

ECE 441 - Sr Design

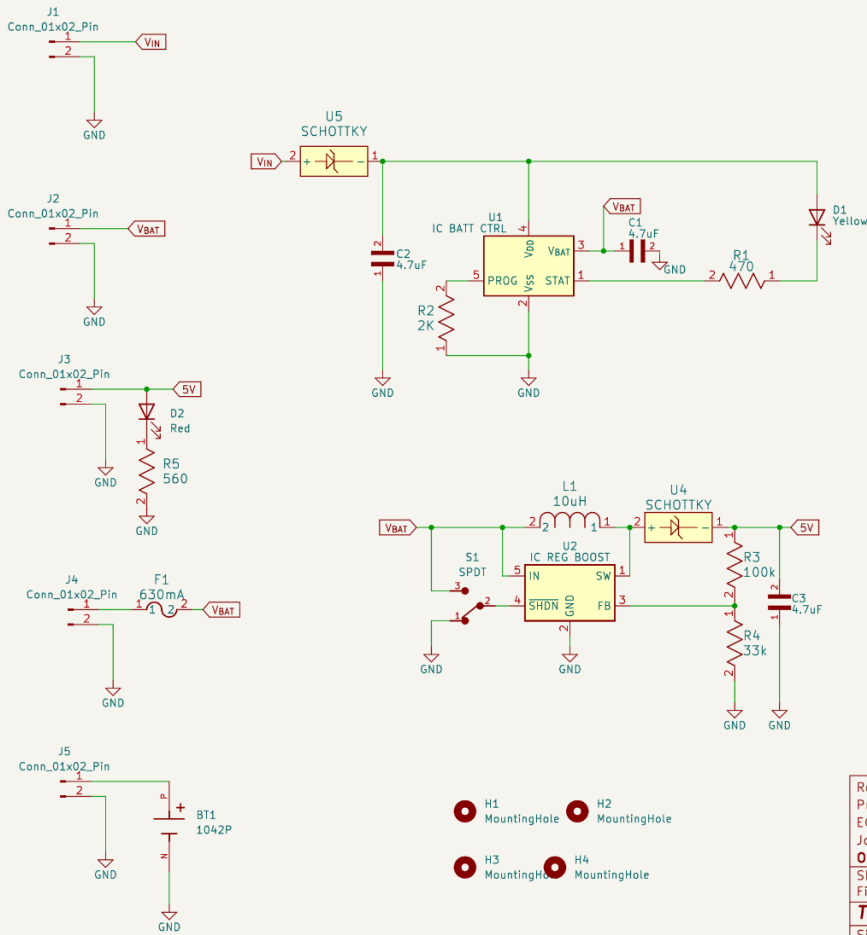
Tech Demo Order

Professor Heer

11/2/23

Joseph Conrow

# SCHEMATIC LAYOUT



Sourced from pg1 of MCP73831 DataSheet:  
<https://ww1.microchip.com/downloads/en/DeviceDoc/MCP73831-Family-Data-Sheet-DS20001984H.pdf>

Sourced from pg9 of AP3012 DataSheet:  
<https://www.diodes.com/assets/Datasheets/AP3012.pdf>

Reviewed by: Cade Tillema & Louis Marun  
 Prof. Don Heer  
 ECE 441 - Fall 2023  
 Joseph Conrow

OSU

Sheet: /  
 File: Recitation LiPo.kicad\_sch

**Title: Lithium Ion Polymer Battery Charger**

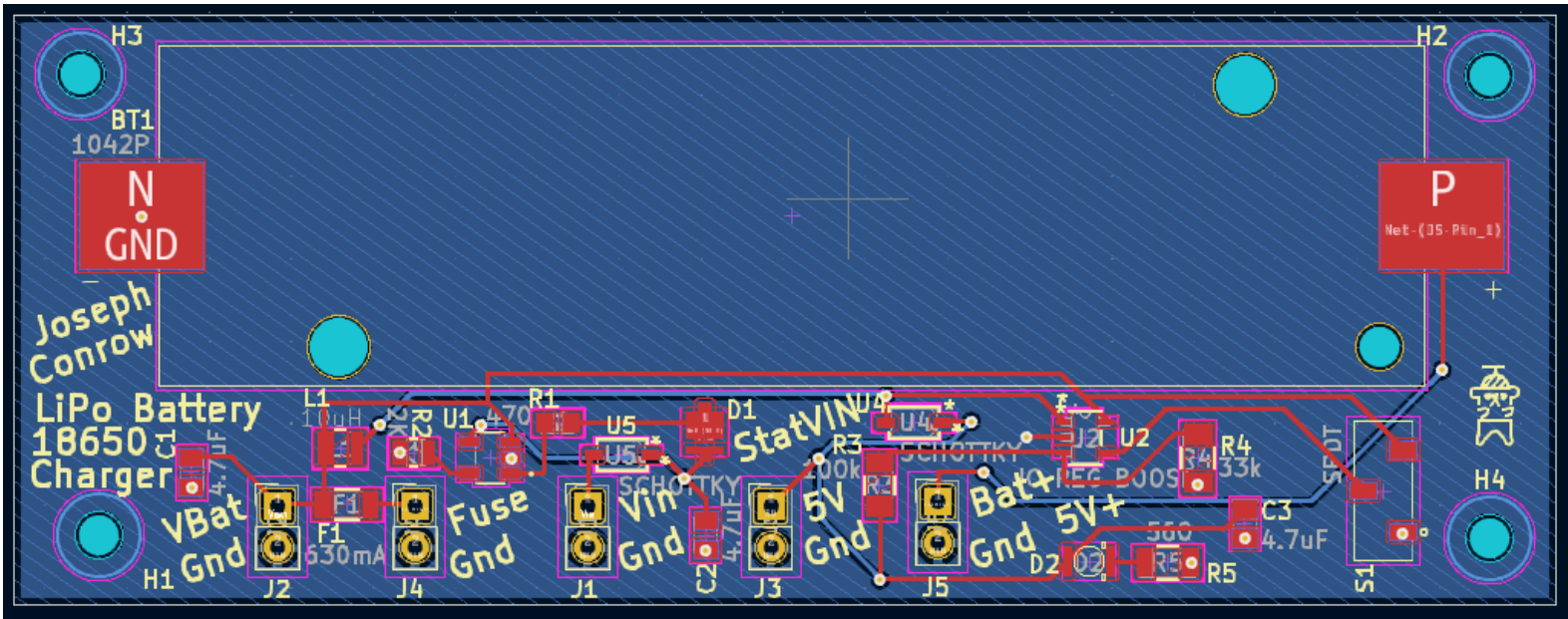
Size: A4 Date: 11/2/23

KiCad E.D.A. kicad 7.0.8-7.0.8-ubuntu20.04.1

Rev: 1

Id: 1/1

# PCB LAYOUT



## PCB BLOCK

Reviewed by: Cade tillema & Louis Marun  
Prof. Don Heer  
ECE 441 – Fall 2023  
Joseph Conrow  
**OSU**

Sheet:  
File: Recitation LiPo.kicad\_pcb

## Title: Lithium Ion Polymer Battery Charger

Date: 11/2/23

Rev: 1

KiCad E.D.A. kicad 7.0.8-7.0.8-ubuntu20.04.1

Id: 1/1

# OSH PARK RECIEPT



Invoice for 6qxXUG22, generated 2023-11-02

## User Information

User Name	Joseph Conrow
User	jconrow00@gmail.com
Order ID	6qxXUG22
Order Date	2023-11-02 20:52:17

## PCB : Recitation LiPo.kicad\_pcb

Set Cost	\$26.10 USD per set of 3
PCB Quantity	3 (1 set of 3)
Project Subtotal	\$26.10 USD

## Shipping Information

Shipping Method	Usps - Free Shipping
Shipping Cost	\$0.00 USD
Shipping Address	Joseph Conrow 219 NW 7TH ST CORVALLIS, OR, 97330-6303 United States of America

## Billing Information

Order date	2023-11-02 20:52:17
Payment date	2023-11-02 22:21:31
Payment method	Stripe
Card	Visa ending in 0749, expiring 11/25
Payment status	Paid
Order Items	\$26.10 USD
Total cost	\$26.10 USD

OSH Park  
311 B Ave  
Suite B  
Lake Oswego, OR 97034

# BOM

Reference	Value	Footprint	DATASHEET	Model	Supplier	Qty
BT1	1042P	1042P:1042P	<a href="https://www.kevelco.com/userAssets/file/M65p2">https://www.kevelco.com/userAssets/file/M65p2</a>	1042P	<a href="https://www.digikey.com/en/products/detail/keysight/1042P">https://www.digikey.com/en/products/detail/keysight/1042P</a>	1
C1-C3	4.7uF	GRM219R6YA475KA73D:GRM219R6YA475KA73D	<a href="https://search.murata.co.jp/Ceramy/image/img/A">https://search.murata.co.jp/Ceramy/image/img/A</a>	GRM219R6YA475KA73D	<a href="https://www.digikey.com/en/products/detail/murata/GRM219R6YA475KA73D">https://www.digikey.com/en/products/detail/murata/GRM219R6YA475KA73D</a>	3
D1	Yellow	KW DSLP31.CC-GXHX-4J8K-Z444-60-R18:KW DSLP31.CC-GXHX-4J8K-Z444-60-R18	<a href="https://dammedia.osram.info/media/resource/hir">https://dammedia.osram.info/media/resource/hir</a>	KW DSLP31.CC-GXHX-4J8K-Z444-60-R18	<a href="https://www.digikey.com/en/products/detail/osram/KW-DSLP31-CC-GXHX-4J8K-Z444-60-R18">https://www.digikey.com/en/products/detail/osram/KW-DSLP31-CC-GXHX-4J8K-Z444-60-R18</a>	1
D2	Red	LTST-C930KRKT:LTST-C930KRKT	<a href="https://www.digikey.com/en/products/detail/liteon/LTST-C930KRKT">https://www.digikey.com/en/products/detail/liteon/LTST-C930KRKT</a>	LTST-C930KRKT	<a href="https://www.digikey.com/en/products/detail/liteon/LTST-C930KRKT">https://www.digikey.com/en/products/detail/liteon/LTST-C930KRKT</a>	1
F1	630mA	3413_0214_22:FUS1206_24N_SCH	<a href="https://us.schurter.com/en/datasheet/typ_US1_1">https://us.schurter.com/en/datasheet/typ_US1_1</a>	3413.0214.22	<a href="https://www.digikey.com/en/products/detail/schurter/3413.0214.22">https://www.digikey.com/en/products/detail/schurter/3413.0214.22</a>	1
H1-H4	MountingHole	MountingHole:MountingHole_2.5mm				4
J1-J5	Conn_01x02_Pin	Connector_PinHeader_2.54mm:PinHeader_1x02_P2.54mm_Vertical				5
L1	10uH	1239AS_H_100M_P2:IND_DFE252012C_MUR	<a href="https://www.murata.com/~media/webrenewal/pr">https://www.murata.com/~media/webrenewal/pr</a>	1239AS-H-100M=P2	<a href="https://www.digikey.com/en/products/detail/murata/1239AS-H-100M=P2">https://www.digikey.com/en/products/detail/murata/1239AS-H-100M=P2</a>	1
R1	470	RC0805N_YAG:RC0805N_YAG	<a href="https://www.yageo.com/upload/media/product/pr">https://www.yageo.com/upload/media/product/pr</a>	RC0805FR-07470RL	<a href="https://www.digikey.com/en/products/detail/yageo/RC0805FR-07470RL">https://www.digikey.com/en/products/detail/yageo/RC0805FR-07470RL</a>	1
R2	2K	RG2012P-202-B-T5:RES_1220_SUS	<a href="https://www.susumu.co.jp/common/pdf/n_catalog">https://www.susumu.co.jp/common/pdf/n_catalog</a>	RG2012P-202-B-T5	<a href="https://www.digikey.com/en/products/detail/susumu/RG2012P-202-B-T5">https://www.digikey.com/en/products/detail/susumu/RG2012P-202-B-T5</a>	1
R3	100k	ERJ_8ENF1003V:RC1206N_PAN	<a href="https://industrial.panasonic.com/cdbs/ww-data">https://industrial.panasonic.com/cdbs/ww-data</a>	ERJ-8ENF1003V	<a href="https://www.digikey.com/en/products/detail/panasonic/ERJ-8ENF1003V">https://www.digikey.com/en/products/detail/panasonic/ERJ-8ENF1003V</a>	1
R4	33k	RMCF1206JT33K0:RES_RMCF1206_STP	<a href="https://www.seielect.com/catalog/sei-rmcf_rmcf">https://www.seielect.com/catalog/sei-rmcf_rmcf</a>	RMCF1206JT33K0	<a href="https://www.digikey.com/en/products/detail/stackpole/RMCF1206JT33K0">https://www.digikey.com/en/products/detail/stackpole/RMCF1206JT33K0</a>	1
R5	560	RMCF1206FT560R:STA_RMCF1206_STP	<a href="https://www.seielect.com/catalog/sei-rmcf_rmcf">https://www.seielect.com/catalog/sei-rmcf_rmcf</a>	RMCF1206FT560R	<a href="https://www.digikey.com/en/products/detail/stackpole/RMCF1206FT560R">https://www.digikey.com/en/products/detail/stackpole/RMCF1206FT560R</a>	1
S1	SPDT	JS102011JCQN:SW_JS102011JCQN	<a href="https://www.ckswitches.com/media/1422/js.pdf">https://www.ckswitches.com/media/1422/js.pdf</a>	JS102011JCQN	<a href="https://www.digikey.com/en/products/detail/c-k/js102011jcqn">https://www.digikey.com/en/products/detail/c-k/js102011jcqn</a>	1
U1	IC BATT CTRL	MCP73832T_2DCI_OT:MCP73832T_2DCI_OT	<a href="https://ww1.microchip.com/downloads/en/Device">https://ww1.microchip.com/downloads/en/Device</a>	MCP73832T-2DCI/OT	<a href="https://www.digikey.com/en/products/detail/microchip/MCP73832T-2DCI/OT">https://www.digikey.com/en/products/detail/microchip/MCP73832T-2DCI/OT</a>	1
U2	IC REG BOOST	AP3012KTR_G1:SOT-23-5_DIO	<a href="https://www.diodes.com/assets/Datasheets/AP3">https://www.diodes.com/assets/Datasheets/AP3</a>	AP3012KTR-G1	<a href="https://www.digikey.com/en/products/detail/diodes/AP3012KTR-G1">https://www.digikey.com/en/products/detail/diodes/AP3012KTR-G1</a>	1
U4, U5	SCHOTTKY	1N5819HW-7-F:1N5819HW-7-F_DIO	<a href="https://www.diodes.com/assets/Datasheets/ds3">https://www.diodes.com/assets/Datasheets/ds3</a>	1N5819HW-7-F	<a href="https://www.digikey.com/en/products/detail/diodes/1N5819HW-7-F">https://www.digikey.com/en/products/detail/diodes/1N5819HW-7-F</a>	2

# DIGIKEY ORDER RECPIEPT

#	QUANTITY	PART NUMBER	MANUFACTURER PART NUMBER	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
1	6	1N5819HW-FDICT-ND	1N5819HW-7-F	DIODE SCHOTTKY 40V 1A SOD123	0.43	2.58
2	3	AP3012KTR-G1DICT-ND	AP3012KTR-G1	IC REG BOOST ADJ 500MA SOT23-5	0.47	1.41
3	3	MCP73832T-2DCI/OTCT-ND	MCP73832T-2DCI/OT	IC BATT CNTL LI-ION 1CEL SOT23-5	0.76	2.28
4	3	CKN10721CT-ND	JS102011JCQN	SWITCH SLIDE SPDT 300MA 6V	0.94	2.82
5	4	RG20P2.0KBCT-ND	RG2012P-202-B-T5	RES SMD 2K OHM 0.1% 1/8W 0805	0.48	1.92
6	4	490-10563-1-ND	1239AS-H-100M=P2	FIXED IND 10UH 1A 460 MOHM SMD	0.33	1.32
7	3	486-1142-1-ND	3413.0214.22	FUSE BOARD MNT 630MA 32VAC 63VDC	0.67	2.01
8	4	160-1463-1-ND	LTST-C930KRKT	LED RED CLEAR CHIP SMD	0.36	1.44
9	4	475-KWDSLP31.CC-GXHX-4J8K-Z444-60-R18CT-ND	KW DSLP31.CC-GXHX-4J8K-Z444-60-R18	OSTUNE E1608 AND E3030	0.51	2.04
10	10	490-7208-1-ND	GRM219R6YA475KA73D	CAP CER 4.7UF 35V X5R 0805	0.136	1.36
11	2	36-1042P-ND	1042P	BATT HOLDER 18650 1 CELL SMD	5.34	10.68
12	10	311-470CRCT-ND	RC0805FR-07470RL	RES 470 OHM 1% 1/8W 0805	0.024	0.24
13	10	P100KFCT-ND	ERJ-8ENF1003V	RES SMD 100K OHM 1% 1/4W 1206	0.089	0.89
14	10	RMCF1206JT33K0CT-ND	RMCF1206JT33K0	RES 33K OHM 5% 1/4W 1206	0.02	0.20
15	10	RMCF1206FT560RCT-ND	RMCF1206FT560R	RES 560 OHM 1% 1/4W 1206	0.023	0.23