Project: ***DM2080***
Current Revision: ***R1M1E1***

DM2080 *Revision History:*

Date	Revision	Reason for Change	Changes Implemented
5th July 2022	Initial release		
21th October 2022	R1M1E1	Light bleeding of the LED light into the USB-C connector. Not enough feedback from buttons.	- moved LED to the other side of the PCB - moved LED pins to CONNECTOR A to the PWM capable pins - added 100k resistors to gates of mosfes - resized the PCB board - added new buttons

Title ***DM2080***			*Luxonis Holding* *1925 Harmony Park Drive* *Westminster, CO* *80234* *United States*	Cannot open file C:\Users\BrianLuxonis\
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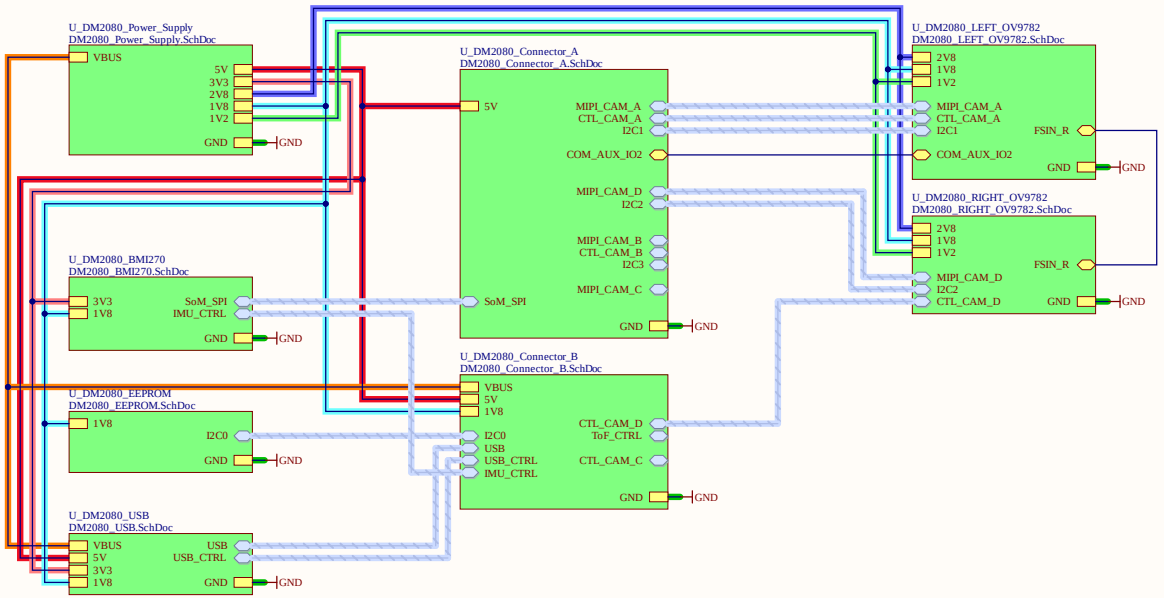
Date: 24.11.2022 Time: 16:27:14		Sheet 1 of 9		
Drawn by: ***David Malovrh***				



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Title DM2080			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 United States
Size: Tabloid	Number: D0001093	Revision: R1M1E1	Cannot open file C:\Users\BrianLuxonis\
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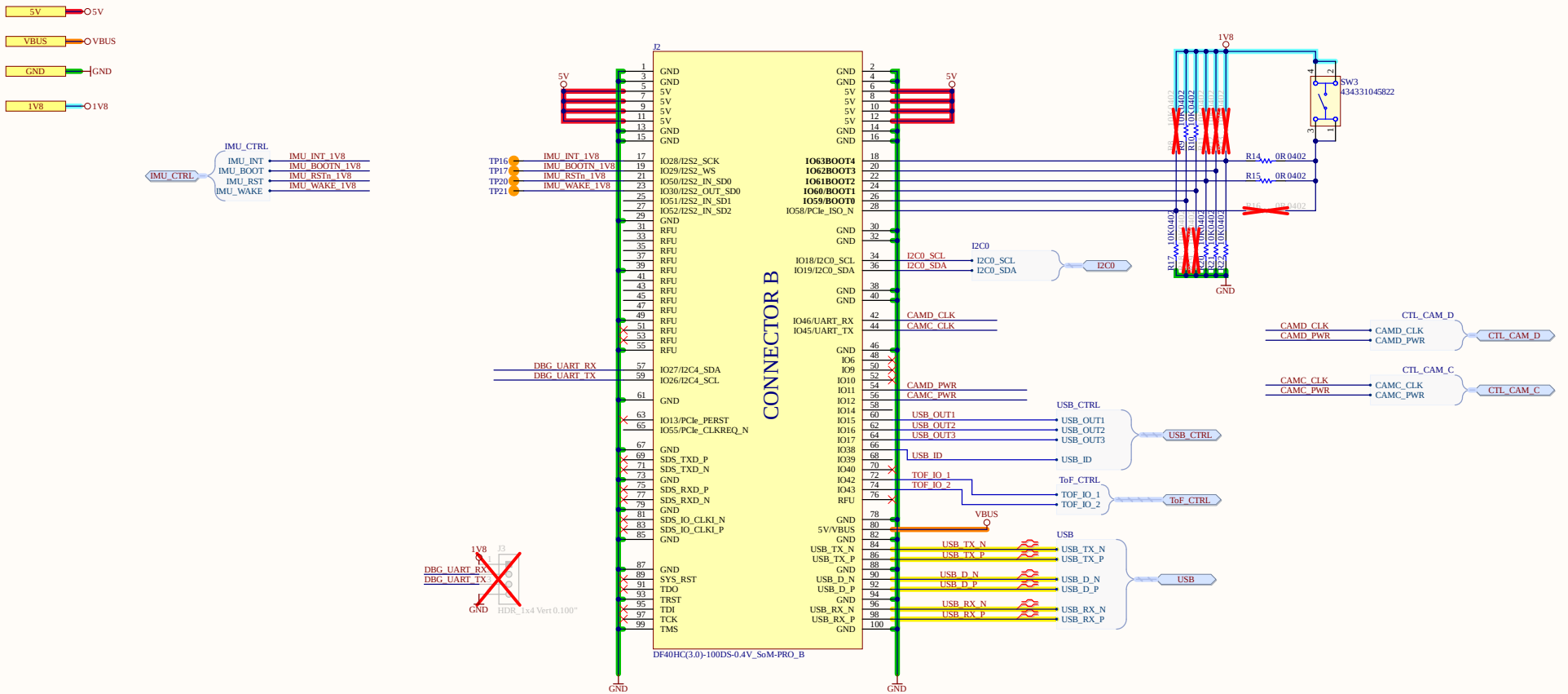

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Luxonis Holding
1925 Harmony Park Drive
Westminster, CO
80234
United States

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SMT mounting standoffs for module
M2, 3MM steel spacer on M2.5 mounting pad

MH1 9774030943R GND
MH2 9774030943R GND

GND
5V

DPHYv1.2
Max 2.1 Gbps / lane
MIPI Lanes:

Parameter Set 1 — MIPI_CAM_A

MIPI_CAM_A
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

I2C1
I2C1_SDA
I2C1_SCL

SW1 434331045822
GND
MX/KB_RST

LED_GREEN
LED_BLUE

SD_HST0_CD
SD_HST0_CLK
SD_HST0_CMD

CTL_CAM_B
CAM_B_PWDN_N
CAM_B_CLK_OUT
SW2 434331045822
CAMB_PWR
KB_PWR
CAMB_CLK

I2C2
I2C2_SCL
I2C2_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

Parameter Set 1 — MIPI_CAM_B

J1

CONNECTOR A

1	GND	RX4_CAMA_CLK_N	3
5	RX4_CAMA_CLK_P	GND	7
9	GND	RX4_CAMA_D0_N	11
13	RX4_CAMA_D0_P	GND	15
17	RX4_CAMA_D1_N	RX4_CAMA_D1_P	19
21	GND	RX5_CAMA_D2_N	23
25	RX5_CAMA_D2_P	GND	27
29	RX5_CAMA_D3_N	RX5_CAMA_D3_P	31
33	IO25/CAMA_I2C1_SDA	IO24/CAMA_I2C1_SCL	35
37	**PGOOD**	**nRST**	39
41	**WAKEUP**	GND	45
43	IO11/PWR_BTN	IO70/RST_BTN	47
49	IO69/LED1	IO12/LED2	51
53	GND	IO79	55
57	RFU	IO71/SD_CD	61
59	IO32_3V3/SD_CLK	IO33_3V3/SD_CMD	63
65	IO7/CAML_PWR	IO6/CAMR_PWR	67
69	IO56/AUX_IRQ	GND	71
73	IO22/CAMST_CLK	GND	75
77	IO26/CAMB_I2C2_SCL	IO27/CAMB_I2C2_SDA	79
81	GND	RX2_CAMB_D1_N	83
85	RX2_CAMB_D1_P	GND	87
89	RX2_CAMB_D0_N	RX2_CAMB_D0_P	91
93	GND	RX2_CAMB_CLK_N	97
95	RX2_CAMB_CLK_P	GND	99

2	GND	RX0_CAMD_CLK_N	4
6	RX0_CAMD_CLK_P	GND	10
8	RX0_CAMD_D0_N	RX0_CAMD_D0_P	12
14	GND	RX0_CAMD_D1_N	16
18	RX0_CAMD_D1_P	GND	22
20	RX1_CAMD_D2_N	RX1_CAMD_D2_P	24
26	GND	IO21/CAMA_CLK	30
28	GND	IO37_3V3/SD_D3	34
32	IO8/CAMA_PWR	IO36_3V3/SD_D2	38
36	IO35_3V3/SD_D1	IO34_3V3/SD_D0	42
40	IO13/CAMFS_2L	GND	46
44	RX1_CAMD_D3_N	RX1_CAMD_D3_P	48
50	GND	IO23/CAMD_CLK	54
52	IO9/CAMD_PWR	IO14/CAMFS_4L	58
56	GND	IO65/SPI1_SS_3	62
60	IO17/SPI1_SIO0	IO18/SPI1_SIO1	64
66	IO19/SPI1_SIO2	IO20/SPI1_SIO3	68
70	IO16/SPI1_SS_0	GND	74
72	IO15/SPI1__SCK	GND	76
78	IO28/I2C3_SCL	IO29/I2C3_SDA	80
82	GND	RX3_CAMC_D1_N	84
86	RX3_CAMC_D1_P	GND	88
90	RX3_CAMC_D0_N	RX3_CAMC_D0_P	94
92	GND	RX3_CAMC_CLK_N	98
96	RX3_CAMC_CLK_P	GND	100

DF40HC(3.0)-100DS-0.4V_SoM-KB_A

GND GND

MIPI_CAM_D
Parameter Set 1

MIPI_CAM_D
MIPI_RX6_C_N
MIPI_RX6_C_P
MIPI_RX6_D0_N
MIPI_RX6_D0_P
MIPI_RX6_D1_N
MIPI_RX6_D1_P
MIPI_RX7_D0_N
MIPI_RX7_D0_P
MIPI_RX7_D1_N
MIPI_RX7_D1_P

CTL_CAM_A
CAMA_CLK
CAMA_PWR
SD_HST0_D3
SD_HST0_D2
SD_HST0_D1
SD_HST0_D0
R7 22R 0402 COM_AUX_IO2

SoM_SPI
SPI1_CS_3
SPI1_SIO0
SPI1_SIO1
SPI1_SIO2
SPI1_SIO3
SPI1_CS_0
SPI1_SCK
Parameter Set 1

I2C3
I2C3_SCL
I2C3_SDA

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

Parameter Set 1 — MIPI_CAM_C

D1 EASV3015RGBA0
5V
R1 1K 0402
R2 1K 0402
R3 1K 0402
Q1 RE1C002UNTCL
LED_RED
R4 100K 0402
R53 100K 0402
Q2 RE1C002UNTCL
LED_GREEN
R23 100K 0402
Q3 RE1C002UNTCL
LED_BLUE
R24 100K 0402
GND

2485_PGOOD and MX_RST_1V8 both have pull ups to 1.8V on 2099 module.
2485_PGOOD is held low by open-drain output on 2099 PMIC until power is good.
MX_RST_1V8 rises with 1.8V at POR, but can be held low by user button or 2099 JTAG.

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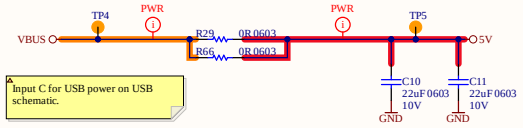
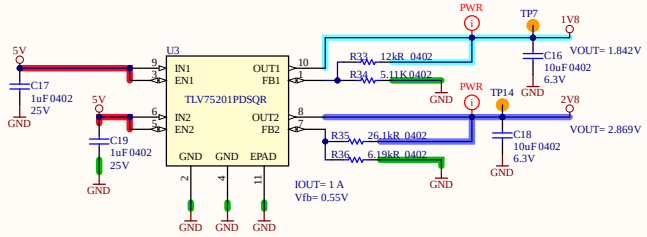
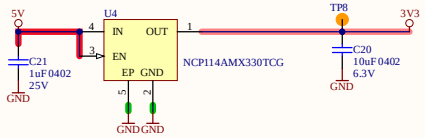
VBUS
5V
3V3
2V8
1V8
1V2
GND

POWER INPUT

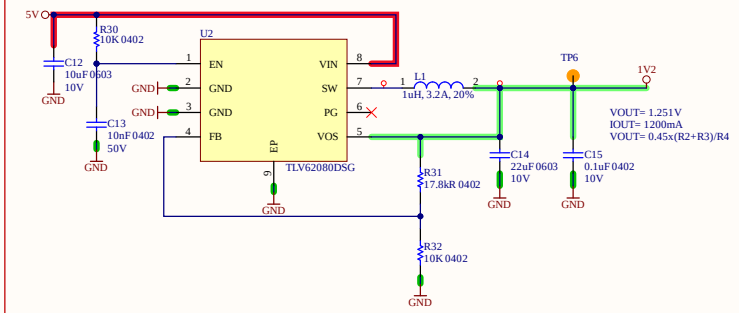


LDO POWER SUPPLIES





DC-DC POWER SUPPLIES



TP9 TP10 TP11 TP12
GND GND GND GND

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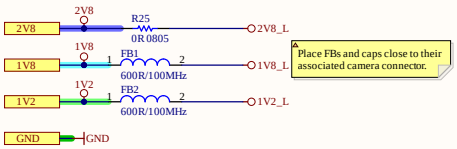
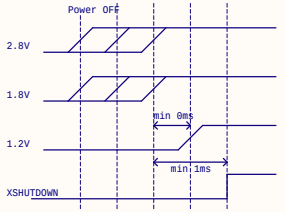


MODULE & SENSOR INFORMATION			
MODULE	TG161B-201 OR AN01V32-0JG	I2C Clock Rate	TBD kHz Max
SENSOR	OV09782 RGB 1 Mega pixel CMOS 1/4 inch	I2C Address (8 bits)	0xTBD(W) 0xTBD(R)
MAX RESOLUTION	1280X800	Sensor Clock Input	6 - 27 MHz (24 MHz typ.)

Supply Information

Supply Name		Voltage	Max Current
Module	Sensor		
DOVDD	VDD-IO	1.8V	2.5mA
DVDD	VDD-D	1.2V	52mA
AVDD	VDD-A	2.8V	24mA

OV9282 POWER REQUIREMENTS



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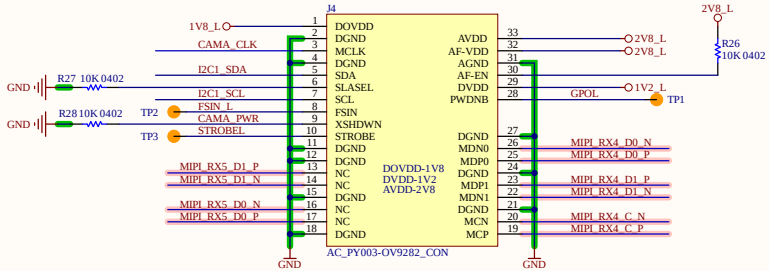
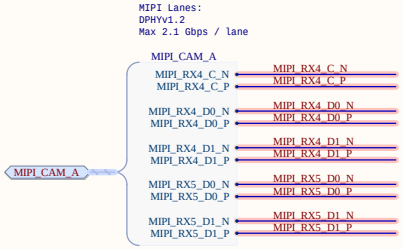
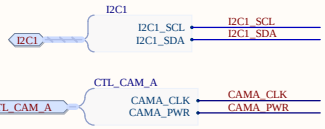
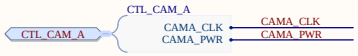
1. AVDD rising can occur before or after DOVDD rising as long as they are rising before XSHUTDOWN rising
2. XSHUTDOWN is pulled up after AVDD and DOVDD are stable
3. DVDD rises after DOVDD, but before XSHUTDOWN is pulled high

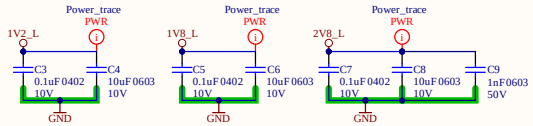
Mark "LEFT" on PCB
Place so that is the module's left camera.

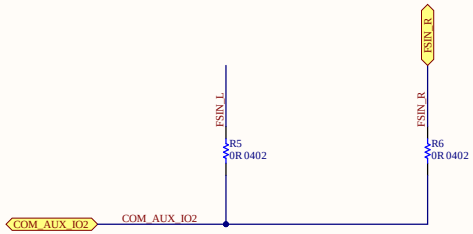












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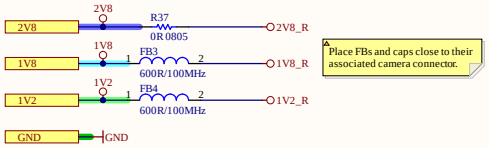

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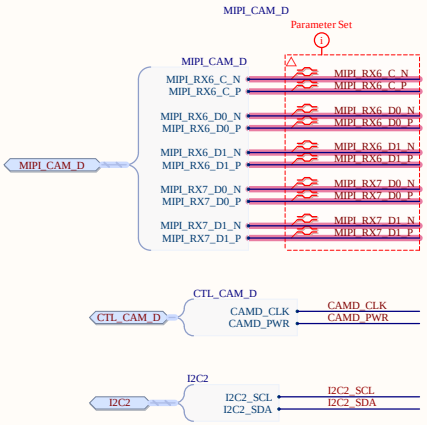

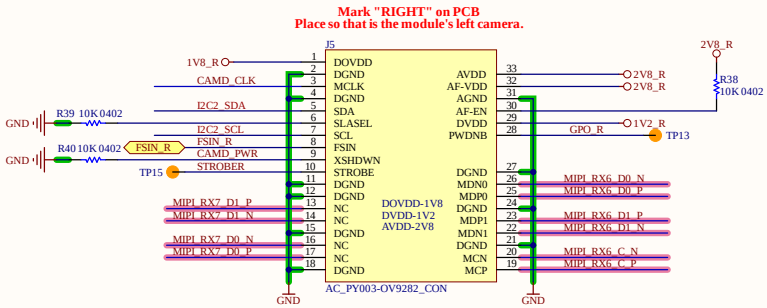

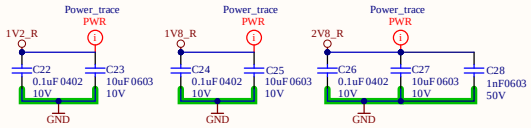

Because the stereo pair of OV9282 modules hard wired to CAM_B (below) no additional reset cirucitry is required to account for different conditions. This means that "CAM1" (Left) is reset via CAM_PWDN, and "CAM2" (Right), is reset via CAM_PWM. This also means that the signal CAM_AUX_IO1 is no longer required here, as that was only possible if the stereo pair were connected to CAM_C or CAM_D

OV9282 sensor I2C address may be changed via I2C protocol. Therefore, in order to assign different I2C address to t sensors on the same I2C bus, one needs to hold the reset the all sensors except one and assign a unique I2C address to the active sensor. This routine should be applied for all sensors in the initialization routine.

CAMERA CONNECTOR RESET CONNECTION TABLE

CAM NO	CAMERA CONNECTOR			
	CAM_A	CAM_B	CAM_C	CAM_D
CAM_1	CAM_PWDN	CAM_PWDN	CAM_PWDN	CAM_PWDN
CAM_2	CAM_PWM	CAM_PWM	CAM_AUX_IO1	CAM_AUX_IO1

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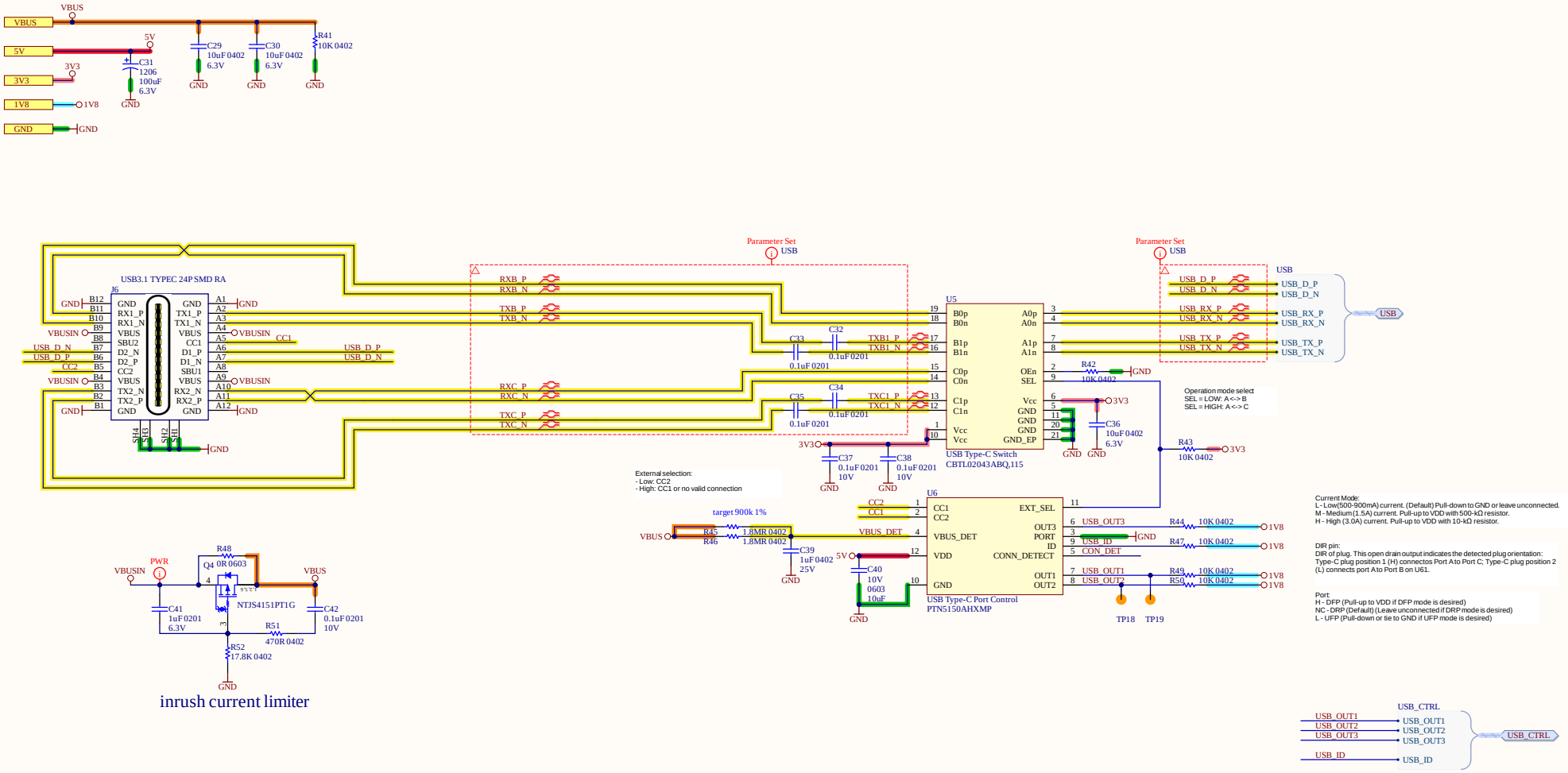

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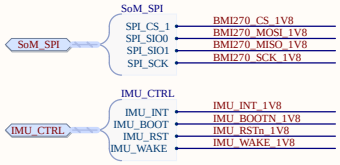

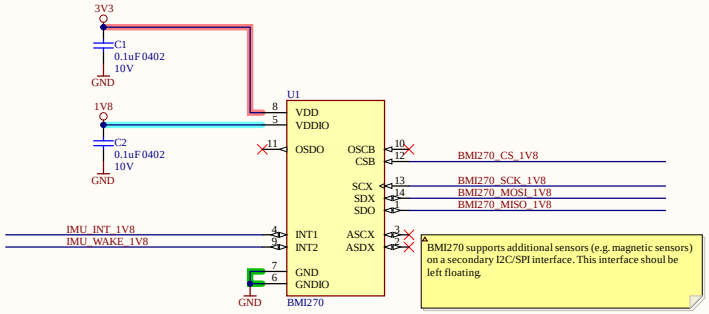

Sensor Orientation (gravity vector ↓)					upright	upftadn
Output Signal X	0g / 0 LSB	1g / 8192 LSB	0g / 0 LSB	-1g / -8192 LSB	0g / 0 LSB	0g / 0 LSB
Output Signal Y	-1g / -8192 LSB	0g / 0 LSB	1g / 8192 LSB	0g / 0 LSB	0g / 0 LSB	0g / 0 LSB
Output Signal Z	0g / 0 LSB	0g / 0 LSB	0g / 0 LSB	0g / 0 LSB	1g / 8192 LSB	-1g / -8192 LSB

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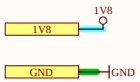

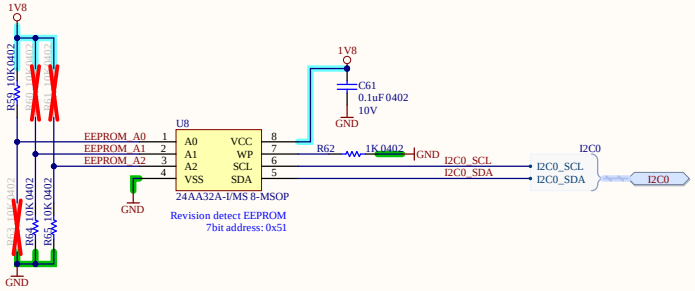

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