

VAR-MX7CustomBoard



CONTENT

PAGE NO.	SCHEMATIC PAGE
1	Cover
2	Block Diagram
3	VAR-SOM-MX7
4	Display ,Touch, HDMI
5	USB, Audio, Camera
6	Peripherals, Exp. Connectors
7	G. Ethernet PHY, PCIe
8	Power & Mechanics

Disclaimer:

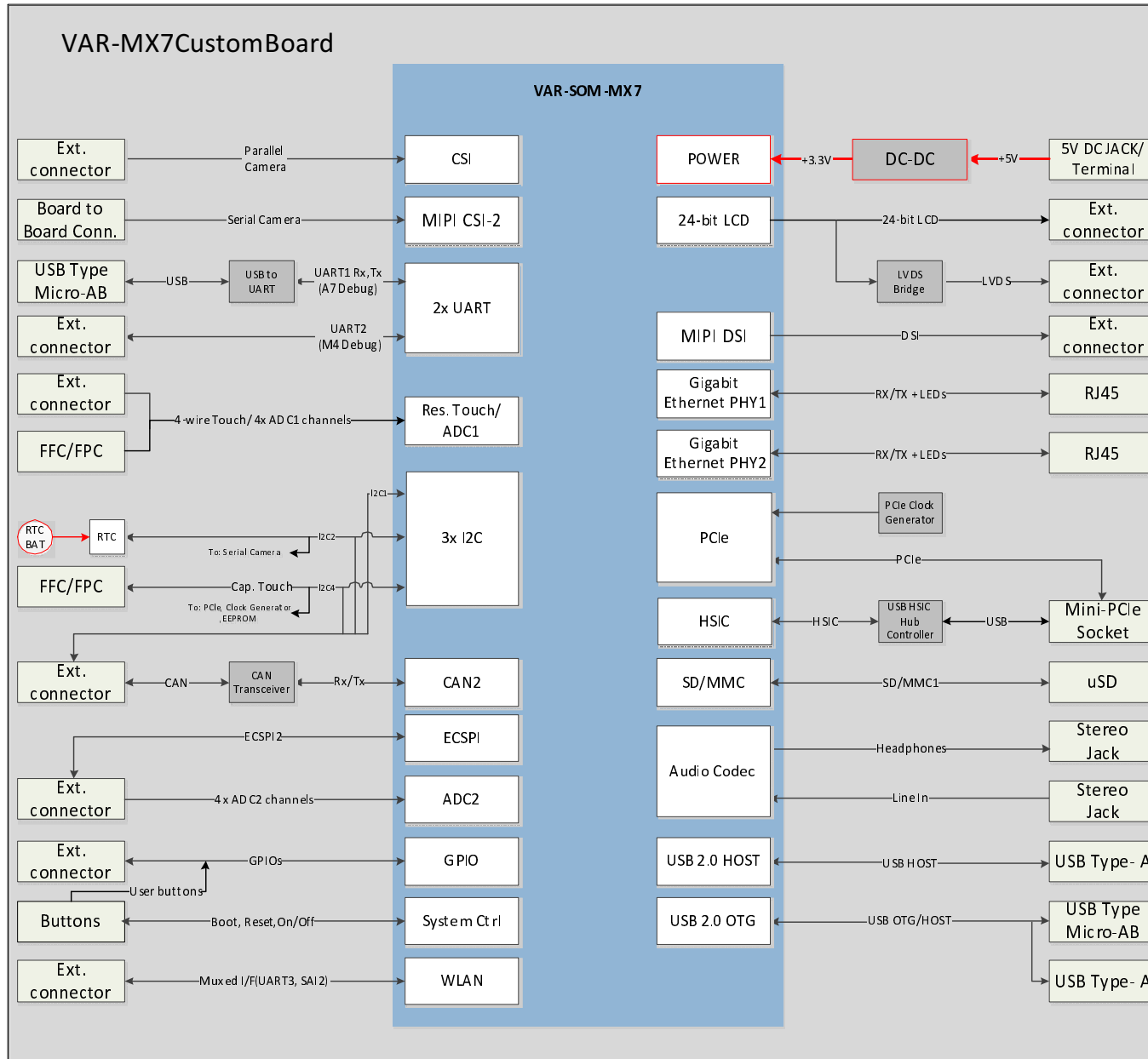
Schematics are for reference only.
Variscite LTD provides no warranty for the use of
these schematics.
Schematics are subject to change without notice.

Revision History

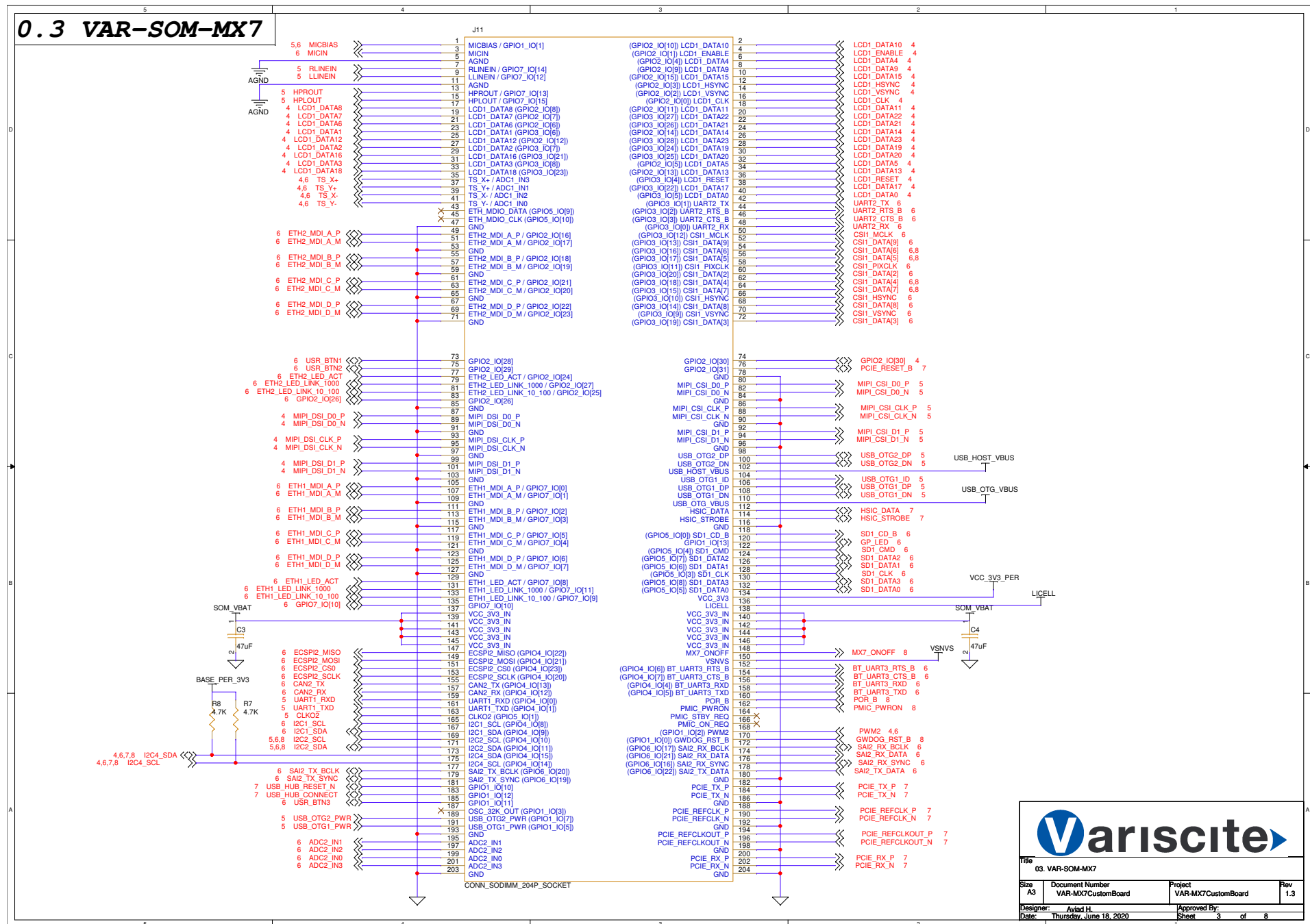
Document	Carrier	
1.0	1.0	Initial
1.1	1.1	Production
1.2	1.1	Replaced C84,C87 with 0R Ohm resistors R89,R90 Added note for external PCIe clock
1.3	1.2	Added serial resistors on LCD lines: RN1,RN2,RN3,RN4,R91
1.4	1.3	USB Hub - added resistor R92, removed I2C4 connection
1.5	1.3	Removed PCIe clock note
1.6	1.3	Q1 note added

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



0.3 VAR-SOM-MX7



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

04. DSI, LVDS, Touch

Note:
LCD1_CLK has on SOM 33R serial resistor

3.4 LCD1_CLK >> R91 >> 0R >> LCD1_CLK_R 6

3 LCD1_ENABLE >> RN2-2 >> 27R >> LCD1_ENABLE_R 6

3 LCD1_RESET >> RN1-1 >> 27R >> LCD1_RESET_R 6

3 LCD1_HSYNC >> RN2-6 >> 27R >> LCD1_HSYNC_R 6

3 LCD1_VSYNC >> RN1-3 >> 27R >> LCD1_VSYNC_R 6

3 LCD1_DATA0 >> RN3-6 >> 27R >> LCD1_DATA0_R 6

3 LCD1_DATA1 >> RN3-4 >> 27R >> LCD1_DATA1_R 6

3 LCD1_DATA2 >> RN2-2 >> 27R >> LCD1_DATA2_R 6

3 LCD1_DATA3 >> RN2-3 >> 27R >> LCD1_DATA3_R 6

3 LCD1_DATA4 >> RN2-7 >> 27R >> LCD1_DATA4_R 6

3 LCD1_DATA5 >> RN2-8 >> 27R >> LCD1_DATA5_R 6

3 LCD1_DATA6 >> RN3-7 >> 27R >> LCD1_DATA6_R 6

3 LCD1_DATA7 >> RN3-8 >> 27R >> LCD1_DATA7_R 6

3 LCD1_DATA8 >> RN1-4 >> 27R >> LCD1_DATA8_R 6

3 LCD1_DATA9 >> RN2-4 >> 27R >> LCD1_DATA9_R 6

3 LCD1_DATA10 >> RN2-8 >> 27R >> LCD1_DATA10_R 6

3 LCD1_DATA11 >> RN3-5 >> 27R >> LCD1_DATA11_R 6

3 LCD1_DATA12 >> RN3-8 >> 27R >> LCD1_DATA12_R 6

3 LCD1_DATA13 >> RN4-5 >> 27R >> LCD1_DATA13_R 6

3 LCD1_DATA14 >> RN4-8 >> 27R >> LCD1_DATA14_R 6

3 LCD1_DATA15 >> RN3-2 >> 27R >> LCD1_DATA15_R 6

3 LCD1_DATA16 >> RN1-2 >> 27R >> LCD1_DATA16_R 6

3 LCD1_DATA17 >> RN3-1 >> 27R >> LCD1_DATA17_R 6

3 LCD1_DATA18 >> RN4-5 >> 27R >> LCD1_DATA18_R 6

3 LCD1_DATA19 >> RN4-6 >> 27R >> LCD1_DATA19_R 6

3 LCD1_DATA20 >> RN4-7 >> 27R >> LCD1_DATA20_R 6

3 LCD1_DATA21 >> RN4-1 >> 27R >> LCD1_DATA21_R 6

3 LCD1_DATA22 >> RN4-2 >> 27R >> LCD1_DATA22_R 6

3 LCD1_DATA23 >> RN4-4 >> 27R >> LCD1_DATA23_R 6

3 LCD1_DATA18 R R2 51 D0 B2

3 LCD1_DATA19 R R3 52 D1 B3

3 LCD1_DATA20 H R4 54 D2 B4

3 LCD1_DATA21 H R5 55 D3 B5

3 LCD1_DATA22 H R6 56 D4 B6

3 LCD1_DATA23 R R7 57 D5 B7

3 LCD1_DATA10 R G2 4 D7 G2

3 LCD1_DATA11 R G3 6 D8 G3

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

3 LCD1_DATA10 R G5 10 D11 G5

3 LCD1_DATA11 R G6 12 D12 G6

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

3 LCD1_CLK PCLK 31 CLKIN

3 LCD1_ENABLE R HSYNC 27 D23

3 LCD1_VSYNC R VSYNC 28 D25

3 LCD1_DATA18 R R2 51 D0 B2

3 LCD1_DATA19 R R3 52 D1 B3

3 LCD1_DATA20 H R4 54 D2 B4

3 LCD1_DATA21 H R5 55 D3 B5

3 LCD1_DATA22 H R6 56 D4 B6

3 LCD1_DATA23 R R7 57 D5 B7

3 LCD1_DATA10 R G2 4 D7 G2

3 LCD1_DATA11 R G3 6 D8 G3

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

3 LCD1_CLK PCLK 31 CLKIN

3 LCD1_ENABLE R HSYNC 27 D23

3 LCD1_VSYNC R VSYNC 28 D25

3 LCD1_DATA18 R R2 51 D0 B2

3 LCD1_DATA19 R R3 52 D1 B3

3 LCD1_DATA20 H R4 54 D2 B4

3 LCD1_DATA21 H R5 55 D3 B5

3 LCD1_DATA22 H R6 56 D4 B6

3 LCD1_DATA23 R R7 57 D5 B7

3 LCD1_DATA10 R G2 4 D7 G2

3 LCD1_DATA11 R G3 6 D8 G3

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

3 LCD1_CLK PCLK 31 CLKIN

3 LCD1_ENABLE R HSYNC 27 D23

3 LCD1_VSYNC R VSYNC 28 D25

3 LCD1_DATA18 R R2 51 D0 B2

3 LCD1_DATA19 R R3 52 D1 B3

3 LCD1_DATA20 H R4 54 D2 B4

3 LCD1_DATA21 H R5 55 D3 B5

3 LCD1_DATA22 H R6 56 D4 B6

3 LCD1_DATA23 R R7 57 D5 B7

3 LCD1_DATA10 R G2 4 D7 G2

3 LCD1_DATA11 R G3 6 D8 G3

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

3 LCD1_CLK PCLK 31 CLKIN

3 LCD1_ENABLE R HSYNC 27 D23

3 LCD1_VSYNC R VSYNC 28 D25

3 LCD1_DATA18 R R2 51 D0 B2

3 LCD1_DATA19 R R3 52 D1 B3

3 LCD1_DATA20 H R4 54 D2 B4

3 LCD1_DATA21 H R5 55 D3 B5

3 LCD1_DATA22 H R6 56 D4 B6

3 LCD1_DATA23 R R7 57 D5 B7

3 LCD1_DATA10 R G2 4 D7 G2

3 LCD1_DATA11 R G3 6 D8 G3

3 LCD1_DATA12 H G4 7 D9 G4

3 LCD1_DATA13 R G5 10 D10 G5

3 LCD1_DATA14 R G6 12 D11 G6

3 LCD1_DATA15 R G7 14 D12 G7

3 LCD1_DATA16 R B2 15 D13 B2

3 LCD1_DATA17 R B3 16 D14 B3

3 LCD1_DATA18 R B4 17 D15 B4

3 LCD1_DATA19 R B5 18 D16 B5

3 LCD1_DATA20 R B6 22 D17 B6

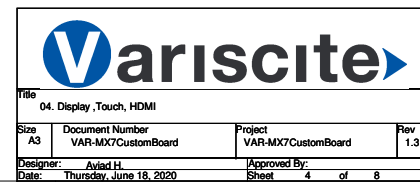
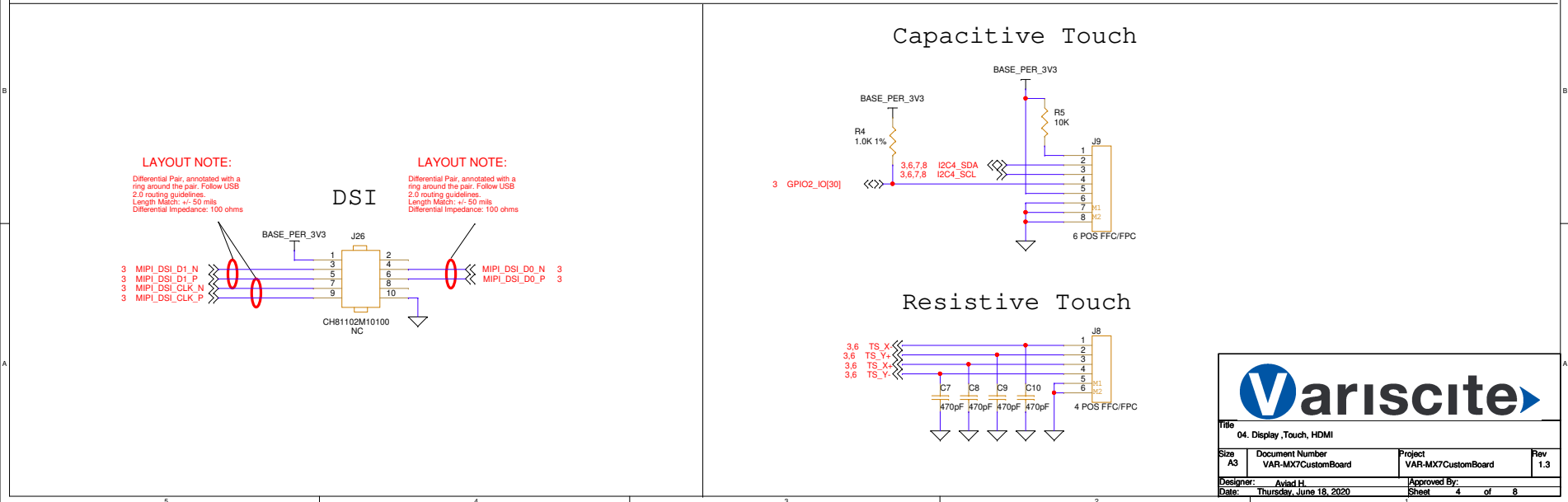
3 LCD1_DATA21 R B7 24 D18 B7

3 LCD1_DATA22 R B8 26 D19 B8

3 LCD1_DATA23 R B9 28 D20 B9

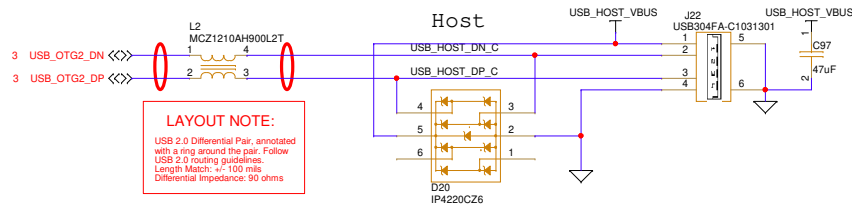
3 LCD1_CLK PCLK 31 CLKIN

3 LCD1_ENABLE R

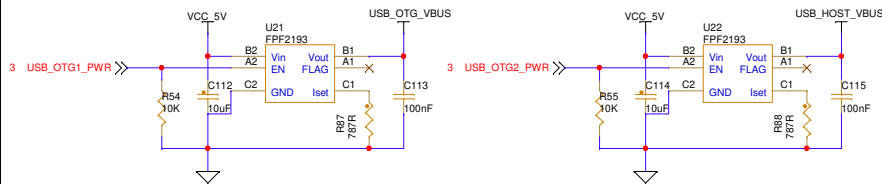


05. USB, Audio, Camera

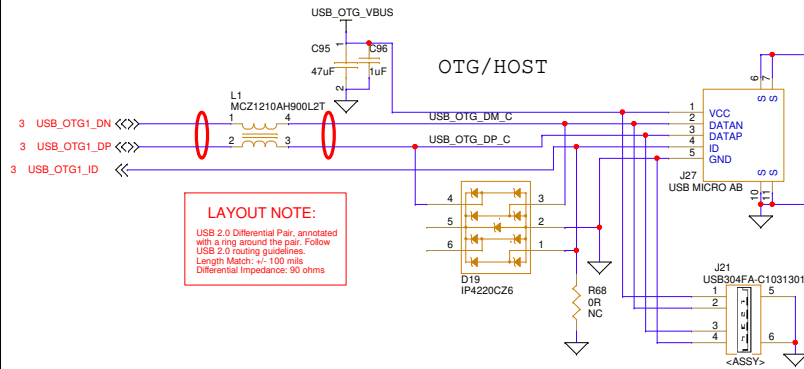
USB



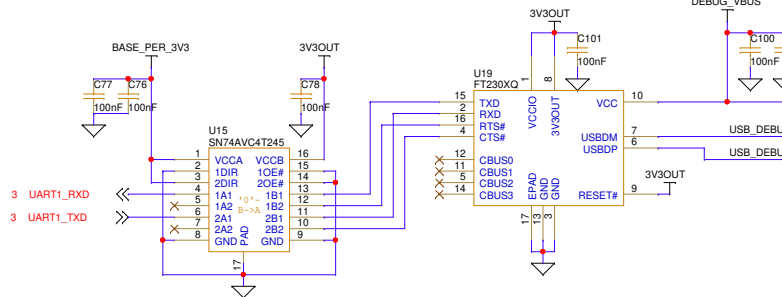
Power Distribution



OTG/HOST

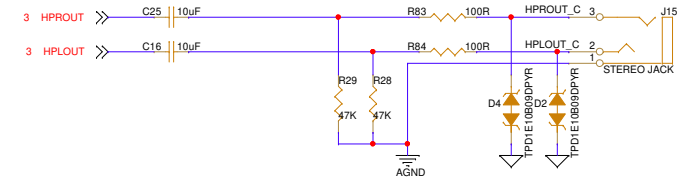


USB Debug

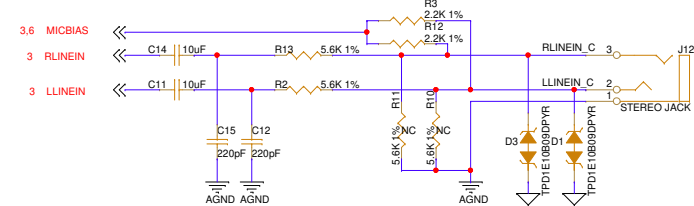


Audio

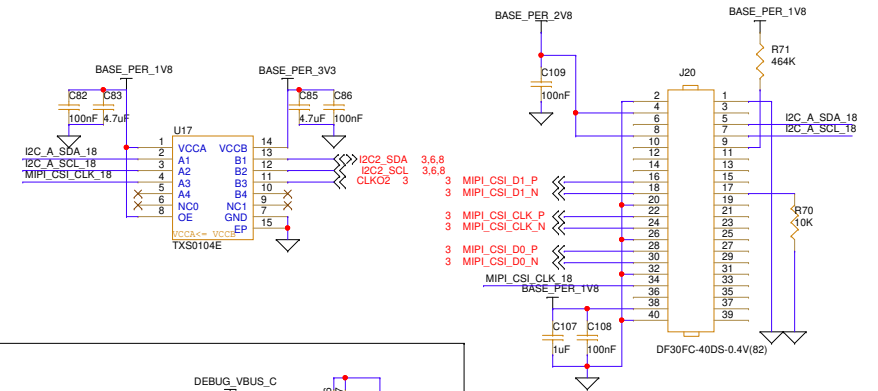
Headphones



Line In

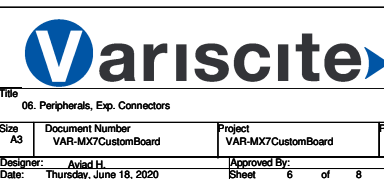
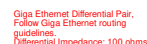


Camera

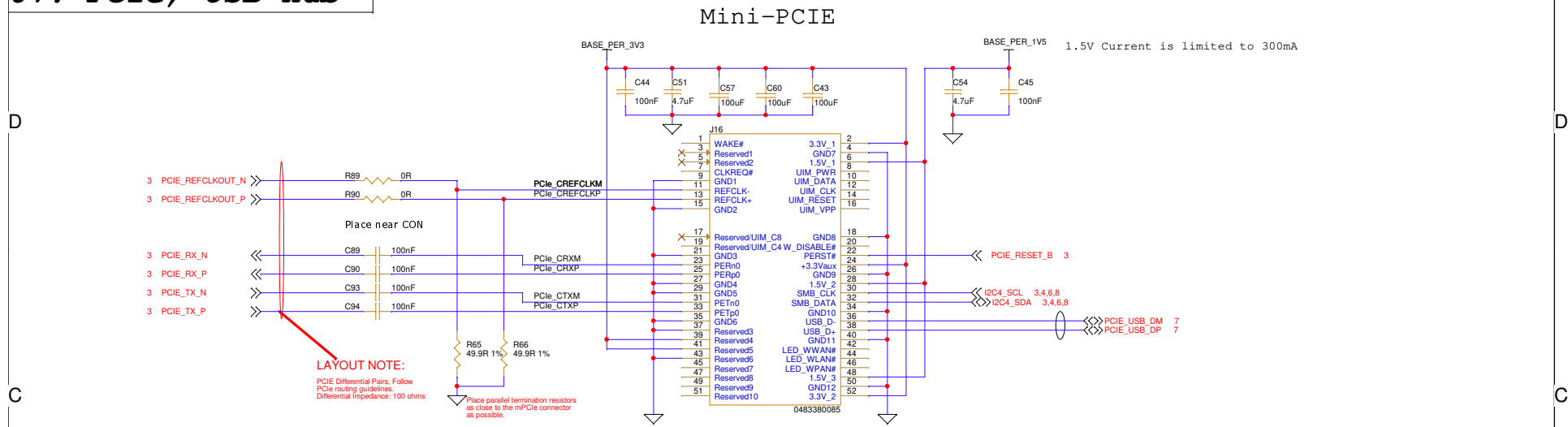


Title 05. USB, Audio, Camera			
Size A3	Document Number VAR-MX7CustomBoard	Project VAR-MX7CustomBoard	Rev 1.3
Designer Ayad H.		Approved By:	
Date Thursday, June 18, 2020		Sheet 5 of 8	

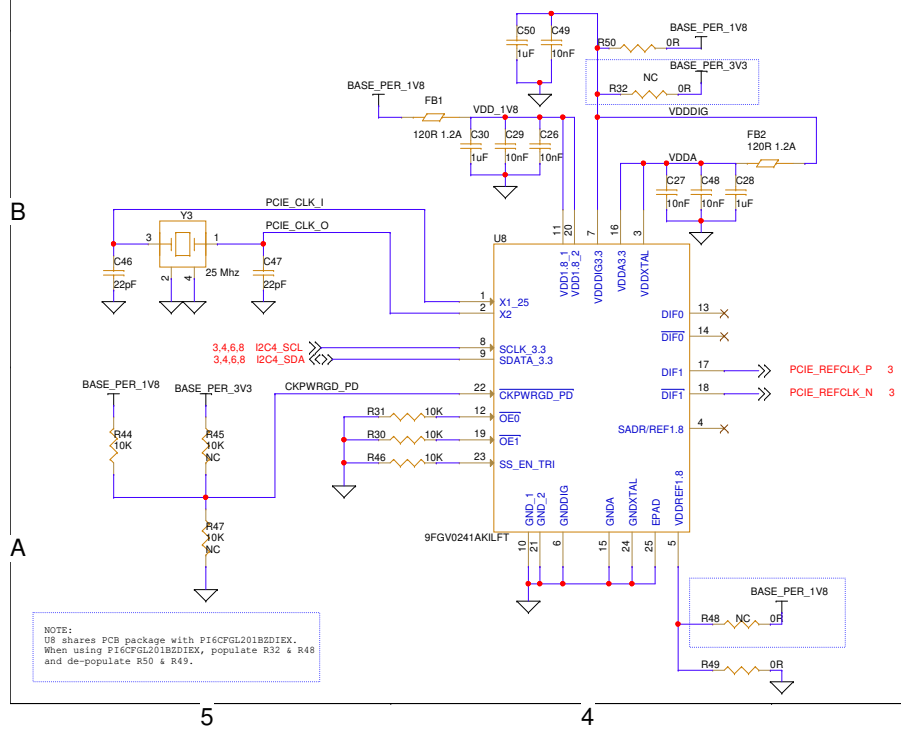
Giga Ethernet Differential Pair,
Follow Giga Ethernet routing
guidelines.
Differential Impedance: 100 ohms



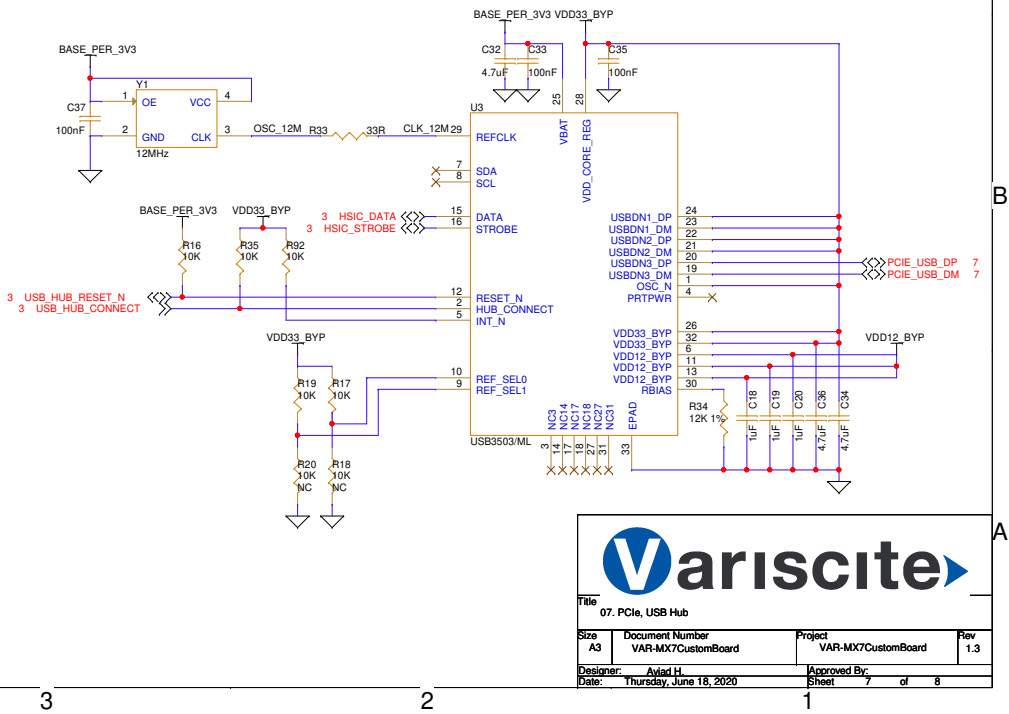
07. PCIe⁵, USB Hub



PCIe Clock Generator



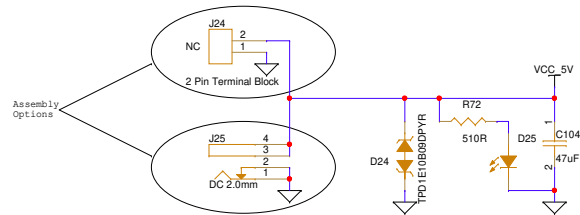
USB Hub



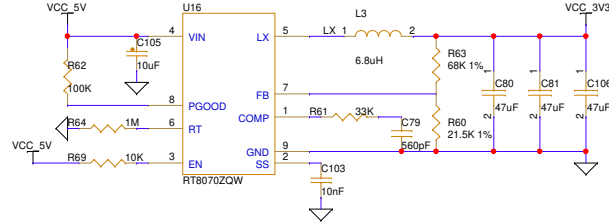
Title 07. PCIe, USB Hub			
Size A3	Document Number VAR-MX7CustomBoard	Project VAR-MX7CustomBoard	Rev 1.3
Designer: Ayad H.		Approved By:	
Date: Thursday, June 18, 2020		Sheet 7 of 8	

08. Power, Mechanics

DC-IN - 5V



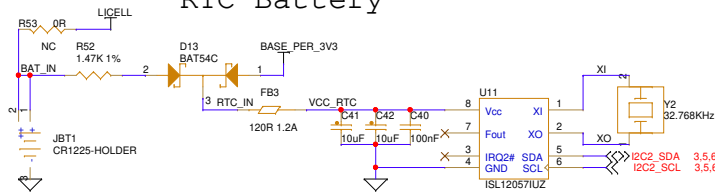
3.3V Digital 4A



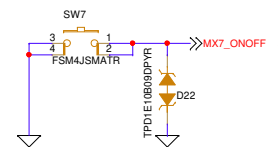
SOM Power



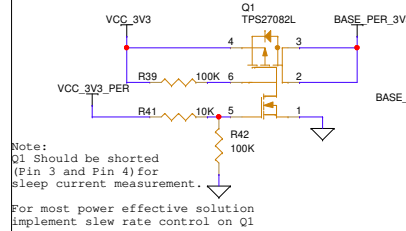
RTC Battery



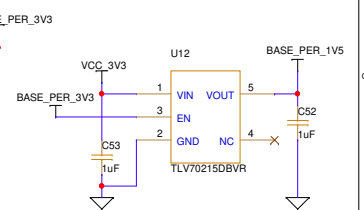
ONOFF



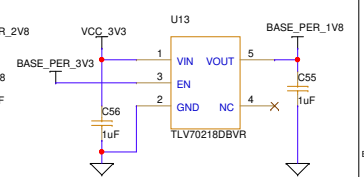
3.3V Base



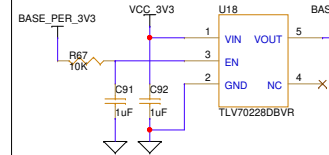
1.5V Base



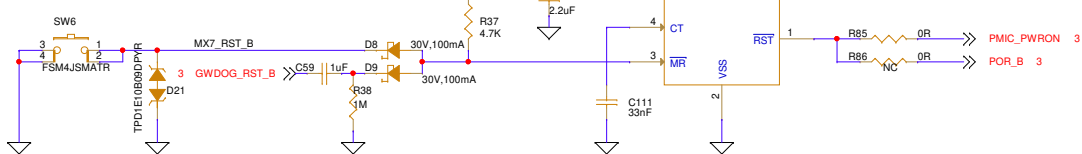
1.8V Base



2.8V Base

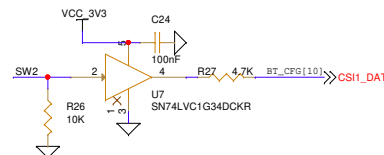
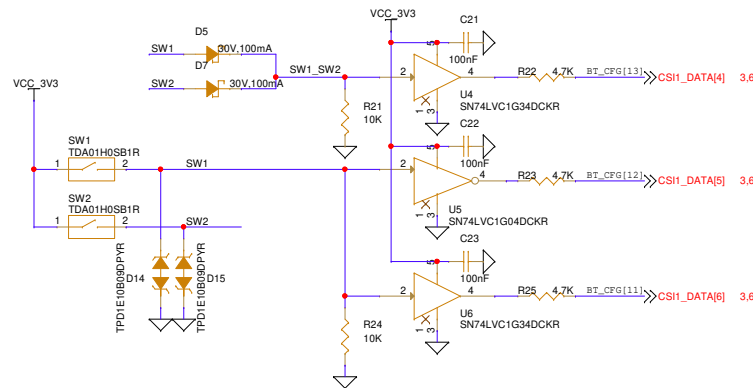


Reset

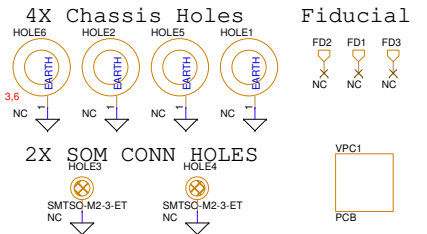
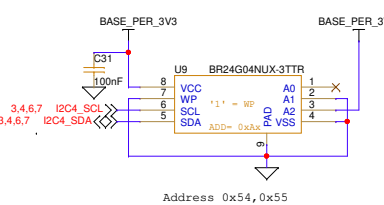


Boot strap

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



Board ID



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	