annotated with a ring around the pair. Follow USB 2.0 routing guidelines. Length Match: +/- 50 mils Differential Impedance: 100 ohms

## Capacitive Touch

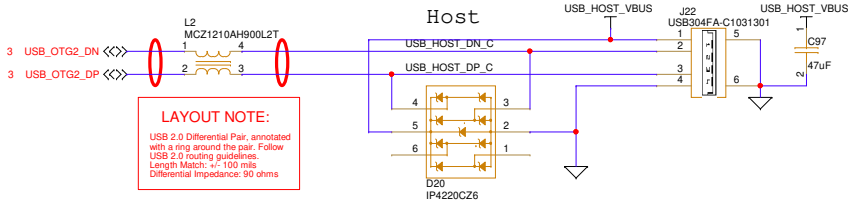
## Resistive Touch

| | | | |
|---|---|---|---|
| Title: 04. Display ,Touch, HDMI | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 4 of 8 | |

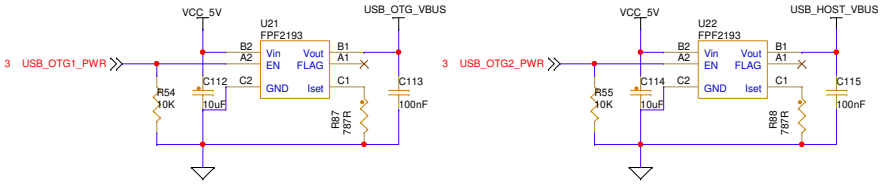
# 05. USB,Audio,Camera

## USB

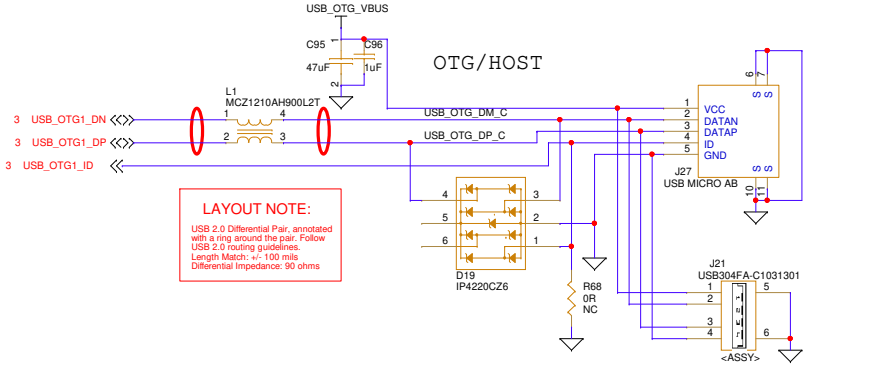
### Host



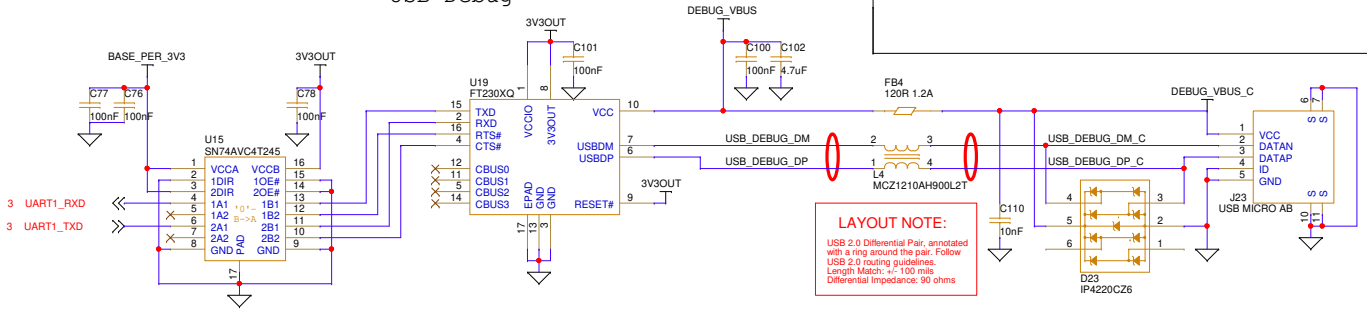

### Power Distribution




### OTG/HOST

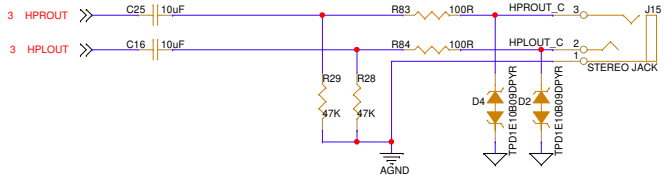



### USB Debug

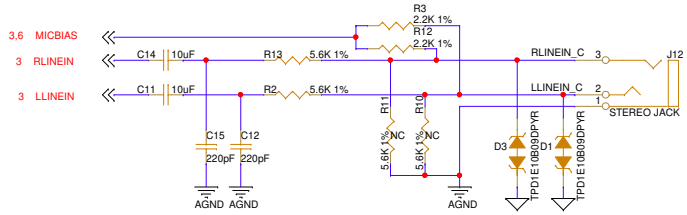



## Audio

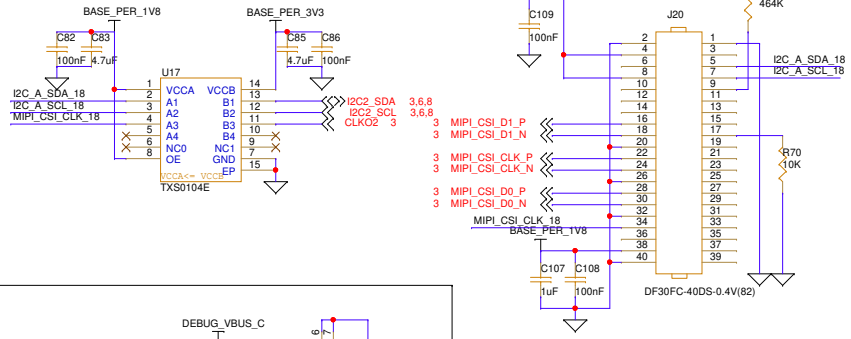
### Headphones




### Line In




## Camera

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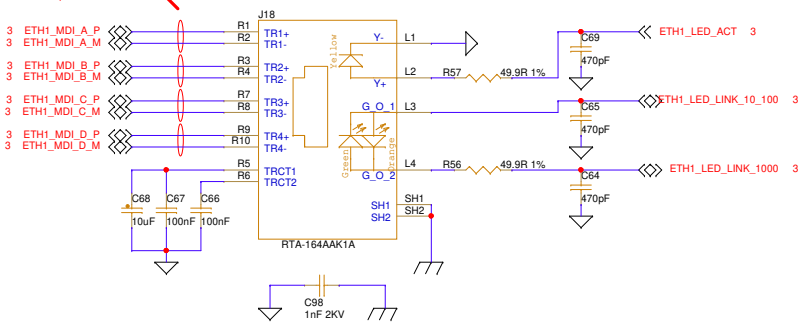
| | | | |
|---|---|---|---|
| Title: 05. USB, Audio, Camera | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 5 of 8 | |

# 06. Peripherals, Ext. Connectors

## Gigabit Ethernet1

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

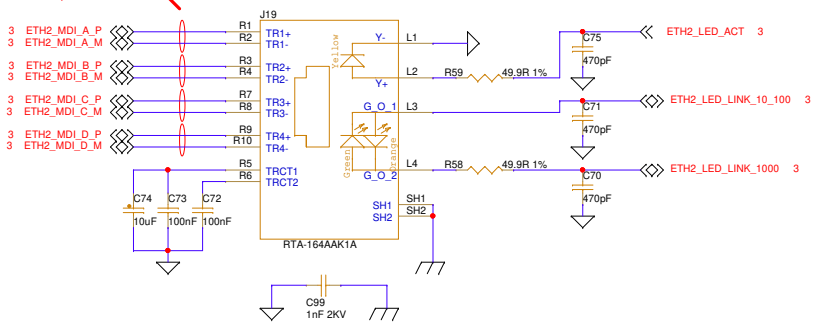
RJ45



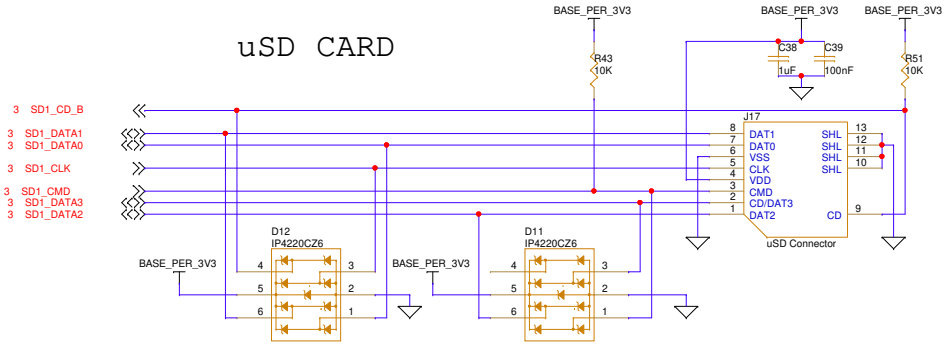

## Gigabit Ethernet2

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

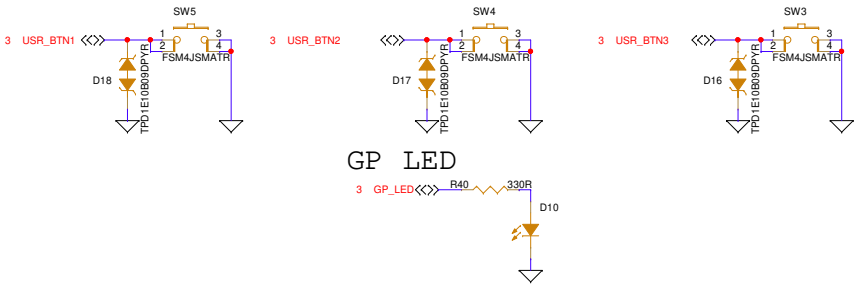
RJ45




## uSD CARD




## USER BUTTONS

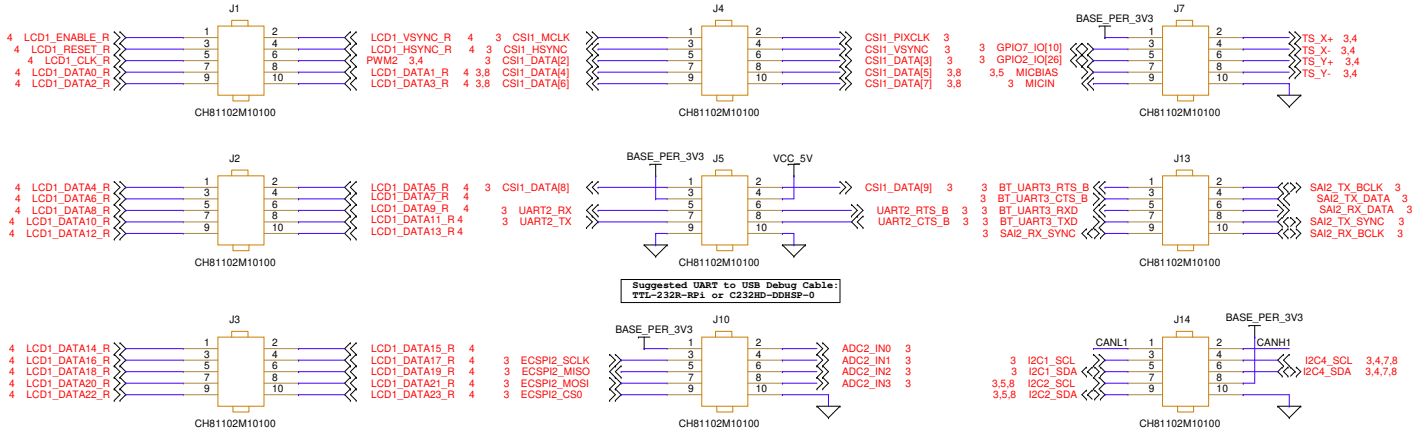



## GP LED



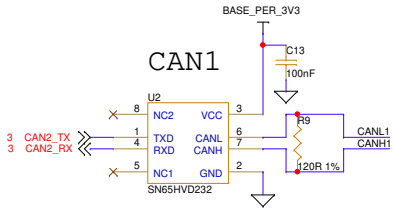

## Extension Connectors

Note:
J7,J13 pins are functional only on certain SOM configurations.
Please refer to VAR-SOM-MX7 datasheet for more information.




Suggested UART to USB Debug Cable:
TTL-232R-RPi or C232HD-DDHSP-0

## CAN1

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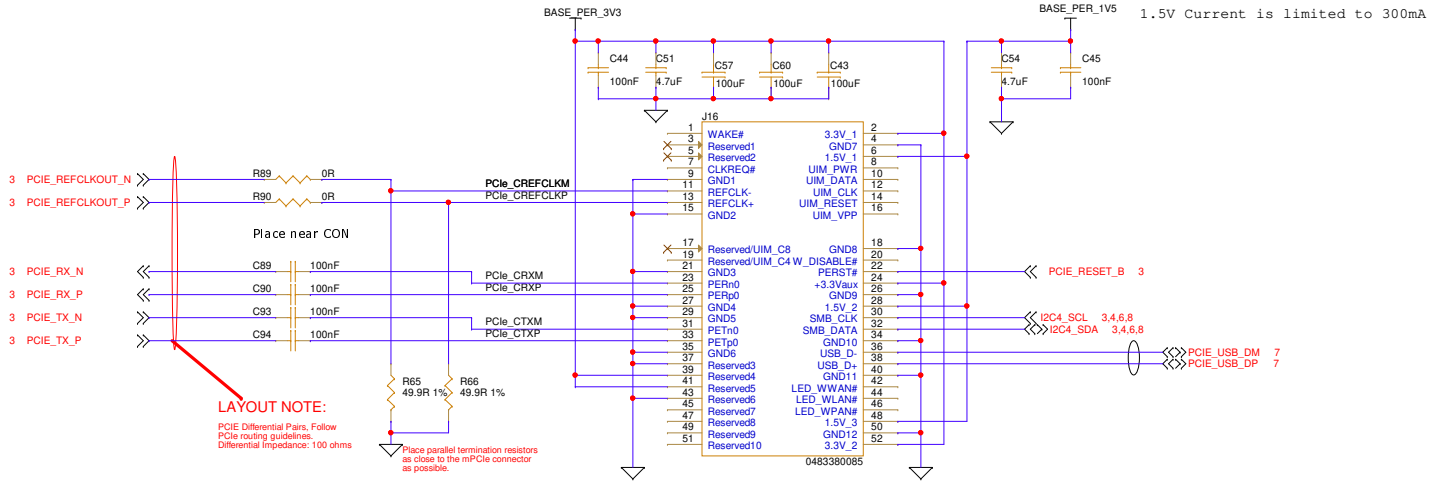
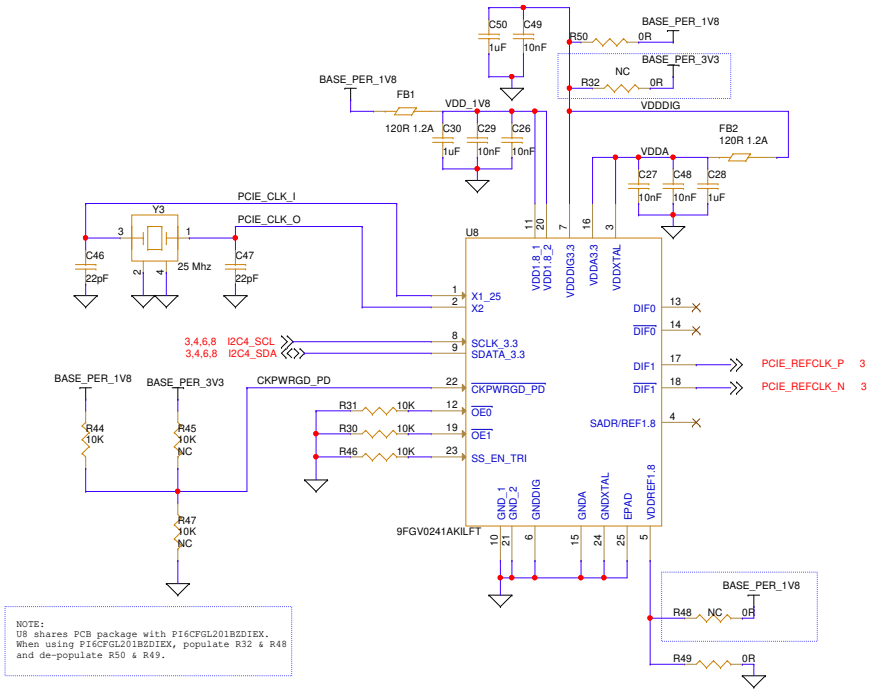
| | | | |
|---|---|---|---|
| Title: 06. Peripherals, Exp. Connectors | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 6 of 8 | |

# 07. PCIe, USB Hub

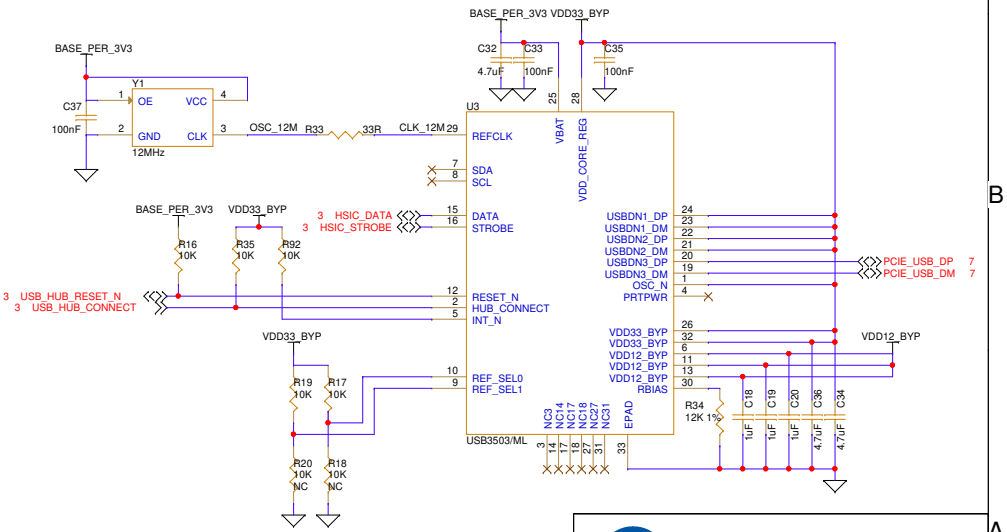
## Mini-PCIE




## PCIe Clock Generator




## USB Hub

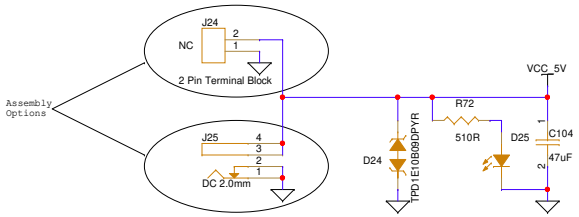



Variscite

| | | | |
|---|---|---|---|
| Title: 07. PCIe, USB Hub | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, June 18, 2020 | | Sheet 7 of 8 | |

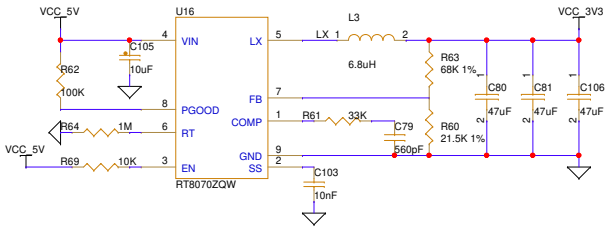
# 08. Power,Mechanics

## DC-IN - 5V

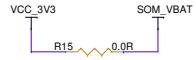



## 3.3V Digital 4A

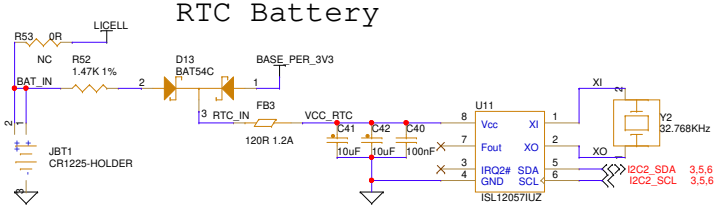
Note:
3 x 47uF caps required
for full load operation



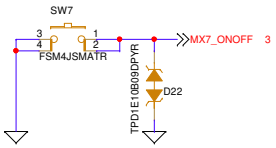

## SOM Power



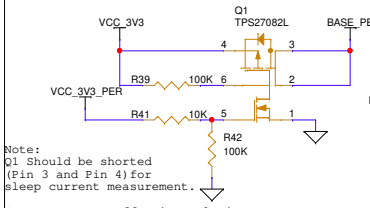

## RTC Battery




## ONOFF



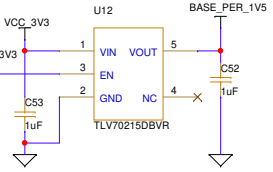

## 3.3V Base



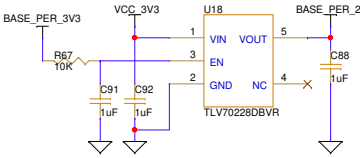

Note:
Q1 Should be shorted
(Pin 3 and Pin 4)for
sleep current measurement.

For most power effective solution
implement slew rate control on Q1

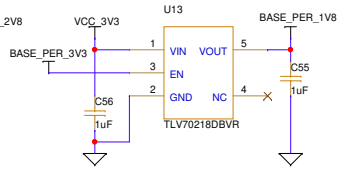
## 1.5V Base



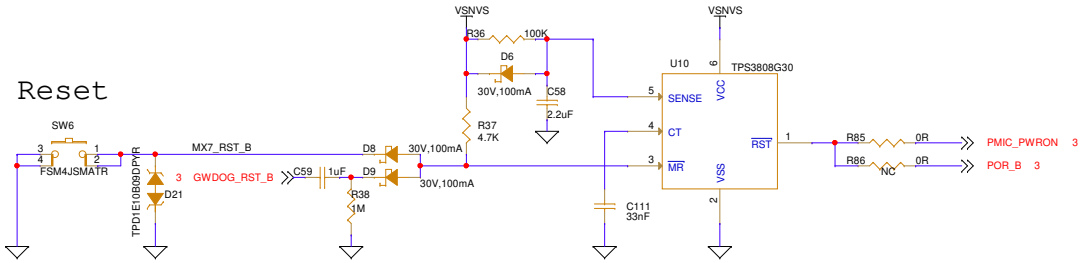

## 2.8V Base




## 1.8V Base

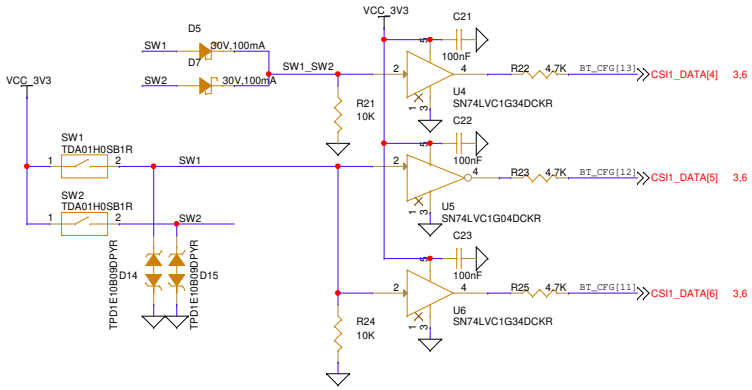


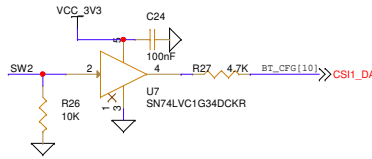

## Reset



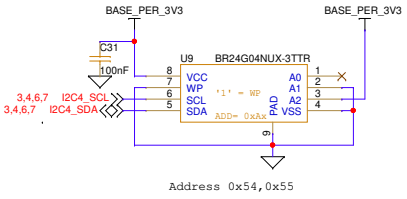

## Boot strap

| SW1 | SW2 | BOOT Source |
|---|---|---|
| OFF | OFF | SD |
| OFF | ON | NAND |
| ON | OFF | eMMC |
| ON | ON | N/A |



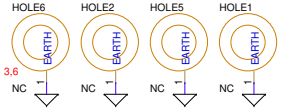




## Board ID



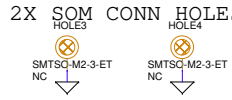

Address 0x54,0x55

## 4X Chassis Holes




## Fiducial


## 2X SOM CONN HOLES





Variscite

| | | | |
|---|---|---|---|
| Title: 08. Power & Mechanics | | | |
| Size: A3 | Document Number: VAR-MX7CustomBoard | Project: VAR-MX7CustomBoard | Rev: 1.3 |
| Designer: Aviad H. | | Approved By: | |
| Date: Thursday, October 01, 2020 | | Sheet 8 of 8 | |