Project: ***BW1094***
Current Revision: ***R1M1E1***

BW1094 Revision History:

Date	Revision	Reason for Change	Changes Implemented
12/3/2019	R0M0E0 -> R1M1E1	1) Want all camera module connectors to be same-side flex, but RGB camera connector on this board does not align with that convention 2) Project needs to be updated to reflect Gen2 1099 pinout	1) Changed RGB camera connector to a top-contact, since it is mounted on the bottom of the board. 2) J1 updated to Gen2 pinout on schematic, and J10 aux header updated to pinout QSPI. TPs added for RGB aux IO lines, and silk screen added for aux header J10.

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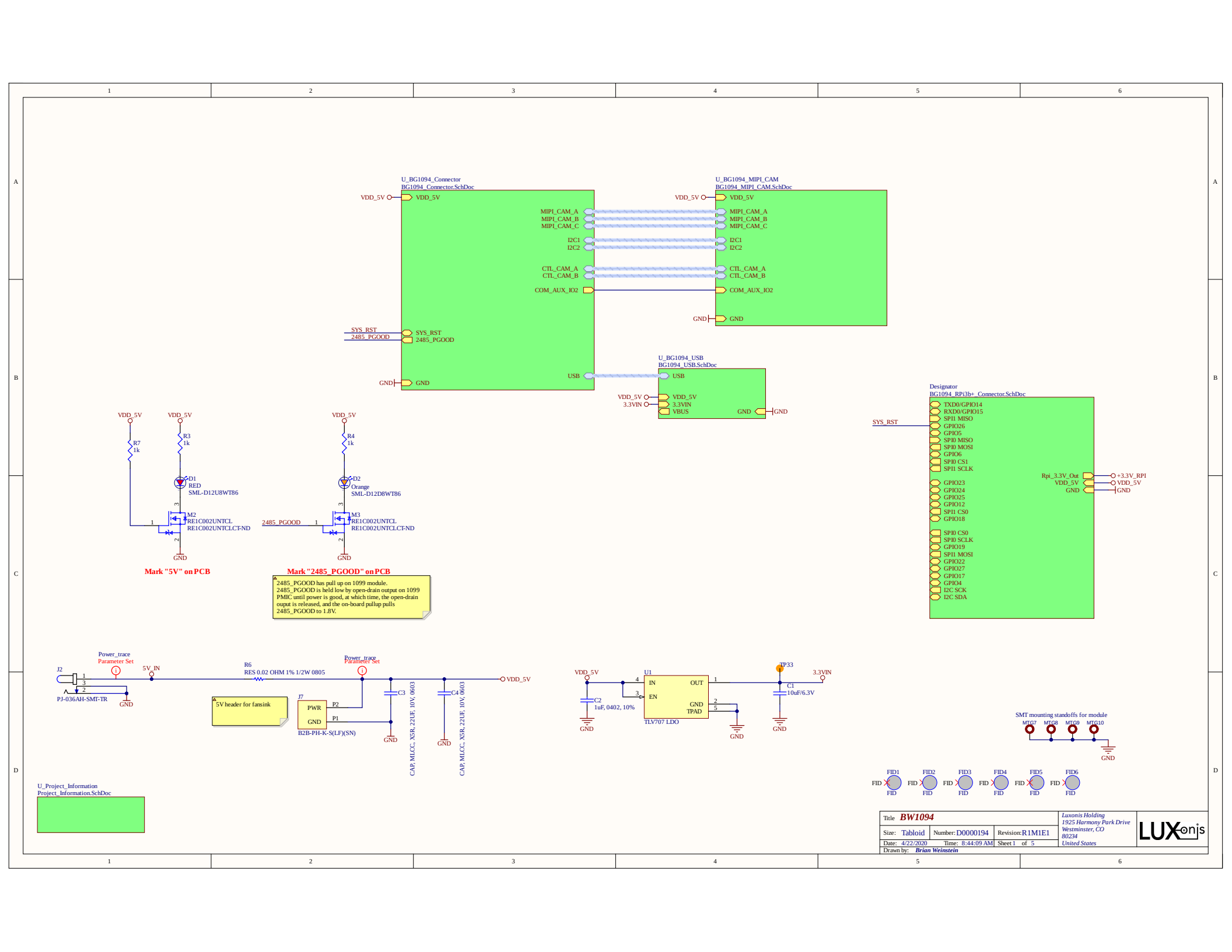
U_BG1094_Connector
BG1094_Connector.SchDoc
U_BG1094_MIPI_CAM
BG1094_MIPI_CAM.SchDoc
U_BG1094_USB
BG1094_USB.SchDoc
Designator
BG1094_RPi3b+_Connector.SchDoc
Mark "5V" on PCB
Mark "2485_PGOOD" on PCB
2485_PGOOD has pull up on 1099 module.
2485_PGOOD is held low by open-drain output on 1099 PMIC until power is good, at which time, the open-drain ouput is released, and the on-board pullup pulls 2485_PGOOD to 1.8V.
5V header for fansink
B2B-PH-K-S(LF)(SN)
PJ-036AH-SMT-TR
TLV707 LDO
SMT mounting standoffs for module
U_Project_Information
Project_Information.SchDoc
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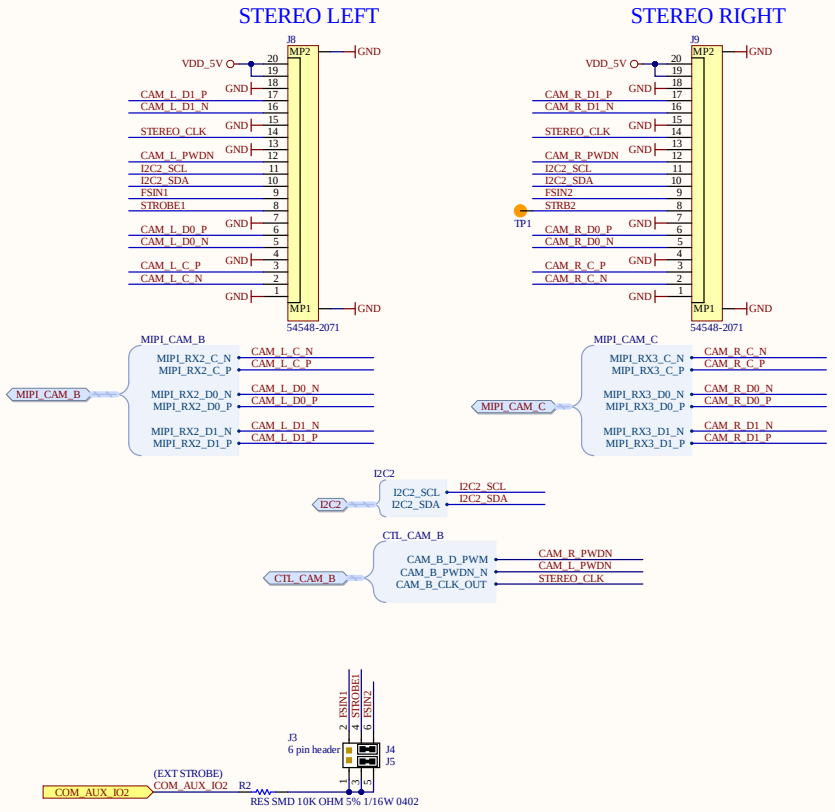
VDD_5V

GND

STEREO CAMERA PAIR



PCB NOTE: Add below diagram to the PCB

Supported Modes of Operation

NO SYNC

NORMAL

TIMING MASTER

TIMING SLAVE

Jumper configuration for FSIN and STROBE pins

This header is used for configuring the STROBE signal direction between the camera boards by using jumpers. A strobe signal may drive FSIN signal for waking up a sensor from its low power mode. See the "Supported Modes of Operation" note for supported jumper settings.

- "NO SYNC" is the mode in which none of the camera modules is excited by any strobe signal.

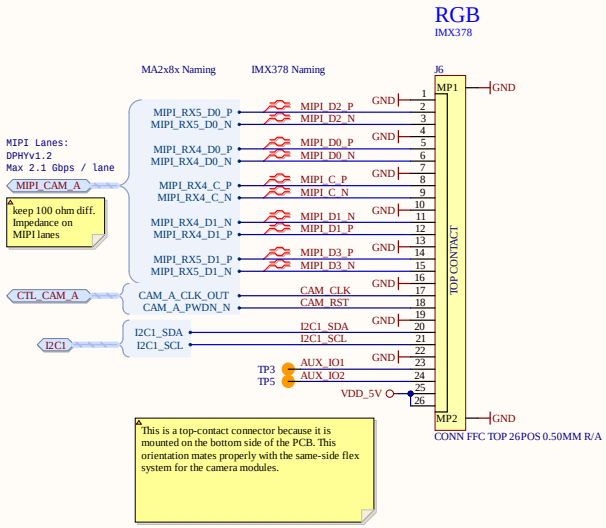
- "NORMAL" mode means STROBE mechanism works only among the stereo cameras themselves. In this mode, CAM1 strobe is connected to the CAM2 FSIN input.

- "TIMING MASTER" mode means CAM1 STROBE signal drives the EXT_STROBE signal as well as the CAM2 FSIN input. EXT_STROBE signal circulates among the other camera ports so that one camera module can manage the timing of all cameras within the system.

- "TIMING SLAVE" mode uses external strobe signal which is driven externally by another camera. In this mode, CAM1 and CAM2 are excited by the EXT_STROBE signal.

Note that, at most only one camera can be in the "TIMING MASTER" mode at a time. STROBE generation and FSIN reception should be configured via software.

RGB CAMERA



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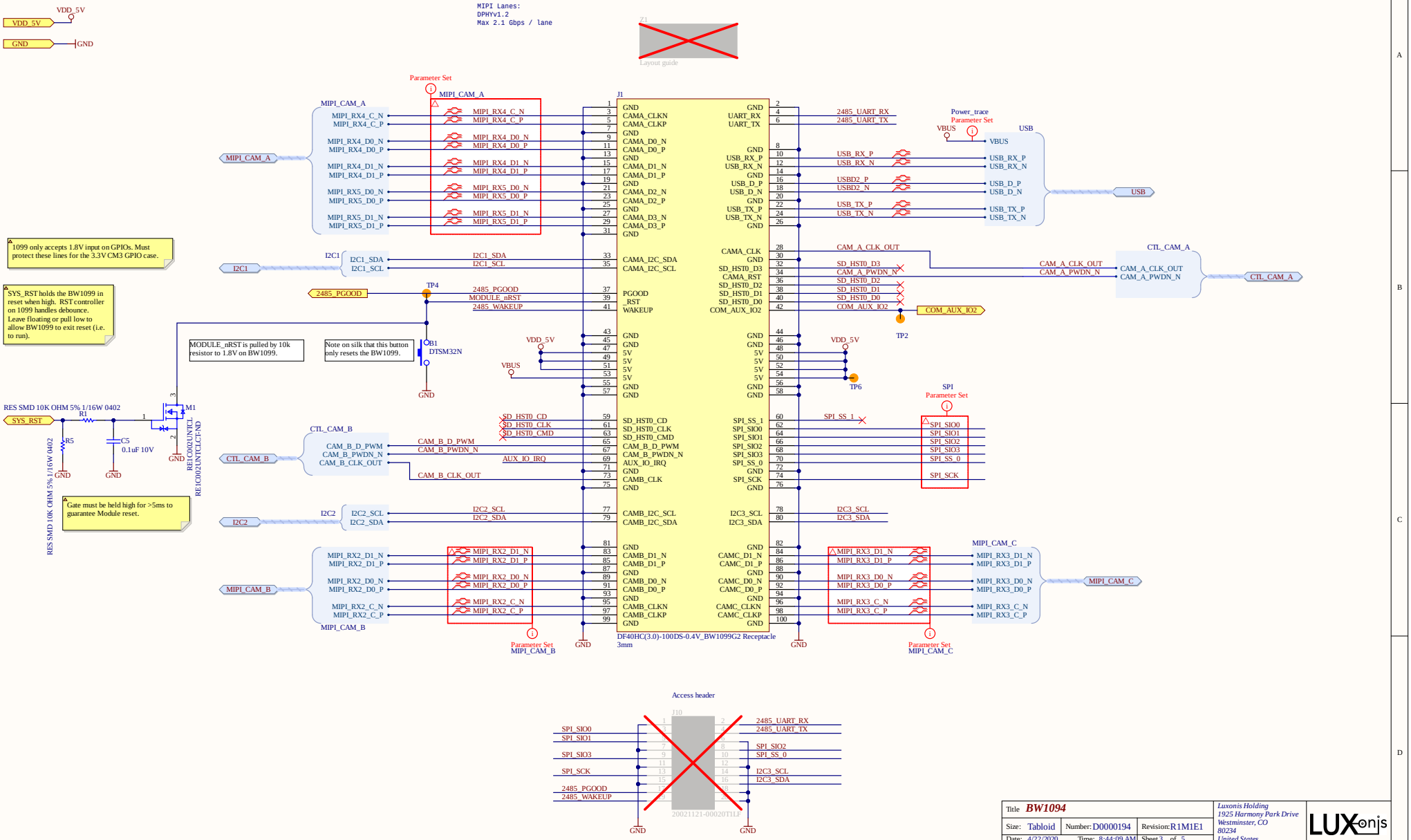
MIPI Lanes:
DPHYv1.2
Max 2.1 Gbps / lane
Z1
Layout guide
VDD_5V
GND
Parameter Set
MIPI_CAM_A
J1
MIPI_RX4_C_N
MIPI_RX4_C_P
MIPI_RX4_D0_N
MIPI_RX4_D0_P
MIPI_RX4_D1_N
MIPI_RX4_D1_P
MIPI_RX5_D0_N
MIPI_RX5_D0_P
MIPI_RX5_D1_N
MIPI_RX5_D1_P
2485_UART_RX
2485_UART_TX
Power_trace
Parameter Set
VBUS
USB
USB_RX_P
USB_RX_N
USBD2_P
USBD2_N
USB_TX_P
USB_TX_N
USB_D_P
USB_D_N
1099 only accepts 1.8V input on GPIOs. Must protect these lines for the 3.3V CM3 GPIO case.
I2C1
I2C1_SDA
I2C1_SCL
CAMA_I2C_SDA
CAMA_I2C_SCL
CAM_A_CLK_OUT
CAM_A_PWDN_N
CTL_CAM_A
SYS_RST holds the BW1099 in reset when high. RST controller on 1099 handles debounce. Leave floating or pull low to allow BW1099 to exit reset (i.e. to run).
2485_PGOOD
TP4
MODULE_nRST
2485_WAKEUP
PGOOD
_RST
WAKEUP
SD_HST0_D3
SD_HST0_D2
SD_HST0_D1
SD_HST0_D0
COM_AUX_IO2
TP2
MODULE_nRST is pulled by 10k resistor to 1.8V on BW1099.
Note on silk that this button only resets the BW1099.
B1
DTSM32N
5V
TP6
SPI
Parameter Set
SPI_SS_1
SPI_SIO0
SPI_SIO1
SPI_SIO2
SPI_SIO3
SPI_SS_0
SPI_SCK
RES SMD 10K OHM 5% 1/16W 0402
R1
M1
SYS_RST
R5
C5
0.1uF 10V
RE1C002UNTCL
RE1C002UNTCLCT-ND
Gate must be held high for >5ms to guarantee Module reset.
CTL_CAM_B
SD_HST0_CD
SD_HST0_CLK
SD_HST0_CMD
CAM_B_D_PWM
CAM_B_PWDN_N
CAM_B_CLK_OUT
AUX_IO_IRQ
CAMB_CLK
I2C2
I2C2_SCL
I2C2_SDA
CAMB_I2C_SCL
CAMB_I2C_SDA
I2C3_SCL
I2C3_SDA
MIPI_CAM_B
MIPI_RX2_D1_N
MIPI_RX2_D1_P
MIPI_RX2_D0_N
MIPI_RX2_D0_P
MIPI_RX2_C_N
MIPI_RX2_C_P
MIPI_CAM_C
MIPI_RX3_D1_N
MIPI_RX3_D1_P
MIPI_RX3_D0_N
MIPI_RX3_D0_P
MIPI_RX3_C_N
MIPI_RX3_C_P
DF40HC(3.0)-100DS-0.4V_BW1099G2 Receptacle
3mm
Access header
J10
SPI_SIO0
SPI_SIO1
SPI_SIO2
SPI_SS_0
SPI_SIO3
SPI_SCK
I2C3_SCL
I2C3_SDA
2485_PGOOD
2485_WAKEUP
20021121-00020T1LF
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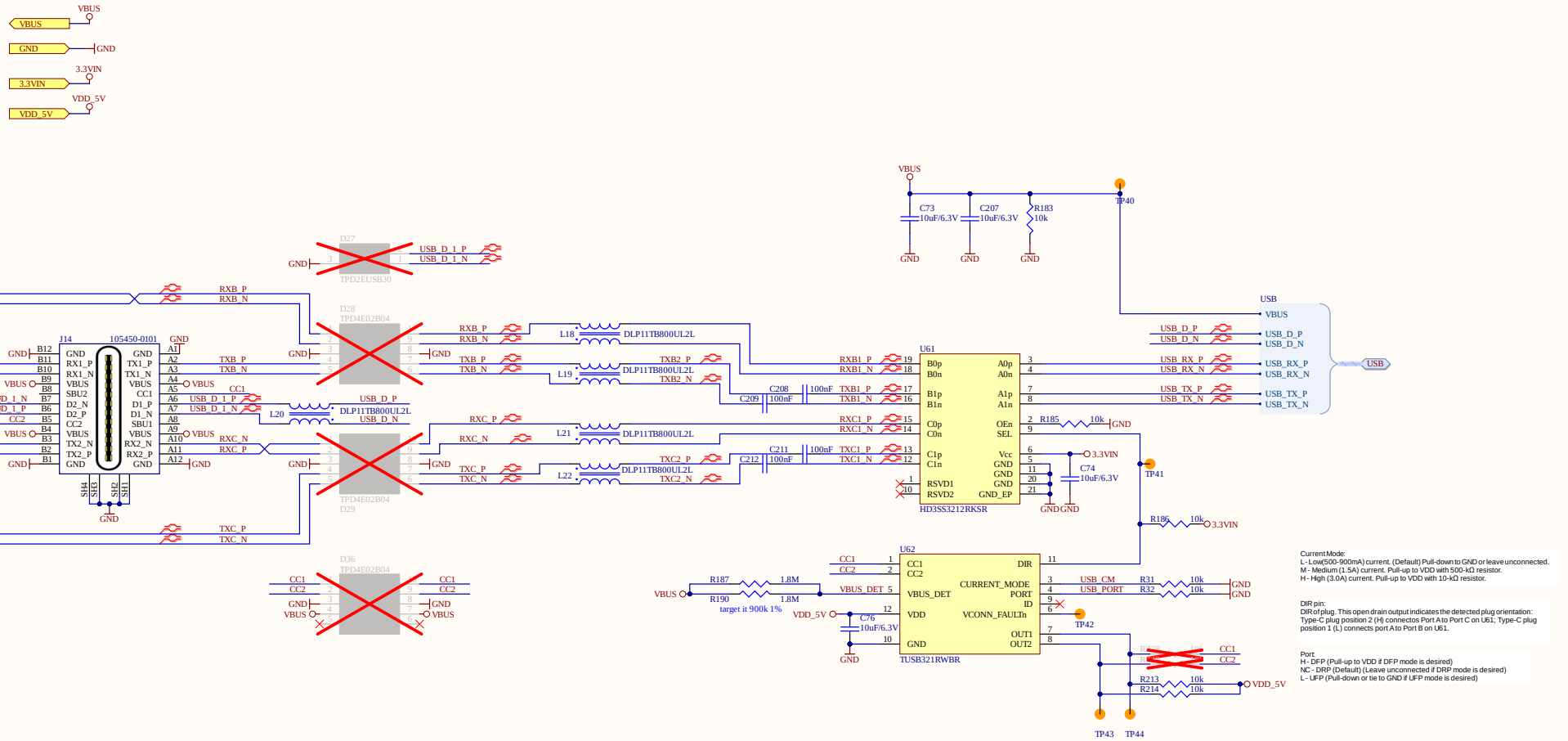

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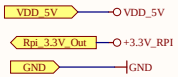
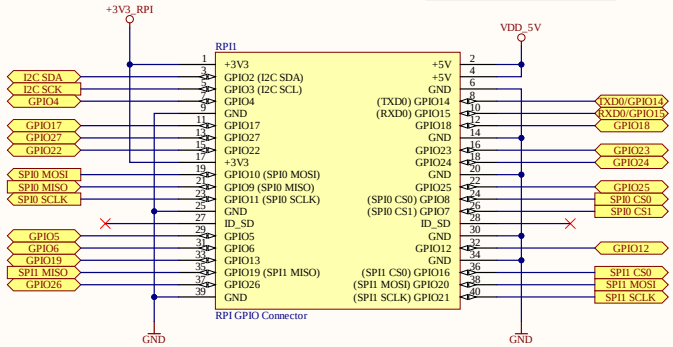


1094 backdrives the Raspberry Pi.



Samtec ESQ-120-13-L-D is appropriate, as is Harwin M20-610204

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