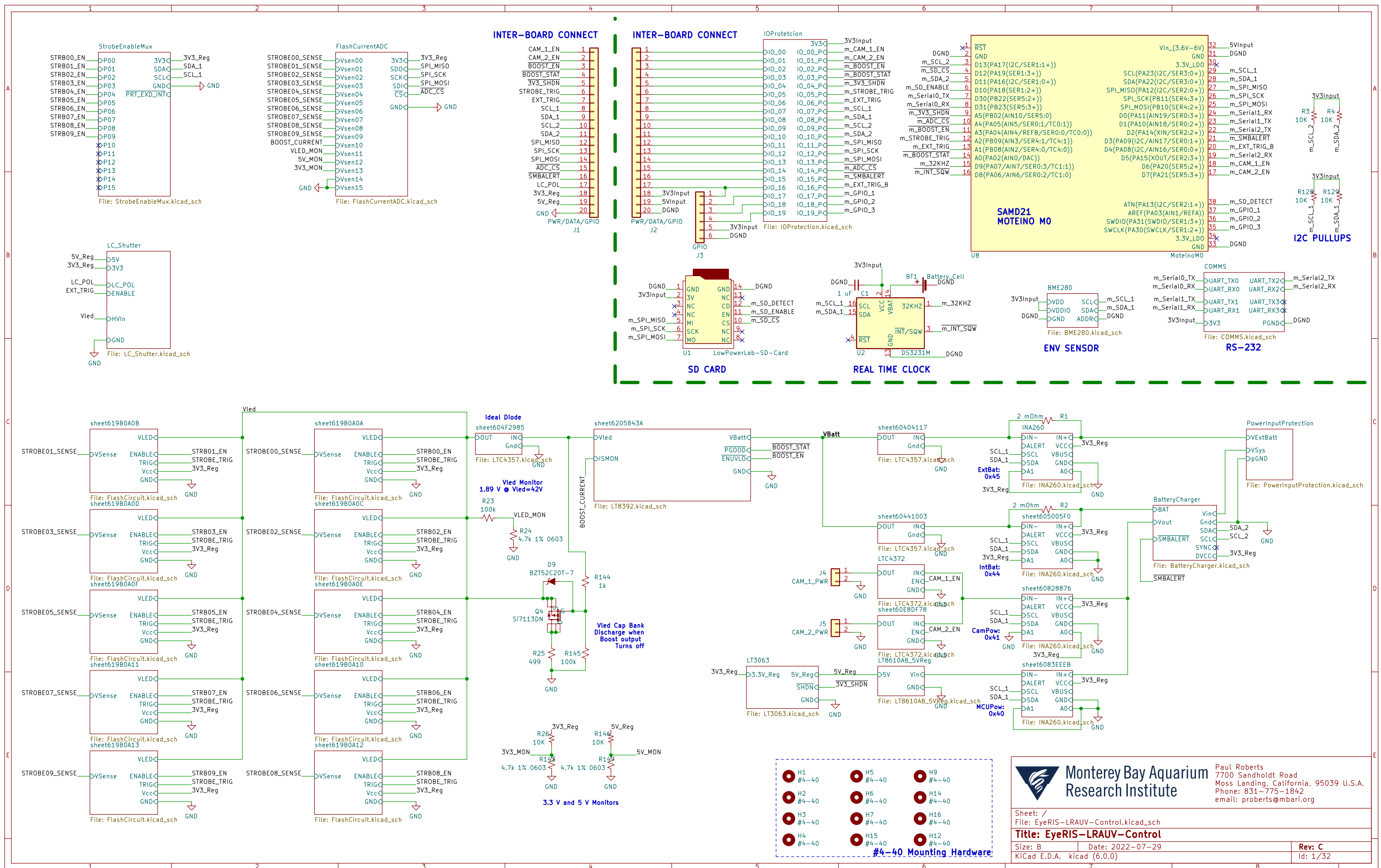
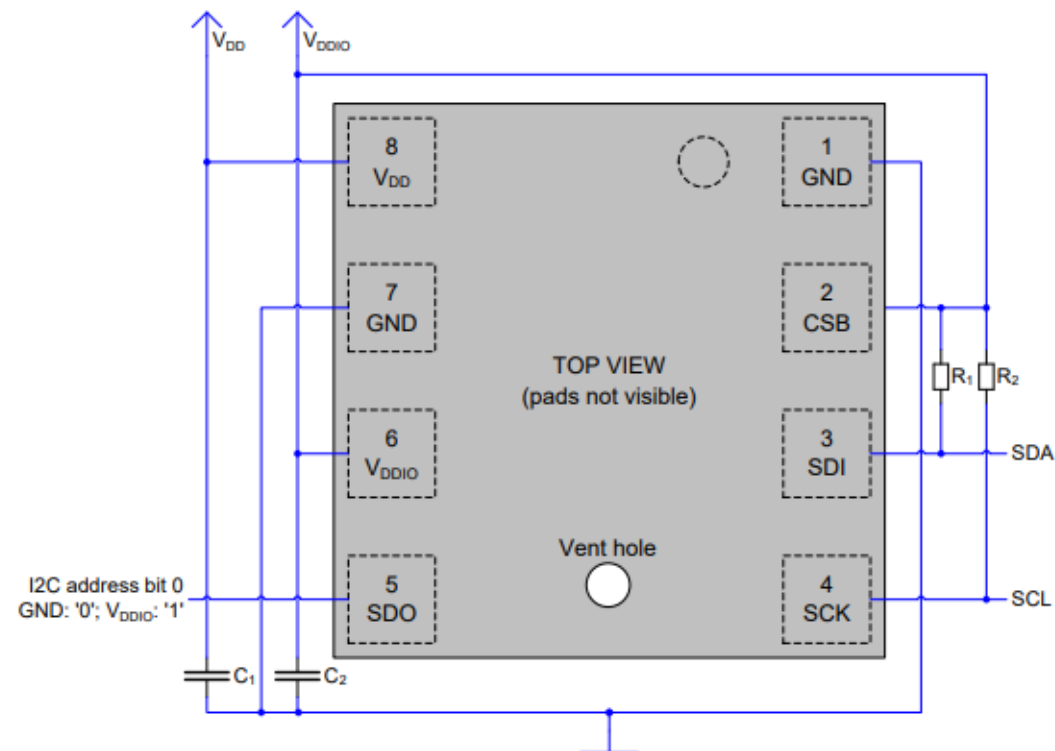
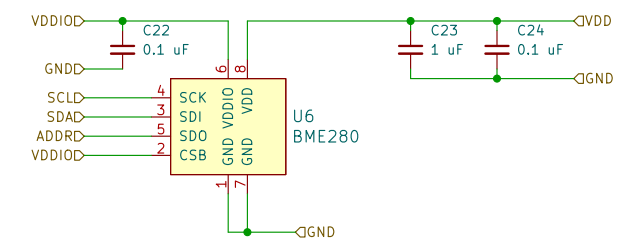




7.2 Connection diagram I²CFigure 17: I²C connection diagram

Notes:

- The recommended value for C₁, C₂ is 100 nF
- The value for the pull-up resistors R₁, R₂ should be based on the interface timing and the bus load; a normal value is 4.7 kΩ
- A direct connection between CSB and VDDIO is required



ADDR = GND -> 0x76
ADDR = VDDIO -> 0x77



Monterey Bay Aquarium
Research Institute

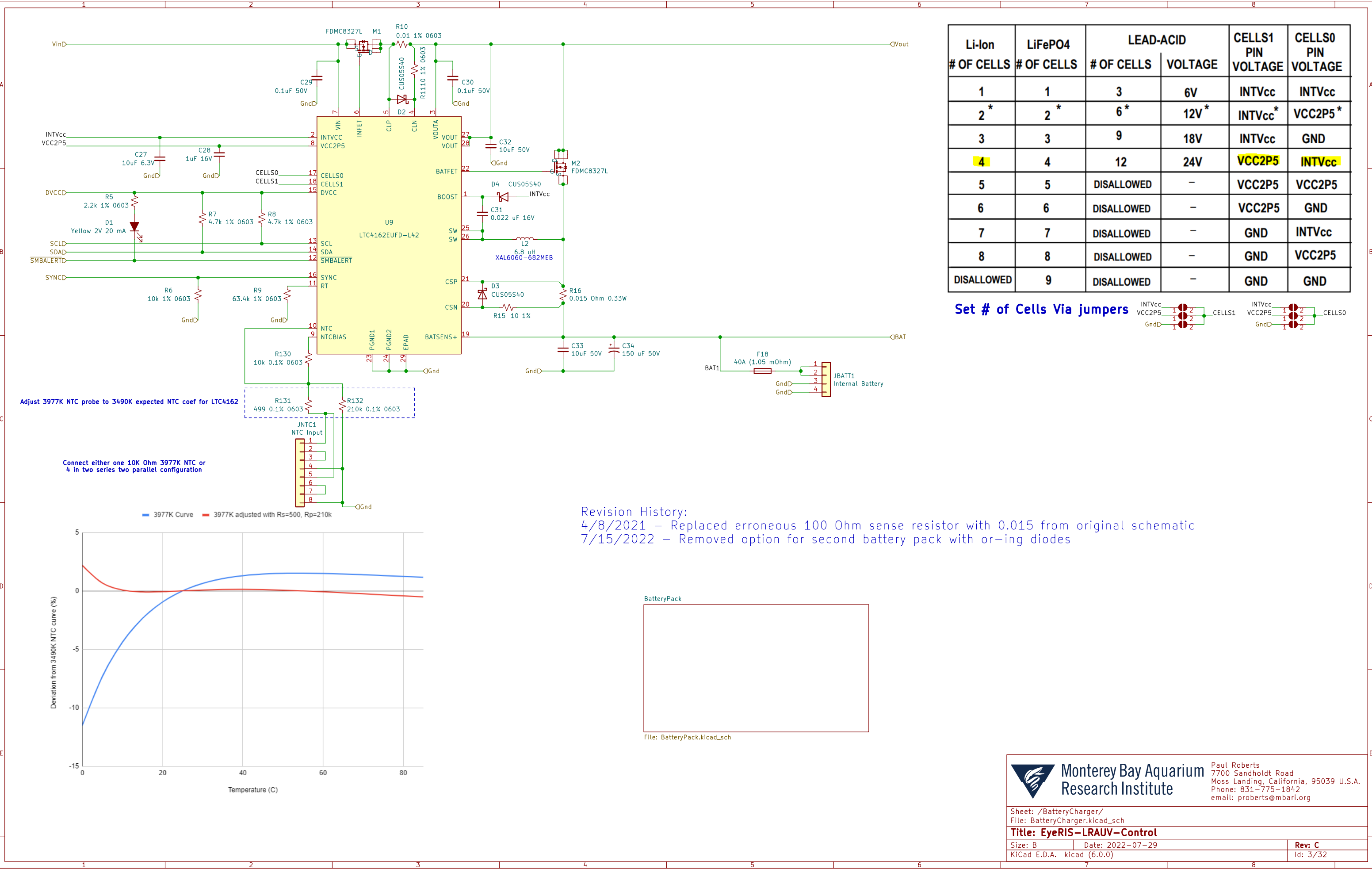
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /BME280/
File: BME280.kicad_sch

Title: EyeRIS-LRAUV-Control

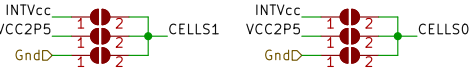
Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

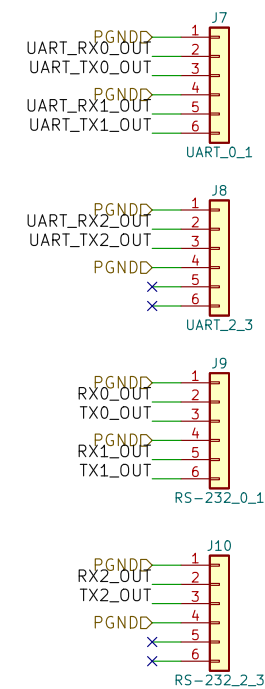
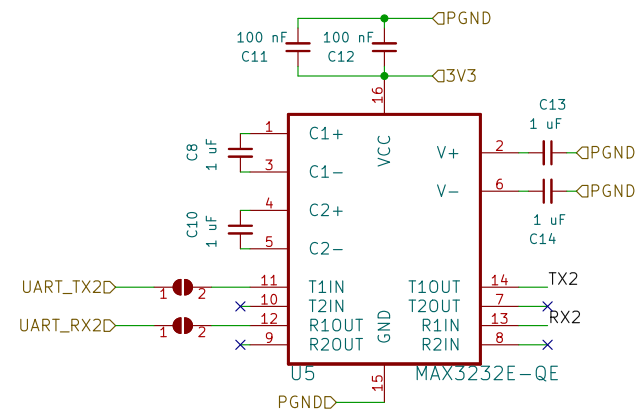
Rev: C
Id: 2/32



Li-Ion # OF CELLS	LiFePO4 # OF CELLS	LEAD-ACID		CELLS1 PIN VOLTAGE	CELLS0 PIN VOLTAGE
		# OF CELLS	VOLTAGE		
1	1	3	6V	INTVcc	INTVcc
2 *	2 *	6 *	12V *	INTVcc *	VCC2P5 *
3	3	9	18V	INTVcc	GND
4	4	12	24V	VCC2P5	INTVcc
5	5	DISALLOWED	—	VCC2P5	VCC2P5
6	6	DISALLOWED	—	VCC2P5	GND
7	7	DISALLOWED	—	GND	INTVcc
8	8	DISALLOWED	—	GND	VCC2P5
DISALLOWED	9	DISALLOWED	—	GND	GND

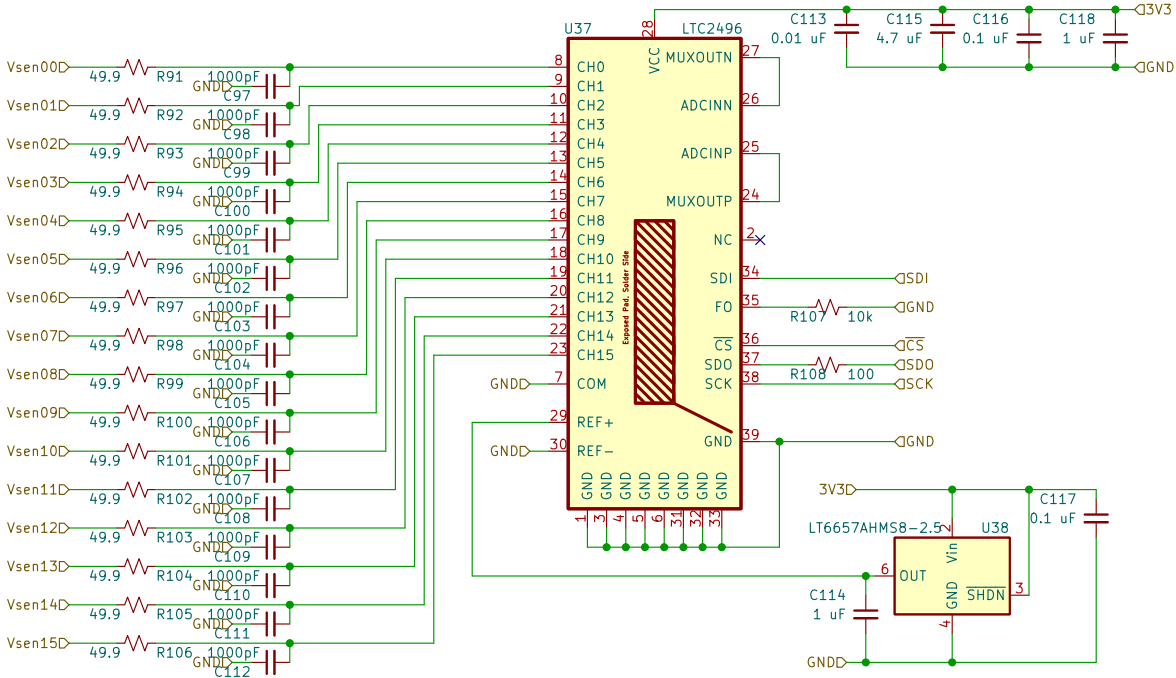
Set # of Cells Via jumpers





 Monterey Bay Aquarium Research Institute	Paul Roberts 7700 Sandholdt Road Moss Landing, California, 95039 U.S.A. Phone: 831-775-1842 email: proberts@mbari.org	
	Sheet: /COMMS/ File: COMMS.kicad_sch	
Title: EyeRIS – LRAUV – Control		
Size: B	Date: 2022-07-29	Rev: C
KiCad E.D.A. kicad (6.0.0)		Id: 4/32

16-channel, 16-bit, 2.5V reference single-ended ADC



Monterey Bay Aquarium
Research Institute

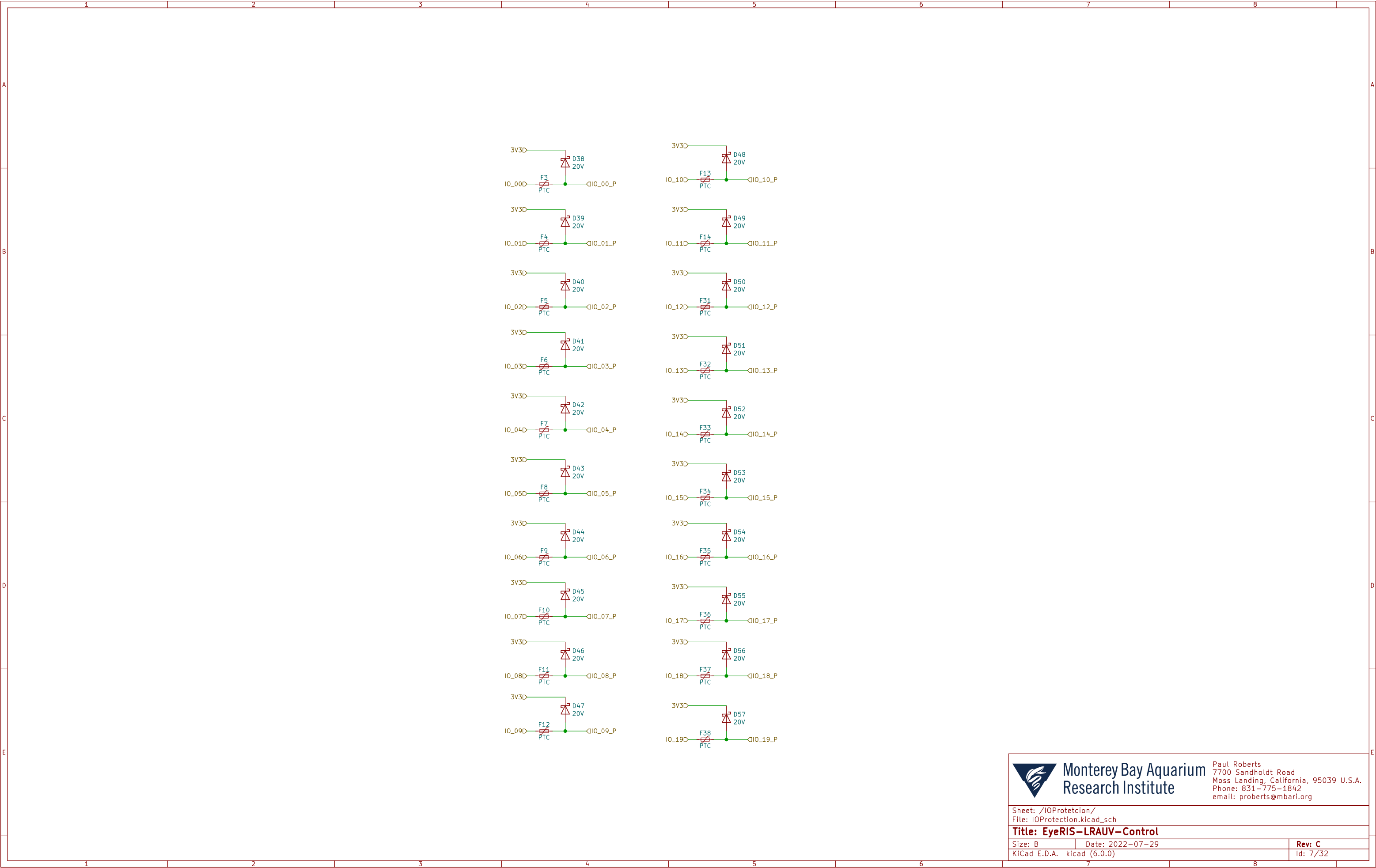
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /FlashCurrentADC/
File: FlashCurrentADC.kicad_sch

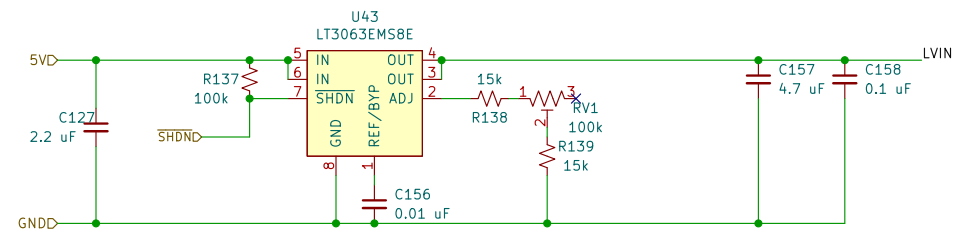
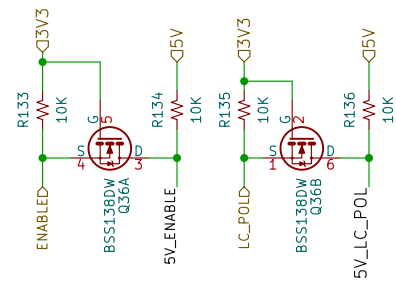
Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

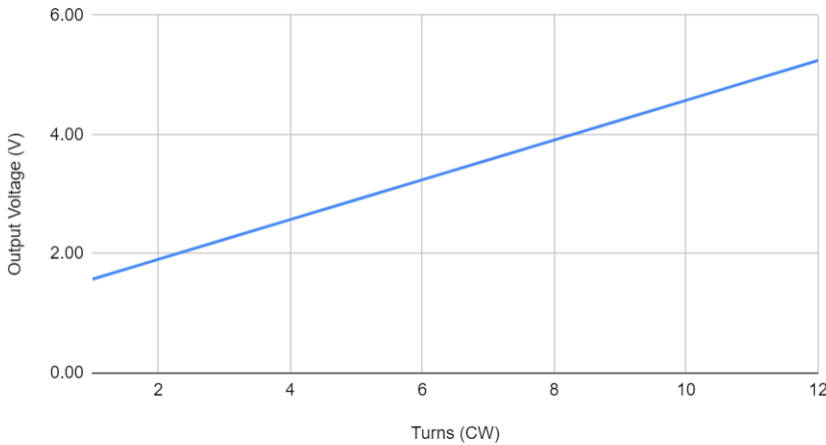
Rev: C
Id: 5/32



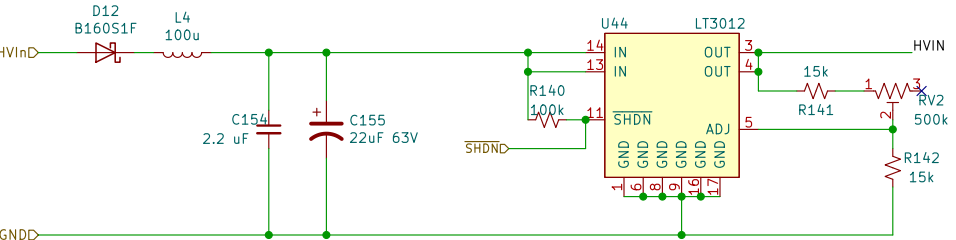
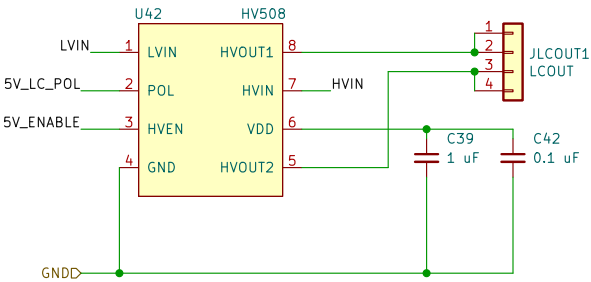
3.3 to 5V Level Shifter



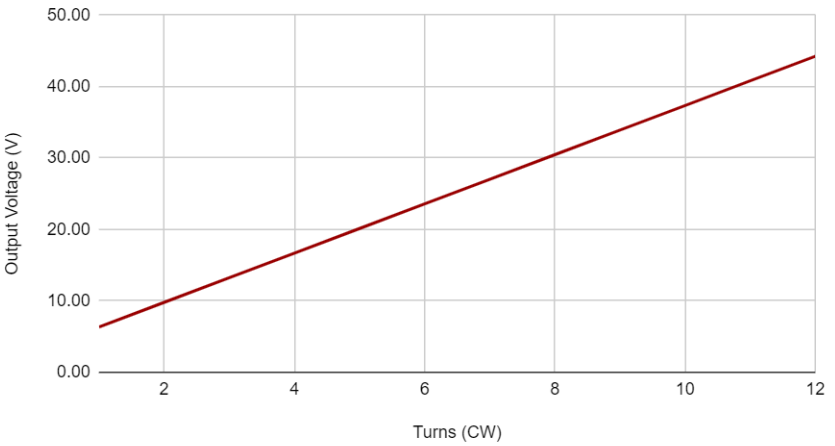
LVIN Voltage vs. Turns (CW)



HV508 LC Shutter Driver (90V Max)



HVIN Voltage vs. Turns (CW)



Monterey Bay Aquarium
Research Institute

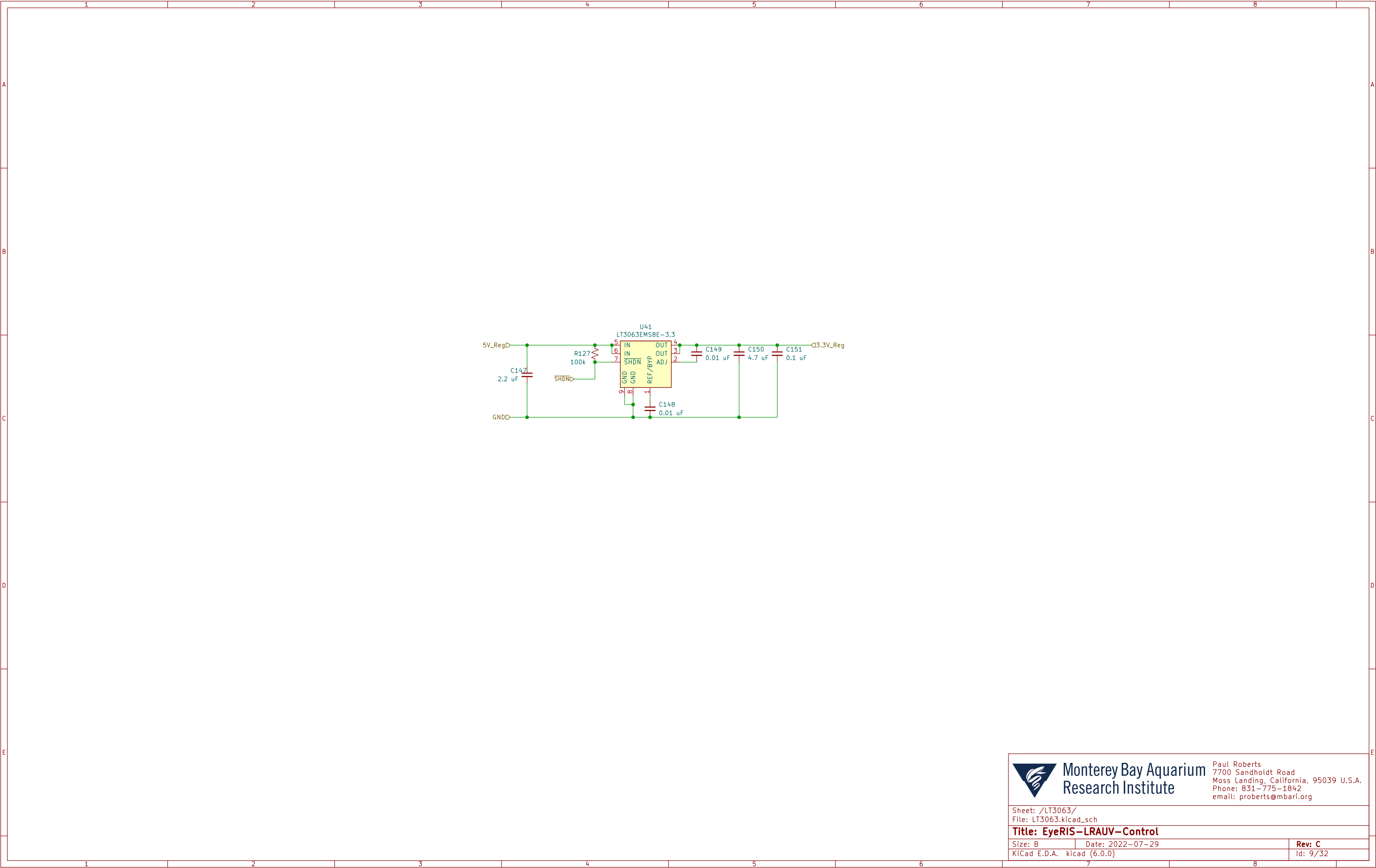
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /LC_Shutter/
File: LC_Shutter.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 8/32



Monterey Bay Aquarium
Research Institute

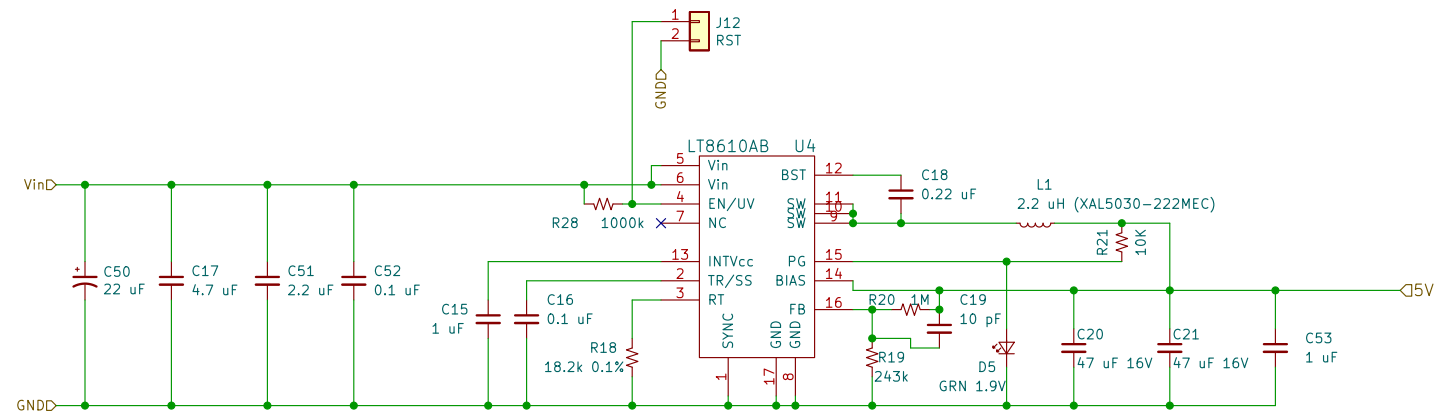
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /LT3063/
File: LT3063.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 9/32



Notes:
 Remove indicator LED (D5) if needed, power draw should be less than 1 mW at 5V out

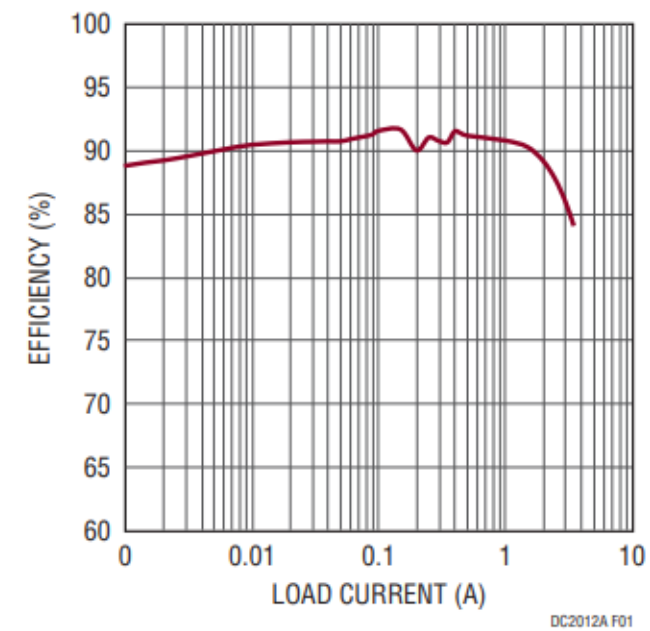
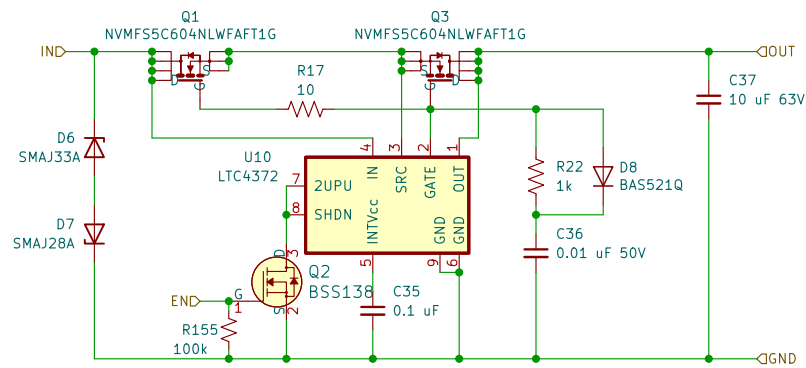


Figure 1. LT8610AB 12V_{IN} to 5V_{OUT} Efficiency at 2MHz Switching Frequency



Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /LTC4372/

File: LTC4372.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B

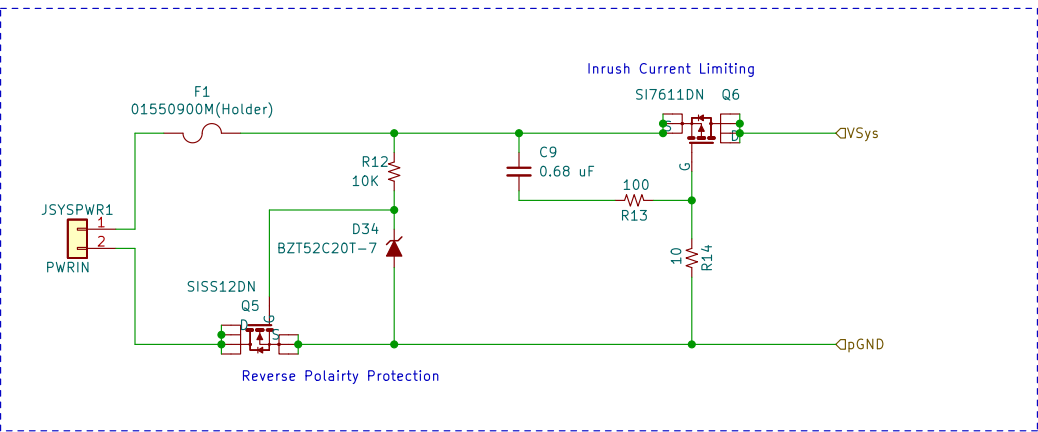
Date: 2022-07-29

Rev: C

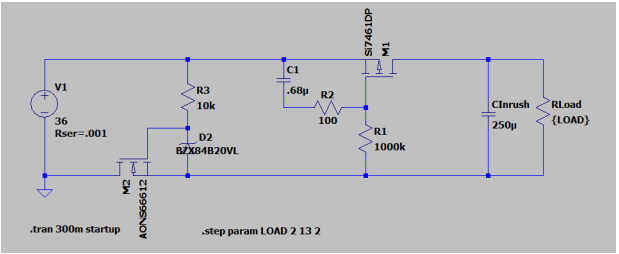
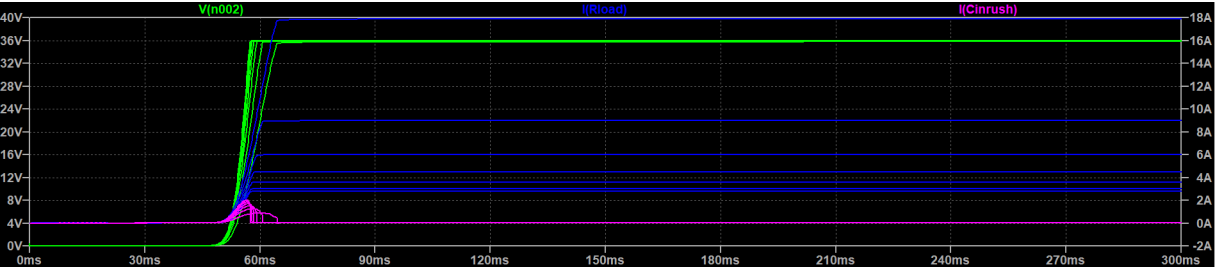
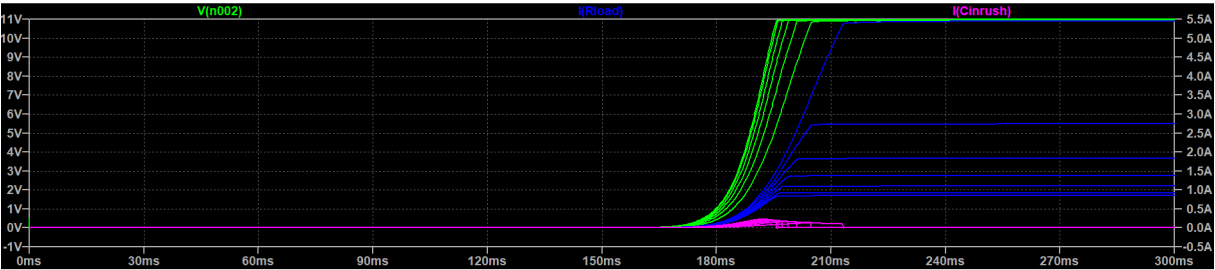
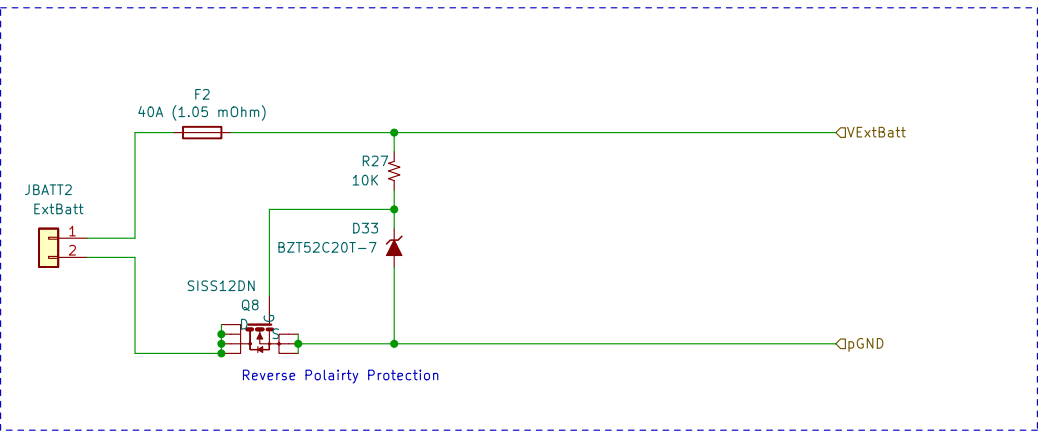
KiCad E.D.A. kicad (6.0.0)

Id: 12/32

LRAUV Load Controller Power Input with RP protetcion and Inrush limit to 2A @ 36V



External Battery Input with RP protection and no inrush limit



Monterey Bay Aquarium
Research Institute

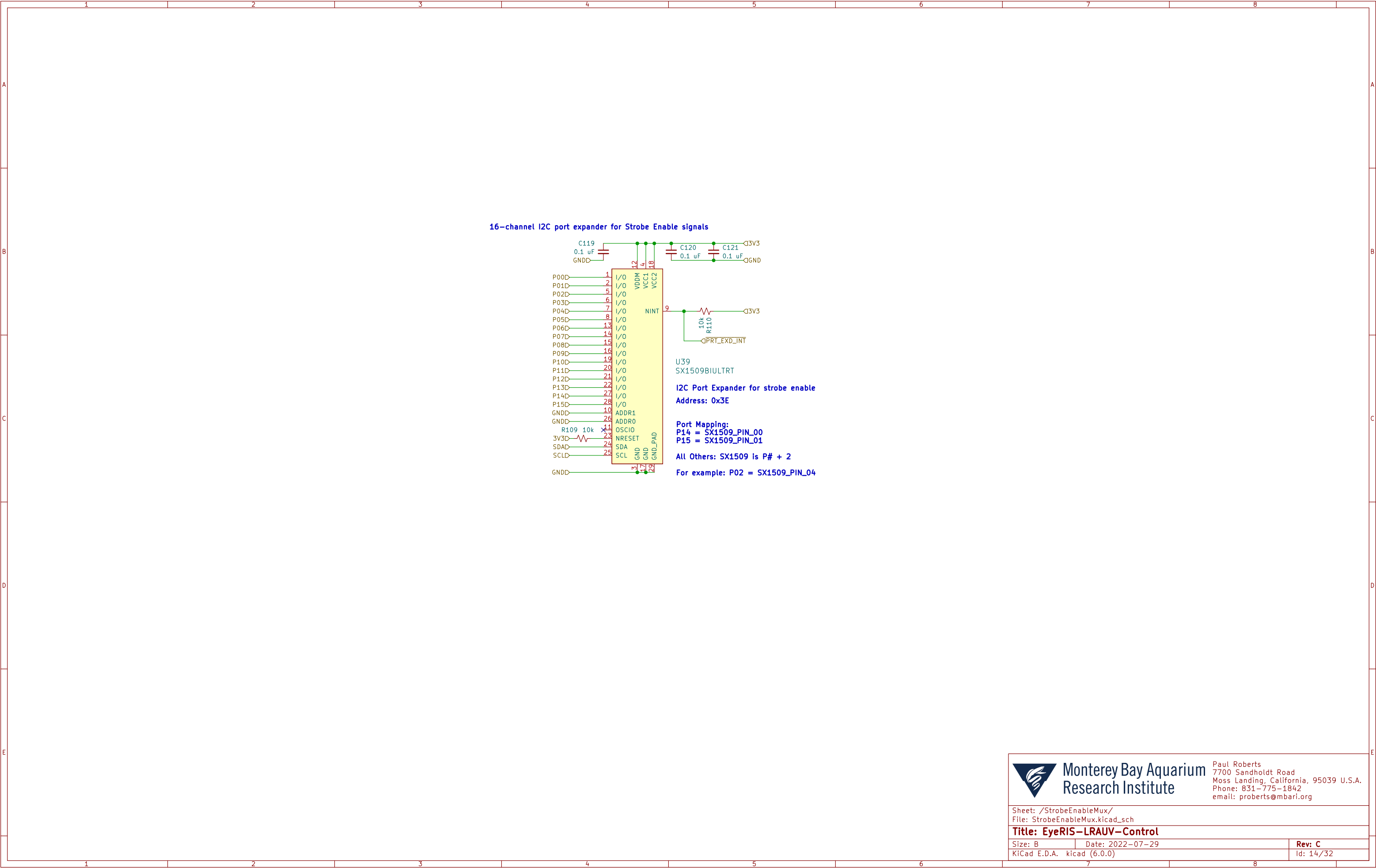
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

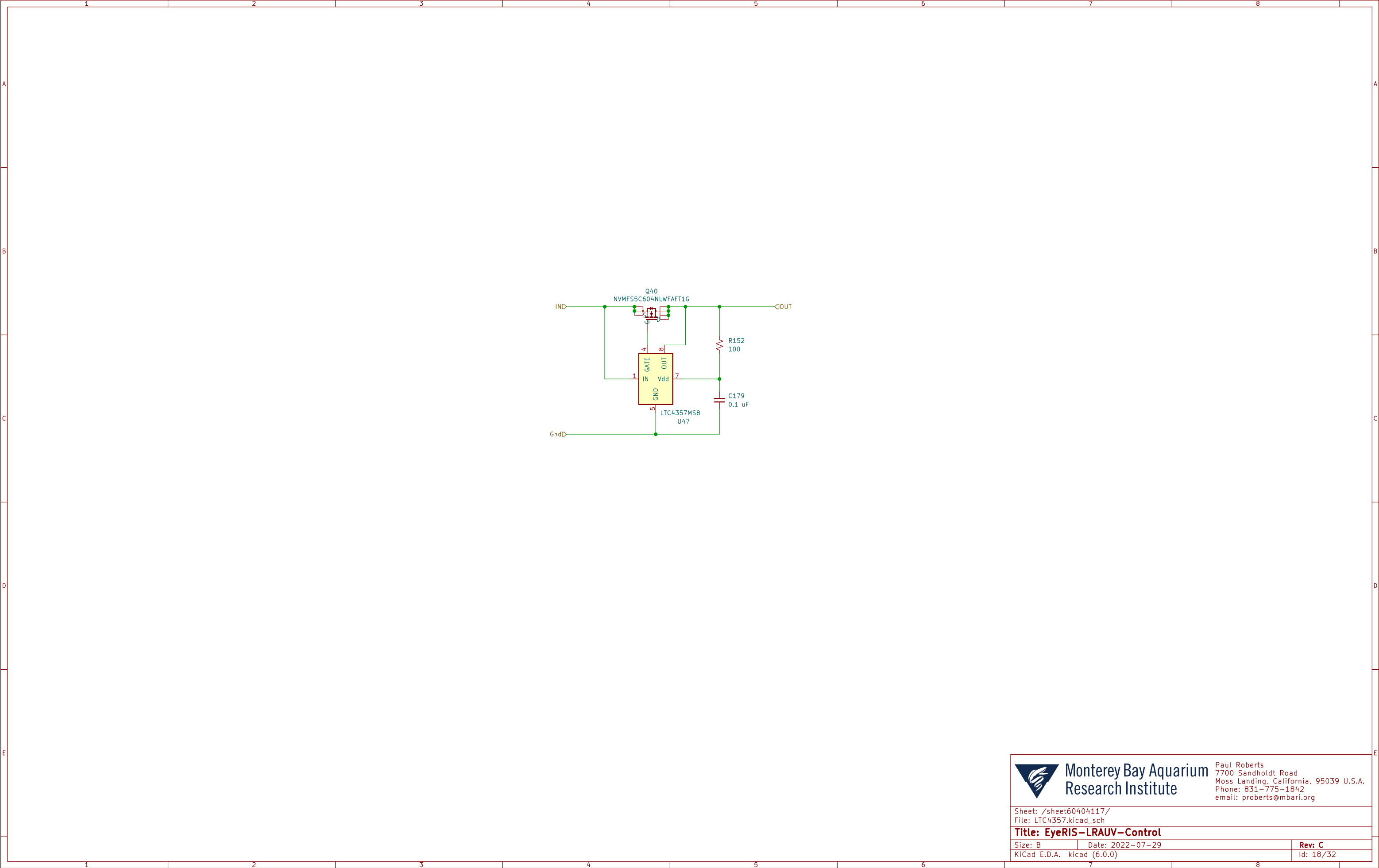
Sheet: /PowerInputProtection/
File: PowerInputProtection.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 13/32





Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet60404117/
File: LTC4357.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

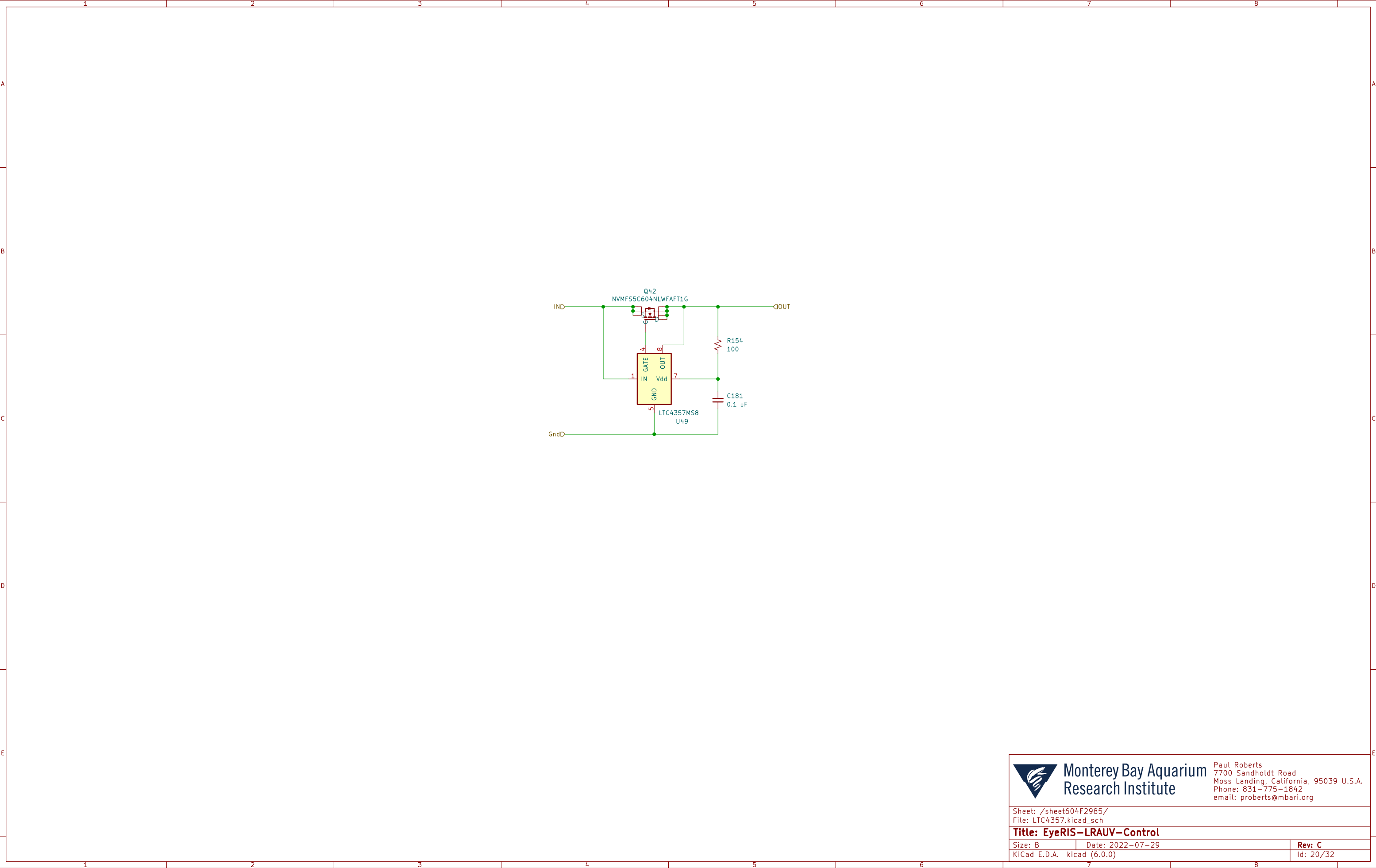
Rev: C
Id: 18/32



Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

KiCad E.D.A. kicad (6.0.0)

d: 19/32



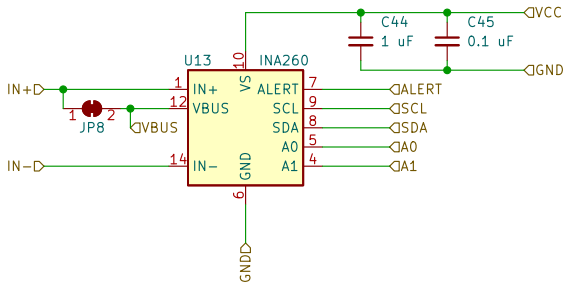


Table 2. Address Pins and Slave Addresses

A1	A0	SLAVE ADDRESS
GND	GND	1000000
GND	VS	1000001
GND	SDA	1000010
GND	SCL	1000011
VS	GND	1000100
VS	VS	1000101
VS	SDA	1000110
VS	SCL	1000111
SDA	GND	1001000
SDA	VS	1001001
SDA	SDA	1001010
SDA	SCL	1001011
SCL	GND	1001100
SCL	VS	1001101
SCL	SDA	1001110
SCL	SCL	1001111



Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

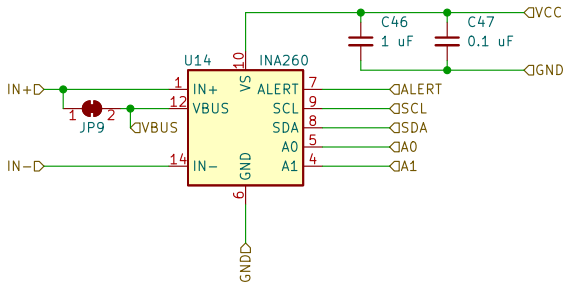


Table 2. Address Pins and Slave Addresses

A1	A0	SLAVE ADDRESS
GND	GND	1000000
GND	VS	1000001
GND	SDA	1000010
GND	SCL	1000011
VS	GND	1000100
VS	VS	1000101
VS	SDA	1000110
VS	SCL	1000111
SDA	GND	1001000
SDA	VS	1001001
SDA	SDA	1001010
SDA	SCL	1001011
SCL	GND	1001100
SCL	VS	1001101
SCL	SDA	1001110
SCL	SCL	1001111



Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet60828876/
File: INA260.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B
KiCad E.D.A. kicad (6.0.0)

Date: 2022-07-29

Rev: C

Id: 22/32

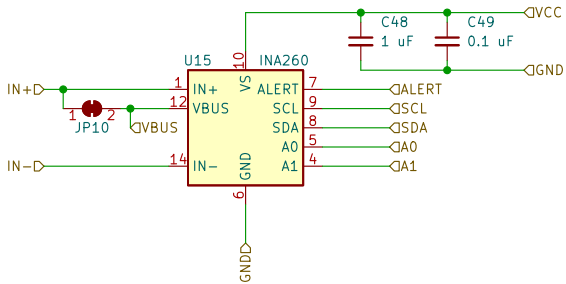


Table 2. Address Pins and Slave Addresses

A1	A0	SLAVE ADDRESS
GND	GND	1000000
GND	VS	1000001
GND	SDA	1000010
GND	SCL	1000011
VS	GND	1000100
VS	VS	1000101
VS	SDA	1000110
VS	SCL	1000111
SDA	GND	1001000
SDA	VS	1001001
SDA	SDA	1001010
SDA	SCL	1001011
SCL	GND	1001100
SCL	VS	1001101
SCL	SDA	1001110
SCL	SCL	1001111



Monterey Bay Aquarium
Research Institute

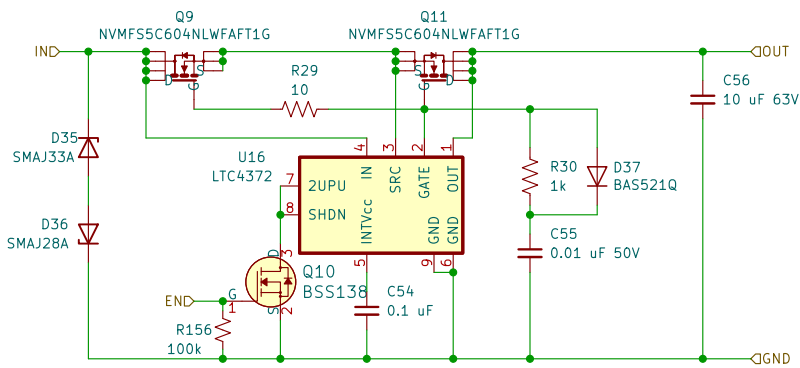
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet6083EEEB/
File: INA260.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 23/32



Monterey Bay Aquarium
Research Institute

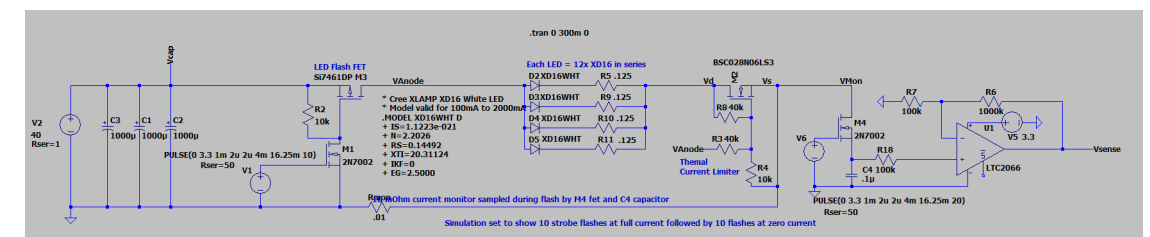
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet60E8DF78/
File: LTC4372.kicad_sch

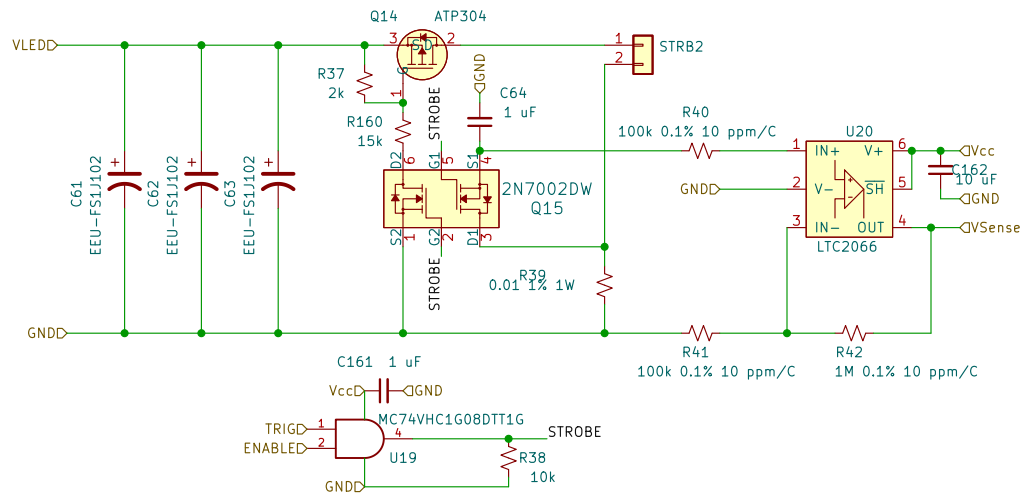
Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

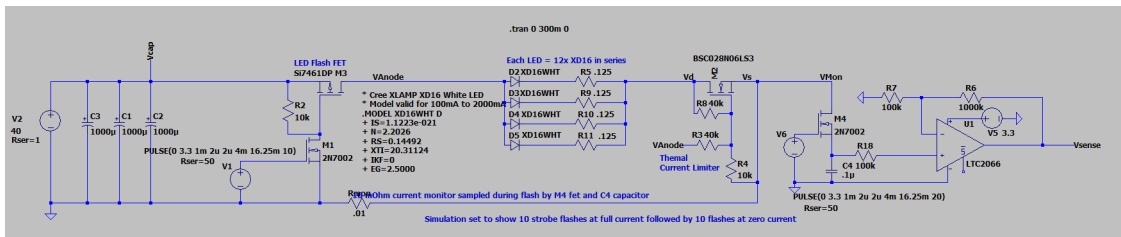
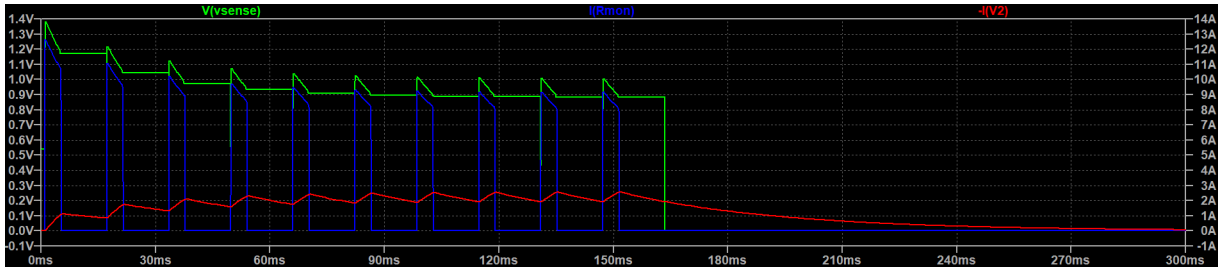
Rev: C
Id: 24/32



 Monterey Bay Aquarium Research Institute		Paul Roberts 7700 Sandholdt Road Moss Landing, California, 95039 U.S.A. Phone: 831-775-1842 email: proberts@mbari.org
Sheet: /sheet619B0A0A/ File: FlashCircuit.kicad_sch		
Title: EyeRIS -LRAUV-Control		
Size: B	Date: 2022-07-29	Rev: C
KiCad E.D.A. kicad (6.0.0)		Id: 25/32



LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current



Revision History:
4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from exceeding ratings



Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

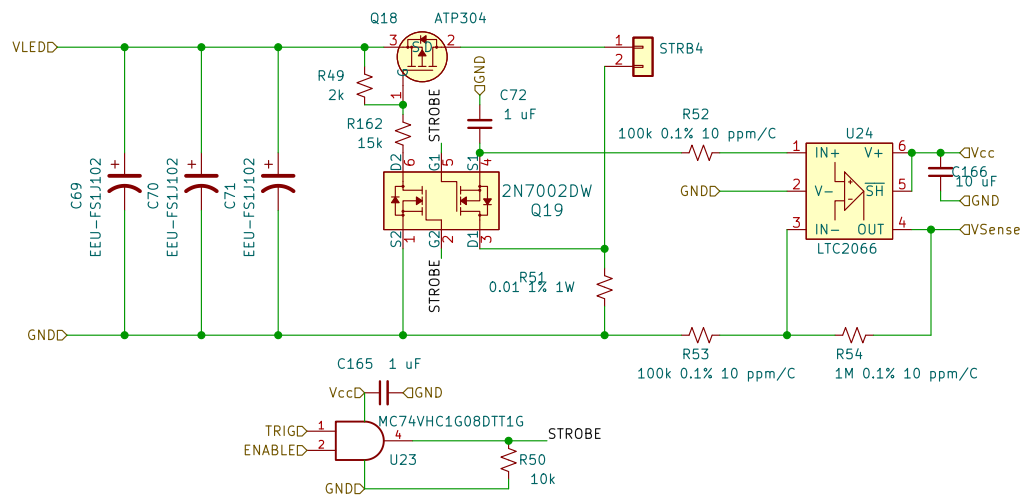
Sheet: /sheet619B0A0B/
File: FlashCircuit.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

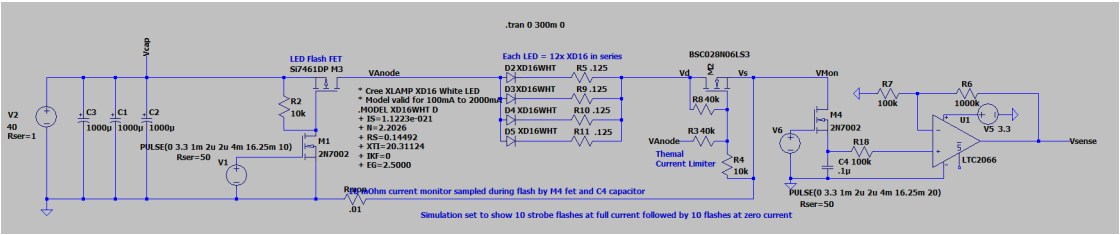
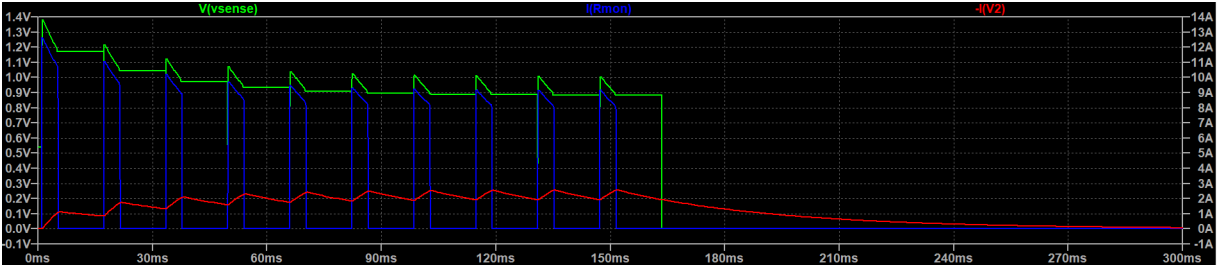
Rev: C
Id: 26/32

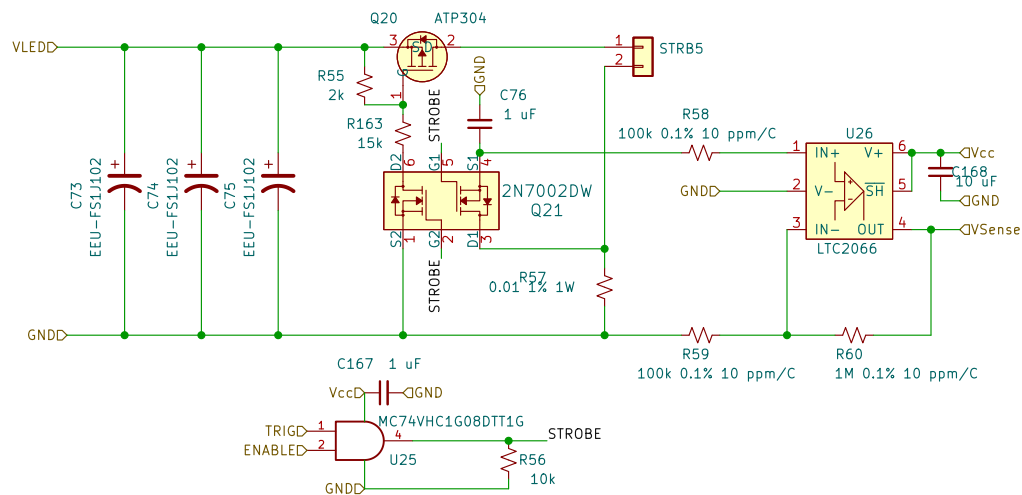
Id: 27/32



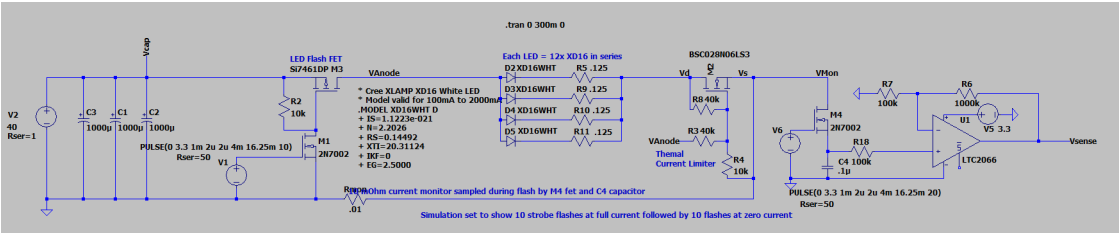
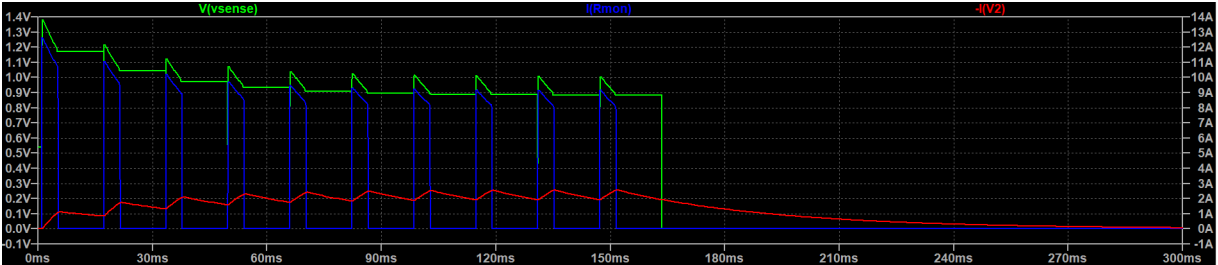
Revision History:
 4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from exceeding ratings

LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current



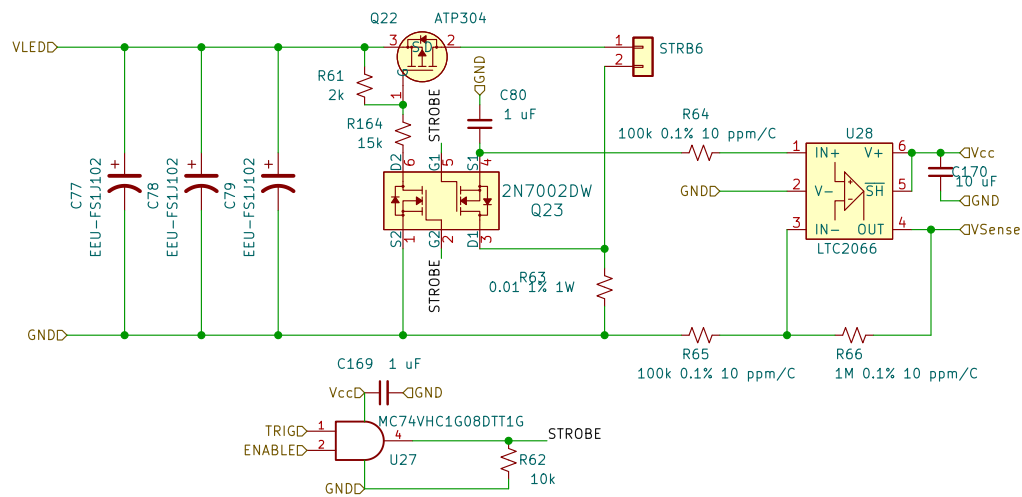


LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current

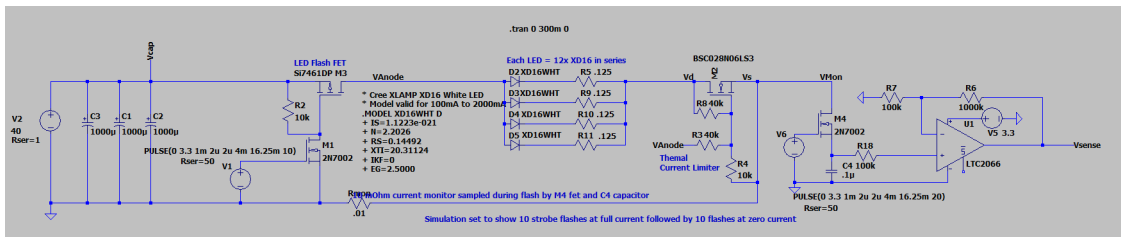
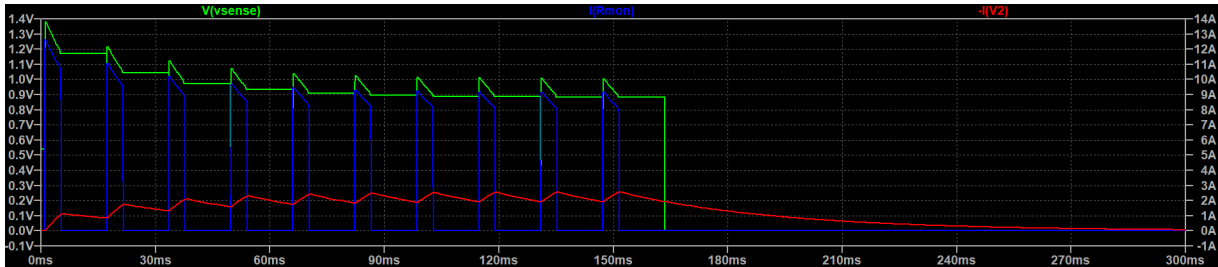


Revision History:

4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from axceeding ratings



LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current



Revision History:
4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from exceeding ratings



Monterey Bay Aquarium
Research Institute

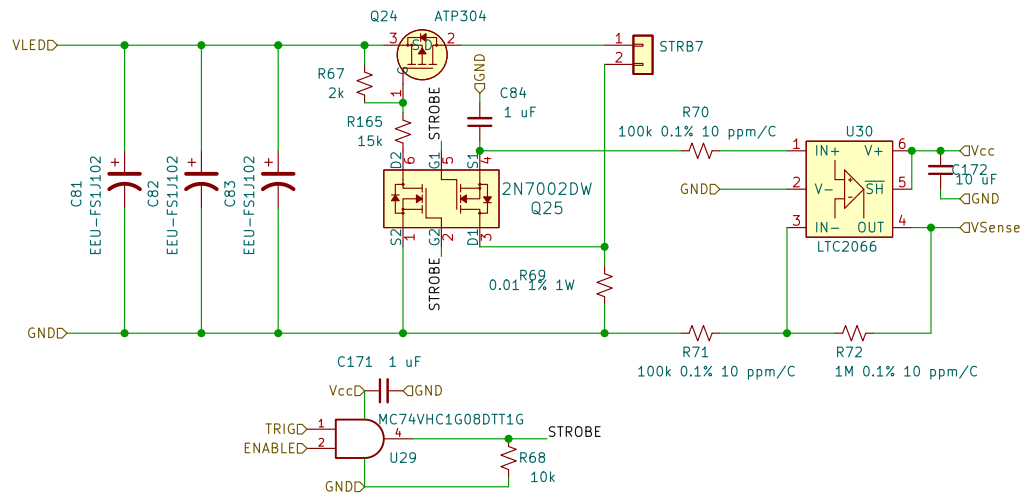
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet619B0A0F/
File: FlashCircuit.kicad_sch

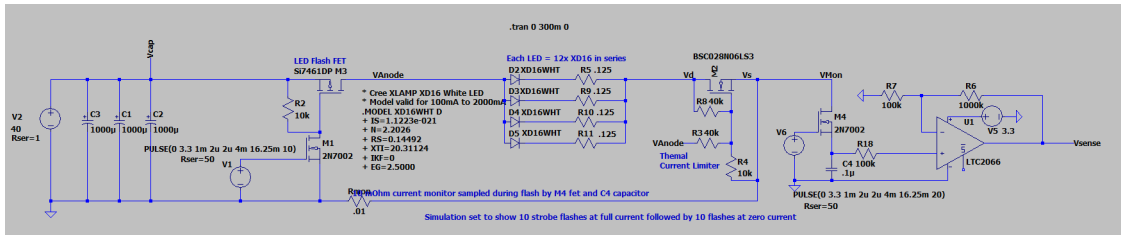
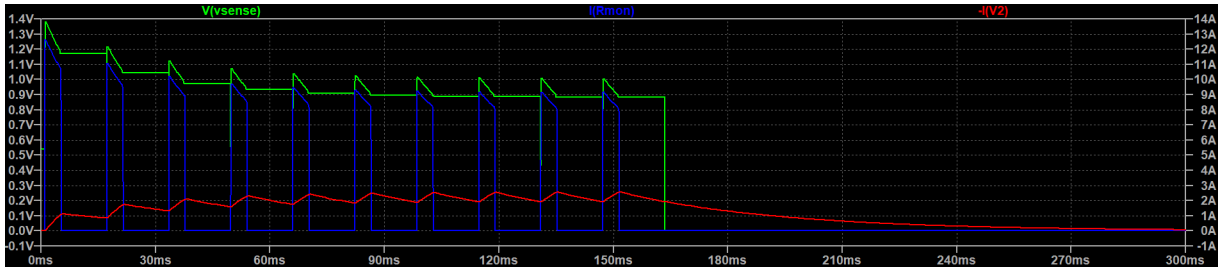
Title: EyeRIS-LRAUV-Control

Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 30/32



LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current



Revision History:

4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from exceeding ratings



**Monterey Bay Aquarium
Research Institute**

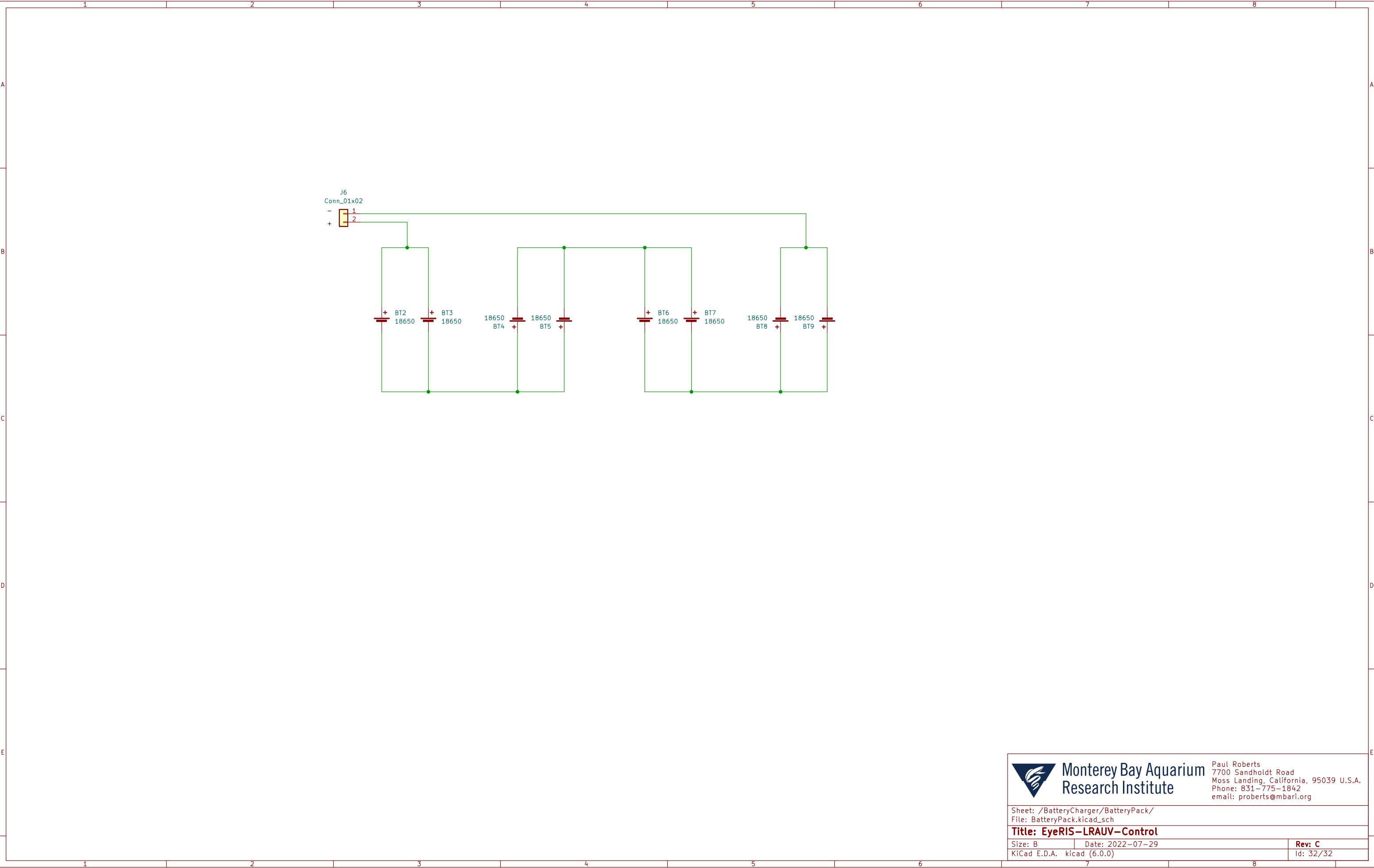
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

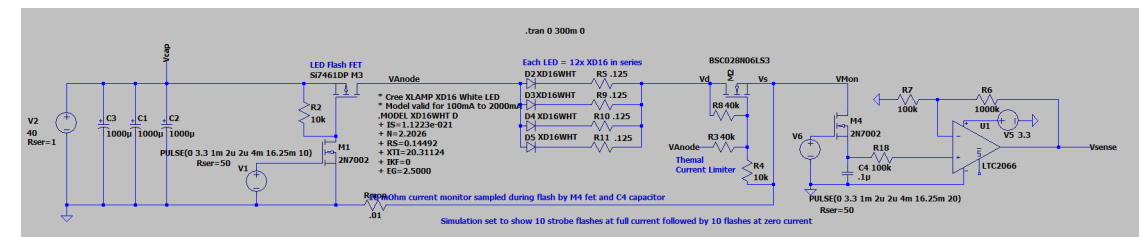
Sheet: /sheet619B0A10/
File: FlashCircuit.kicad_sch

Title: EyeRIS-LRAUV-Control

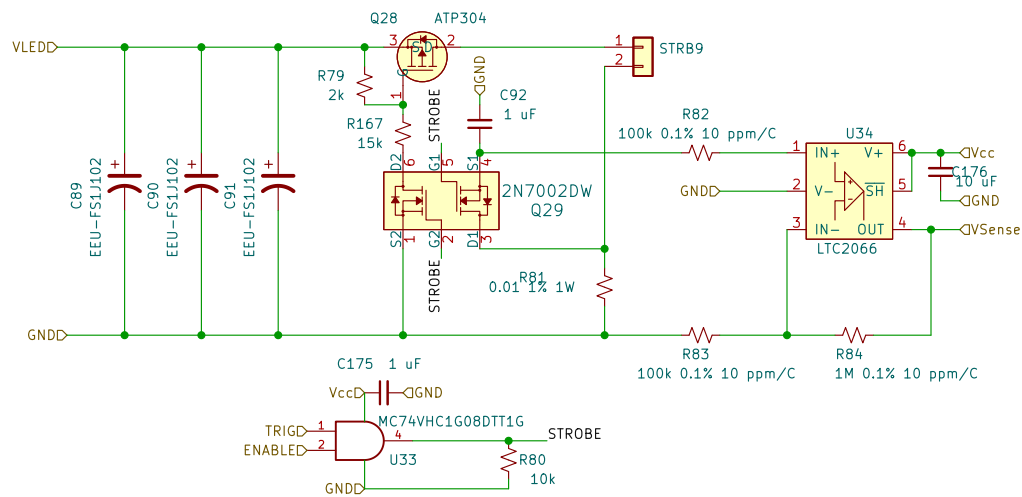
Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 31/32

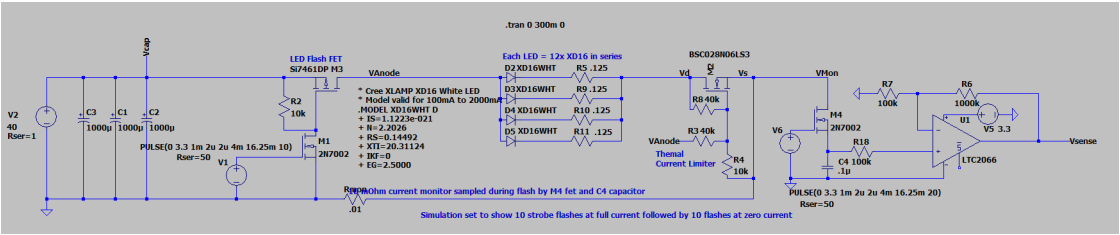
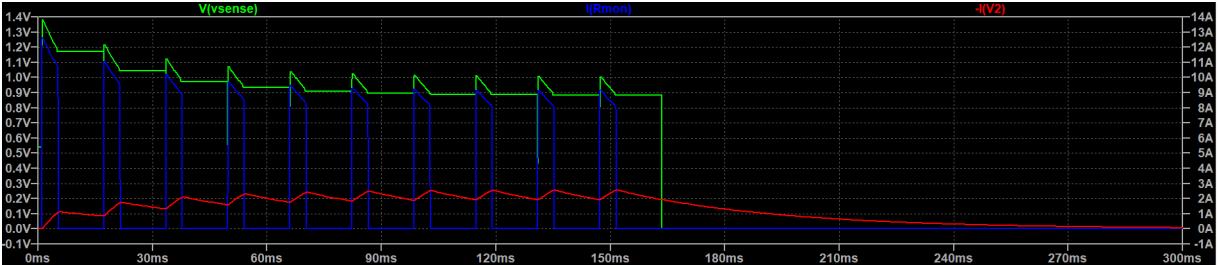




4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from axceeding ratings



LT spice simulation of 60 Hz, 4ms flashes with flash current, monitor voltage and capacitor ripple current



Revision History:
4/8/2021 – Added 30k resistor to prevent pfet gate–source voltage from axceeding ratings



**Monterey Bay Aquarium
Research Institute**

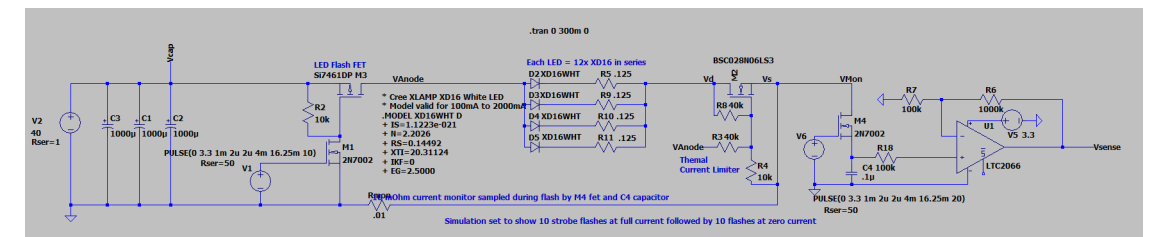
Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet619B0A12/
File: FlashCircuit.kicad_sch

Title: EyeRIS-LRAUV-Control

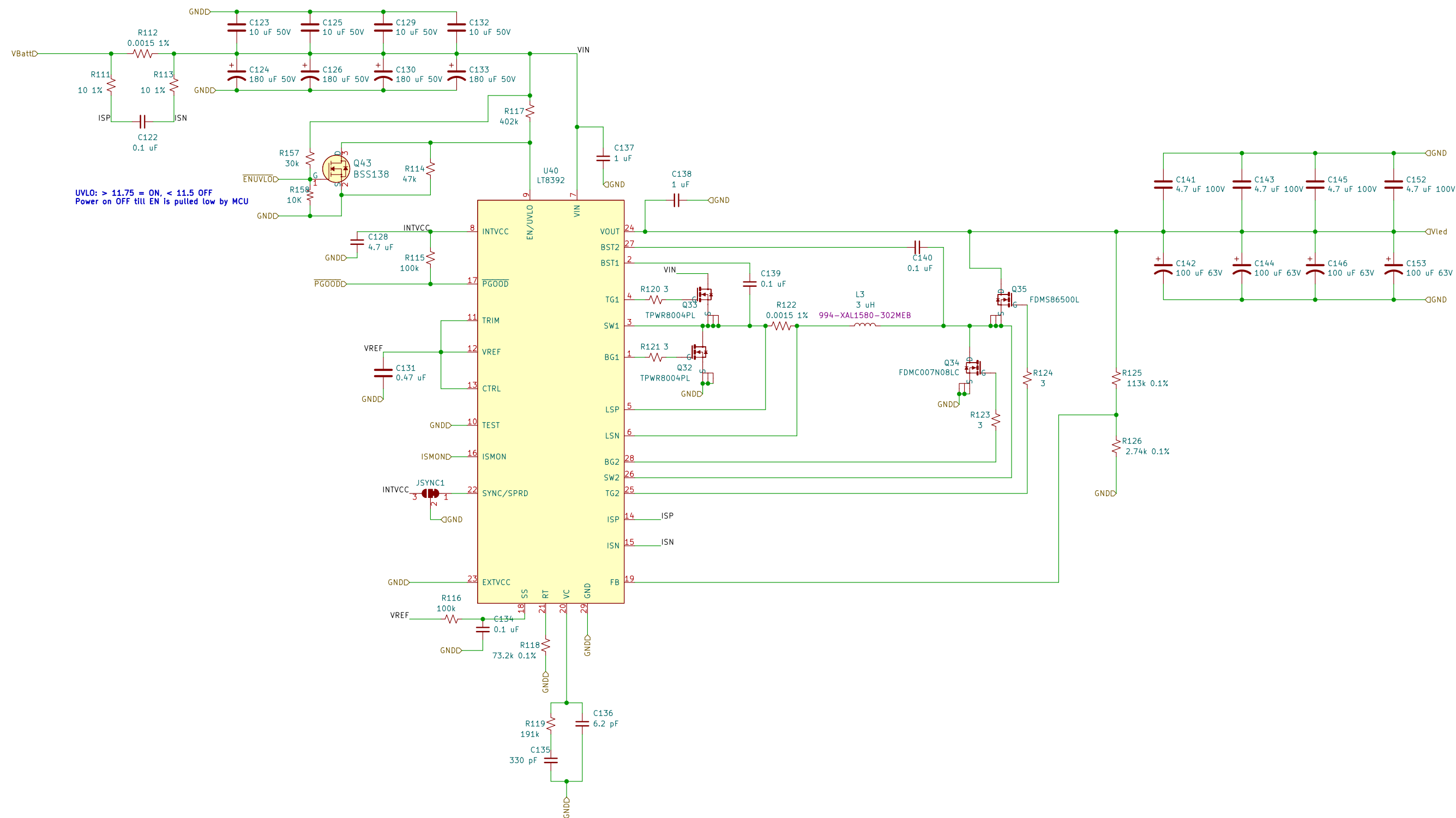
Size: B Date: 2022-07-29
KiCad E.D.A. kicad (6.0.0)

Rev: C
Id: 33/32



4/8/2021 – Added 30k resistor to prevent pfet gate-source voltage from exceeding ratings

Revision History:
4/8/2021 – Replaced 100k pullup on UVLO/EN circuit with 30k pullup to Vin



Monterey Bay Aquarium
Research Institute

Paul Roberts
7700 Sandholdt Road
Moss Landing, California, 95039 U.S.A.
Phone: 831-775-1842
email: proberts@mbari.org

Sheet: /sheet6205843
File: LT8392.kicad_sch

Title: EyeRIS-LRAUV-Control

Size: B

Date: 2022-07-29

Rev: C

Id: 35/32