Project: DM1092_LiPo
Current Revision: R0M0E0

DM1092_LiPo Revision History:

Date	Revision	Reason for Change	Changes Implemented
July 9th, 2020	Initial release		
December 7th, 2020	BW1092_R0M0E0 -> DM1092_R0M0E0	1. IMU data transfer maximum 1kHz rate over I2C 2. Issues with floating lines (to weak MX pull-up)	1. Changed power supply from 3V3 to 1V8 for IO, removed INT, RSTn and BOOTN from level shifter. Removed I2C3_3V3 interface added SPI0 connected directly to MX bus. Corrected chip setup for SPI. Updated routing and matched signals. 2. Added 10k pullups to BNO08x_INT_1V8 and BNO08x_RSTn_1V8
December 28th, 2020	DM1092_R0M0E0 -> DM1092_LiPo_R0M0E0	1. QWIIC ENV connector I2C voltage level isssue 2. Battery powered 3. Alarm buzzer	1. ENV I2C signals routed over level shifter to J12 2. Added BMS for LIPO battery and power switch which disconnects power to BW1099 and camera modules 3. Added buzzer and driving circuit

ESP32 WROOM IO_MUX

ESP32 PIN	ESP32-WROOM-32D PIN	Analog Function1	Analog Function2	Analog Function3	RTC Function1	RTC Function2	Function 1	Function 2	Function 3	Function 4	Function 5	Function 6	GPIO Matrix	At RST	After RST
5	4	ADC_H	ADC1_CH0		RTC_GPIO0		GPIO36		GPIO36					oe=0,ie=0	oe=0,ie=0
8	5	ADC_H	ADC1_CH3		RTC_GPIO3		GPIO39		GPIO39					oe=0,ie=0	oe=0,ie=0
10	6		ADC1_CH6		RTC_GPIO4		GPIO34		GPIO34					oe=0,ie=0	oe=0,ie=0
11	7		ADC1_CH7		RTC_GPIO5		GPIO35		GPIO35					oe=0,ie=0	oe=0,ie=0
12	8	XTAL_32K_P	ADC1_CH4	TOUCH9	RTC_GPIO9		GPIO32		GPIO32					oe=0,ie=0	oe=0,ie=0
13	9	XTAL_32K_N	ADC1_CH5	TOUCH8	RTC_GPIO8		GPIO33		GPIO33					oe=0,ie=0	oe=0,ie=0
14	10	DAC_1	ADC2_CH8		RTC_GPIO6		GPIO25		GPIO25			EMAC_RXD0		oe=0,ie=0	oe=0,ie=0
15	11	DAC_2	ADC2_CH9		RTC_GPIO7		GPIO26		GPIO26			EMAC_RXD1		oe=0,ie=0	oe=0,ie=0
16	12		ADC2_CH7	TOUCH7	RTC_GPIO17		GPIO27		GPIO27			EMAC_RX_DV		oe=0,ie=0	oe=0,ie=1
17	13		ADC2_CH6	TOUCH6	RTC_GPIO16		MTMS	HSPICLK	GPIO14	HS2_CLK	SD_CLK	EMAC_TXD2		oe=0,ie=0	oe=0,ie=1
18	14		ADC2_CH5	TOUCH5	RTC_GPIO15		MTDI	HSPIQ	GPIO12	HS2_DATA2	SD_DATA2	EMAC_TXD3		oe=0,ie=1,wpd	oe=0,ie=1,wpd
20	16		ADC2_CH4	TOUCH4	RTC_GPIO14		MTCK	HSPID	GPIO13	HS2_DATA3	SD_DATA3	EMAC_RX_ER		oe=0,ie=0	oe=0,ie=1
21	23		ADC2_CH3	TOUCH3	RTC_GPIO13	I2C_SDA	MTDO	HSPICS0	GPIO15	HS2_CMD	SD_CMD	EMAC_RXD3		oe=0,ie=1,wpu	oe=0,ie=1,wpu
22	24		ADC2_CH2	TOUCH2	RTC_GPIO12	I2C_SCL	GPIO2	HSPIWP	GPIO2	HS2_DATA0	SD_DATA0			oe=0,ie=1,wpd	oe=0,ie=1,wpd
23	25		ADC2_CH1	TOUCH1	RTC_GPIO11	I2C_SDA	GPIO0	CLK_OUT1	GPIO0			EMAC_TX_CLK		oe=0,ie=1,wpu	oe=0,ie=1,wpu
24	26		ADC2_CH0	TOUCH0	RTC_GPIO10	I2C_SCL	GPIO4	HSPIHD	GPIO4	HS2_DATA1	SD_DATA1	EMAC_TX_ER		oe=0,ie=1,wpd	oe=0,ie=1,wpd
25	27						GPIO16	GPIO16	HS1_DATA4	U2RXD		EMAC_CLK_OUT	SD_SPI_CS	oe=0,ie=0	oe=0,ie=1
27	28						GPIO17	GPIO17	HS1_DATA5	U2TXD		EMAC_CLK_OUT_180	SD_SPI_SCK	oe=0,ie=0	oe=0,ie=1
34	29						GPIO5	VSPICS0	GPIO5	HS1_DATA6		EMAC_RX_CLK		oe=0,ie=1,wpu	oe=0,ie=1,wpu
35	30						GPIO18	VSPICLK	GPIO18	HS1_DATA7				oe=0,ie=0	oe=0,ie=1
38	31						GPIO19	VSPIQ	GPIO19	U0CTS		EMAC_TXD0		oe=0,ie=0	oe=0,ie=1
42	33						GPIO21	VSPIHD	GPIO21			EMAC_TX_EN	SD_SPI_MOSI	oe=0,ie=0	oe=0,ie=1
40	34						U0RXD	CLK_OUT2	GPIO3					oe=0,ie=1,wpu	oe=0,ie=1,wpu
41	35						U0TXD	CLK_OUT3	GPIO1			EMAC_RXD2		oe=0,ie=1,wpu	oe=0,ie=1,wpu
39	36						GPIO22	VSPIWP	GPIO22	U0RTS		EMAC_TXD1	SD_SPI_MISO	oe=0,ie=0	oe=0,ie=1
36	37						GPIO23	VSPID	GPIO23	HS1_STROBE				oe=0,ie=0	oe=0,ie=1

NOTE:
Green boxes are intended primary usage.
Orange boxes are nets enabled with jumper resistor populated.

DM1092

DM1092 NET NAME	Level Shift	Level Shifted NET NAME	QUIIC / AUX connector/ uSD
ESP_GPI36	no	n/a	AUX: J5,6
ESP_GPI39	no	n/a	AUX: J5,7
ESP_GPI34	no	n/a	AUX: J5,4 / ESP_GPI34
ESP_GPI35	no	n/a	AUX: J5,5
MX_INT_3V3	3.3V <-> 1.8V	MX_INT_1V8	
ESP_GPIO33_PWM	no	n/a	
I2C3_SCL_3V3	3.3V <-> 1.8V	I2C3_SCL_1V8	QUIIC: J11,1
I2C3_SDA_3V3	3.3V <-> 1.8V	I2C3_SDA_1V8	QUIIC: J11,2
ESP_GPIO27	3.3V <-> 1.8V	GPIO8/SPI0_CS_1	C
ESP_GPIO14	no	n/a	AUX: J6,6
ESP_GPIO12	no	n/a	AUX: J6,4
ESP_GPIO13	no	n/a	AUX: J6,5
ESP_GPIO15	no	n/a	AUX: J6,7
ESP_GPIO2	no	n/a	AUX: J6,2
ESP_GPIO0	no	n/a	
ESP_GPIO4	no	n/a	AUX: J6,3
SD_SPI_CS	no	n/a	SD_SPI_CS
SD_SPI_SCK	no	n/a	SD_SPI_SCK
VSPI_CS0	3.3V <-> 1.8V	SPI0_CS_0	
VSPI_SCK	3.3V <-> 1.8V	SPI0_SCK	
VSPI_SDI_SIO1	3.3V <-> 1.8V	SPI0_SIO1	
VSPI_HOLDn_SIO3	3.3V <-> 1.8V	SPI0_SIO3	SD_SPI_MOSI
ESP_RXD0	no	n/a	
ESP_TXD0	no	n/a	
VSPI_WPn_SIO2	3.3V <-> 1.8V	SPI0_SIO2	SD_SPI_MISO
VSPI_SDO_SIO0	3.3V <-> 1.8V	SPI0_SIO0	

BW1099EMB

1099 Connector PIN	1099 NET NAME	1099 PU/PD
59	GPIO_7	40.2kR/1.8V
78	GPIO_24	2.2kR/1.8V
80	GPIO_25	2.2kR/1.8V
60	GPIO_8	no
36	GPIO_36_3V3	40.2kR/1.8V
63	GPIO_33_3V3	40.2kR/1.8V
61	GPIO_32_3V3	40.2kR/1.8V
32	GPIO_37_3V3	300kR/GND
40	GPIO_34_3V3	40.2kR/1.8V
38	GPIO_35_3V3	40.2kR/1.8V
70	SPI_SS_0	1kR/1.8V
74	SPI0_SCK	no
64	SPI0_SIO1	no
68	SPI0_SIO3	1kR/1.8V
66	SPI0_SIO2	1kR/1.8V
62	SPI0_SIO0	no

PCA9570

BNO085 PIN
1
2
3
5
6
7

DM1092

DM1092 NET NAME	Level Shift	Level Shifted NET NAME	QUIIC / AUX connector
MX_RST_3V3	3.3V <-> 1.8V	MX_RST_1V8	
EXP_PWR	no	n/a	
EXP_P2	no	n/a	AUX: J5,2
EXP_P3	no	n/a	AUX: J5,3
I2C3_SCL_3V3	3.3V <-> 1.8V	I2C3_SCL_1V8	QUIIC: J11,1
I2C3_SDA_3V3	3.3V <-> 1.8V	I2C3_SDA_1V8	QUIIC: J11,2

BW1099EMB

1099 Connector PIN	1099 NET NAME	1099 PU/PD
39	SYS_RST	10kR/1.8V
nc		
nc		
nc		
78	GPIO_24	2.2kR/1.8V
80	GPIO_25	2.2kR/1.8V

NOTE:
Green boxes are intended primary usage.

BNO085

BNO085 PIN
11
14
18
19
17
20
15
16
4

DM1092

DM1092 NET NAME	Level Shift	Level Shifted NET NAME	QUIIC / IO connector
BNO08x_RSTn_1V8	no	n/a	
BNO08x_INT_1V8	no	n/a	
GPIO8/SPI0_CS_1	3.3V <-> 1.8V	ESP_GPIO27 (ESP_MX_QSPI)	
SPI0_SCK	3.3V <-> 1.8V	VSPI_SCK (ESP_MX_QSPI)	
SPI0_SIO0	3.3V <-> 1.8V	VSPI_SDO_SIO0 (ESP_MX_QSPI)	
SPI0_SIO1	3.3V <-> 1.8V	VSPI_SDI_SIO1 (ESP_MX_QSPI)	
ENV_SCL_3V3	3.3V <-> 1.8V	ENV_SCL_1V8	QUIIC: J12,1
ENV_SDA_3V3	3.3V <-> 1.8V	ENV_SDA_1V8	QUIIC: J12,2
BNO08x_BOOTN_1V8	no	n/a	

BW1099EMB

1099 Connector PIN	1099 NET NAME	1099 PU/PD
6	UART_TX	no
69	GPIO_53	no
60	GPIO_8	no
74	SPI0_SCK	no
64	SPI0_SIO1	no
62	SPI0_SIO0	no
nc		
nc		
4	UART_RX	no

NOTE:
Green boxes are intended primary usage.

Title: *DM1092_LiPo*			*Luxonis Holding* *1925 Harmony Park Drive* *Westminster, CO* *80234* *United States*
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
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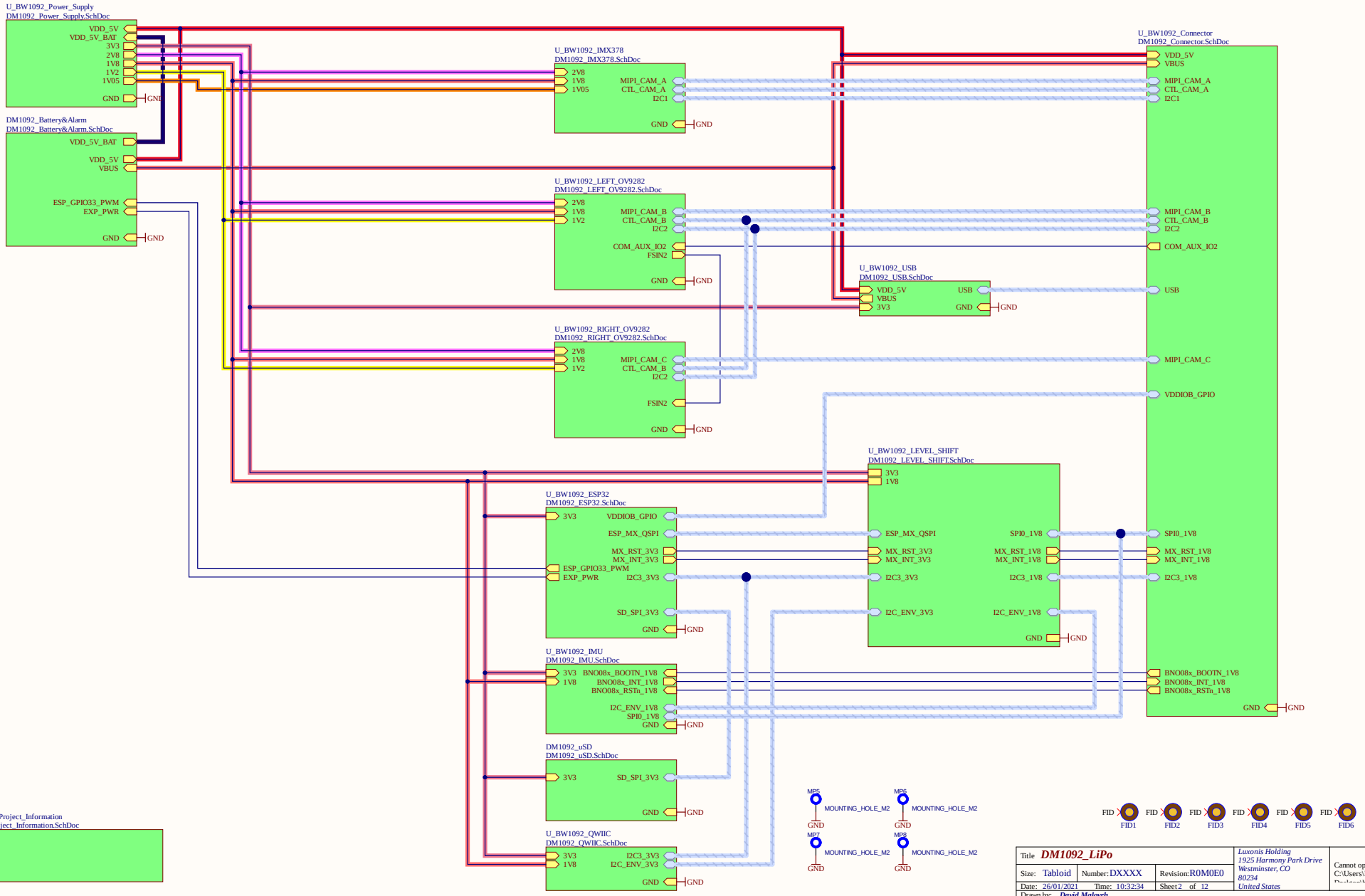
Drawn by: *David Malovrh*			


U_BW1092_Power_Supply
DM1092_Power_Supply.SchDoc
VDD_5V
VDD_5V_BAT
3V3
2V8
1V8
1V2
1V05
GND
DM1092_Battery&Alarm
DM1092_Battery&Alarm.SchDoc
VDD_5V_BAT
VDD_5V
VBUS
ESP_GPIO33_PWM
EXP_PWR
U_BW1092_IMX378
DM1092_IMX378.SchDoc
2V8
1V8
1V05
MIPI_CAM_A
CTL_CAM_A
I2C1
U_BW1092_LEFT_OV9282
DM1092_LEFT_OV9282.SchDoc
MIPI_CAM_B
CTL_CAM_B
I2C2
COM_AUX_IO2
FSIN2
U_BW1092_RIGHT_OV9282
DM1092_RIGHT_OV9282.SchDoc
MIPI_CAM_C
U_BW1092_USB
DM1092_USB.SchDoc
USB
U_BW1092_Connector
DM1092_Connector.SchDoc
VDDIOB_GPIO
U_BW1092_LEVEL_SHIFT
DM1092_LEVEL_SHIFT.SchDoc
U_BW1092_ESP32
DM1092_ESP32.SchDoc
ESP_MX_QSPI
MX_RST_3V3
MX_INT_3V3
I2C3_3V3
SD_SPI_3V3
SPI0_1V8
MX_RST_1V8
MX_INT_1V8
I2C3_1V8
I2C_ENV_3V3
I2C_ENV_1V8
U_BW1092_IMU
DM1092_IMU.SchDoc
BNO08x_BOOTN_1V8
BNO08x_INT_1V8
BNO08x_RSTn_1V8
DM1092_uSD
DM1092_uSD.SchDoc
U_BW1092_QWIIC
DM1092_QWIIC.SchDoc
U_Project_Information
Project_Information.SchDoc
MOUNTING_HOLE_M2
FID1
FID2
FID3
FID4
FID5
FID6
Title DM1092_LiPo
Size: Tabloid
Number: DXXXX
Revision: R0M0E0
Date: 26/01/2021
Time: 10:32:34
Sheet 2 of 12
Drawn by: David Malovrh
Luxonis Holding
1925 Harmony Park Drive
Westminster, CO
80234
United States
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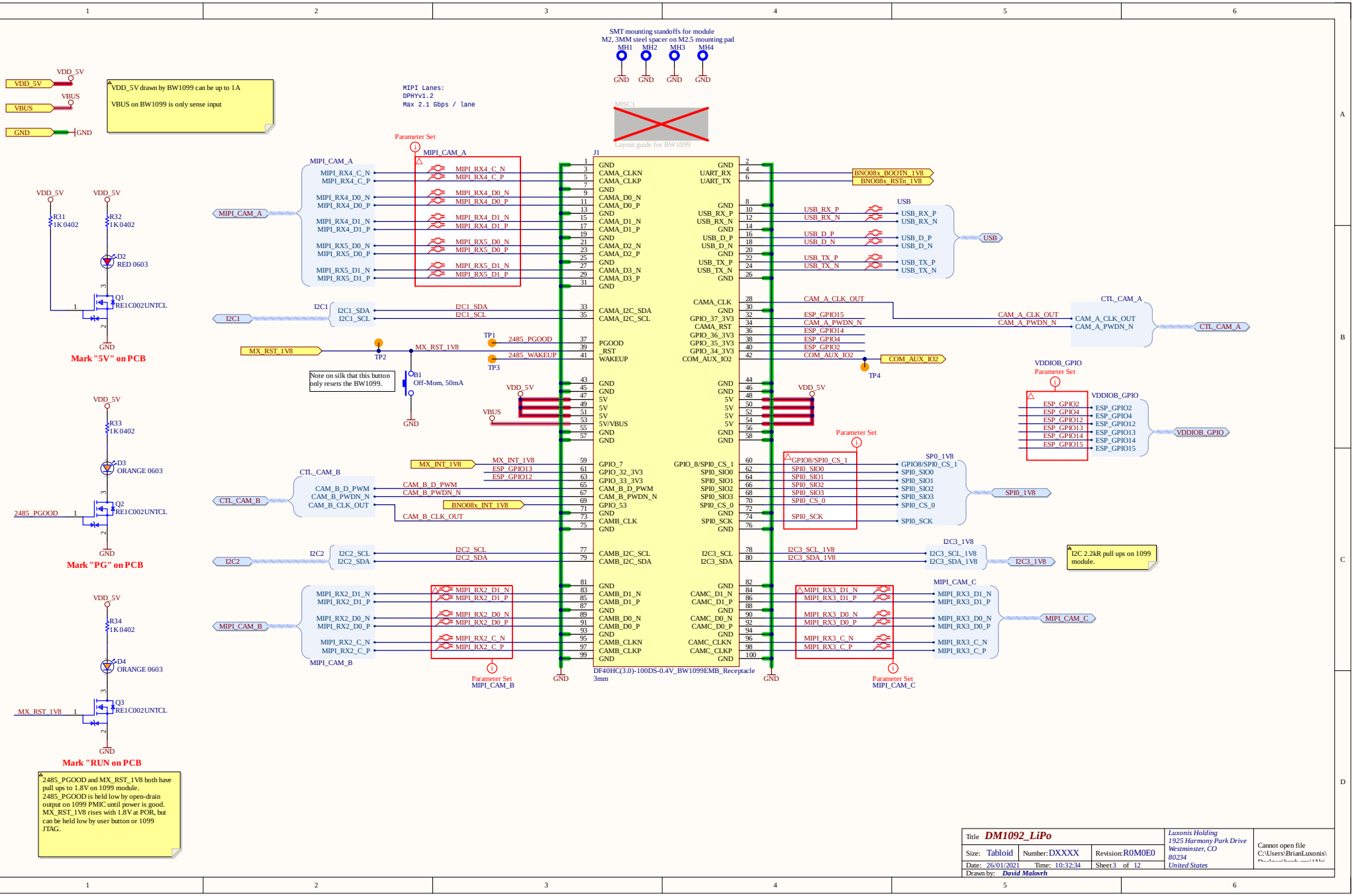
SMT mounting standoffs for module
M2, 3MM steel spacer on M2.5 mounting pad
MH1 MH2 MH3 MH4
GND GND GND GND
VDD_5V
VBUS
GND
VDD_5V drawn by BW1099 can be up to 1A
VBUS on BW1099 is only sense input
MIPI Lanes:
DPHYv1.2
Max 2.1 Gbps / lane
MISC1
Layout guide for BW1099
J1
DF40HC(3.0)-100DS-0.4V_BW1099EMB_Receptacle
3mm
Parameter Set
MIPI_CAM_A
MIPI_CAM_B
MIPI_CAM_C
R31 1K 0402
R32 1K 0402
D2 RED 0603
Q1 RE1C002UNTCL
Mark "5V" on PCB
R33 1K 0402
D3 ORANGE 0603
Q2 RE1C002UNTCL
Mark "PG" on PCB
R34 1K 0402
D4 ORANGE 0603
Q3 RE1C002UNTCL
Mark "RUN on PCB
2485_PGOOD and MX_RST_1V8 both have pull ups to 1.8V on 1099 module.
2485_PGOOD is held low by open-drain output on 1099 PMIC until power is good.
MX_RST_1V8 rises with 1.8V at POR, but can be held low by user button or 1099 JTAG.
Note on silk that this button only resets the BW1099.
B1 Off-Mom, 50mA
TP1 TP2 TP3 TP4
BNO08x_BOOTN_1V8
BNO08x_RSTn_1V8
USB
CTL_CAM_A
CTL_CAM_B
VDDIOB_GPIO
SPI0_1V8
I2C3_1V8
I2C 2.2kR pull ups on 1099 module.
Title DM1092_LiPo
Size: Tabloid
Number: DXXXX
Revision: R0M0E0
Date: 26/01/2021
Time: 10:32:34
Sheet 3 of 12
Drawn by: David Malovrh
Luxonis Holding
1925 Harmony Park Drive
Westminster, CO
80234
United States
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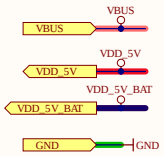
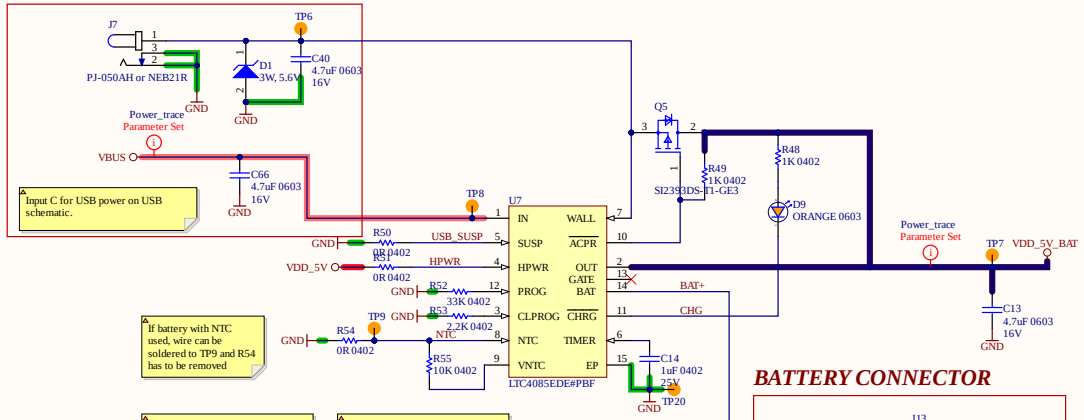
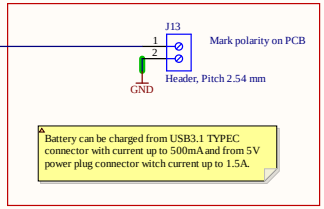


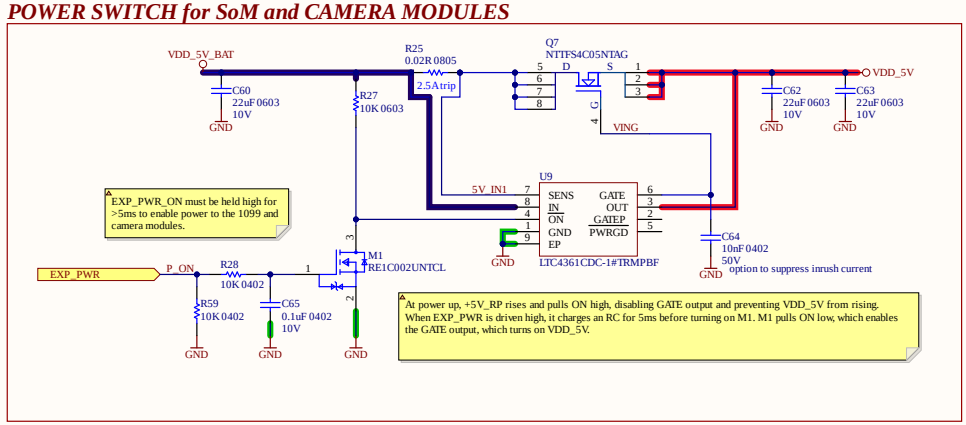
POWER INPUT



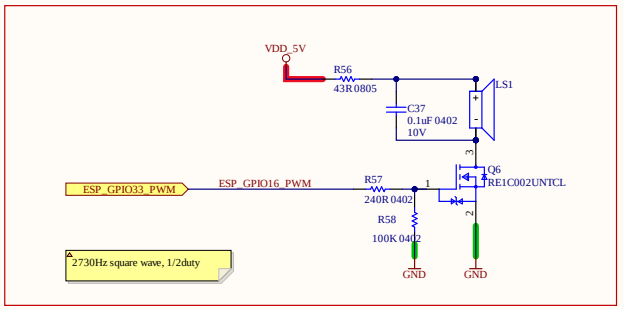
BATTERY CONNECTOR



POWER SWITCH for SoM and CAMERA MODULES



BUZZER



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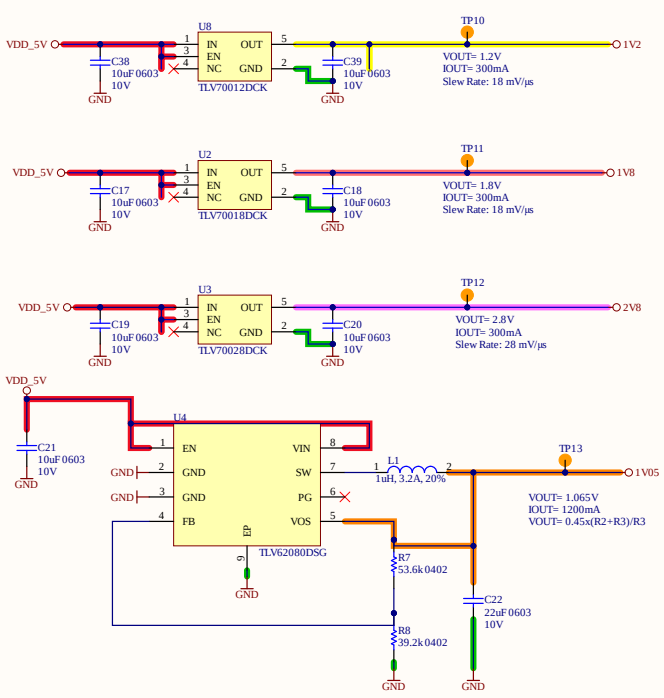
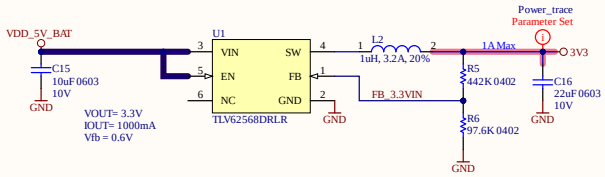
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
Date: 26/01/2021	Time: 10:32:34	Sheet 3 of 13	
Drawn by: David Malovrh			

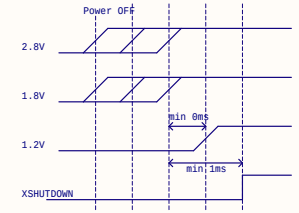
POWER SUPPLIES FOR CAMERA MODULES



3.3V USB SW POWER



OV9282 POWER REQUIREMENTS

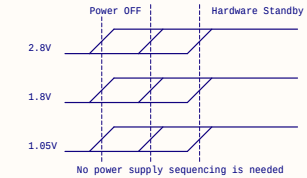


Supply Information

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

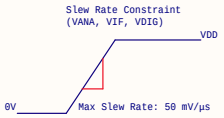
1. AVDD rising can occur before or after DOVDD rising as long as they are rising before XSHUTDOWN rising
2. XSHUTDOWN is pulled up after AVDD and DOVDD are stable
3. DVDD rises after DOVDD, but before XSHUTDOWN is pulled high

IMX378 POWER REQUIREMENTS



Supply Information

Supply Name		Voltage	Max Current
Module	Sensor		
AVDD	VANA	2.8V ± 0.1	55mA
DOVDD	VIF	1.8V ± 0.1	2.5mA
DVDD	VDIG	1.05V ± 0.1	446mA

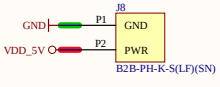


POWER SEQUENCING REQUIREMENTS:

The BW1099 module handles it's own power sequencing on-board.

The camera modules have their own power sequencing requirements. The OV9282 have requirements for sequencing, and the IMX378 has a max slew rate requirement. See above.

FAN CONTROLLER



TP14 TP15 TP16 TP17

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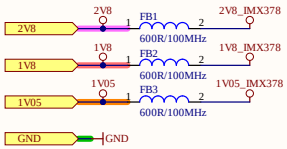
Place FBs and caps close to their associated camera connector.



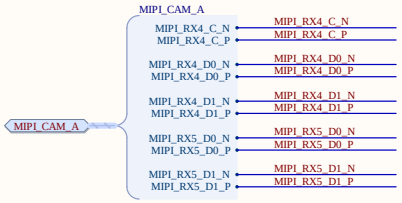
Supply Information

Supply Name		Voltage	Max Current
Module	Sensor		
AVDD	VANA	2.8V ± 0.1	55mA
DOVDD	VIF	1.8V ± 0.1	2.5mA
DVDD	VDIG	1.05V ± 0.1	446mA

On the BW1097, the IMX378 camera module is hardwired into the "Cam-A" logical position. This means the logic which used to be required to support the module being plugged into different physical connectors (and different logical positions) is no longer needed and can be removed.

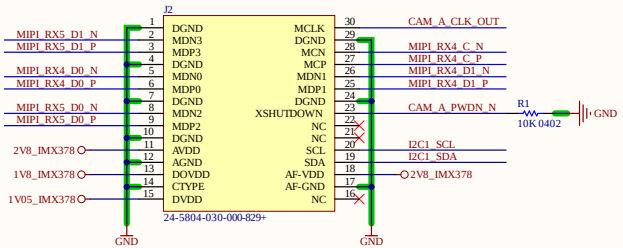
Note: It is still a limitation that the clock source for the cameras must be shared between CAMA/C and CAMB/D.

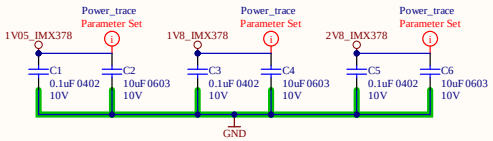
MIPI Lanes:
DPHYv1.2
Max 2.1 Gbps / lane

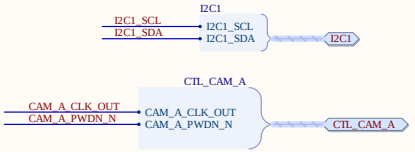


IMX378 MODULE CONNECTOR

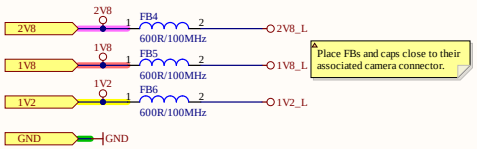
MODULE & SENSOR INFORMATION			
MODULE	A12N02A-201	I2C Clock Rate	1000 kHz Max
SENSOR	IMX378-AAQH5-C 12.3 Mega pixel CMOS 1/2.3 inch	I2C Address (8 bits)	0x34 (Sensor) 0x18 (VCM driver) 0xA0 (EEPROM driver)
MAX RESOLUTION	4056x3040	Sensor Clock Input	6 - 27 MHz







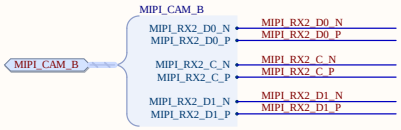
Title: DM1092_LiPo			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 United States
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
Date: 26/01/2021	Time: 10:32:35	Sheet 4 of 12	
Drawn by: David Malovrh			



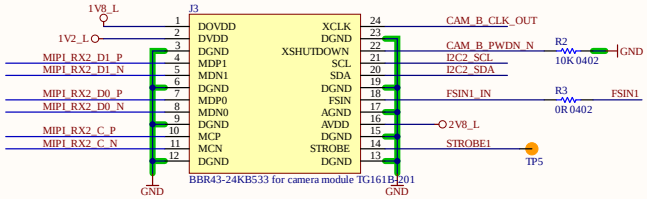
MODULE & SENSOR INFORMATION			
MODULE	TG161B-201 OR AN01V32-0JG	I2C Clock Rate	400 kHz Max
SENSOR	OV09282-GA4A B&W 1 Mega pixel CMOS 1/4 inch	I2C Address (8 bits)	0xC0(W) 0xC1(R)
MAX RESOLUTION	1280X800	Sensor Clock Input	6 - 64 MHz (24 MHz typ.)

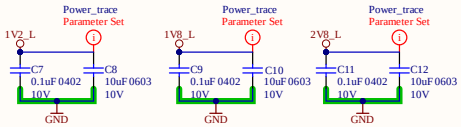
Supply Information

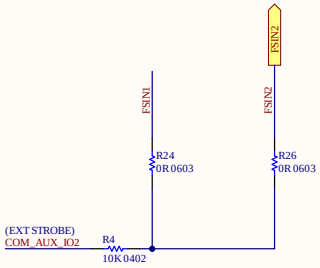
Supply Name		Voltage	Max Current
Module	Sensor		
DOVDD	VDD-IO	1.8V	2.5mA
DVDD	VDD-D	1.2V	52mA
AVDD	VDD-A	2.8V	24mA



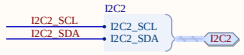
Mark "LEFT" on PCB
Place so that is the module's left camera.

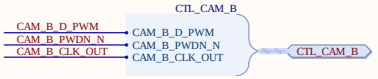






Camera timing Sync Option





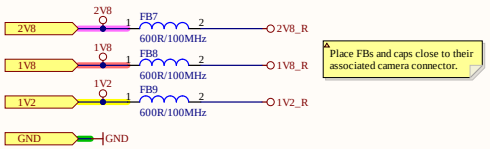
Because the stereo pair of OV9282 modules hard wired to CAM_B no additional reset cirucitry is required to account for different conditions. This means that "CAM1" (Left) is reset via CAM_PWDN, and "CAM2" (Right), is reset via CAM_PWM. This also means that the signal CAM_AUX_IO1 is no longer required 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 the 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

Title: DM1092_LiPo			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 United States
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
Date: 26/01/2021	Time: 10:32:35	Sheet 5 of 12	
Drawn by: David Malovrh			



Place FBs and caps close to their associated camera connector.

MODULE & SENSOR INFORMATION			
MODULE	TG161B-201 OR AN01V32-0JG	I2C Clock Rate	400 kHz Max
SENSOR	OV09282-GA4A B&W 1 Mega pixel CMOS 1/4 inch	I2C Address (8 bits)	0xC0(W) 0xC1(R)
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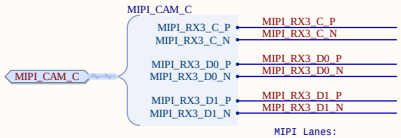
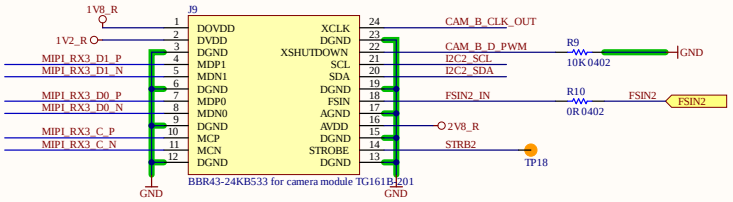
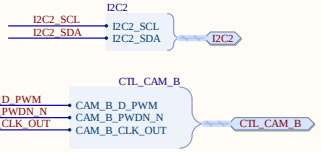
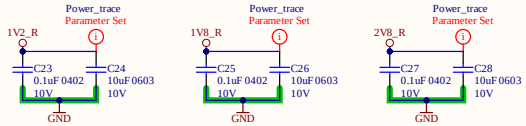


MIPI Lanes:
DPHYv1.2
Max 2.1 Gbps / lane

Mark "RIGHT" on PCB
Place so that this is the module's right camera.







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CAMERA CONNECTOR RESET CONNECTION TABLE

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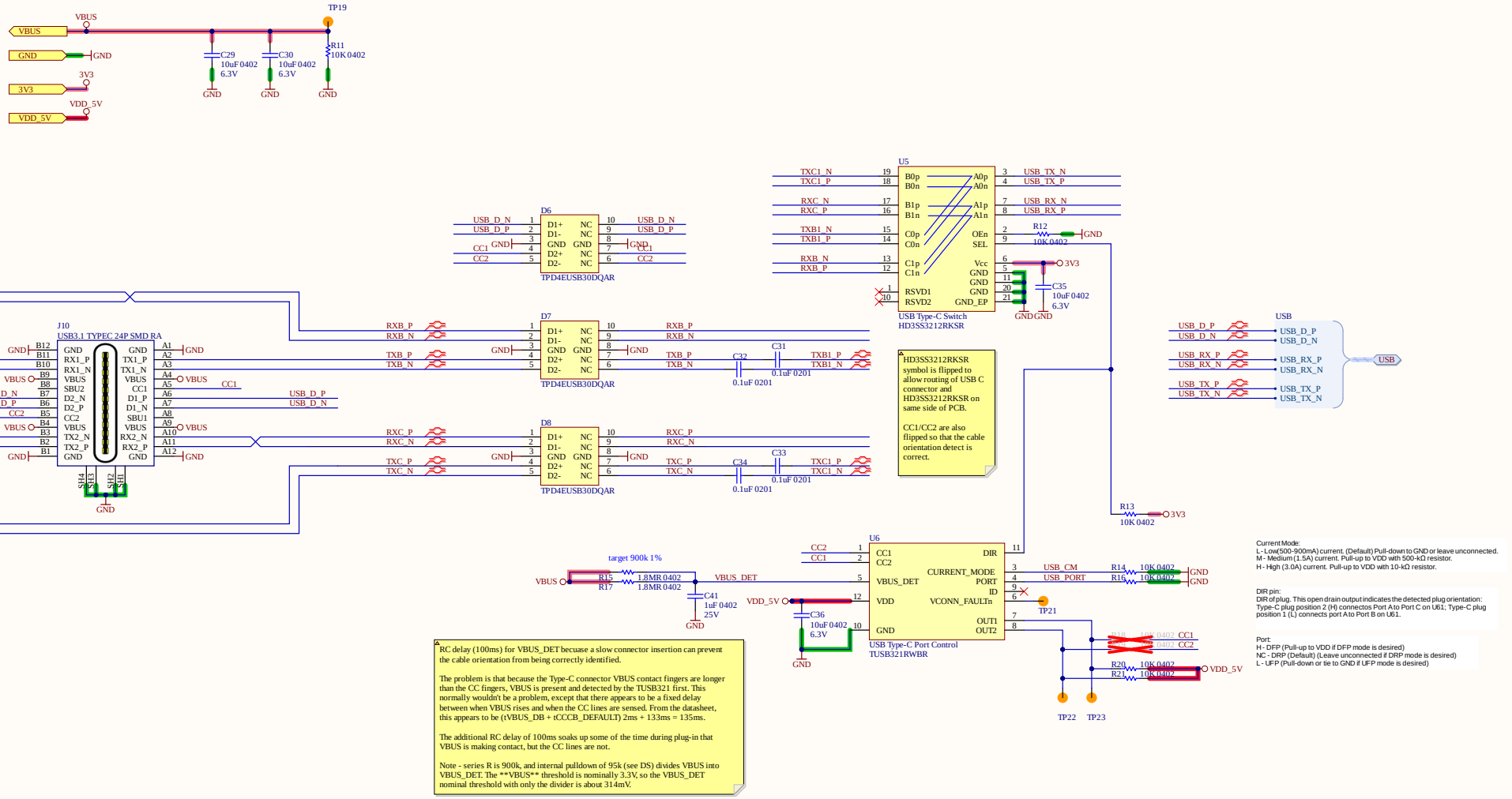
CAM_1	CAM_PWDN	CAM_PWDN	CAM_PWDN	CAM_PWDN
CAM_2	CAM_PWM	CAM_PWM	CAM_AUX_IO1	CAM_AUX_IO1

Title: DM1092_LiPo			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 United States
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
Date: 26/01/2021	Time: 10:32:35	Sheet 7 of 12	
Drawn by: David Malovrh			



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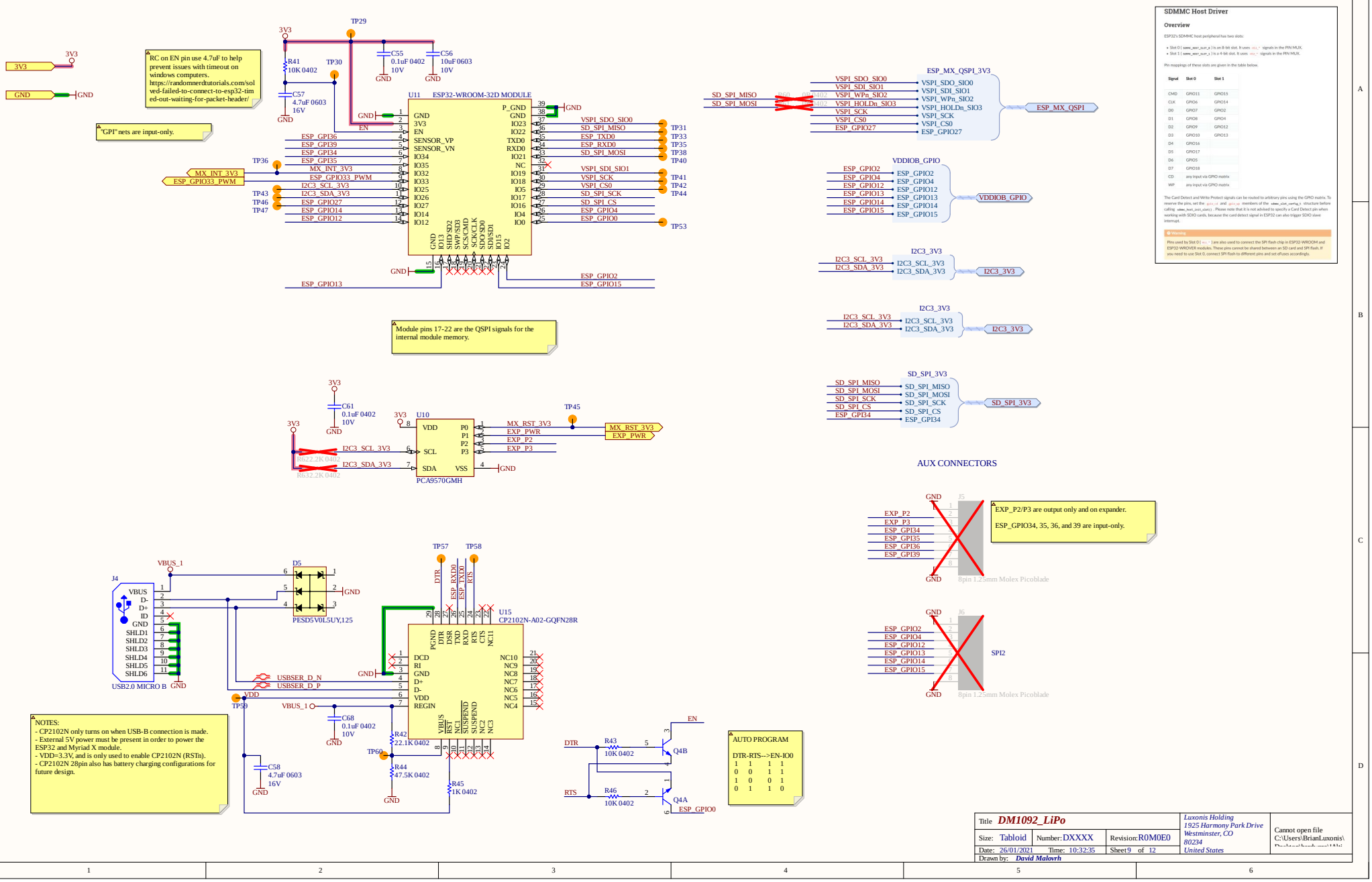
Size: Tabloid	Number: DXXXX	Revision: R0M0E0	Cannot open file C:\Users\BrianLuxonis\
Date: 26/01/2021	Time: 10:32:35	Sheet 8 of 12	
Drawn by: David Malovrh			


3V3
GND
RC on EN pin use 4.7uF to help prevent issues with timeout on windows computers. https://randomnerdtutorials.com/solved-failed-to-connect-to-esp32-timed-out-waiting-for-packet-header/
"GPI" nets are input-only.
TP29
TP30
R41 10K 0402
C55 0.1uF 0402 10V
C56 10uF 0603 10V
C57 4.7uF 0603 16V
U11 ESP32-WROOM-32D MODULE
GND 1
3V3 2
EN 3
SENSOR_VP 4
SENSOR_VN 5
IO34 6
IO35 7
IO32 8
IO33 9
IO25 10
IO26 11
IO27 12
IO14 13
IO12 14
GND 15
IO13 16
SHD/SD2 17
SWP/SD3 18
SCS/CMD 19
SCK/CLK 20
SDO/SD0 21
SDI/SD1 22
IO15 23
IO2 24
IO0 25
NC 26
IO4 27
IO16 28
IO17 29
IO5 30
IO18 31
IO19 32
NC 33
IO21 34
RXD0 35
TXD0 36
IO22 37
IO23 38
GND 39
P_GND 40
ESP_GPI36
ESP_GPI39
ESP_GPI34
ESP_GPI35
MX_INT_3V3
ESP_GPIO33_PWM
I2C3_SCL_3V3
I2C3_SDA_3V3
ESP_GPIO27
ESP_GPIO14
ESP_GPIO12
VSPI_SDO_SIO0
SD_SPI_MISO
ESP_TXD0
ESP_RXD0
SD_SPI_MOSI
VSPI_SDI_SIO1
VSPI_SCK
VSPI_CS0
SD_SPI_CS
ESP_GPIO4
ESP_GPIO0
ESP_GPIO2
ESP_GPIO15
ESP_GPIO13
TP31
TP33
TP35
TP38
TP40
TP41
TP42
TP44
TP53
TP36
TP43
TP46
TP47
Module pins 17-22 are the QSPI signals for the internal module memory.
ESP_MX_QSPI_3V3
VSPI_SDO_SIO0
VSPI_SDI_SIO1
VSPI_WPn_SIO2
VSPI_HOLDn_SIO3
VSPI_SCK
VSPI_CS0
ESP_GPIO27
ESP_MX_QSPI
VDDIOB_GPIO
ESP_GPIO2
ESP_GPIO4
ESP_GPIO12
ESP_GPIO13
ESP_GPIO14
ESP_GPIO15
VDDIOB_GPIO
I2C3_3V3
I2C3_SCL_3V3
I2C3_SDA_3V3
SD_SPI_3V3
SD_SPI_MISO
SD_SPI_MOSI
SD_SPI_SCK
SD_SPI_CS
ESP_GPI34
C61 0.1uF 0402 10V
U10 PCA9570GMH
VDD 8
SCL 6
SDA 7
VSS 4
P0 1
P1 2
P2 3
P3 5
R62 2.2K 0402
R63 2.2K 0402
MX_RST_3V3
EXP_PWR
EXP_P2
EXP_P3
TP45
AUX CONNECTORS
J5
J6
EXP_P2/P3 are output only and on expander.
ESP_GPIO34, 35, 36, and 39 are input-only.
8pin 1.25mm Molex Picoblade
SPI2
J4 USB2.0 MICRO B
VBUS
D-
D+
ID
SHLD1
SHLD2
SHLD3
SHLD4
SHLD5
SHLD6
D5 PESD5V0L5UY,125
U15 CP2102N-A02-GQFN28R
PGND 29
DTR 28
DSR 27
TXD 26
RXD 25
RTS 24
CTS 23
NC11 22
DCD 1
RI 2
GND 3
D+ 4
D- 5
VDD 6
REGIN 7
VBUS 8
RST 9
NC1 10
SUSPEND 11
SUSPEND 12
NC2 13
NC3 14
NC10 21
NC9 20
NC8 19
NC7 18
NC6 17
NC5 16
NC4 15
USBSER_D_N
USBSER_D_P
TP57
TP58
TP59
TP60
C68 0.1uF 0402 10V
C58 4.7uF 0603 16V
R42 22.1K 0402
R44 47.5K 0402
R45 1K 0402
NOTES:
- CP2102N only turns on when USB-B connection is made.
- External 5V power must be present in order to power the ESP32 and Myriad X module.
- VDD=3.3V, and is only used to enable CP2102N (RSTn).
- CP2102N 28pin also has battery charging configurations for future design.
R43 10K 0402
R46 10K 0402
Q4B
Q4A
AUTO PROGRAM
DTR-RTS-->EN-IO0
1 1 1 1
0 0 1 1
1 0 0 1
0 1 1 0
SDMMC Host Driver
Overview
ESP32's SDMMC host peripheral has two slots:
Slot 0 (sdmmc_host_slot_x) is an 8-bit slot. It uses sdx_* signals in the PIN MUX.
Slot 1 (sdmmc_host_slot_x) is a 4-bit slot. It uses sdx_* signals in the PIN MUX.
Pin mappings of these slots are given in the table below.
Signal Slot 0 Slot 1
CMD GPIO11 GPIO15
CLK GPIO6 GPIO14
D0 GPIO7 GPIO2
D1 GPIO8 GPIO4
D2 GPIO9 GPIO12
D3 GPIO10 GPIO13
D4 GPIO16
D5 GPIO17
D6 GPIO5
D7 GPIO18
CD any input via GPIO matrix
WP any input via GPIO matrix
The Card Detect and Write Protect signals can be routed to arbitrary pins using the GPIO matrix. To reserve the pins, set the gpio_cd and gpio_wp members of the sdmmc_slot_config_t structure before calling sdmmc_host_init_slot() . Please note that it is not advised to specify a Card Detect pin when working with SDIO cards, because the card detect signal in ESP32 can also trigger SDIO slave interrupt.
Warning
Pins used by Slot 0 (sdx_*) are also used to connect the SPI flash chip in ESP32-WROOM and ESP32-WROVER modules. These pins cannot be shared between an SD card and SPI flash. If you need to use Slot 0, connect SPI flash to different pins and set eFuses accordingly.
Title DM1092_LiPo
Size: Tabloid
Number: DXXXX
Revision: R0M0E0
Date: 26/01/2021
Time: 10:32:35
Sheet 9 of 12
Drawn by: David Malovrh
Luxonis Holding
1925 Harmony Park Drive
Westminster, CO
80234
United States
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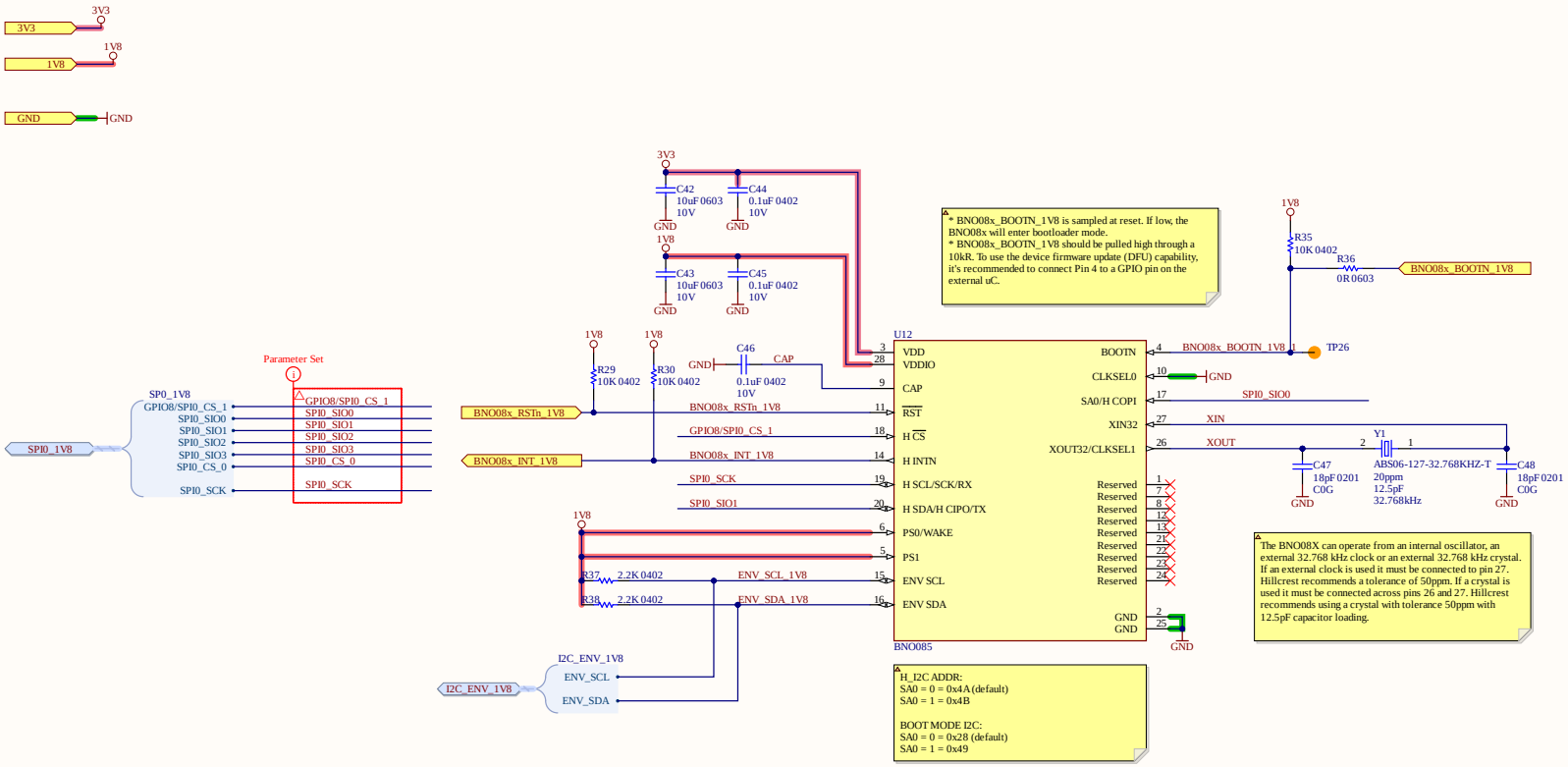

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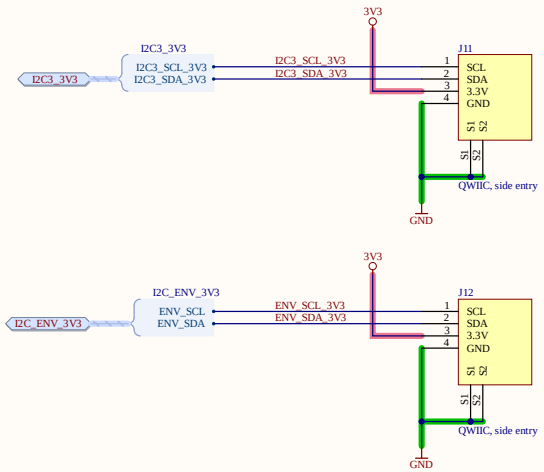

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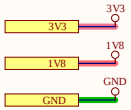
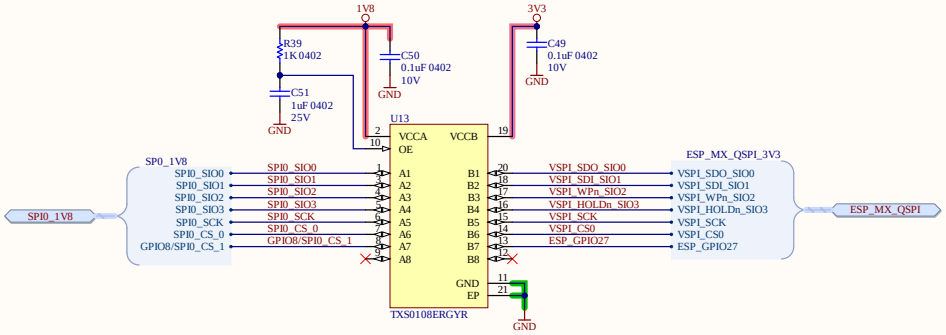
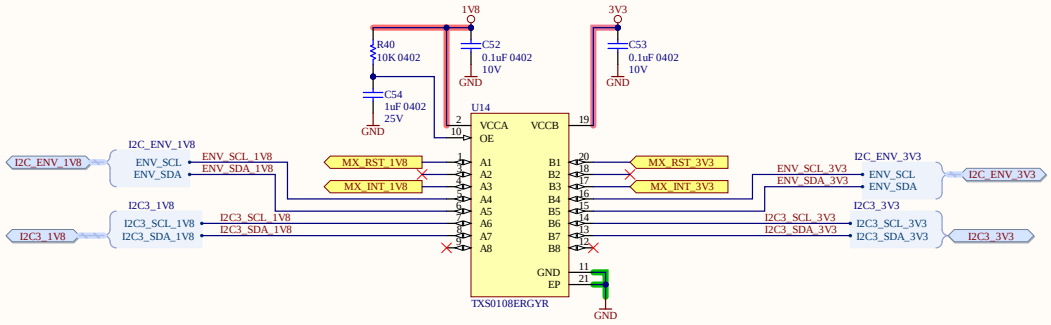




When driving high. TXS0108E ports have internal 4k pull ups to VCCA and VCCB, but when driving low, the pull up is 40k.

The TXS0101/2/4 translators have fixed 10-kΩ value pull-up resistors which provide dc-bias and dc current sourcing/drive capabilities to maintain a high signal. The TXS0108E translator reliably supports high-speed data rates in excess of 60Mbps, whereas the initial TXS series type translators supported slightly less than half this. The ability to translate down to the 1.2V operating-node is also supported in the TXS0108E device.



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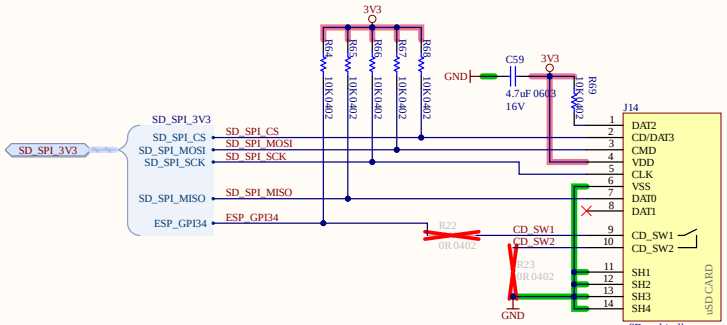

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Size: Tabloid	Number: DXXXX	Revision: R0M0E0	
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